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1892–3.

NEW SOUTH WALES.

VOTES

AND

PROCEEDINGS

OF THE

LEGISLATIVE ASSEMBLY

DURING THE SESSION

OF

1892-3,

WITH THE VARIOUS DOCUMENTS CONNECTED THEREWITH.

IN EIGHT VOLUMES.
VOL. VI.

SYDNEY:
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1892-3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

VOTES AND PROCEEDINGS.

SESSION 1892-3.

(IN EIGHT VOLUMES.)

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1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE AND PLAN.

RELATING TO THE

PROPOSED RAILWAY

FROM

GRAFTON TO LISMORE.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

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PLAN.

Grafton to Lismore Railway.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

RAILWAY FROM GRAFTON TO LISMORE.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing a line of Railway from Grafton to Lismore," have, after due inquiry, resolved that it is expedient to construct the Lismore–Casino section of the proposed railway, provided that the cost does not exceed £6,000 per mile, and that the betterment principle can be applied to the land to be served by the proposed line; and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Reasons for referring the proposed railway to the Committee.

1. The railway is a portion of a proposed line from Grafton to the Tweed, which in 1889 and 1890 was before a previous Committee in the reference by the Legislative Assembly to consider and report upon the expediency of constructing a railway from Grafton to the Tweed, and which portion that Committee, for reasons stated in their Report, did not recommend should be carried out. The length of this unrecommended portion was about 80 miles, but as it is before the present Committee it is 82 miles 60 chains. The principal reasons which influenced the previous Committee in not recommending that a railway between Grafton and Lismore should be constructed were the poor quality of most of the land between the Richmond and the Clarence, the improbability of traffic passing from the Richmond district to the Clarence, and the conviction that the only justification for connecting the two districts by railway, as proposed, was to make it part of what is known as the North Coast Railway, which would extend from the Hunter River along the coast northwards, or to connect Grafton with the table-land of New England at Glen Innes, or elsewhere in that neighbourhood, upon neither of which matters, owing to the uncertainty surrounding them, did the Committee consider themselves called upon to express an opinion. Explaining the reasons for having the railway from Grafton to Lismore referred to the present Committee, the Under Secretary for Public Works described it as a section of what would eventually be the North Coast Railway, or "part of a comprehensive and national policy of railway construction." Since the date of the Report of the previous Committee, he said, definite action had been taken in the matter of the North Coast Railway. A complete survey had been made of the length between Maitland, on the Hunter, and Taree, on the Manning; the survey had been revised and estimates had been prepared; and surveyors were at work between Taree and Kempsey, and between Kempsey and Glenreagh. Surveys had also been prepared for a line between Murwillumbah and the Tweed Heads, where it would join a projected extension of the Queensland line from Southport; and it was the ultimate intention of the Minister, he further stated, "to place before the Cabinet proposals for the carrying out of, at any rate, certain sections of the line" he had sketched out, with the view of Parliament being asked

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asked to submit them for the consideration of the Committee. "The Minister therefore thinks," he continued, "that in offering this section of the North Coast Railway to the Committee for approval, they will look at it, not simply as a proposal *per se*, and which, perhaps, on that ground, might not have sufficiently strong grounds to recommend it for approval, but as part of a great whole which has weighty claims for most mature consideration." When moving the motion in the Legislative Assembly, referring the proposed line to the Committee for consideration and report, the Minister for Works said nothing of its connection with the North Coast Railway. The motion was passed as a formal motion, and was in the following terms:

> "That it be referred to the Parliamentary Standing Committee on Public Works to consider and report upon the expediency of constructing a line of railway from Grafton to Lismore."

Description of the railway.

2. The proposed railway is 82 miles 60 chains in length. Commencing at Turf-street, Grafton, close to the Clarence River, at a point giving facilities for sidings down to wharfs on the river bank, and to a dock for a ferry punt for carrying trains across the river, if that should be necessary in the future to connect with railway extensions southward and westward from South Grafton, the line follows the river bank for six miles. Thence, as far as the tenth mile, it takes a north-easterly direction, and from that point proceeds generally northward. Sportsman's Creek is crossed at 16 miles, and at Loxdon Creek the main ascent to the Richmond Range is made with a grade of 1 in 60. At 27½ miles the fall from the range to the Richmond begins, and the line then has a more westerly bearing, not far from and on the east side of the main road. Myall Creek is passed at 30½ miles, the main road at 42½ miles, Two-mile Creek at 42¾ miles, and Myrtle Creek at 45¼ miles. At 47 miles the original line, and that which was before the Committee when they were considering the proposed Railway from Grafton to the Tweed, is deviated from to the westward so as to junction with an amended trial survey from Tenterfield to Casino. This the deviation does at about 54 miles, after crossing Sandy Creek at 50½ miles. At 57½ miles Shannon Brook or Deep Creek is passed over, and at 63½ the middle or main arm of the Richmond River. The town of Casino is then entered and left on its north side. From Casino the line gradually rises to the range between the middle and north arms of the Richmond, and passes through the range by a short tunnel to the west of the main road. Then descending the range by way of the valley of Back Creek, this line goes on to Leycester Creek, which it follows at a distance of about three-quarters of a mile to the Twickenham Estate, on the bank of the north arm of the Richmond River, and 82¾ miles from Grafton, where it ends and joins the authorised railway from Lismore to the Tweed. From Grafton to the Richmond Range the construction of the line does not call for any works of a special character, but for some miles beyond the range, owing to the country being subject to severe floods, some heavy creek bridges and an unusually large number of small waterways will be required. About two miles north of Casino the country subject to floods is passed, and the necessity for special provision to deal with flood-water ceases. The ruling grade of the line is 1 in 60 between Grafton and Casino, and 1 in 50 between Casino and Lismore. The curves are generally easy. The deviation to suit a line from Tenterfield to Casino exists for the present, it should be stated, as a trial survey only.

Estimated cost.

3. The estimated cost of the railway, exclusive of land and compensation, is £662,000, or £8,000 per mile. Brick material and stone for concrete are said to be generally plentiful along the route, except between the Richmond Range and Casino, and timber of excellent quality is obtainable, the ironbark being in unusually long lengths. These circumstances have some effect upon the question of cost in the construction of the line. Some minor deviations of the route have been reported upon and either approved or recommended for further investigation, but they have not been considered in the estimate of cost laid before the Committee.

Railway Commissioners' opinion of the line.

4. The opinion of the Railway Commissioners respecting the line is embodied in their report of May, 1889, on the proposed Railway from Grafton to the Tweed. In that report they are generally favourable to the carrying out of the whole proposal, but to this expression of opinion they add the suggestions that the cost of making the railway should be credited with one-half the money realised

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from the sale of Crown lands along the railway route from the time of deciding to construct the line, and that the Railway Commissioners should have a voice in the arrangements for the subdivision and mode of sale of the land. These suggestions they emphasise in a minute written by their Secretary on 29th March, 1892, with special reference to the line from Grafton to Lismore, and say that "unless this course is taken, the making of the line will be a most serious burden upon the existing railways for a long time to come." An estimate of working expenses or of traffic, their report upon the Grafton to Tweed railway proposal does not give; and the recent minute of their Secretary is also silent on the subject. The report explains the absence of the estimate by saying that the figures cannot be laid down with any degree of certainty. To a great extent they would be speculative, and being of opinion that the subject is one requiring to be dealt with on broad principles of State, the Commissioners desire to be relieved from giving this information.

The present Committee's inquiry.

5. The present Committee have conducted their inquiry respecting the proposed railway both in Sydney and the districts interested in the proposal. Though the districts were visited, and evidence taken there by a Sectional Committee in 1889, it was thought well to give the residents an opportunity to put before the Committee any new evidence in their possession relative to the line, and another Sectional Committee was appointed for that purpose. This Sectional Committee proceeded to Grafton, *via* Glen Innes, and the Newton-Boyd Road, examining witnesses on the way; and having taken evidence at Grafton they visited the Clarence River Heads, and Chatsworth, Maclean, and Lawrence, where also witnesses were examined. The taking of evidence was afterwards resumed at Grafton, and the Sectional Committee then visited Copmanhurst, on the Upper Clarence, and Ramornie, on the Orara River. Having concluded their inquiry at Grafton, they proceeded along the route of the proposed railway, inspecting the country as they travelled over it, and taking further evidence. Witnesses were examined at Myrtle Creek, Casino, Runnymede Station, and Lismore; and the inquiry was continued at Coraki, Woodburn, Ballina, Alstonville, and Byron Bay. The Sectional Committee held in all seventeen sittings, and examined 109 witnesses. Their Report with the minutes of the evidence taken by them is published with this Report, and it will be seen that they discovered as they proceeded with their work that it was "impossible to come to a satisfactory decision, if the proposal were to be treated merely as one for a local line between the two towns mentioned. They, therefore, deemed it to be their duty to inquire into the principal side issues which were raised during their investigation. The claims of the residents of the Clarence that their river was the only possible port for the districts to the north of it; the equally strong assertions of the residents of the Richmond that their river would prove the best port if the entrance were improved; the statements of its advocates that Byron Bay would render either the Clarence or the Richmond River harbour unnecessary; the merits of the North Coast line; the connection with the table-land of New England, *via* Tenterfield or Glen Innes; the influence of the proposed line from Grafton to Guyra, *via* Don Dorrigo scrub; the service to the Upper Richmond district; the rival proposals for railways from Casino to Lawrence, from Lismore to Maclean, *via* Coraki, and from Woodburn to Maclean or Iluka—were all matters which had to be taken into account by the Committee in framing their Report." The Committee, sitting in Sydney, examined the Under Secretary for Public Works, the Engineer-in-Chief for Railway Construction, Mr. W. A. B. Greaves, and Mr. T. Fisher (old residents of Grafton, who applied to the Committee to give evidence before them), and the Hon. John See, M.P., Colonial Treasurer, the representative of the electorate of Grafton in the Legislative Assembly.

Principal points the Committee have had to consider.

6. The principal points which the Committee have had to consider in the present inquiry may be summarised under two heads:—

(1) The claims of Grafton to the railway.
(2) The reasons additional to those before the previous Committee which are favourable to the construction of the railway.

The claims of Grafton to the railway at the present time are similar to what they were when the matter was under the consideration of the previous Committee. The additional reasons in support of constructing the line are based on what may be new regarding the idea of a North Coast Railway, on some improvements in the plan of the proposed line, and on the progress of settlement in the country through which the line would pass.

Claims of Grafton to the railway.

7. As put before the Sectional Committee, it is claimed for Grafton that it is entitled to the railway because it is the most convenient point for connecting the table-land of New England with the coast; it is on the direct route of a North Coast railway; and it possesses a port which is not only the natural port of the districts inland of it but is the best on the north coast, and when the complete scheme of improvements now in progress at the entrance shall have been carried out, will be second only to Port Jackson. In this connection attention may be drawn to the evidence given before the Sectional Committee by Mr. M. L. Maclean, the officer in charge of the harbour works now being carried out at the entrance to the Clarence River. That officer expresses the belief that the works recommended by the Public Works Committee in 1890 will make the entrance to the river as safe as if the whole scheme designed by Sir John Coode were carried out, and that by their recommendation the Committee saved to the country the cost of the breakwaters which formed the remainder of Sir John Coode's scheme. The evidence given before the Committee in Sydney, with regard to the claims of Grafton, is generally to the same effect. It is not claimed that the proposed railway between Grafton and Lismore, ought of itself, in the interests of Grafton, to be constructed; nor is it contended that it would of itself be profitable. But it is held that this length of line should be carried out as part of a national system of railways for the north coast and its adjacent table-lands, from which system Grafton would derive the advantages to which, by reason of its position and importance, it is entitled. Connected with Glen Innes, Grafton might be the outlet for a large part of the country west and north-west of Glen Innes. Connected with the rivers south of the Clarence, and with the table-land, by way of Don Dorrigo, a large trade might be attracted from the districts now dependent for ports on the small southern rivers, from increased settlement which railway construction would be expected to produce in those districts, and from the country of the table-land south and south-west of Glen Innes. It is important, so it is urged, "that all the north coast districts should be connected with the existing railway system by the shortest length of line, and in such a manner as would confer the greatest benefit upon the districts on the coast, as well as upon the districts on the table-land"; and this, it is considered, could be effected by a railway from Glen Innes to Grafton and thence to the Macleay.

Additional reasons favourable to the construction of the railway.

8. The first of the reasons additional to those before the Committee previous to the present which are favourable to the construction of the proposed railway is what may be new respecting the project of a North Coast Railway. Beyond the statement made to the Committee by the Under Secretary for Public Works, there is nothing new. As already mentioned, on the occasion when the proposed line between Grafton and Lismore was referred to the Committee nothing was said by the Minister for Works of its connection with the North Coast Railway, and the statement of the Under Secretary is before the Committee, unsupported by any evidence showing that the North Coast Railway will be carried out either in the near or the distant future. There is nothing to show that the Government as a whole approve of such a line, or will put it before Parliament for reference to the Committee; and if it were seriously considered, the important question would arise whether the point of commencement should be the Hunter River District and not Grafton or Lismore. At present, apart from the surveys mentioned by the Under Secretary, the project is as indefinite as ever it was. The plan of the proposed line, however, shows some improvement. It is much more certain than it was when last considered. The deviation provides for what is regarded by the Engineer-in-Chief for Railway Construction as the most suitable point for connecting Casino with Tenterfield, if such a connection should eventually be decided upon, and for serving country where there is more settlement than along the portion of the railway from Grafton to Lismore for which the deviation is a substitute. It also gives lighter grades. So far as the deviation is concerned it appears to be an improvement of the proposal as it was before the previous Committee, and in that respect a good result from the decision of that Committee not at that time to recommend the construction of this section of the proposed line. The Under Secretary for Public Works informed the Committee that no decision had been come to by the Government with regard to a railway from Tenterfield to Casino, but mentioned that the present Minister for Works was favourable to such a line. "Without giving this as a Cabinet or Ministerial

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Ministerial decision," he said, "I am at liberty to mention it." There is the same indefiniteness about this connection with the table-land, it will be observed, as there is in relation to the North Coast Railway; and it is further necessary to point out that if Casino be connected by railway with Tenterfield it is not likely that Grafton will be connected by a railway with Glen Innes. The most satisfactory circumstance which has made itself apparent in the present inquiry is a material reduction in the cost at which it is estimated the railway could be constructed. The Engineer-in-Chief's estimate is £8,000 per mile. The railway surveyor who has been employed in revising the surveys of the line expressed to the Sectional Committee the opinion that it could be constructed for £6,000 per mile, and subsequently, after, at the request of the Sectional Committee, again going over the line, his belief that it might be carried out for £5,000 per mile. Increased settlement in the country which would be served by the proposed railway has progressed to some extent since the date of the inquiry by the previous Committee. Since 1890, when the leaseholds in these districts were thrown open for selection no less than 93,141 acres have been taken up; and there has been a revival in gold-mining in the neighbourhood of Dalmorton, between Glen Innes and Grafton, 150 miners being at work.

Conclusion arrived at by the Sectional Committee.

9. The conclusion arrived at by the Sectional Committee, as shown by their report, is that it is best to move slowly with regard to the proposed railway, and that the line should be constructed from Lismore to Casino only, "and remain there till the route connecting the coast with the table-land is chosen, or the continuation of the North Coast Railway decided upon." Substantially this is the same, it will be seen, as the conclusion arrived at by the previous Sectional Committee. They come to this decision for several reasons. They find that the Richmond River and Byron Bay are important competitors with the Clarence as harbours for the north coast districts; that there would not be, between the districts of the Richmond and the Clarence Rivers, a passenger and goods traffic sufficient to justify the construction of the proposed railway; and that the desire of the Richmond district to be connected with the table-land from Casino, supported by the rapid progress in population and business taking place at Byron Bay, is an important matter for consideration in relation to the claim of Grafton to be connected by railway with Glen Innes. In their view the extension from Lismore to Casino is justifiable, as it will fit in with any line from Casino or Grafton to the table-land, or with a North Coast Railway going south towards and beyond Grafton; it will pass through land most of which is well fitted for agriculture, and it will be a means of reducing a large expenditure now incurred in attempting to keep open a channel in the south arm of the Richmond River used for the transit of goods and passengers for Casino.

Resolution of the Committee.

10. The Committee agree with the conclusion of the Sectional Committee, but are of opinion further that if the railway be constructed between Lismore and Casino it should be done, not only at the proposed reduced cost, but in accordance with the betterment principle. The evidence in the inquiry was considered by the Committee on 13th September, and their decision is shown in the following extract from their Minutes of Proceedings :—

> Mr. O'Sullivan, with the consent of the Committee, having amended his notice of motion, moved,—"That, in the opinion of the Committee, it is expedient to construct the Lismore-Casino section of the proposed line of railway from Grafton to Lismore as submitted by the Legislative Assembly, provided that the cost does not exceed £6,000 per mile, and that the betterment principle can be applied to the land to be served by the proposed line."
>
> Mr. Neild moved,—"That the motion be amended by the addition of the following words:—'and conditionally upon the discontinuance of the snagging and dredging operations in the south arm of the Richmond River.'"
>
> The amendment was seconded by Mr. Collins, and negatived on the following division upon the question,—"That the words proposed to be added be so added."

Ayes, 5.	Noes, 8.
Mr. Garrard,	Mr. Suttor,
Mr. Ewing,	Mr. Hoskins,
Mr. Neild,	Mr. Humphery,
Mr. O'Sullivan,	Dr. Garran,
Mr. Collins.	Mr. Davies,
	Mr. Wall,
	Mr. McCourt,
	Mr. Dawson.

The

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The motion was passed on the following division :—

Ayes, 9.	Noes, 4.
Mr. Garrard,	Mr. Humphery,
Mr. Suttor,	Mr. Davies,
Mr. Hoskins,	Mr. Wall,
Dr. Garran,	Mr. McCourt.
Mr. Ewing,	
Mr. Neild.	
Mr. O'Sullivan,	
Mr. Collins,	
Mr. Dawson.	

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 28 September, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

RAILWAY FROM GRAFTON TO LISMORE.

TUESDAY, 14 *JUNE*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. JAMES HOSKINS.	JOHN CASH NEILD, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.

The Committee proceeded to consider the proposed Railway from Grafton to Lismore.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 14 June, 1892.

1. *Chairman.*] Have you a statement of this proposal to place before the Committee? Yes. On the 12th November, 1889, I had the honour to appear before the Public Works Committee regarding a proposal for the construction of a Railway from Grafton to the Tweed, and, after very exhaustive inquiry, the Committee, on the 20th March of the following year, came to the conclusion to recommend that only part of that line—viz, from Lismore to the Tweed—should then be carried out. This recommendation received the approval of Parliament, and the work is now being carried out, and tenders for the last section of the line—viz., from Mullumbimby to the Tweed (distance, 22 miles 35 chains)—are now being invited. Tenders to be received on the 10th August next. The proposal now before this Committee is the construction of the portion omitted by the Committee on the previous occasion—viz, from Grafton to Lismore, a distance of 82 miles 60 chains—the full particulars of which I will presently describe. It will be seen by a reference to the Report of the Sectional Committee, which visited the district on the first occasion of the question being before the Committee, that the following words were used by them:—"Believing that no produce will pass between Grafton, on the Clarence, and Casino, on the Richmond, the Sectional Committee can see no reason for constructing the portion of the proposed railway which would connect those two places, *unless it were constructed as a part of what is known as the North Coast Railway.* If it were determined to construct a line of railway, as has been suggested, from the Hunter River district along the coast northwards, then the proposed line between Casino and Grafton could form part of the greater scheme of the North Coast Line. Or, on the other hand, if it were feasible to connect Grafton with the table-land of New England at Glen Innes, or elsewhere in that neighbourhood, there might be some justification for the construction of the line to Grafton, as being a centre or point of very great importance, but the Sectional Committee do not deem it part of their duty to offer any suggestion as to the construction of a line to Glen Innes from Grafton, or as to the North Coast Line." The Committee to a large extent endorsed the views of their Sectional Committee on this point. In the 12th paragraph of their Report will be found the following words,—"To some extent their reasons for not supporting the construction of the portion of the railway between Lismore and Grafton have been already stated, and they will be found more fully stated in the Report of the Sectional Committee." It will thus be seen that the Committee, to a considerable extent, based their reasons for the rejection of this portion of the line on the ground that no definite decision had been come to with regard to what is known as the North Coast Railway. Since that time, however, definite action has been taken in the matter of that line, and a complete survey has been made of the portion between Maitland and Taree, on the Manning; the survey has been revised and estimates prepared. Surveyors are also now at work on the part of the country between Taree and Kempsey, and between Kempsey and Glenreagh. It will be seen, therefore, that the whole of the route between Maitland and the Tweed has been either covered by revised and complete surveys, or surveys are in progress, 40 miles being actually under construction, and I may further point out that surveys have also been prepared for a line between Murwillumbah and the Tweed Heads, where it will join a projected extension of the Queensland line from Southport. The Minister, therefore, has confidence in placing this proposal before the Committee as part of a comprehensive and national policy of railway construction. It is the ultimate intention of the Minister to place before the Cabinet proposals for the carrying out of, at any rate, certain sections of the line I have sketched out, with the view of Parliament being asked to submit them for the consideration of this Committee. The Minister, therefore, thinks that, in offering this section of the North Coast Railway to the Committee for approval, they will look at it, not simply as a proposal *per se*, and which, perhaps, on that ground might not have sufficiently strong grounds to recommend it for approval, but as part of a great whole which has weighty claims for most mature consideration. By a reference to the evidence and the previous Report of the Committee it will be seen that I have fully gone into the merits of the question, and I do not

J. Barling, Esq. 14 June, 1892.

not know that I have any further evidence other than that already supplied to the previous Committee. I may, however, make the following quotation from the evidence I gave on the question on a former occasion :—

Comment has been made on the inferior character of the soil between Grafton and Casino. The Commissioners for Railways, however, make it clear that it can only be called poor in comparison with the phenomenally rich lands which are to be found in the Richmond and Tweed River districts. Mr. Lyne, when Secretary for Works, in introducing the proposal to the House, said : "The country through which the line passes nearly as far as Casino is not rich agricultural land, but the line will open up a considerable area of Crown land, and will pass through fairly good country, here and there, in the neighbourhood of streams, and in those parts there will be considerable agricultural development."

I also went on to quote extracts from other sources which show that this land is only poor in comparison with the phenomenally rich land further to the north. I may, perhaps, be allowed now to quote a few words from the evidence of Mr. Surveyor Donaldson, at Grafton, when he was examined by the Sectional Committee there. He is the District Surveyor, and I think it will be admitted that he is exceptionally competent to speak on the subject. He said, "The whole of the country between Grafton and Casino is well adapted for grazing and dairy-farming, and a great deal of it, in proximity to the watercourses, for agriculture. Settlement on this part of the district is retarded for want of better means of communication than the ordinary roads, and the land cannot be profitably utilized for anything but grazing purposes under present conditions. Yet notwithstanding existing drawbacks, and as showing the faith entertained in the future of this part of the district, there has been taken up during the last four years, within a distance of 5 miles on each side of the railway line, and within the 46 miles, commencing about 8 miles from Grafton and extending to the same distance from Casino, an area of 32,500 acres in fifty-three separate holdings, averaging 615 acres each, conditional purchase and conditional lease combined. I would commend to the Committee the whole of his evidence. I have now to hand in a plan which I have obtained to day from Mr. Saunders, the Chief Draftsman of the Lands Department, which charts up to date the land which has been sold, and the Government land which is still left in the district I put in this plan when I gave my evidence in 1889, but it has now been charted up to the present date.

2. Can you give us a tabulated statement as to the areas? Yes ; the following is a tabulated statement :—

PARTICULARS of Conditional Purchases and Conditional Leases in the Land Districts of Casino, Lismore, and Grafton for the years 1890 and 1891 :—

Conditional Purchases and Conditional Leases confirmed.

Districts.	Area of Conditional Purchases.	Area of Conditional Leases.	Totals.
	acres.	acres.	acres.
Casino	60,914	69,686	130,600
Lismore	9,159	3,444	12,603
Grafton	20,604	19,493	40,097
Totals	90,677	92,623	183,300

Conditional Purchases and Conditional Leases forfeited for non-fulfilment of required conditions.

Districts.	Conditional Purchases.		Conditional Leases		Totals.
	No.	Area.	No.	Area.	
		acres.		acres.	acres.
Casino	12	2,794	32	16,401	19,195
Lismore	10	1,523	13	5,292	6,815
Grafton	26	2,070	26	5,572	7,642
Totals	57	6,387	71	27,265	33,652

Department of Lands, 13/6/92. C. J. SAUNDERS.

APPROXIMATE statement of Crown Lands in the Counties of Rous, Richmond, and Clarence, lying between the Richmond River on the north, and the Clarence on the south :—

	acres.
Forest reserves	155,000
Railway reserves..	55,000
Other reserves	60,000
Unreserved and unalienated Crown land	560,000
Total	830,000

14/6/92. C. J. SAUNDERS,

3. Does not that show the land leased and alienated all over the Grafton district, and is it not mostly up and down the river? I am aware of that, but am giving the information as closely as possible.

4. Is it not a fact that a part of the land enumerated in this return would not be affected by the railway under consideration? No doubt; but by looking at the plan it will be seen that the various parts are marked, and an approximate idea can easily be formed of the parts which will be affected by the proposed line. I have also received, by the courtesy of the Government Statistician, some interesting particulars as to the population and agriculture in these districts. They are as follows:— J. Barling, Esq. 14 June, 1892.

Population.

Electorates.	Population (at date of Census).		Increase.	
	1881.	1891.	Total	Per cent.
Richmond	9,266	22,321	13,055	140·9 equal to an annual increase of 9·2 %
Clarence	6,752	8,221	1,469	21·8 " " " 2·0 %
Grafton	7,744	9,852	2,108	27·2 " " " 2·4 %
Total	23,762	40,394	16,632	70·0 equal to an annual increase of 5·4 %
Remainder of the Colony, exclusive of Metropolitan Electorates, and of the Electorates of Sturt, Wentworth, and Wilcannia	457,697	606,257	148,911	34·0 equal to an annual increase of 3·0 %

Agriculture.

Electorates.	1881-82. Area under					1891-92. Area under					Increase per cent. of total area under cultivation during the decade.
	Maize.	Sugar-cane.	Sown Grasses.	Other Crops.	Total under cultivation.	Maize.	Sugar-cane.	Sown Grasses.	Other crops.	Total under cultivation.	
	acres.	acres.	acres.	acres.	acres.	acres.	acres.	acres.	acres.	acres.	%
Richmond	5,479	4,123	1,960	772	12,334	12,550	13,549	53,685	2,254	82,038	565·1
Clarence	9,710	7,419	61	294	17,484	15,702	8,171	65	1,095	25,033	43·2
Grafton	7,419	449	103	534	8,505	13,190	325	616	2,181	16,312	91·8
Total	22,608	11,991	2,124	1,600	38,323	41,442	22,045	54,366	5,530	123,383	222·0

I have now to read the report of the Railway Commissioners. On the 29th March, 1892, I sent this minute to the Railway Commissioners, by direction of the Minister:—

Minute Paper.—Railway, Grafton to Lismore.

Department of Public Works, Sydney, 29 March, 1892.

The Cabinet has determined to submit to Parliament, with a view to referring to the Public Works Committee, the proposal to extend the railway from Grafton to Lismore, a length of 80 miles 60 chains, which is estimated to cost £640,000.

Will the Railway Commissioners kindly supply the necessary information, as required by the Public Works Act?

J. BARLING,
Under Secretary.

The following reply was sent:—

Information in regard to the railway, Grafton to Lismore, was embodied in the Commissioners' report under seal dated 3rd May, 1889, on railway, Grafton to Tweed River. I am directed by the Railway Commissioners to request that special consideration should be given to the suggestion made in that report, that the capital expended in the construction of the line should be reduced by the application of portion of the money realised from the sale of Crown lands, as, unless this course is taken, the making of the line will be a most serious burden upon the existing railways for a long time to come. The construction of the line in itself will add very materially to the value of the Crown lands in the district.—H. McL., 29/3/92.

The report therein referred to, which was submitted to the Committee on the 3rd May, 1889, is as follows:—

Proposed Railway from Grafton to the Tweed, *via* Casino, Lismore, and Byron Bay.

Office of the Railway Commissioners of New South Wales, Sydney, 3 May, 1889.

In accordance with the provisions of the "Public Works Act, 1888," section 13, we beg to report as under:—

The Engineer-in-Chief estimates the cost of construction of a single line of railway (exclusive of land and compensation) at ... £1,652,000

Capital expenditure, at 3½ per cent. ... 57,850

We have carefully inspected the route of the proposed railway, and also a good deal of the surrounding country, and find the land for a great portion of the distance to be of the highest and most productive character we have seen in the Colony; the roads, however, are of the most defective kind.

From Grafton to a point about 10 miles south of Casino the country generally is excellent for grazing purposes, whilst the banks of the various creeks are well suited for cultivation, and the land is being taken up for this purpose. Very fine timber also exists along the route, both hard and soft woods, ironbark, cedar, pine, &c., largely prevailing.

After passing from the pastoral country the whole of the land thence to Casino, Lismore, the Brunswick, and the Tweed, is of an exceedingly rich character, and capable of producing almost any tropical or temperate zone product.

We inspected about 140 miles of river and creek frontages in the district, and found that practically every acre of land available for settlement had been taken up and was under cultivation: thus clearly showing that where the means of getting the produce to a market exists the fertility of the land brought settlement.

A considerable quantity of land has been taken up in the vicinity of the proposed route of the railway, but in consequence of the difficulty of getting produce to market only a small proportion of the land has been cleared.

We were assured, and we feel that in all probability such would be the case, that if the line is authorised a large number of the existing landowners who possess 640-acre lots, and in some cases more, would at once subdivide their holdings, and that at the least six families would locate themselves where at present there is only one. The soil is so rich that a good income can be obtained even from a 40-acre holding.

We feel that the country urgently requires a railway, and are of opinion the demand should be complied with, although it will be some considerable time before the large capital required for its construction will receive a fair return; and we therefore think an exceptional course should be followed in regard to its construction.

Along

J. Barling, Esq.

14 June, 1892.

Along the route of the railway, and within 10 miles of it on either side, there are Crown lands to the extent of 622,000 acres, at present valued at £761,000; and undoubtedly if the line is made this land, if sold judiciously, would realise to the State quite if not more than double this amount. And as the cost of making the railway will be very heavy, owing to the numerous water-ways to be crossed and the broken character of the country, we would suggest for the consideration of the Government that the railway capital should be credited with one-half the money realised from the sale of this land from the time it is decided to make the railway, the Railway Commissioners to be allowed to have a voice in the arrangements for the subdivisions and mode of sales of the land, which could otherwise be sold in accordance with the provisions of the law relating to Crown lands.

We are aware that our proposal is one having no precedent in this country, but it is doubtless within the knowledge of the Government that to a large extent lines have been made in America on the land grant system, the railway companies in that country having had conveyed to them the alternate blocks of land to a depth of 20 miles back from the railway on either side; and the sale of these lands has enabled railways to be pushed forward into districts which could not otherwise have had such communication.

This district, in being isolated from the trunk line, cannot contribute any additional traffic thereto; and in consequence of this, and also because of its great richness, we think, in the interests of the State, we are justified in making this proposal for consideration.

In the sister Colony of Victoria, too, the Government write down the railway capital each year to the extent of £200,000 from moneys received from the sale of Crown lands, the total amount so credited up to June, 1888, being £2,200,000.

It has been pointed out by deputations in various parts of the Colony that the American railways precede the populations very considerably, and that as a consequence very speedy settlement follows; but we do not think this state of things is applicable generally to Australia. The fact is lost sight of that the population of America is exceedingly great, its growth from 1870 to 1880 having been 11,500,000, and that there is a continuous inpouring of emigrants of all nationalities into the country. On some days there have been as many as 6,000 emigrants taken into New York alone by ships from Liverpool.

If the line is authorised very careful consideration will have to be given to fixing the position of the terminus at Grafton and Murwillumbah, as ultimately the railway will have to be extended south or west of Grafton, and in the north the line will ere long have to be taken forward to join the Queensland system of railways.

We have not given the usual statement of estimated working expenses and traffic, as the figures cannot be laid down with any degree of certainty. We therefore ask to be relieved from giving this information, as we feel the figures would be to a very great extent speculative, and the subject is one requiring to be dealt with on broad principles of State.

With regard to the line itself, if authorised, we would make arrangements for the station accommodation to be laid in the cheapest way, so as to keep the first cost as low as possible until the income from the line justified a more liberal expenditure.

The Common Seal of the Railway Commissioners of New South Wales was hereunto affixed at Sydney, on the 3rd day of May, in the year of Our Lord, 1889, in the presence of,—
H. McLACHLAN.

E. M. G. EDDY, Chief Commissioner.
W. M. FEHON, Commissioner.
CHARLES OLIVER, Commissioner.

The following is the official description of the line:—

Railway, Grafton to Lismore—Length, 82 miles 60 chains.

Estimated cost, exclusive of land and compensation, £662,000 = £8,000 per mile.

THE railway will commence at Turf-street, in the City of Grafton, close to the Clarence, giving facilities for sidings down to wharfs on the bank, and to a dock for a ferry punt for carrying trains across the river to possible extensions southward and westward from South Grafton.

Running along a ridge which joins the Clarence, and rises generally above flood-level, the bank of the river is followed up for 6 miles, where a bend in the latter takes place, the railway taking a north-easterly direction to the 10th mile. From here the line runs generally northward, crossing Sportsman's Creek at 16 miles.

At Loxdon Creek, the main ascent to the Richmond Range is made, 1 in 60 being now adopted for this grade; high ground is then taken over the range and its spurs to 27½ miles, where the fall to the Richmond begins, the line following a more westerly bearing, not far from the main road, on its east side. Myall Creek is passed at 30½ miles, the main road at 42½ miles; Two-mile Creek at 42¾ miles, and Myrtle Creek at 45¼ miles.

At 47 miles, the original line is deviated from to the westward, to suit the amended trial line, Tenterfield to Casino, which, running up the Mongogerie Valley, junctions with the line under report at about 54 miles, Sandy Creek having been crossed at 50½ miles.

Shannon Brook, or Deep Creek, near which there is a large butter-factory, is passed over at 57½ miles, and the Richmond River middle or main arm, at 63½.

Just beyond this the town of Casino is entered and passed through on its north side.

From Casino the line gradually rises to the range between the middle and north arms of the Richmond, passing through the range by a short tunnel to the west of the main road. The descent is made by the valley of Back Creek to Leycester Creek, which is followed down at about ¾ mile distance to the Twickenham Estate, at 82¾ miles on the bank of the north arm of the Richmond River, where the authorised line to the Tweed begins.

From Grafton to the Richmond Range no special features call for remark, an average line being obtained. Beyond this some heavy creek bridges are required—the great rainfall of this district causing widespread and rapid floods. Between these creeks, after such floods as those of January, 1887, July, 1889, and August, 1889, and more frequently since, large stretches of country are overflowed by rapidly running water, an inspection made shortly after the two latter mentioned floods, showing that over 7 miles of such country have to be crossed, and the maintenance of the line cannot be ensured without an unusually large number of small water-ways, in addition to the larger creek bridges.

These add considerably to the cost of the line.

At about 2 miles north of Casino the flooded country is passed, and the rest to Lismore is more or less undulating.

The ruling grade from Grafton to Casino is 1 in 60, and that between Casino and Lismore 1 in 50.

The sharpest curve is 12 chains radius, but there is only one of these, the curvature being generally easy.

Brick material and stone for concrete, except between the Richmond Range and Casino, is generally plentiful, ironstone south of this gap and bluestone north.

The timber is of excellent quality, the ironbark being in unusually long sticks.

There are some minor deviations of the line which have been reported upon and either approved or recommended for further investigation, but they have not been surveyed or considered in the estimates.

The first trial survey for this line was made by Messrs. Cumming and Gibb in 1884; the permanent survey by Messrs. Sharkey, Cumming, Lloyd, Thornbury, and Geisow, in 1886-1889. The amendment to suit the Tenterfield to Casino deviation exists as a trial survey only, recently made by Mr. W. Kennedy, under Mr. Lloyd.

H. DEANE, 14/6/92.

5. Do I understand that the reason for putting this proposal before the Committee now is that the North Coast Trunk Railway project has advanced considerably beyond the point at which it had arrived when this railway was previously considered? Yes.

6. Has the deviation which has now been made in the proposed route about the 50-mile peg been made with a view to a possible connection with Tenterfield? Yes.

7. *Mr. O'Sullivan.*] Why has the deviation been made? It is to meet a possible line from Tenterfield to Casino, and no doubt there are easier grades by the proposed line.

8. *Mr. Neild.*] When you read the names of the surveyors of this line was the name of Mr. Hogg included? I have given the names as supplied to me by Mr. Deane. Mr. Hogg has been on the line from Inverell to Glen Innes, but his name is not mentioned here.

J. Barling, Esq. 14 June, 1892.

9. Are we to understand that in inquiring into this line before the Committee we are also to take into consideration the question of an extension to Tenterfield? No; I have not said anything about Tenterfield. No decision has been come to with regard to an extension from Tenterfield to Casino.
10. If the deviation is to provide for a future line to Tenterfield, would it not be necessary for the Committee to deal with that? I should think it is quite open to the Committee to take it into consideration. Although no determination has been come to in the matter, I may mention that the Secretary for Public Works is favourable to an extension from Tenterfield to Casino. Without giving this as a Cabinet or Ministerial decision, I am at liberty to mention it.
11. Have there been many efforts made to improve this line? Most decidedly.
12. This is the final outcome? Yes.
13. From the reference made in the official description to the conveyance of trucks and passenger carriages by punts across the Clarence River, are we to understand that the Minister contemplates the use of such contrivances instead of erecting a bridge? Certainly not; that is not decided. What I have read is simply Mr. Deane's description of the line. It has certainly not been before the Minister.
14. Has the erection of a bridge been considered by the Department? It has not been considered by the Minister yet.
15. *Mr. O'Sullivan.*] Has any consideration been given to a proposal to make a line from Lawrence to Casino? I have no information on the subject in my possession at the present time. I think I can say that consideration has been given to the question, but it has not been definitely considered.
16. *Mr. Davies.*] Have you traversed this country? I have traversed it between Casino and Lismore, but not between Grafton and Casino.
17. Have you any data as to the probable income from this railway? No; the Railway Commissioners state in their report that it is hardly possible to give that.

Henry Deane, Esq., Engineer-in-Chief, Railway Construction Branch, Department of Public Works, sworn, and examined:—

H. Deane, Esq. 14 June, 1892

18. *Chairman.*] Is the plan now before the Committee the same plan which was placed before the Committee when it inquired into the proposal previously? The line does not exactly follow the same route, but in the main it is the same. There is a deviation to meet a proposed connection with Tenterfield. The original plan showed the line coming a little nearer into Grafton. In the present scheme the line starts from Turf-street, which is a little further out. The object of that is to have the terminus in the main street. The present terminus does away with the necessity for crossing Alumny Creek. The line originally started from Mary-street. I have since been in Grafton, and I have no doubt that the proper place to start the line is Turf-street. There is a road bridge over Alumny Creek.
19. Will this change decrease the cost? Not materially.
20. Will it afford as good a place for crossing the river from the south? I do not propose to cross the river there at all. The bridge would be 7 miles further up the river. It would be a great pity to attempt to cross there, and if it is desirable to take trucks or passenger carriages across, it could easily be done by means of a ferry.
21. Do you look on a ferry as the correct thing, if there is much traffic? I do not see any great objection to taking carriages across in that way. The proper railway connection would be a bridge, but passengers from the south would not like to have to travel 5 or 6 miles north of Grafton and come back again.
22. Will this proposal to stop on the north side of the creek decrease the cost of the line? Slightly, but not very much.
23. What is the meaning of the black line on the map, near Grafton, showing a connection with Tenterfield? That was the survey made to Tenterfield, *via* Tabulam, which has been discarded.
24. If a connection is made by way of Tenterfield, will it be nearer Casino, as far as the Department is concerned? Yes, near Deep Creek.
25. Will you show the Committee where deviations have been made from the old route? The broad line in red at the Grafton end, shown on the plan, is the line which was submitted to the Committee previously.
26. Is there any material deviation in the route between Grafton and where you now propose the main deviation? Nothing of importance.
27. What are your reasons for this deviation at the 50-mile peg from Grafton? The original line at this part is shown as a dotted red line, and it crossed the Richmond River below Casino; that is what is sometimes called the South Arm.
28. That line crossed the Richmond to the east of Casino? Yes, and the survey made to Tenterfield junctioned with that line on the southern side of the river, and went almost in a due westerly direction. When we were prosecuting the revision of the survey between Tenterfield and Casino, I found that it was a very awkward line, with severe grades, and I instructed the surveyors to examine another line. Mr. Lloyd is the surveyor who found this line, and we got a crossing on the Richmond Range (running west for some distance, and then running north, dividing the catchment basins of the Richmond and the Clarence) at a lower elevation, and with very much better grades. Seeing that we were coming in the direction shown by the green line on the plan into Casino, it struck me that it would be better to junction there, as otherwise we should have a duplication of 12 miles out of Casino, which is unnecessary. As it did not lengthen this line very much, I thought it was a better one to adopt.
29. If there were to be no connection with Tenterfield, would you take the more direct course shown by the dotted line? Yes; supposing it was decided for all time that there should be no connection with Tenterfield, I think that would be the case. At the same time, I must say that there is good country at the proposed junction. There is a butter-factory and more settlement there, which the new line serves better than the dotted line. Even on its own merits I think, on re-consideration, the red line is a better one than the dotted line.
30. Will it serve more population? There is not much population on either line, but it is better country, and there are better grades.
31. If the Tenterfield line were out of the question, would you still recommend this deviation? Yes; I should in any case recommend this as the best line to adopt, for this reason: Even supposing the original survey to Tenterfield were adopted, that would be the proper point of departure, that is, west of Casino.

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32. Are we to understand that, by the putting back of this portion of the line by the Committee a few years ago, we saved the country from being committed to a mistake, so far as the route is concerned? I do not know that I would go so far as to say that. In my opinion the new line is an improvement. In Casino it was pointed out to me that the station site, as shown on the new line now submitted, would be a much better one than that originally proposed. It was previously reported on by one of the officers of the Department, and I took the opportunity of examining into it, and I found that that was the case.
33. In the new survey you crossed the river to the west of the town instead of to the east, as it was in the old survey? Yes, with the old crossing to the east there is really no room for a proper station-ground. You have to rise to the bridge over the river at a certain elevation to keep out of floods, and you do not get on to favourable ground for a station until you get some distance from the river. Therefore, the line shown on this plan is much more favourable.
34. Where is the present vehicular bridge? About the centre of the town, some distance to the west of the original line.
35. Are there any other deviations from the original survey between Casino and Lismore? No, not till we approach Lismore. We cross the river at Lismore (which is part of the line under contract) at a different point, where the red line joins the black on the original line. The original route enters Lismore further up Leycester Creek. The borings taken for the foundation of the bridge showed that a bridge there was almost impracticable.
36. Were those borings taken at the time the last Sectional Committee was up there? They were n t finished.
37. Will the alteration bring the line further into the town? Yes.
38. In the plan now before the Committee, is there provision for a bridge at Leycester Creek? No; that is included in the present contract. When the line was submitted first, and when this Committee recommended the construction of a line from Lismore to the Tweed, it was thought that a bridge over Leycester Creek would be excluded, but it was found necessary to include it.
39. Why? So as to get the station into the town instead of taking it right away from the town.
40. In other words, local influence was brought to bear to have the recommendation of the Committee extended so as to bring the line further into the town? The recommendation was from Lismore to the Tweed. I do not think there was any departure from the original intention.
41. Will not the bridge cost something? Yes, but it will be all included in the original estimate.
42. Have you pinched somewhere else? There has been no pinching. I stated at the time that the estimate had not been sufficiently worked out, and since that time we have had an opportunity of making a much more careful estimate. The actual quantities show that we can carry out the work well within the margin of the estimate.
43. When making their recommendations the previous Committee had not the necessity of erecting the bridge before them? No.
44. Because you have been able to save on other works you have gone in for this bridge? There would be no object in building the bridge under the original plan, because the Leycester Creek bridge would carry the railway back on land situate right out of town, but the bridge now constructed carries it right into the town.
45. Is the station at a very much lower level? It is above flood-level. It was not affected by the last flood.
46. Where there is a bend shown in the black line, is not that where it was proposed to cross originally? Yes: and in order to get the station out of flood-level on that line you have to go a considerable distance out.
47. Has bringing it further into town kept it above flood-level? Yes; the railway bridge and the road bridge are very close to one another. The foundations are good.
48. Has a close and careful survey of this line been made, or is it likely that it will be altered by further survey? Not materially.
49. When the proposal was last before the Committee, had the survey had that careful consideration which you have since been able to give it? No. I do not think there will be any serious alteration in future. Of course there will be a few little details altered, as there are on every line.
50. Will you state the different streams that have to be crossed on the line, and the cost of the bridges? The most costly bridge is at Casino. The estimate for this bridge is £23,000. Independently of that there are only three creeks where, I think, it is necessary to make any special provision beyond the ordinary timber openings. Those are Myrtle Creek, Deep Creek, and Bungabbee Creek.
51. Will you have to put substantial structures at those creeks? I propose to have steel spans. At Myrtle Creek the cost will be nearly £9,000; Deep Creek, £3,200; and Bungabbee Creek, £6,800. These are round figures. At Myrtle Creek I propose to have three 60-ft. openings with steel spans. The rest will be the usual timber openings.
52. With iron cylinders? Yes. At Deep Creek there is a shorter span of 60 ft., with a few timber openings.
53. What sort of crossing will you have near Grafton? Only timber openings.
54. Is your line above flood-level all the way? Yes.
55. Even after getting into Grafton? Yes; we follow a little ridge just above flood-level. Although the timber openings are not important as to height or structure their aggregate length is very large, and they bring up the cost of the line. There are more than 7½ miles of flooded country.
56. Will you be able to effect as much saving on this line as you have on the other part? No; I have cut down the estimate very much.
57. Where do you expect to get your timber for these openings? There are ironbark ridges in the district. I saw a good deal of ironbark during my visit there.
58. Did you see any cedar when you were passing over that route? No. I travelled over the road between Grafton and Casino, which is very near the line.
59. What is the nature of the country between Grafton and where the Lawrence Road joins the road to Casino? A great deal of it is very sandy. After you leave the bend of the Clarence, about 5 or 6 miles from the town, it becomes very sandy.
60. Would you call it good country between Grafton and Casino? I should not call it good country; some of it is very poor.
61. Could you make a living on 40 acres? If I were compelled to live on 40 acres, I think I could pick out

out 40 acres which would answer my purpose. That country loses very much by comparison with the beautiful flats of Grafton, and the country around Lismore and Casino.

62. *Mr. O'Sullivan.*] Would not a bridge over the Clarence at a point mentioned by you be very costly? I cannot give particulars, but it would be costly.

63. Are you not aware that in America railways are carried over rivers—for instance, at Detroit and Sacramento—by steam punts? Yes.

64. Could not that plan be tried in connection with this railway, in order to avoid the construction of an expensive bridge? I do not think there would be any difficulty about it, but I do not think there would be any necessity for adopting anything like what they have at Sacramento. In this case, all that I imagine would be necessary would be to send trucks and passenger carriages across, and it would not be necessary to send locomotives over. In this case South Grafton would be at the end of a long line of railway, and North Grafton would be at the end of another long length of railway.

65. Then there would be no necessity to construct an expensive bridge to connect these two portions of the North Coast Railway? Not for many years to come.

66. Have you ever taken into consideration a proposed route from Lawrence to Casino? No.

67. Has your Department ever been instructed to take into consideration that route? I am not aware of any survey or even exploration having been made. I believe that Grafton has always been looked upon as the proper place to take, as it lies in the direct North Coast route.

68. If a line were taken from Casino to Lawrence, could the railway cross there by means of steam punts, just the same as at Grafton? Yes.

69. Would not such a line save a considerable amount of railway construction. It would lengthen the southern portion.

70. Would there not be a saving on this proposed line? Yes, taking this particular line into consideration.

71. Is it not much shorter from Lawrence to Casino than from Grafton to Casino? Yes.

72. Even allowing that it lengthened the southern end of the North Coast Railway, would it not be a shorter distance for the whole line? That has to be proved; I am not sure about that.

73. Is there plenty of ballast along the line? I believe you can get ballast in the range. There would not be anything immediately on the line until you get to Lismore and Casino, and bluestone can be got between Lismore and Casino.

74. Does ironbark grow in the vicinity of the Richmond Range? I do not quite remember, but there are patches. The obtaining of ironbark would not be a difficulty on that line.

75. Is there no possibility of avoiding the range on this line? No.

76. Is not the altitude of the range less towards the coast? Yes; it dies out as you go eastward.

77. If you took a line from Lawrence to Casino would there not be less difficulty in crossing that range? I cannot say without examination. Probably there would be more flooded country on the Clarence, and there would be a creek to cross which flows into the Broadwater. Even if the range does die out, it does not follow that you would get a better crossing place than we have.

78. Is there any possibility of reducing the cost of this line? No; I have cut it down as low as I possibly can.

79. Being a main trunk line, and crossing very wet country, would it be necessary to make a very strong line? Yes.

80. Therefore, it would be a mistaken policy to endeavour to weaken the line for the purpose of saving cost? Yes. The bridges and culverts on this line, divided over the whole length, cost nearly £2,000 per mile.

81. *Mr. Collins.*] Does this estimate include all the railway station buildings? Yes; it also includes the sum put down by Mr. Whitton in the original estimate for wharfs and various works at Grafton, namely, £44,000.

82. *Mr. Humphery.*] What was the estimate for the section between Lismore and Byron Bay? I am not sure that it was ever divided up in that way.

83. What was the estimate of cost per mile? I think it was taken at £14,000 per mile.

84. I notice in the evidence you gave before the previous Committee, you supplied the figures as £1,271,300 from Grafton to Byron Bay? Yes.

85. You say that the cost will now be £662,000 from Grafton to Lismore? Yes.

86. Would the difference be your estimate of the cost of the section Lismore to Byron Bay? No; a great reduction of cost has been made on this portion of the line.

87. Where has the reduction been made? I should have some difficulty in explaining where the reduction was, except in this way—that the original estimate was made from insufficient data. I pointed that out in my evidence. When that line was submitted to the Committee first the longitudinal section was not finished, and therefore it was impossible to give an accurate estimate.

88. What do you estimate will be the whole cost of the line from Grafton to Murwillumbah? The estimated cost from Lismore to the Tweed was £867,350. There will probably be some saving, which will bring it down to £800,000. If you add that amount to this estimate it will probably give the total cost.

89. That will be nearly £1,500,000? Yes.

90. Will that cover the whole cost from Grafton to the Tweed? Yes.

91. Without a bridge at Grafton? Yes.

92. Have you formed any estimate of the cost of that bridge? No.

93. Is this estimate for a single line? Yes.

94. *Mr. Hoskins.*] Why is it that you propose to cross the Clarence River in constructing this line? I do not propose to cross the Clarence River; I was only speaking of crossing it with a view of forming a connection with the lower portion of the North Coast Railway.

95. Has your Department ever been asked to make a trial survey of the country between the Clarence and the Richmond Rivers, lower down even than Lawrence? No; there has never been any survey. Lines have been suggested, but they have not received consideration.

96. Would a line half-way down between Grafton and the Heads, and the Richmond River, be shorter than a line from Grafton to Lismore? It would be much shorter.

97. Would such a line go through a very much better tract of country? I can scarcely give an opinion about that; possibly it might, but it would not serve the purpose of this line.

98. Would such a line be 40 or 50 miles shorter? About 50 miles, I suppose.

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99. Would such a line be very much more eligible than one between Grafton and Lismore? If the object was merely to connect the two rivers, that line would be undoubtedly the shortest, but it would not form part of the North Coast Line—the through route.
100. When travelling between Grafton and Casino did you see many passengers and teams? No.
101. Did you meet half-a-dozen people? I did not meet many.
102. *Mr. Davies.*] What are the ruling grades on this line? One in 60 between Lismore and Casino, and 1 in 50 between Grafton and Casino.
103. Are there many curves in the line? No. The sharpest curve is 12 chains, but that can be cut out without difficulty; it is near Deep Creek, on the deviation.
104. What is the character of the earthworks? They are not heavy. Crossing the Richmond Range on the east side is the worst place. There is a tunnel 220 yards long between Casino and Lismore. I believe it is through basalt.
105. Will not that be very costly? Not necessarily; if it is jointy, the excavation will not be very heavy.
106. What is the depth of the cuttings along the line? About 19 miles there is a cutting of 19 feet deep for 6 or 8 chains; at 22 miles there is a cutting 25 to 35 feet deep; at the Richmond Range the cuttings are 35 feet, 32 feet, 16 feet, 20 feet, 22 feet. They extend for a good many miles. I would not call 35 feet a deep cutting. At Myrtle Creek crossing the cuttings are much less—at about 48 miles—where the junction of the Tenterfield survey comes in. The earthworks are not very serious; that is especially the case on the Casino side. The tunnel is half-way between Casino and Lismore.
107. Have you traversed the whole of this line? I have not been along the centre line. I went along the road, and I could judge the character of the country, but I did not examine the survey.
108. You went along the road which crosses the surveyed line several times? Yes; I examined particular points of the survey.
109. Is there very much settlement along the line? No; as soon as you get off the flooded land at the Clarence it is generally grazing land.
110. Is the population very scattered? Yes; there are very few people to be seen.
111. What is the estimated cost per mile? £8,000.
112. Have you any idea what a bridge over the Clarence would cost? No.
113. Do you think it would cost £500,000? No.
114. Do you know the width of the Clarence River? Yes. The narrowest point on the Clarence opposite Grafton is, roughly speaking, a quarter of a mile.
115. Would that narrowest point be where your line starts from? No; that is some distance lower down. Where the railway starts the river is split into two.
116. Is it not much wider there than where you speak of? It is very much wider there; but where the river would have to be spanned, if a bridge were ever erected, it is, roughly speaking, about a quarter of a mile broad.
117. Where is it proposed to connect the North Coast Railway with this line? It is marked on the plan from Guyra. The line from Guyra and the line from Maitland would have a considerable length in common.
118. What is the object of coming in from Tenterfield close to Deep Creek if you construct a line from Guyra? That is for a Tenterfield connection. It remains for the future to determine which is the proper connection.
119. If you go to Grafton with this line, would you not favour coming by way of Guyra to make the connection there? I do not favour one or the other at the present moment. It seems to me that that is quite a distinct question.
120. Does not your plan show a connection with Tenterfield, and have you not already given evidence that the object of the proposed deviation, to some extent, is to make a junction with the line at Tenterfield? Independently of that question, I would prefer the deviation.
121. You must have some strong opinion in reference to the connection of the North Coast Railway by way of Tenterfield, as shown by your plan, and by your evidence this afternoon, that that is one important consideration which guided you in making the deviation? Probably, at some future time a connection with the table-land will be made, perhaps in both directions. What I intended by making this deviation so as to suit the Tenterfield line, was to provide for eventualities of the future.
122. Will the total cost of the line from Grafton to the Tweed be about £1,400,000? Yes.
123. Are you of opinion that the line would pay if constructed from Grafton to Lismore, as submitted to the Committee? That is a phase of the question I have not gone into.
124. Having travelled over the country, and from your knowledge as a professional man, do you think the railway is likely to pay within the next ten years? It is impossible for me to say how trade might spring up. A considerable trade might spring up.
125. Is the nature of the country between Grafton and Lismore likely to develop a large trade? The local produce would be fat cattle, milk, and butter.
126. *Mr. Neild.*] Do you think it would be possible to find a more easy route than the present one, say from Lismore to Lawrence, and thence to Grafton? No; I do not think it is possible to find a better route than the one between these two points.
127. Apart from the question of a railway route, do you think that such a line as I suggest would serve a better quality of country? I believe the present route is the right one to take.
128. If Lismore and Grafton are to be connected by railway, do you think the present route is the right one? Yes.

WEDNESDAY.

WEDNESDAY, 31 *AUGUST*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Grafton to Lismore.

William Albert Brelsford Greaves, Esq., sworn, and examined:—

129. *Chairman.*] What is your occupation? I have no particular occupation.

130. I understand that at one time you were connected with the Survey Branch of the Mines Department? I was a District Surveyor for a number of years, about twenty-five years. I am now engaged in pastoral pursuits. W. A. B. Greaves, Esq. 31 Aug., 1892.

131. *Mr. O'Sullivan.*] You own a large station in the Clarence district? I own a station—Newbold—on the Clarence.

132. Where is it situated? About 30 miles west of Grafton.

133. You know the country well between Grafton and Casino? I have never been to Casino, but I know the country as far as the Clarence water-shed—as far as Myrtle Creek. I know, intimately, the whole of the Clarence country, and I have prepared a written statement which I wish to put in as evidence.

134. Would you prefer to make a statement before being examined? I should prefer to read what I have written. I have with me a map showing the geological formation of the country of the whole of the northern districts, and the line of demarcation between the coast and the table-land, which may be of service to the Committee.

135. Will you kindly place the information before the Committee? I have been a resident of the Clarence, and have been acquainted with it for about thirty-six years. I was formerly in charge of the surveys of the district, and I made many of the early surveys. I was there at the time of the early settlement of the district by farmers. I then removed to New England, and was in charge of that district, I think, for about seventeen or eighteen years, and in charge also of the Gwydir, Liverpool Plains, New England, and part of Warrego. I am intimately acquainted with the greater portion of the country within the Clarence water-shed. I know the country between Grafton and Myrtle Creek, but not beyond. It is undulating forest suitable for mixed farming, but poor compared with the rich brush and open forest flats of the Clarence River. The worst of the land is seen on the tops of spurs on the road towards Casino; when ringbarked it produces excellent pasture. The country is well timbered, though most of that which was valuable has been cut up to a reasonable distance from the main road; but a short distance away, much of the primeval forest remains. The trees comprise tallow-wood, ironbark, stringybark, various kinds of gums, and bloodwood. There are no engineering difficulties through this piece of country, and I should think a railway would not cost over £7,000 per mile. This railway, when made, will afford facilities for opening out the rich country to be found on the middle portion of the Clarence River, south and east of Tabulam, and the Timbarra gold-fields; and east of the fall of the table-lands, shown by a red line upon the plan, which I have prepared to more fully explain my evidence. This red line follows approximately the lower falls of the table-land, where nature has indelibly set up her land marks—not to be disputed. The country west of that line belongs to the table-land, and east of it to the coast, both commercially and politically. This land would fall within an average distance of 25 miles, were the railway made, as against 40 miles to the nearest water carriage. The country in the Clarence Valley, as high as Tabulam, is commercially connected with Grafton, and the produce would be conveyed for shipment at Grafton. There is but little settlement in this portion of the district at present, owing to its isolation and bad roads; but its fertile lands must induce settlement whenever facilities are afforded for bringing produce to market, and present land holders, nearer the line, would subdivide, and there would be ten families where there is only one now. As instance the sub-divisions going on in the neighbourhood of Junee, on the Southern Railway line. The construction of this line and its ultimate extension south and west, will connect several districts; it will not be a local line from nowhere to Grafton, but it will form part of a system of railways for the northern coast district, which has been advocated at Grafton for many years. This system includes a line along the littoral portion of the district; and a line west into the wheat lands at Glen Innes and Inverell. It will open up a wonderfully rich and extensive district, capable of settling a large population. On account of its extent and richness an exceptional course might be followed in its construction, even if it should be thought not to pay at first, for where railways precede population speedy settlement follows, and this railway will not compete with water-carriage. The line under construction in the northernmost portion of the district (Tweed) will not pay until connected with Grafton, and continued further south, and ultimately connected with the railway system of the Colony. When connected with the table-land, the northern coast district can interchange commodities. It could consume the whole of the breadstuffs produced at present, which could be delivered cheaper to any part of the district than from Sydney. Sugar, maize, bananas, pine-apples, oranges, and most tropical fruits could be given in exchange. Notwithstanding the differential rates on the Great Northern Railway most of the wool of the west finds its way to the Clarence, as being the nearest and cheapest port, and a deal of merchandise passes the same way, and much more would, but on account of the delays on the roads. With improved entrance to the river, the Clarence will become the second best harbour in the Colony. It will readily be admitted that the river is the largest beyond comparison on this line of coast, and the inlet evidently designed by nature to be the centre of a great colonial system. There is no railway touching the coast from Newcastle on the south to the Tweed on the north, a distance of about 300 miles, and any railway from the interior should be to a point that will serve the greatest number; and as only one line can be constructed at present, that should

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be to the most central, and it will be seen that the Clarence occupies that position. Casino, or Lismore, on the Richmond River, is only 40 miles south, and 70 miles east of the Queensland boundary—in fact, in a corner of the Colony with little or no back country. I have shown upon this plan the geological formation of a large portion of the Northern district, and the line of demarcation which I before alluded to. Along this line there is a large area of brush-land, some of the richest in the Colony. I have also shown the positions of the gold-bearing areas, the tin-fields, and probably rich coal-fields; and I should like to point to the vast mineral wealth of the Clarence Valley as a strong reason for the construction of this railway; and if any great proposal for public works was backed up by the moral forces of human progress which go to contribute to national welfare, then are those forces in favour of this work.

136. I gather from your statement that you approve of the proposed line, but you think the connection with the table-land should be *via* Glen Innes? I did not say so. I did not say it should be *via* Glen Innes or any other place; but I say it must ultimately connect with the railway system of the Colony. Glen Innes is much the nearest place with which to connect.

137. You would prefer to see connection made at Glen Innes, would you not? I think I should, because it is the nearest, and it taps the interior at a far more suitable point than any other line either north or south.

138. Then you would suggest the construction of the line from Lismore to Grafton as a means of connecting the north coast district with the table-land *via* Glen Innes? Yes; and its extension south as far as the Macleay.

139. You know the country well between Grafton and Glen Innes? Most intimately.

140. You know that it is very sparsely populated? Yes.

141. Do you think it is likely, in the present state of the finances, that Parliament would be justified in adopting your suggestion to connect with Glen Innes? All that I can say in reply to that is that it is of no use constructing a railway in the northern corner of the Colony unless it is connected with the present railway system. I say it will not pay.

142. But may there not be some superior connection to the one you suggest? I do not think so.

143. What trade is there likely to be between Grafton and Glen Innes which would give the railway a chance of paying in the next twenty years? There would be a very large exchange of merchandise. The farmers on the table-land as far as Inverell, and almost as far as Moree, would grow wheat; and if every man living on the table-land to-day was growing wheat they could not even then supply the very large population there is on the coast with breadstuffs.

144. You look forward to the through traffic to pay the working expenses on the line? Certainly, when connected.

145. You realise that there would be very little local traffic between Grafton and Glen Innes? I think the whole of the merchandise for the west would go from Grafton if the line were constructed. It certainly would not go from Sydney.

146. But I am alluding to points from Grafton to Glen Innes; there would be very little traffic between those points and Grafton? There would until the railway was constructed, and when the railway has preceded population all the rich land which I have described in my written statement would be available for settlement. It is some of the richest land in the Colony, and it is very extensive. It is that beautiful brush-land with the chocolate soil, but at present its isolation is a bar to settlement.

147. Where is this land situated? Slightly back from the Clarence River.

148. Can you name it? The Coombadjah and Dandarah scrubs form some of it.

149. At what point upon the proposed route between Glen Innes and Grafton are they situated? About 8 or 10 miles from the present surveyed line of railway from Grafton to Glen Innes.

150. How far out from Grafton? About 40 miles from Grafton.

151. Anywhere near Dalmorton? Very much to the right as you go from Grafton.

152. The surveyed line between Grafton and Glen Innes lies some distance from the road? It seems to travel as good a piece of country almost as the Blue Mountains. The surveyed line most studiously avoids all the good country. There is plenty of good country to the right and left, the produce of which could be brought to the line of railway.

153. It is not possible to see much of that good country from the main road? You do not see any of the good country from Casino to Grafton either, and there is plenty on both sides.

154. Have you formed any opinion about the proposed connection between Llangothlin and Grafton, *via* Don Dorrigo Scrub? Many years ago I submitted to the Government of the day plans showing a line of railway from Grafton to Armidale, which passed through what is known as Don Dorrigo Scrub, but it has not been surveyed as the Guyra line, which I say is utterly impracticable. It goes round three parts of a circle to get from Grafton to Glen Innes.

155. If that line were constructed it would form a portion of the north coast railway? I do not think it could ever be constructed; it is too long.

156. But if it could be constructed would it not open up a better future for Grafton? No; that land has been very much over-estimated. It is nothing but broken gorges, covered with dense cedar brush which you cannot get into.

157. I understand you are now alluding to the Don Dorrigo Scrub? No; but to the Guyra line; it does not go through the Dorrigo proper.

158. Then I gather that you do not entertain that proposal at all? I do not.

159. Touching the country between Grafton and Casino, you admit in your statement that it is rather poor compared with the rich country on the rivers? Yes.

160. Is the country of such a character that it cannot be availed of for purposes of settlement should the line go through there? I believe the whole of it will be availed of for settlement. I believe that that country is, at the present day, far better than the improved portion of the county of Cumberland.

161. What use do you think that country would be turned to if it were settled? If it were only ring-barked it would produce excellent pasture.

162. How many acres of it would keep a beast? If ringbarked, about ten.

163. Is there any chance of any cultivation? Yes; I think it would suit crops of oats and hay, and it would do very well for dairy-farming.

164. At the present time it is very sparsely settled? Yes; and the Upper Clarence is even more so, all for want of better communication.

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165. If, in your opinion, this land is so good, why has it not been settled before? It will never tempt farmers so long as there are better lands to pick from. When the better lands are gone, and when there is better access to it, this land will be taken up. I myself know a number of persons who are waiting for the throwing open of the lands now reserved on the Clarence, for free selection, pending the decision in regard to railways. There are 2 miles of land reserved upon no less than three different railways from Grafton to the interior and the coast line. All that land is locked up, and the great cause of this sparse settlement is the locking up of the land pending the decision in regard to the railway. Not only that, but all this land has been reserved as special areas. Whereas some years ago a man could go to the Hunter and get a piece of land for 5s. an acre he has to pay from £3 to £6 an acre on what is known as the scrub lands of the Clarence District.
166. What is the distance between Grafton and Casino? Sixty miles.
167. Is it not more than that—65 miles? I think not. We used to call it 50 miles in the early days.
168. At any rate we should have 60 miles of sparsely populated country through which the railway would run? Yes, but not 60 miles.
169. And this line would run through inferior land? Every railway in the Colony runs through a sparsely populated district and through inferior land.
170. But we are asked to deal with a line of railway, three-fourths of which will run through sparsely populated country and inferior land. As a citizen and taxpayer, would you be justified in running a line of railway between Casino and Grafton under those circumstances? If it touches rich lands at the end of the line. It would be like making a railway to Bathurst to tap the rich lands of the west.
171. You mean to reach the lands on the Richmond? Yes.
172. What trade would spring up on the Richmond along the proposed line of railway? If it were connected with the table-land there they could grow sufficient breadstuffs in New England to feed the people on the Richmond and the Clarence.
173. At the present time we are only considering the line as one from Grafton to Lismore, and it is not yet decided as to where the table-land shall be tapped. Supposing that we tapped it at Tenterfield from Casino, how would this line pay expenses? It would not pay expenses at all.
174. Would you recommend it under those circumstances? Certainly not.
175. Would you recommend it as a portion of the proposed North Coast line? The Grafton line certainly, and its continuation south and west from the best port on the coast.
176. Under those circumstances we must expect to have certain sections of a line like that running through inferior country? You must.
177. What is the depth of water at Grafton? I have sounded the river in many places, but I cannot tell from memory. Opposite to where I lived in Grafton there will be about 25 feet of water. I piloted the first river steamers that went up the river. I used to consider that from 15 to 17 feet could be found anywhere down the river.
178. Are you aware that at present 12 feet of water is about all that can be guaranteed at Grafton under existing conditions? I did not know that.
179. If that were so would you recommend Grafton as a port for ocean-going vessels? Yes, on this ground: Many years ago a number of vessels of between 1,200 and 1,500 tons were built to trade between the port and Adelaide. On account of the shallow water they were specially built for that trade. These vessels drew that draught of water in order to get over the shoals. Those vessels could come up to Grafton, because if there are 12 feet of water at Grafton it is at low tide.
180. But you are recommending Grafton as a port for a large trade, which would have to be done in ocean-going vessels. If you have a depth of 12 feet only at Grafton, how can you recommend it as a port for ocean-going vessels? It need not all take place at Grafton. Take it at the Heads.
181. But your railway connection would go to Grafton from the table-lands? Yes; and all the merchandise might go to the Heads if necessary.
182. Then, you would have another line running from Grafton to the Heads? The same as you have to Darling Harbour, Sydney.
183. You would have a branch line from Grafton to the Heads? You may call it a branch line. It would be a line for merchandise.
184. Do you think, that by means of extensive dredging, you could make a good depth of water at Grafton? Sir John Coode's plan will probably make the depth 18 feet; some say the depth will be greater.
185. Do you know the depth of water at Lawrence? I forget it. That used to be a troublesome place.
186. It is a greater depth than at Grafton? I cannot say.
187. The troublesome place is above Lawrence, between Lawrence and Grafton? On the Long Reach there is a troublesome place.
188. If this line were taken down to Grafton, it would become essential by-and-bye to run a branch line from Lawrence to the Flying Horse, between Grafton and Casino, to provide a proper shipping port? I should think not. If you cannot ship your produce at Grafton, you had better do as they do in some of the States in America, where they have no ports at all—as, for instance, Vermont.
189. But you are recommending this line as a portion of a system which is going to make Grafton the shipping port of the north; and I want to find out from you if the water conditions around Grafton are of such a character as to justify us in the belief that Grafton could be made the great port of the north? I think it could be made the great port of the north, but it could not perhaps carry on those large vessels which you think it ought to. If there was only a poor port at Grafton, I am sure the merchants of Sydney would be only too glad to tranship from lighters or droghers the merchandise of this portion of country, supposing it were formed into a separate colony to-morrow.
190. But all that would indicate a mere local trade of small dimensions, after all? It would be the means of getting the produce of the interior to water-carriage for transhipment.
191. In view of the prospect before Byron Bay, where, at the present time, without a breakwater, ships are loading and unloading in nearly all weathers—is there not a port growing up there? I know Byron Bay geographically, and I know it is considerably north of the table-land, and the table-land is the western interior of the northern coast; and to make Byron Bay a shipping port of the northern coast would be to send loading out of its legitimate channel.
192. Is it not likely that Byron Bay may become a port, at all events, for the Richmond River district? It may, but I do not think it ever will so long as the Richmond bar is open.
193. Do you know the Richmond bar? No.

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194. Do you know the depth of water there now? No; but I know the steamers which have traded there for the last thirty-six years. I have known people of the Richmond intimately, and I know that the Richmond bar cannot be better than either the Macleay or the Hastings, or half a dozen other rivers with which I am acquainted.

195. Supposing you see sworn evidence from experts to the effect that there is a rapidly improving entrance there, and one which, when works are carried out, is likely to be a success? I know it is very variable; I believe the "Tomki" is at present in trouble there.

196. At all events the Richmond River entrance is likely to be a harbour for the Lower Richmond? I believe it will be.

197. Then, with Byron Bay as a harbour for the other portion of the Richmond River district, where is the chance of creating a great port at Grafton? Because it never could be supplied with commodities from the same neighbourhood at all. Byron Bay is in the northern corner of the colony, within, I believe, 30 miles of the Queensland boundary, and it is certainly about 70 miles west of the Queensland boundary in the other direction.

198. Supposing a railway were run from Byron Bay, through Casino, to Tenterfield, and perhaps further out west, would that not be likely to create a port at Byron Bay? I believe the people at Tenterfield might with some little advantage, ship their produce at Byron Bay; but it would be sending the things north which would require to go south. It is going up to the corner of the Colony instead of coming direct to the coast a nearer way.

199. I gather that you are strongly in favour of the line as a portion of a connection between the north coast and the tablelands, and you also favour it as a portion of the north coastal railway? Certainly.

200. Pending a decision on all those points do you think we should be wise in going beyond a certain stage in the railway? What certain stage do you refer to.

201. Would it be wise to build a portion of it, and wait there for developments, until the question of connection with the table-land is decided? I think there should be no waiting. This line should be constructed, and it should be continued.

202. You say that although you are aware there are 60 miles of sparsely populated country, and inferior land to go through? It is sparsely populated, but not for 60 miles.

203. *Mr. Davies.*] You have stated that you are of opinion that the whole of this line could be constructed for £8,000 a mile? Less—£7,000.

204. Are you aware that the estimated cost of a portion of it is over £20,000? I believe that included the extension up to the Tweed, which is very tortuous and expensive.

205. Would you be suprised to learn that it includes the connection from South Grafton to Glen Innes? I was alluding, not to the Glen Innes line, but to the line from Grafton to Casino, as costing £7,000 a mile.

206. Not taking the whole line? Certainly not.

207. You are acquainted with the route from Grafton to Myrtle Creek? Yes.

208. There is no engineering difficulty in the construction of a line between those two points? I think not, it is fairly level.

209. And it would be a very inexpensive country for the construction of a line? Yes.

210. There are no engineering difficulties of any kind? No.

211. What do you think is the value of land, per acre, without the railway? I hardly think it is of any value.

212. It is of no value? Not much, because there is so much good land in the Clarence which will be alienated before this can be taken up. People will not take up bad land when, by waiting a little, they can get good. If the railway question were settled, some 300,000 acres of the richest land in the Colony would be thrown open for settlement. It has been reserved, and the Government have made special areas of it, and they are asking from 30s. to £6 an acre for it with all the timber upon it.

213. Would Mr. Donaldson, an old public officer in charge of the Grafton district, be competent to judge as to the value of the land? I think so.

214. If he puts a value of £1 per acre on the land, at present, would it be an excessive value? He is not putting the upset price, which is 25s. In his capacity as a district surveyor he could not value land under the upset price.

215. Would his valuation be excessive—if the railway were constructed—at 30s. an acre? I think it would be much within bounds; I think it would be worth £2.

216. All along the line? Yes.

217. Ten miles on each side? I will not say 10 but 3 miles.

218. Taking 10 miles on each side, do you think it would be worth 30s. an acre? Certainly.

219. If Mr. Donaldson says the value of the land which is at present reserved as a railway reserve is £600,000, or £700,000, you think he is within the mark? The land would readily fetch 30s. an acre if the railway were constructed.

220. I think, within the reserve, there are 350,000 acres? There are a good many reserves. There are the population areas, timber reserves, and railway reserves, which are locked up, hence the sparseness of population.

221. Do you think his estimate is not an excessive one? I certainly think it is a very reasonable one.

222. Do you think it would be fair to build the railway out of the proceeds of the sale of the Crown lands to be improved? I think it would.

223. The whole construction to be built out of the sale of land? I will not say the whole construction. I think if you were to build the line from the proceeds of the land the railway would be deferred.

224. Do you think it would be wise for the Government to go to London to borrow the money to build a railway which cannot pay for many years, when they have this land, which we are told by competent witnesses could be sold, and the cost of construction paid out of it? I think it would be wise to construct the railway as I have suggested in my written statement—sell the land, and recoup the cost of it afterwards.

225. You do not think it will be prudent to wait for the sale of the lands before constructing the line? Certainly not; we shall have to wait a long time.

226. The land at Myrtle Creek is fairly good? The chief portion of it has been alienated. Higher up the creek there is a good deal of land, and on both sides of the present alienations there is good land. Myall Creek is also very good.

227. So that, taking the land right through to Lismore or Casino, it is what you call a fair average? It is. The whole of the land is better than the average land of the county of Cumberland. 228.

228. Do you think the construction of a line from Grafton to Lismore, to make the connecting link with the Richmond River, would be a wise policy? Not unless it is determined to continue it south and west; because I am quite sure a line in the northern corner of the Colony will not pay. It will not pay till connected with Grafton. It will pay when the line continues further. W. A. B. Greaves, Esq. 31 Aug., 1892.
229. And you do not think it would be of any service to connect these two great rivers? Not to make Grafton the terminus of the two rivers, because each river has its own port.
230. But the Clarence River is at present a much safer harbour and port? At the present time the whole of the passenger traffic of the Richmond, or nearly all, goes over it, but the greater part of the passenger traffic comes to the Clarence.
231. In view of that fact would it not be wise to connect the two rivers by rail? Not with the view of its paying, because it would not pay at present.
232. You are an advocate for extension to the south? Yes; by way of Glen Innes, and south as far as the Macleay, or down to Raymond Terrace, to which it will ultimately go. This railway would be a feeder to all the ports on the line, and it would open up all that brush-land where there is no road at present; and until there is a road no one dare touch it.
233. And if a connection were made to the west it would be very costly, would it not? I believe it would.
234. In what direction would you make this connection? It should be made as nearly as possible to Glen Innes, by the Newton Boyd route. The line is capable of being very much improved, and that is the most direct line. It is 110 miles to Glen Innes, whilst by going by what they call the Guyra route,—which is a misnomer, for it can never go to Guyra because of the impassable nature of the Guyra river—it would be 200 or 220 miles as against 110 miles.
235. The country through which you suggest this line should be continued to the table-land is about the worst you can find in Australia? Some portion of it. You pass through the worst country as you go down the Glen Innes road. The only way to approach the table-land by rail is to follow the course of the river.
236. You are fully acquainted with the country between Grafton and Glen Innes by way of Newton Boyd? Yes.
237. And you advocate a connection lower down the river;—not by the old surveyed route? Yes; by the old route; and I say it could be very much improved.
238. Is it not a fact that this is very bad country? It is bad country.
239. You would not take it as a gift? A lot of it I would not have as a gift.
240. You would not take the whole of it for the cost of fencing? No; but I find wherever railways have been made they go through bad country to get to good. You cannot have good country all the way.
241. Are you aware it would cost £2,000,000 to construct that line from Grafton, through South Grafton, to Glen Innes? I believe that was the first estimate; but I think it could be done for one-half the money by an amendment of the survey.
242. What reasons have you for making that statement? I have the authority of those in charge of the railway surveys and the published reports, and knowing the country through which it passes. I took some part in suggesting an amended survey.
243. Are you aware that, according to the Engineer-in-Chief for Railways, the cheapest portion of the line which could be constructed from South Grafton to Glen Innes—and it is only 27 miles—would be £7,413, whilst a large portion of it would cost £20,410 per mile;—that estimate was made within the last three or four months;—you must be altogether misinformed with reference to the reduced cost of construction of the line to which you have referred? I have seen it over and over again reported that the line has been so much improved that the cost of construction is nothing like the estimate which was made in April. The ruling grade is now 1 in 50; it was, before amended, 1 in 33.
244. The Engineer-in-Chief states that the lowest cost of any portion of it, a distance of 27 miles, is £7,413 per mile; 25 miles and 40 chains will cost £18,060 per mile, 29 miles and 6 chains will cost £20,410 per mile, and 33 miles and 63 chains will cost £11,708 per mile? The aggregate cost is £2,000,000 by the first estimate.
245. I understand that you would not favour the construction of the line between Grafton and Lismore unless there were some guarantee of its continuance from South Grafton to the table-land? I will not say I would not recommend its construction, because I believe it will ultimately pay; but it will pay at once if it is connected with the railway system of the Colony or extended south, forming a portion of the north coast railway.
246. *Mr. Neild.*] Do I understand you to say that at the present time Grafton is used as a shipping port for a considerable quantity of wool from New England to the table-land? It is.
247. Are you aware it is in sworn evidence before the Committee that a storekeeper in Glen Innes is the only person who sends wool *via* that line to Grafton for shipment to Grafton? This storekeeper is the agent for the squatters in the west. It is Mr. Utz. I daresay he sends a large quantity of wool.
248. What do you call a large quantity? The produce of a good many stations.
249. Do you know that the quantity sent is sworn to as being merely a few bales per annum—six or seven team loads? I do not know that. I do not believe it.
250. You say there is some very fine scrub land in the vicinity of the proposed line—Grafton to Glen Innes? I said it was within 8 or 10 miles.
251. How would farmers or occupants of this scrub land get their produce through this rough country to a railway at a distance of 8 miles or 10 miles? By the best road which could be made.
252. They would have to come over very rough country? I do not think the country would be rough. It would be country down the valley of the Mitchell or South River. There is a road where men are at present drawing cedar to Grafton, and it would only be about another mile off the road they use at present to go to the nearest point of the railway.
253. Do you know that it is sworn to by maize-growers over and over again that it does not pay to carry maize 7½ miles to water carriage on the Clarence or Richmond Rivers? I do not know that.
254. If they swear that, and if, consequently, it is to be accepted as a fact, would it pay to take maize 8 miles to 10 miles to the proposed railway line, as you describe? Yes; I believe it would. I know farmers who are carrying it 12 miles to the steamers from the Upper Clarence, and it seems to pay them.
255. Your main argument in favour of the line from Grafton to Lismore is for the sake of connection with the table-land *via* the neighbourhood of Glen Innes? Yes, and continuing the coast line south.

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256. You speak of a great reduction in the cost of the proposed line;—have you seen a report of the Engineer-in-Chief for Railways, dated 26th April, dealing with that question? I have not; but I may have read extracts from it, and articles on the subject.
257. Would you be surprised to learn that in this report the length is given as 102 miles 10 chains, and not 110 miles as you state? I did not know it was 102 miles. I understood the amended survey made it longer.
258. Do you know that the Engineer-in-Chief states that the ruling grade is to be 1 in 33? That has all been cut out and 1 in 50 substituted.
259. That is the statement made on the 26th April last. Has the line been resurveyed and these heavy grades cut out since that date? I think I have it in print that all the 1 in 33 grades have been cut out, and that 1 in 50 is the ruling grade now.
260. Then something you have seen somewhere in print you take to be more reliable than the Engineer-in-Chief's report and sworn statement to the Committee? I do not take it to be more reliable, because I have not seen that report. I know the line can be further improved.
261. But you are contradicting the accuracy of the report from which I am reading extracts? I am giving you the information I have obtained from newspapers.
262. And you think the newspapers are more reliable than the Engineer-in-Chief's report? I do not think anything of the kind.
263. You have stated in evidence that the line, Grafton to Llangothlin, was 200 miles? I said the Glen Innes *via* Llangothlin.
264. Do you know the distance from Llangothlin to Glen Innes? Twenty-one miles.
265. Do you know the distance of the surveyed line to Llangothlin from South Grafton? I do not; but I have estimated it myself, and I have come to the conclusion that the line could not be constructed round by what they call Coff's Harbour to Grafton under 200 miles.
266. You have not been through the Don Dorrigo Scrub as far as the railway surveyors have been? I have not; but I have been very largely into the country. I have been almost as far as it was possible to go.
267. But you have given evidence before the Committee that the line cannot be constructed that way? Not when there is a better line. I said that there is a better line, which I pointed out some years ago to the Government, and that line has not been surveyed yet. The idea has been to go round by Coff's Harbour, which is not a harbour at all, and to get round by there the surveyors have gone out of their way.
268. Therefore, although you have not been through the country and the railway surveyors have, you have recommended a line as a better line than the one surveyed by the surveyors? Because the table-land stands out like an island, and frowns as it were on the sea, and I do not see how you could fall 5,000 feet in 15 miles.
269. You have stated that the line between Casino and Grafton has not been taken up because there is no railway? Want of road access: and as long as there is good land on the Clarence that land is not likely to be taken up.
270. Are you aware, according to the evidence of Mr. Donaldson, the district surveyor, that after taking a strip of land 10 miles on each side of the railway line, 20 miles in width between Grafton and Casino, more than two-thirds of the entire area has been taken up by purchasers under conditional lease? I am not aware of it.
271. Then, there would not be a great deal left to select? I believe there is a great deal left, because I believe all that land has been reserved. Mr. Donaldson must have been referring to lands which have not been reserved.
272. Will the land which is open for selection be the best land? Yes; I should think so
273. You say it takes about 10 acres of this country, if it is ringbarked, to feed a beast;—are cattle ever fattened on that country? Not unless it is ringbarked.
274. Is there any area of ringbarked country between Grafton and Casino? Not that I am aware of immediately along the line.
275. Mr. Vickery has a large station? Yes.
276. It is the principal station in the district? I will not say it is the principal station.
277. What other station is there? Southgate, Wooroowoolgen, Myrtle Creek.
278. You say the land at Myrtle Creek has been nearly all taken up in selections? The station remains for all that.
279. Is there any ringbarked country at Mr. Vickery's station? I do not know: I have not been there for many years.
280. Are you aware that Mr. Vickery sends all his cattle to Liverpool Plains for fattening? I am not surprised at that, because this country is poor for fattening, and unless it is ringbarked it will not fatten.
281. Do you know it is in evidence before the Committee that cattle are never fattened there, and are always sent away? I should have said so if I had been asked.
282. You say this land is worth 30s. an acre. It takes 10 acres, when ringbarked, to feed a beast, and reckoning money at 7 per cent., that would be a guinea per annum, to feed store cattle? Yes; it seems very large, but in connection with the feeding of store cattle on ringbarked country, there would be a farm, and other means of existence. It would not be simply a paddock of 10 acres with which to feed one beast; it would be an improved farm; so that land of that kind is not likely to be taken to feed cattle, but if ringbarked, it would feed them, though it would not fatten them.
283. It is very poor country? It is fair country.
284. Another statement you made was that the majority of passengers to and from Richmond River go *via* the Clarence? Yes.
285. Are you aware it has been sworn that not over a dozen a week go? I am very much surprised, because whenever I have gone up the Clarence the steamer has always been full of people. I was up there about two months ago, and it is not true.
286. It was very bad weather at that time? When I went up it was exceedingly fine weather. At any rate I saw two coaches on the banks of the river to carry these twelve people a week. I believe they run almost every day—at least they run whenever there is a steamer.
287. What point do they travel from on the Clarence? From Lawrence and Harwood Island.
288. There is a good deal of land along this proposed line between Grafton and Casino, which is fairly accessible from Lawrence, is there not? I do not know. If so much land as you say has been alienated, I am very much surprised. I am not aware of the alienations which have been referred to. 289.

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289. How long is it since you have been over the line between Grafton and Casino? Not for ten years. I have never been to Casino.
290. What settlement was there when you were there? Very little. There were the Cross Roads, the Flying Horse, and one or two other places, which I, myself, surveyed ten years prior to that.
291. Do you know of anything which would lead you to the conclusion that a single additional dwelling has been erected during the last twelve years along that line? I cannot say, but I believe a very large area has been alienated notwithstanding.
292. Then if it has been alienated, and has not been occupied residentially, it must have been taken up for the purpose of speculation in connection with the proposed line? That I could not say. But I think it is very likely there would be subdivisions in that case.
293. Is it customary for subdivisions to follow railway systems? I believe it is.
294. Can you name any? Yes; Junee, Albury, and Narrandera, and all about the Western and the Southern railway. I was out there only the other day, and was told that it was being done, that large estates are being subdivided, and that farmers are glad to pay 9s. 6d. an acre and fence and grow wheat upon them.
295. Do you think if this line were built from Casino to Grafton, and then taken on to Glen Innes, Grafton would become an important shipping port? I do.
296. That the wool grown on the table-lands and to the west of the table-lands would be sent to Grafton for shipment? I believe it all would. I believe it goes there now, notwithstanding what may have been sworn in evidence.
297. So that you would advocate the construction of 80 odd miles of railway from Lismore to Grafton, and 100 odd miles of railway from there to Glen Innes, the result of which construction would be the drawing of traffic from the Great Northern Line of the colony? I think consideration should be given to the persons who have located themselves on the table-land, and that they should have the option of going to the nearest port with which they are connected commercially.
298. Then you think that the justification for the construction of this couple of hundred miles of railway is to be found in giving the people of New England a choice of markets? Not only a choice of markets, but their proper market.
299. You say you know a great deal of New England? I do.
300. Are you aware that the growth of wheat in New England does not amount to more than four months' consumption of the people of those districts? I believe it does not amount to very much, but I think it might be stimulated very much if a market were opened to them.
301. But if the people only grow wheat for only four months in the year, surely they have a market open for them for the other eight months? They ought to grow more than they can consume.
302. *Mr. Collins.*] How far is your station from the proposed line? It is 30 miles from Grafton, and the proposed line would come through one corner of it, and cut off 300 or 400 acres.
303. Is that the line from Grafton to Casino? No, from Grafton to Glen Innes. The proposed line does not come within 20 or 30 miles.
304. Have you much freehold land on your run? Yes.
305. Then if the line were constructed it would improve your run? I do not think it would, but a line to Glen Innes might.
306. How many acres of freehold have you? From 12,000 to 14,000 acres.
307. Selected or purchased? Both.
308. A line from Glen Innes to Grafton would improve that land? I hardly think it would improve the land.
309. It would improve the value of the land? It might; but I think it would be many years before it made it more productive than it is.
310. Are there many selectors on your run? A few.
311. *Bona fide* selectors? Yes.
312. And if this line were constructed, would you be willing to sell your run for settlement? I do not think so—it would not sell.
313. You would keep it for yourself? I think so. Free selectors and the produce of my run would be conveyed to water carriage rather than go by this railway you are speaking of. It would be of no convenience as far as I am concerned, but to people further off it would be of great service. I am only 8 miles from water carriage.
314. What is the size of your holding altogether? About 130 square miles.
315. Has any of your land on your run been abandoned by you? A great deal of it is very unproductive—it is cedar brush, good for farms, valueless to graze.
316. Have you abandoned it? I have never had possession of it, because it is country which never can be occupied. The Dandarah scrub is on a portion of the run.
317. And it is still open for selection? Yes.
318. Who uses it now? The fauna of the district.
319. How much stock have you on your run? About 5,000 cattle.
320. On how many miles? About 120.
321. Is that all it is capable of carrying? Yes; on account of the dense cedar brush. There are miles of country you cannot occupy at all. The railway would open up some of that land to settlement.
322. What would it be worth then? The Government might proclaim it a special area. It is within 2 miles of the railway.
323. It is worth nothing now? No.
324. And if the railway line passes it it will open it up? Yes; it would be worth 30s. to £2 and £3 an acre, and when once cleared it is worth £10 an acre.
325. How far are they from water carriage now? Dandarah would be 25 miles from water carriage.
326. But the nearest point of your run? Eight miles from water carriage.
327. Do you not think that the selectors would use the port of Grafton rather than the railway? Yes, for that particular portion, because there would be 8 miles of water carriage to 5 miles of railway.
328. That would be no convenience to them? No.
329. There is a good macadamised road from Glen Innes to Grafton? I do not think it is a good one.
330. It has cost a tremendous lot of money? I believe it has.

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331. There are settlers within 10 miles of that road. Would they be able to use the railway if constructed to Glen Innes? I think they would, but I do not think there would be many settlers on the middle part of it. On the lower part of it, and on the table-land portion of it, they would. The middle portion of it goes through some of the worst country in New South Wales. The railway surveyed on the coast goes through beautiful alluvial land.
332. Is that the Orara country? It is.
333. That would be a portion of the North Coast line? Yes; and it would tap all those rich brush lands which are very extensive indeed
334. Are you aware that a great quantity of land between Grafton and Casino has been abandoned by the lessees of the run? Yes; I am aware of it; Mr. Vickery has abandoned his because of the high appraisement.
335. Do you not think it would be better to make feeders into these harbours rather than run a line on the coast? Feeders would be good, but I think a line of railway and feeders to it would be more to the point.
336. Would it not be better to make the feeders, and develop the country first? I do not think it would be better, but it would be a good plan. I should make the railway first, and the feeders afterwards.
337. *Mr. Wall.*] What is the general agricultural product of the country to be served by the railway? The whole of the Clarence produces maize and sugar-cane, and semi-tropical fruits.
338. The sugar finds its way to Sydney? Yes.
339. From the evidence adduced before the Sectional Committee we are led to infer that the higher lands are adapted for wheat cultivation? The table-land is adapted for wheat cultivation, but not the Clarence. It has been proved beyond question that the Clarence lands are not suitable for wheat growing, but for crops of oats, maize, and sugar, and tropical fruits.
340. If the only object of connection with the Northern line is the exchange of products, I take it that there will be no exchange taking place in sugar? Not between the Richmond and Clarence.
341. Do you not think the people of the Clarence could get wheat cheaper by ships from Sydney than from the table-lands by railway? Not under the present tariff. The present tariff by railway is cheaper than from Sydney in the proportion of 10 to 15.
342. Are there any difficulties in supplying wheat by steamers from Sydney to the Clarence? I am sure the whole supply of flour or wheat to the Clarence and northern districts is from Sydney.
343. Are the people of the Clarence suffering any difficulties in regard to their wheat supply at present? I believe not.
344. They can always get wheat from Sydney? Yes.
345. Grafton can only become a great shipping port by shipping the produce of the district at the port? Certainly, and from the west.
346. It will be by the shipment of the local production of that particular country? Yes.
347. If these products are sent inland to the Northern railway to supply the people of the north, Grafton cannot become a great shipping port? They would not be sent to Grafton if sent to the interior. They would go to the interior without going to Grafton.
348. Then if the products of that particular country go to Tenterfield or Glen Innes they will be taken away from the shipping trade of the port of Grafton? From the place where it is produced.
349. Does not that constitute the trade of the port? I do not see that it does in the slightest.
350. I am speaking now of the products in and around Grafton? Then the products of the port of Grafton requiring to be sent into the interior would go from Grafton.
351. But the very fact of it going to the interior would lessen the export of Grafton? That would show that there would be an exchange of commodities between the coast and the table-land.
352. If the products of the district were sent inland they would lessen the export of products from the port of Grafton? Of course.
353. If a great trade were to arise through the connection with the Northern line—that is, if it were to induce the shipment of wool at the port of Grafton—it would be taking the trade from the present Northern line? It must; but a great deal of the trade which would be taken from the Northern line never did go and never will go down the Northern line as long as there is a road to Grafton and a port there.
354. Do you know that the Railway Commissioners have offered special facilities in order to induce that trade to come along the Northern line to Sydney? Yes.
355. And notwithstanding those facilities Mr. Utz, who gets a considerable amount of merchandise forwarded to Grafton, makes some arrangement to send some wool to Grafton for shipment there. He has made some arrangement with the local squatters to send their wool to Grafton to ship there? I do not know that he has.
356. Do you know that the special object of reducing the rates or extending the differential system on that line has been to counteract the sending of wool to the coast for shipment in order to make the Northern line pay? I always thought so, and I am quite sure it was the case.
357. The evidence before the Sectional Committee goes to show that it would be impossible to bring the Richmond products to Grafton? Yes.
358. Can you point out what will be the advantage of this connection with Lismore, if at the same time the products of the Richmond River are not going to be brought to Grafton? It would be to the local advantage of the people of the district to have a choice of ports, and to convey their produce to which port they choosed by the proposed railway. There would be very little exchange of produce between the Clarence and the Richmond, but there would be a large exchange of products if the railway were continued beyond Grafton into the interior.
359. Most of the settlement in the Clarence and the Richmond districts is within 20 to 30 miles of the seaboard? It is considerably within that area.
360. Therefore, at the present time, as far as local facilities go, there are no special disadvantages in the way of settlement? Not to those who are settled; but the advantage would be to those who desire to settle.
361. You know that there is a very large area of wheat-growing land between Tenterfield and Tamworth—Tenterfield and Glen Innes, and all down the Northern line? A very large area, and further west the area is larger.

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362. Some of the evidence before the Committee goes to show that some of the inferior lands to which you have referred are adapted to the cultivation of wheat;—your opinion is that it is not adapted to the cultivation of wheat? Yes.
363. Then you think the Glen Innes or Inverell districts could supply the coastal district with wheat? Yes.
364. What exchange of products would be likely to take place in return for that wheat? The New England farmer would send down potatoes and wheat. He would get in return from the Clarence sugar, all kinds of tropical fruits, and fruits in general.
365. Do you know that at the present time the people of Tenterfield are going in very largely for the cultivation of fruit—10,000 trees have been put in during the present year? Yes; but the Clarence could send Tenterfield fruit in exchange for fruit.

Thomas Fisher, Esq., sworn, and examined:—

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366. *Chairman.*] What is your occupation? At present I am engaged in the fire insurance business.
367. Were you for some time a resident of the particular district we have under consideration? For sixteen and a half years.
368. How long is it since you left there? In 1875.
369. Have you any interest there now? Yes, at Grafton.
370. In the town or outside? In the town.
371. *Mr. Davies.*] You have carried on business for some years in Grafton? Yes, commercial business.
372. Had you to do with the shipping of the port? A good deal.
373. Can you tell us where the growth of the shipping business has been? I can only judge by my own experience. When I started in Grafton, I did so with a business of £3,000 a year, and when I left it, in 1875, it was £45,000 a year.
374. That was your commercial business? Yes.
375. Has the shipping trade grown? Very much during that time. It was after free-selection came into operation, in 1861, that it made rapid strides.
376. How long is it since you last visited Grafton? About two years ago.
377. Did you observe any great development of trade? The district had opened itself out more. There was a larger population, and more cultivation, and, naturally I suppose, the shipping business had increased proportionately.
378. Have not the improvements which have been developed been more confined to the river than to the town? Yes, more on the lower part of the river.
379. During your long connection with the district, did you experience any great inconvenience with regard to the defective character of the port? In the early days we did; but after the breakwater was commenced and carried out the port improved considerably. I have known vessels to be bar-bound there for three and four weeks, but not within the last ten or twelve years.
380. Do you know the country between Grafton and Lismore? I know most of it on the line between the cross-roads at Grafton, and from there along to Casino and to Lismore, but I do not know the country immediately adjacent to where the line is supposed to traverse.
381. The surveyed line is not very far from the road? So I understand.
382. But the country is all pretty well of the same character? Nearly all.
383. Do you regard it as fair or inferior country? I should consider what I saw from the road to be rather poor country, but I believe there is better country at the back.
384. The land round Myall, Myrtle, and Sandy Creeks is fairly good? It is. To the left of the proposed route you come to the coal ridge, where there are immense depths of coal, averaging about 12 to 14 miles, I think, from the intended route of the railway.
385. That coal has not been worked? No; for the simple reason it would not pay to work it, the distance of carriage being so great; but I have been over it.
386. Have you had any proof of the quality of the coal? Yes; it is bituminous.
387. What is the depth of the seam? You can see it sticking out; it would simply want tunnelling. There are almost mountains of it.
388. Is there no defined width of seam? I have never seen it opened up. I do not think it has been properly tested.
389. In the event of the construction of the line, do you think the coal industry would be brought into existence? It would be very likely to be developed.
390. Do you favour the construction of the line between Grafton and Lismore? I do.
391. Do you think it would be the means of causing settlement on the land? I think it would eventually. I do not think it would at first.
392. Do you think there would be any great exchange of products between the Richmond River and Grafton? No; their products are of a similar nature. The difficulty sometimes experienced on the Richmond is that they cannot get the vessels in or out.
393. Then, what would the railway have to carry, if constructed? Only the natural products of the district.
394. Then, it would have to wait until the lands were occupied? That would, in all human probability, follow.
395. It would be many years then, before there would be anything to be carried by the line? I think the railway would soon be the means of opening up the land; there are plenty of people waiting for it.
396. At what do you value the land on the line of railway or in the district? At present I should not think that land would be worth more than £1 an acre at the outside; but I think when the railway tapped the country, and clearances took place, it would realise £3, £4, or £5 an acre. I have seen land on the Clarence sold. I paid on behalf of one individual £1 an acre, and sold it afterwards at £30. It was scrub land
397. Rich land? Yes.
398. You do not find much of that class of land on the proposed line? I do not think you will.
399. Do you think, if the line were constructed, it would pay interest on the capital cost? Not immediately, but eventually.

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400. How long do you think it would be before it would pay? A few years.
401. Ten years? Four, five, or six years, probably.
402. And you are of opinion that a line should be constructed from Grafton to Lismore, so as to make a connection between the two rivers? I think so.
403. *Mr. Neild.*] You speak about coal-measures on the line;—are not the same coal-measures to be found at Maclean? No. Unfortunately, I know it to my cost.
404. There are coal-measures at Maclean? I spent £1,000 there, and never found it; at least, I found a little stuff called coal, but it is not coal.
405. You know they are still working away at it? Yes.
406. You do not think this is the same seam? I do not.
407. You advocate connection of the two rivers;—do you think this is the best point of connection—Casino to Grafton? I think so.
408. What do you say to a connection lower down? There is a very great drawback to a connection at Lawrence. Lawrence never can, from its formation and the shallowness of the river, become the port. It is a most difficult place to get round at any time. It is very shallow.
409. But you have to cross some shallows to get to Grafton? Exactly.
410. Then, if Lawrence can never be a port on account of the shallowness of the river, and the awkwardness of the bend, Grafton cannot be a port for the same reason? I mean for the laying of the vessels there—the space is too small.
411. But there is a great width of river? You will not find 2 feet of water upon it. At Devil's Elbow, where the steamers go round, there are from 10 to 15 feet, but you can walk along the other part for a distance of a quarter of a mile.
412. What do you say to a connection lower down—at Harwood? That would make a better connection, only it would have to cross the North Arm and two or three other bodies of water. That would entail very expensive bridge-work.
413. You have heard the evidence of Mr. Greaves that if Grafton should not have enough water to make it an over-sea shipping-port it would be well to construct a line of railway lower down the river, to the Heads? I cannot see that myself, because there are a great many difficulties in the way of getting a railway to the Heads. You would have to cross the North Arm. If you went on the north side you would have to cross it twice. If you went to the south side you would have to cross the South Arm and the Coldstream as well, both entailing heavy bridge-work.
414. What about a connection with Iluka? Woodburn to Iluka would be the shorter.
415. Do you not know that there is every prospect of the Richmond bar being sufficiently improved to carry the trade to the lower river? It does not warrant it at present. There are only 8 feet of water on the bar now, and there is a vessel stuck there.
416. What vessel? The "Tomki."
417. You are aware that a large sum of money has been voted by Parliament, in accordance with Sir John Coode's plans, for its improvement? Yes.
418. Then I understand you are advocating this railway connection because Richmond is not a good enough port? Not necessarily so. I only mention it as part of the reason.
419. Do you not think it would be as well, before undertaking extensive railway construction, to see what the result of these extensive harbour improvements will be? By the time that is done we shall all be dead and buried. Sir John Coode's scheme will never be carried out in our generation.
420. What real use do you think could be made of this line? I think it would open the country right along.
421. Are there not thousands of miles of country opened up by existing lines only, and not put to any adequate use? Very little.
422. Is there a single line in the Colony which does not pass through land only partially utilised? I traversed a piece of country only a week or two ago in regard to which you have recommended a railway—between Cootamundra and Temora. Two years ago it was nothing but brush and timber; now there are thousands of acres cleared and under cultivation in anticipation of the railway.
423. Is it not a fact that on every railway line in this Colony there is an enormous area of land not anything like fully utilised? Plenty.
424. Do you think it is a desirable thing to construct extensive railways to open up more country upon the chance of it being utilised? If it comes in as part of a general scheme which has been promulgated—the North Coast Railway.
425. As a local line, you do not approve of it? I do, because I think it would open country round about.
426. Do you think it desirable to construct an expensive line for the purpose of opening up country, upon the chance of it being utilised? I think there is a great chance that it will be utilised.
427. Do you think the chance is worth the risk? Yes.
428. Even to the extent of three-quarters of a million? Yes; if it forms part of the scheme.
429. Then you think it ought not to be constructed on local grounds only, but that it ought to be constructed as portion of a general scheme? I think it ought to be constructed on local grounds alone, and then it will come in as part of the scheme afterwards.
430. *Mr. Collins.*] Did you apply to the Secretary to give evidence? I did.
431. What information did you desire to give? I wanted to answer any questions put to me.
432. Had you any special information to give? No; I thought some information might be required about shipping.
433. You know, as a business man, that it is far better for people to send goods or produce by water than by railway? Yes.
434. Then this line would not be utilised for produce or goods? Yes, because it would bring produce to the port.
435. Where from? Outlying parts.
436. What parts? On the road to Casino and to the left of the line.
437. Are you aware that the greater portion of the land between Grafton and Casino has been abandoned? No.
438. We have it in evidence that thousands of acres have been abandoned because of their being useless? I did not know of it.

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439. You would not recommend a railway for the purpose of opening up that sort of country? Certainly not.
440. *Mr. O'Sullivan.*] You said your business had increased from £3,000 to £45,000? Yes; that was the business when I left, sixteen and a half years ago.
441. That was in the good times of Grafton? Yes; they were fairly good times.
442. Is it not a fact that a large proportion of the trade of Grafton is now intercepted by commercial centres down the river, such as Harwood, Maclean, and Lawrence? Yes.
443. Therefore, a large amount of trade you formerly did is now done down the river? A great deal of it, I have no doubt.
444. I gather that you are not quite certain about Grafton having the proper depth of water for a port? I can tell you the depth of water about Grafton from experience.
445. Is it a fact that there is no guarantee for vessels drawing more than 12 feet of water there without extensive dredging? Not at Grafton. At South Grafton there are 90 feet of water right off the hill, and where the North Coast Steamship Company's boats lie, they have from 15 to 20 feet of water. Higher up, where the proposed station for the railway terminus is situated, there are 40 feet of water.
446. But I am alluding to the approaches to Grafton on the flats? At Ulmarra there are about 40 feet of water.
447. Do you remember some dredging operations being carried on down the river some time ago? Yes; at the Devil's Elbow.
448. Do you recollect the cost of it? I could not tell you.
449. It was something very great? I could not tell you from memory.
450. In order to have a port for ocean-going vessels, you would require something more certain than 12 feet of water? Certainly.
451. I presume you would advocate a line from Grafton, lower down the Clarence, to deeper water? For the accommodation of larger ships, yes.
452. To what point would you take that line? There is no better point, in my opinion, than from Iluka to Woodburn.
453. But, granting that this line is constructed, and a line to the table-land from Grafton, then you would require a line running further down the Clarence to deeper water for the purpose of getting the ocean-going vessels? I do not think you would then, because these little shoals are easily got away.
454. Would it not be a somewhat precarious port if you had to reckon with these shoals and mud-flats? All ports are alike in that respect. You never can tell what action the tidal waves may have on the bottom.
455. Do you know the town of Casino? Yes.
456. Do you know how the tradespeople are hampered in their trade now when they desire to get their goods up the river? Yes; they have to bring them 2 or 3 miles below the township.
457. To a point called Irvington? Yes.
458. Do you know that at the present time there is a prospect of money being spent on the dredging of that arm of the Richmond? I heard there was some dredging being carried on, but I do not know the cost.
459. In your opinion, if the line were constructed from Lismore to Casino, would that dredging be dispensed with, and would the river trade be dispensed with; so far as the tradespeople of Casino are concerned? I do not think so. It is a long way round—from the river proper to Lismore, 70 miles—up another arm altogether from the main river.
460. And you still think the tradespeople of Casino would use the water-way as far as they could? I think so. I do not think they would go to Lismore. It is 70 miles of extra water-carriage by what is called the North Arm.
461. But would there not be an element of uncertainty in that? No more than at present.
462. At the present time it is somewhat costly to get goods up from Irvington? It costs about 5s. a ton.
463. In addition to what they pay on steamers? They pay about 25s. a ton by steamer, and about 5s. a ton for droghage and cartage.
464. The goods, at present, are taken about as far as Coraki in the ocean steamers, and from there to Irvington in the river steamers? Yes.
465. What is the charge for that portion of the journey? I think it is 5s. a ton—that is river-carriage by the small steamers, and cartage to Casino.
466. Therefore, there is a double charge between Coraki and Casino? Yes.
467. Would it not be more advantageous to the people of Lismore to have the ocean vessels take their goods to Lismore, and have only one railway charge from Lismore to Casino? I should scarcely like to pass an opinion about that; I think it is doubtful.
468. *Dr. Garran.*] You say a railway from Grafton to Casino and Lismore would be of use to the Richmond River people when the river heads are obstructed? Yes; in case of emergency.
469. Do you know how often, during the last five years, they have been unable to get produce out and stores in? They have had periodical difficulties—of longer or shorter duration. I recollect, a few years ago, four or five vessels being bar-bound for weeks.
470. How often during the last five years have they been so stuck up when they would have made use of the railway if it had been made? I cannot answer that.
471. And if vessels could get to the Richmond River they would not make use of this 63 miles of railway carriage to bring their stores up? I do not think they would.
472. So that it would only be occasionally used for that purpose? For that particular purpose.
473. It would not do to make the railway simply for that purpose? No.
474. You have spoken of the line as part of a north coast line? Yes.
475. Will it be of any use to make this portion if the other portion is not made? Yes; it would serve the port of Grafton.
476. You think it would help to bring some trade to Grafton? I think it would.
477. Would it bring much? It is scarcely possible to say, because it depends on what country is opened up, and what population is settled there.
478. Do you think it would be at all likely to bring a paying quantity of trade? Not at first.
479. *Chairman.*] I judge from your evidence that you do not think it desirable to construct the line at present? I do think it desirable, but I do not think it will pay just yet.

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480. You think it would pay within six or seven years of its construction? Yes.
481. Do you think the country would be justified in going in for a line to serve so small a population for at least seven years? That is a matter for the Government to consider—not for me.
482. But, as a tax-payer, do you think the Government would be justified in going in for it? A good many lines have been constructed on the same principle, unfortunately.
483. But if the time has arrived when we should look at the question as to whether a line will pay or not, do you not think that we ought to pause before committing the country to such a large expenditure? I think this line will recoup itself in a short space of time.
484. You speak of the interruption to the Richmond River trade owing to the bad entrance;—are you aware that in years gone by it was considerably worse than it has been during the last two years? I believe it was. The inside crossing, I believe, has improved considerably since the northern portion of the breakwater was commenced.
485. You know that some three years ago there were several vessels lying stranded in the bight close under the north head? Yes.
486. Traffic was absolutely stopped? Yes.
487. There have not been many stoppages during the last two years? Yes; there have been several stoppages of vessels which have grounded and remained there for several days.
488. Not blocking the entrance altogether for other vessels? Partially so; not entirely.
489. There was a time when the Clarence River was in a bad state? Yes; about thirty years ago it was, occasionally, very bad.
490. Now the entrance is comparatively free? Yes; since the southern breakwater was carried out and the northern training-wall.
491. And if these works are carried out at the Richmond River the probability is it will have as good an entrance as the Clarence River? Not until the southern part is done.
492. But if as much is spent on the Richmond mouth as on the Clarence we may reasonably expect a good entrance? It may produce a slight result.
493. And if this railway is for the purpose of giving the northern coast districts an ocean-going port, as the Clarence is supposed to be, then, if the improvements on the Richmond River are successful, we may as well stop there? No one can foreshadow that.
494. Do you know anything of the country between Casino and Lismore? I have travelled over it.
495. Is it better or worse than that between Casino and Grafton? I think it is better.
496. How far would the good country extend south from Casino towards Grafton? I think the first dozen miles are fairly good country. After that you get into a different sort of country—a timber country,
497. Except on the banks of the creeks? Yes.
498. On the banks of the creeks you may find fairly good land? Yes.
499. But it is not a country which will carry a very large population? I do not think it would.
500. So that if we had to depend on the country between Grafton and Myrtle Creek for trade for the railway, it would not pay for some time? I do not think it would.
501. But it is the tapping of the Richmond country at and above Casino which would enable it to pay in the future? Yes.
502. That is, always supposing the people do not stop at the improved Richmond River? Yes.

THURSDAY, 1 *SEPTEMBER*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Sutton.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Grafton to Lismore.

Hon. John See, M.P., Colonial Treasurer, sworn, and examined:—

Hon. J. See, M.P. 1 Sept., 1892.

503. *Chairman.*] You are the representative of Grafton in the Legislative Assembly? Yes.
504. *Mr. O'Sullivan.*] From your knowledge of the Clarence district, you ought to be able to give us a good idea as to the probability of the line which we are considering paying within a reasonable period. From what sources do you think traffic would come to the railway? Locally, along the line itself, and there is also a large trade between the Richmond and the Clarence, while ultimately there will be great traffic between the table-land and the coast. This railway was originally projected as a North Coast line and there was to have been another line to connect the north coast with the table-land. That was looked upon as a national system of railways, and the two lines were inseparably connected, and I have no hesitation in saying they will be ultimately constructed.
505. You regard the line under consideration as a portion of the North Coast Railway and a portion of the railway from the table-land? Yes; I regard it as a portion of the North Coast Railway that will ultimately join on to the northern system of railways somewhere in the vicinity of the Hunter.
506. Where would you recommend a connection with the table-land to be made? That is a matter more for the engineers than for myself. Three projects have been before the country—one to construct a line from Guyra to Grafton, another to construct a line from Glen Innes to Grafton, and a third to construct a line from Tenterfield to Casino. Whichever route would open up the best country and obtain the most trade is the one which, in my opinion, should be selected. The first project was a railway from Glen Innes to Grafton, which no doubt would be the shortest line from the table-land, and in my opinion, if it were practicable, would serve the table-land a great deal better than any other. The question of cost is a consideration, but I say that if a suitable line could be made at a fair cost from Glen Innes to Grafton it would serve the people of the country a great deal better than any other, because it would be most direct.

507.

507. Do you think the line from the table-land to the Tweed would be so productive within a few years, as to justify us in making a connection between Lismore and Grafton? I have no hesitation in saying yes. Hon. J. See, M.P. 1 Sept., 1892.

508. Although you know that at the present time there is very little settlement between Casino and Grafton? I know that. In the first place there is a great deal of Crown land there, and in the second place people living there would have great difficulty in getting their produce to a port of shipment. They would be 60 odd miles away.

509. Then you do not favour the proposal of a merely local line? No; I look upon it as a portion of the North Coast line, and essentially a national line.

510. That being so, you do not regard the inferior character of the country through which it would pass as an obstacle to its construction? I do not think the country is inferior, when compared with our land generally. It is inferior to the scrub land on the northern rivers, but it will compare favourably with our grazing country generally. Scrub land is, of course, very superior, and is, perhaps, the finest land that can be got anywhere.

511. Do you think that the land will be settled if the line is made? Yes; for agricultural and grazing purposes. There is some good land on the creeks, which is not visible from the road. It extends back from the line, and would be benefited by it. There is a considerable amount of good scrub land on the creek banks.

512. What form of agriculture do you think would be followed there? The scrub land would grow maize; other land would grow oats. There are various things to which the soil and climate would be adapted—maize chiefly, I suppose, and barley and oats. The soil is also admirably adapted for fruit. This land is equal, if not superior, to that which is cultivated at New Italy where we have evidence beyond doubt that a great number of fruits, together with the vine and other products, can be grown. I suppose that the land in New Italy is some of the poorest on the north coast, but some of the best results obtained in the Colony have been obtained from it by the Italians residing there. The poorest land on the north coast could be utilised with great advantage if people who understood the character of the soil and the different products for which it is suited were settled upon it.

513. Pending a decision with regard to the North Coast Railway, and a connection with the table-land, you think the Committee will be justified in recommending the construction of this line? I do.

514. Where would the trade come from pending the other connections? I think a large quantity of trade would come from the Upper Richmond to Grafton. That part of the country would be as near Grafton as it would to the Richmond Heads, and while I do not wish to bring the Clarence into competition with the Richmond in the least degree, I say unhesitatingly that the facilities for navigation on the Clarence are much greater than they are on the Richmond. At present there are between 18 and 19 feet of water on the Clarence, and when the contemplated harbour works have been carried out, it is believed that there will be 24 or 25 feet of water there. That belief, I think, will be realised.

515. No person can see the two rivers without being struck by the fact that the Clarence is superior to the Richmond? As regards navigation.

516. Do you think that Grafton is ever likely to become a port for over-sea ships? I say yes, emphatically.

517. How do you propose to get over the obstruction in the river about Lawrence? There are only a few shallow spots. The greater part of the river contains deep water. There is, however, a flat at Lawrence, another at Ulmarra, and a few in other places, but it would be very inexpensive to dredge them, and if dredging were carried on for five or six miles it would give a depth of from 16 to 18 feet of water.

518. Would not the dredging be very expensive? I do not think so. They have a dredge coming out now that would do a large amount of work very economically. The bottom is all soft stuff, and that does not entail very much expense.

519. Would you not have to do it over again after every flood? Yes; but the question of retaining the river banks is under consideration. If that project is carried out, the erosion which now takes place would be largely prevented. At present the soil at the side of the river is washed away, and is the principal cause of the silting up of the river.

520. Would it not be better if, after bringing the line to Grafton, a branch line were run from the Flying Horse to Lawrence for the purpose of bringing goods to deep water? I think the river is navigable now to Grafton. The water is uniformly deep all the way up from Lawrence with the exception of one or two places. I do not think that a branch line from Casino to Lawrence is justifiable. I do not think it would form part of the North Coast Railway.

521. But if Grafton is to become the port of the northern district it would have to be a place for the shipment of wool and other products to Great Britain? Yes; and geographically it is the centre of the north coast and north western districts. At one time it was the depôt of all the country north of Armidale. The traffic from Armidale, Glen Innes, Tenterfield, and right up to Warialda all went to Grafton. I can remember when the trade to the table-land all went up the Newton-Boyd Road to Glen Innes, and I think anyone who takes the map, or who has been over the country, can come to no other conclusion than that, geographically, Grafton is the centre of the northern trade of the Colony. The road from Grafton to Glen Innes cost a very large sum of money—upwards of £200,000—and comparatively speaking, for a mountain road it is a very good road. Although some people assume that it is impassable, there is a large amount of traffic on it, and that traffic would largely increase if there were not differential rates on the railway between Guyra and Wallangarra. The Railway Commissioners are carrying goods beyond Glen Innes for less than they carry to Armidale direct, and in many cases Armidale people can afford to have their goods sent beyond Glen Innes and then brought back again. They find that cheaper than having them sent direct. Were it not for the differential rates, a great deal of the trade from the north-west of the Colony would still go by teams by way of Tenterfield to Lawrence, and by way of Glen Innes to Grafton.

522. Would it be more advantageous to Grafton to have a connection with Glen Innes than to be connected with the table-land *via* the Don Dorrigo scrub? I do not think so. The Glen Innes line would be much shorter. I look upon this question as a matter of expense rather than of expediency. I have never been over the Don Dorrigo country, though I think that a line through that country would open up very valuable land. The land there contains rich volcanic soil, and some of it would be adapted to maize and sugar-growing. The rest of the land would grow wheat, oats, barley, potatoes, the vine,

and

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and a variety of other products suited to the country. I should really make no choice in the selection of a route. I should say that whichever would open up the best country and best serve, not only the people in the immediate neighbourhood of the railway, but also the people whom such a railway would be most intended to serve, the people of the table-land, is the line that should be made. If a railway from Glen Innes to Grafton could be constructed at a reasonable cost it would give direct communication on more advantageous terms than any other line to serve the Inverell and Warialda people. The distance between Guyra and Grafton is greater than between Glen Innes and Grafton—50 miles more, perhaps. The Guyra to Grafton railway would embrace a portion of the North Coast line, and it would serve two purposes. It would serve a portion of the north coast south from Grafton, and it would also connect with the table-land.

523. Would not that connection materially extend the commercial sphere of Grafton, and thus be more advantageous to us than a direct communication with Glen Innes? It would open up more country, and would bring more trade. Some of the ports along the coast, such as Coffs' Harbour, have been mentioned as suitable places to which to bring a railway, but they are merely open roadsteads, and though they might serve the purpose of a harbour in fine weather, they would be no good in bad weather The jetties there will benefit the people residing near them, but I do not think that Woolgoolga or Coff's Harbour, unless with an enormous expense, would serve the purpose of a depôt for a national line of railway. I prefer the Clarence as the natural port of the north coast.

524. You think the line between Grafton and Casino would develop the timber trade? Yes.

525. There are some very valuable timbers along the route? Yes. A considerable amount of traffic would follow a line from Casino to Grafton. At present a large number of passengers travel between Chatsworth and Woodburn. A large trade always follows a railway, and in this instance a great proportion of it would gravitate towards the Clarence.

526. Is it not possible that Byron Bay will become the port of the Richmond River district? I do not think so. In my opinion Byron Bay has the same local relation to that district as Coff's Harbour and Woolgoolga has to the districts further south. I have been all along the coast, and I do not think that Byron Bay, unless with a very large outlay, would serve the purpose which some people believe it should serve—that is the purpose of a harbour for the whole of the northern portion of the Colony. Locally it meets all requirements, but I think it would cost a large amount of money to give accommodation there equal to that given by the Clarence.

527. Is it not at present a very bad port for local purposes? Yes. The principal trade that has been done there recently has been brought by the railway contractor. The North Coast Company in which I am interested, have steamers trading there occasionally which bring produce, timber, some butter, live stock, and so on; but there is not a large volume of trade. There is, however, considerable trade compared with what there was a little while ago, and, no doubt, the jetties have given wonderful facilities to the people residing in the neighbourhood.

528. Is not the Richmond entrance at the present time a very fair one for small vessels? No; it is very bad. Within the last few days the "Tomki" stranded on entering there, and she is still lying on the spit. I was conversing with one of the captains of the company a day or two ago, and he told me that the maximum depth of water in the south channel was 8 feet. I do not want to say a single word against the Richmond, and they tell me that a better channel is opening up to the north. I have had a great deal of experience with bar harbours, and I do not think that the Richmond can possibly have a good bar, or, at any rate, not until they make the south breakwater. There is a bold North Head there which protects the entrance to a very large extent from the north-east, but the principal bad weather we get is from the south-east.

529. The evidence taken on the spot points to the fact that a straighter channel has been created by the works, and that there is every prospect of a very fair entrance being maintained there? I am satisfied that the expenditure of a large sum of money will improve the entrance; but not to the extent of making the Richmond a port which may be compared with the Clarence, where, with the expenditure of a comparatively small amount of money, they have at present a depth of 18 or 19 feet.

530. I am convinced of that; but will the Richmond River be a port good enough for the local trade? Yes.

531. If Byron Bay would serve the Upper Richmond, and the Richmond itself, the Lower Richmond, that would take a great deal of trade from Grafton? No. There is an enormous amount of country at the head of the Richmond and the Clarence which must have some communication with the Clarence by road or railway. There are a great many stations there. There is the Yugalbar Station, a station belonging to Mr. Barnes, Dyrabba Station, Kyogle Station, and several others. These stations all lie between the heads of the Richmond and the Clarence. They are beyond the reach of the navigable waters of the Richmond, and if they were used for anything besides grazing they would require an outlet for their produce. They contain some of the finest dairying land in the Colony, but of course they want facilities for getting to market.

532. Your contention is that it would be cheaper and quicker for the inhabitants of the Upper Richmond to go to Grafton than to go to Byron Bay or Ballina? Undoubtedly, and they would reach a good port when they got there. The cost of carriage by steamer from Grafton to Sydney is precisely the same as from the Clarence Heads to Sydney, that is, if there were direct communication with the Clarence River Heads, goods landed there would not be conveyed cheaper than goods landed at Grafton, because Grafton is the depôt for the navigation of the river. The arrival and departure of all passengers is from Grafton.

533. You expect the trade that will make Grafton a port to come from the Upper Richmond district, from the districts round about Don Dorrigo scrub, and from the table-land if a line is constructed from Glen Innes? Grafton is already a port of considerable importance—the principal port after Newcastle. The railway would add considerably to the volume of the trade of the Clarence.

534. The design of this railway system is to make Grafton the great port of the northern district? Unquestionably.

535. Where do you expect the trade to come from? From where I have indicated—from the Upper Richmond, from the country that lies above the navigable waters of the Clarence, and adjacent to the line, and a very considerable portion from the North Coast line if that line is made south of Grafton, where there is an enormous quantity of the finest land I have seen in the Colony. A considerable number of selections have been taken up there, but the selectors after putting in their time and fulfilling all conditions, had to abandon

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abandon their land altogether, or let it remain idle. The trade from all that country will gravitate to Grafton. There is an enormous amount of country beyond a place called Glenreagh—the Orara country—where there are tens of thousands of acres of the finest land in Australia. It is only because they have no communication by rail with a market that the land there has not been taken up. A great deal has been taken up, but it is unoccupied, like the Big Scrub on the Richmond. That country would give a great amount of trade, but a greater trade would come to Grafton from Inverell, and all that country right on to the Queensland border.

536. The evidence of the business people of Casino was all to the effect that they desired to trade with the Richmond River. Do you think it desirable that a line of railway from Grafton to Casino should compete with the water-carriage from that place down the Richmond? Not altogether, but a considerable quantity of the traffic would come by railway. It would be cheaper to send goods that way than in the way they are sent at present. The south arm of the Richmond is almost blocked up, and the cost of dredging it would be very considerable. There is a project on foot for making a line of railway from Casino down to the main river. I have given this matter of construction a great amount of consideration, and I hope I speak quite impartially in dealing with it. Individually, it would make no difference to me how the line was constructed. Of course, I know that in matters of this sort, the evidence of the Richmond and of Grafton and of Inverell might conflict to some extent from personal or selfish motives, but taking a broad view of the question—and while I have the honor of representing Grafton I have as kind a feeling towards other portions of the north coast as towards it—I think that for the purpose of serving the people generally, a railway should be constructed all along the north coast, and I may say that no other railway, if constructed, would give so good results as a North Coast line, and afterwards a railway from Grafton to the table-land.

537. Have you given any consideration to the rival route from Woodburn to Iluka, or the proposal to go to Maclean? The proposal to make a railway from Chatsworth to Woodburn, and from Iluka to the Richmond Heads, was made with a view to relieving the Richmond people. The bar at the time was worse than it is now. It was almost closed occasionally. The project of a railway from Chatsworth to Woodburn was purely a local matter.

538. You think it ought not to be compared with the railway under consideration? It is merely a local line, which would be a great convenience to a number of persons if they had no other railway, but placed side by side with the line which is under consideration, there is no comparison whatever between the two.

539. Are you at liberty to answer questions bearing upon the probability of the intentions of the Government regarding the North Coast Railway? I will endeavour to answer any question you put to me.

540. I should like to ask you, because it has a very material bearing on the whole project, if the Government intend to proceed with the North Coast Railway from Grafton? I cannot say that the Government have considered, and have finally decided to do that, but the line has been surveyed, and it is the Government project. When I speak of the North Coast Railway, I mean a railway to include the Tweed and the Hunter. I think that no portion of that line would pay by itself; it would only pay as part of the complete whole. But there is the indirect paying of railways, and the direct paying. A railway that may not pay directly may pay indirectly. The great advantages derived from a railway benefit land by giving it an increased value in opening it up for settlement. The direct return to the State may show a loss, but ultimately, with the increase of population and settlement, railways that do not pay will commence to pay.

541. I understand you to recommend this line partly because of the great indirect advantages which will accrue to the State from its construction? Yes.

542. *Mr. Davies.*] You have had a long connection with the Clarence River district, and its trade? I have been connected with it for thirty years.

543. Can you tell the Committee whether its trade and commerce have increased within the last ten years? Yes.

544. At what ratio? The population of Grafton and the Clarence in 1861, was 1,441; in 1871, 2,526; in 1881, 7,744; and in 1889 it was estimated at 9,710. The population there has more than doubled itself each decade, and the produce of the district has proportionately increased.

545. Each ten years the district has more than doubled its population, and more than doubled its trade? Yes. From 1861 to 1881, it has more than doubled its population each ten years. The population of the Clarence in 1861 was over 1,800, and in 1889 it was estimated at 7,827.

546. Has the progress of late years been very marked as compared with the early progress of the district? It has not. The bulk of the good land on the banks of the river and creeks has been taken up, and the land now available for settlement is more remote from the river. There is an enormous quantity of good land on Kangaroo Creek, a tributary of the Orara. The land adjacent to the river has been taken up, but the land more remote has not been taken up.

547. The creek is not navigable? No, they have to take their produce to Grafton in drays, but the North Coast Railway would tap an enormous quantity of this land. There are 100,000 acres of reserves south of Grafton. They contain chiefly good land, but the land is at present unoccupied.

548. The trade and commerce of the district have very greatly increased within the last few years, and I suppose there is no one in a better position to speak authoritatively with regard to it than yourself? I do not think so. I have represented the district in Parliament during the last 12 years, and I have watched every phase of its character.

549. You have been more directly connected with the trade of the port than any other man? Yes. I have had to do with the river commercially for the last 26 or 27 years, and have been interested in steamers and sailing vessels trading there for I suppose nearly a quarter of a century.

550. Has the production of the river increased? Yes, each year. The only time when the production has decreased has been during the occurrence of a disastrous flood. They had a disastrous flood in 1887, and an unprecedented flood in 1889 or 1890. The latter was the highest flood ever known. Of course these floods sweep an enormous quantity of maize away.

551. Has there been any marked reduction in the freight and passenger rates charged during the last few years? Yes, the freight to the Clarence, when I went there first, used to be 2s. 6d. a bag.

552. For maize? Yes.

553. What is it now? One shilling and three-pence a bag—a 50 per cent. reduction.

554. What was the gross tonnage of the output from the Clarence last year? Mr. Bawden and my brother have given the Committee figures in regard to that. I did not bring them with me.

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555. They gave us the figures for a portion of the year—for nine months? The export of maize last year was about 300,000 bags—about 30,000 tons.
556. You have no particulars as to the gross freight carried? There were 30,793 acres of land under maize in 1891, and they produced 1,305,000 bushels. There were 7,860 acres under sugar-cane, producing 124,000 odd tons, and 620 acres under potatoes, producing 2,465 tons. The value of the sugar-cane was £81,184.
557. Without going into details will you state the gross annual value of the production? Roughly speaking, I should think the exports from the Clarence would be worth £500,000 a year.
558. Including sugar? Yes.
559. How much of that would find its way to the Clarence by rail if a line were constructed from Lismore to Grafton? I should think the great bulk of the sugar, if there were a way of getting to the table-land by railway would go there.
560. But how much of produce of the character to which you have referred would go along the line from Grafton to Lismore on its way to the Clarence? None of the produce that comes by steamer from the Clarence now would go to the Richmond.
561. Would any come from the Richmond along the railway? Yes, a great portion of the trade of the Upper Richmond would come to Grafton.
562. You are aware that the estimated cost of the proposed 82 miles of railway from Grafton to Lismore is something like £640,000? Yes.
563. Do you know the country pretty well? Yes.
564. What is the character of it? I should describe it as good grazing country, and some of it as good agricultural country. The land on the banks of the creeks is good scrub land, though numbers of these creeks you would not see from the road. There would be a considerable quantity of good brush land within 10 miles of the proposed railway. I should describe the rest of the land as from fair to good grazing country.
565. There are no engineering difficulties in the way of constructing a railway along the proposed route? None. I think the line will be a great deal cheaper than is estimated. I think it will cost fully 10 per cent. less.
566. Do you think it would be an improvement to stop short at Casino? No; I have the same opinion about that line as about the Tweed and Lismore line. It is only a portion of the system, and until the system is completed it will not pay. I do not think the line between Lismore and the Tweed will pay of itself, but as a North Coast line it will pay admirably.
567. Do you expect that the line between Grafton and Lismore will pay in the near future? I do.
568. Will it stop at Grafton for some years to come? I do not think it ought to stop there. I cannot imagine it stopping at Grafton. If we are to have a North Coast Railway I say it must go to Grafton, and as I am a staunch advocate of the railway, I believe that we cannot have it unless it goes to Grafton. I think that if any section of the North Coast Railway were picked out by itself it would not pay, any more than any portion of the line from Sydney to Bathurst, or of the southern line would pay of itself. Connectedly it would pay admirably.
569. In view of the loss at present existing on several lines that have been constructed—over £300,000 a year—do you think it would be prudent for Parliament to sanction and authorise the construction of this line at an expenditure of £640,000? I do, unmistakably. In regard to the other lines I think that something must be done to make them pay, and that is to extend them. I think that in nearly every instance where lines are shown not to pay, if further construction were made they would pay. It is because they stop short at some particular place that they do not pay. I give the Cooma line as an instance.
570. You think an extension of the Cooma line would be the means of making the present line pay? I do.
571. You do not think it would add to the loss? It might for a little while; but my experience is—and I have had something to do with opening up trade to new districts—that for the first one or two years the trade from a new river does not pay, though ultimately it will pay.
572. Would you, as a representative of this important district, and as Colonial Treasurer, advocate the construction of a line of railway from the sale of Crown lands which have been reserved there? I am certainly in favour of the betterment principle, and there is a great deal to be said with regard to devoting some portion of the revenue from Crown lands specifically towards railway construction.
573. Are you aware of the quantity of land that has been reserved along the route of the proposed railway? Yes, over 100,000 acres.
574. In your judgment what would you place the value of the land at per acre, at present? Well, the Crown values all the land at £1 per acre.
575. Do you think that, taking the average, it would be worth that without a railway? No.
576. What do you think it would be worth with a railway? Two or three pounds, and some of it, where there is good timber, would be worth a good deal more—on the average £3 an acre.
577. Would you be surprised to learn that there are 554,000 acres of land available for sale within 10 miles on each side of the railway? No, I should not There are 240,000 acres available, exclusive of 45,000 reserved for the railway, 65,000 acres of timber reserves, and other reserves which would bring the total amount up to 500,000.
578. Would you be surprised to learn that Mr. Donaldson, a very high official in the Survey Department, values the land at £1 an acre, and with the railway, at 30s. an acre? No; but I think that is worth more.
579. A total value of £787,000? I think it is possible that though land might be valueless without roads and means of communication with a market, with facilities for travelling over it it might be worth £2 or £3 an acre.
580. Would it not be worth while selling the Crown land and constructing a railway from the proceeds? No; I should construct the line first. If you make the line first it gives the land more value.
581. You would not advocate the sale of Crown land for the construction of railways? I should in a sense, but land would fetch more after than before a railway was made, and if it—except such land as was required for *bona fide* settlement—were placed as a set-off against the cost of the railway, it would be the same as if you sold it before the railway were made. In one case you would sell it in anticipation of a railway, and in the other case you would sell it after the railway had been made.

582.

582. If we are to go on constructing lines which, from the first, show no possibility of returning the interest on their cost, and possibly of returning the working expenses, we must find money by some other means than those we at present adopt? You might say the same about our public roads. We get no direct return from them, but we spend large sums upon making bridges, and if you can construct a railway almost as cheaply as a road, and maintain it almost as cheaply, it is better to have a railway, because it gives greater facilities. You lose directly, but indirectly you gain. That is another view which I think should be taken of railway construction. Whenever a railway saves a large expenditure on the construction and maintenance of roads, I think that should be credited amongst the returns. Hon. J. See, M.P. 1 Sept., 1892.

583. Are you aware that this principle has, to some extent, been adopted in Victoria, and has, to some extent, been recommended by our own Commissioners? I know that the Commissioners, when they recommended the line from Grafton to the Tweed, recommended that some portion of the Crown land should be sold for the purpose of defraying the cost.

584. Are you aware of the amount which has been so dealt with by the Victorian Commissioners for Railways? No, I am not. As a general rule, when our public estate is sold, the proceeds are expended for general public purposes, and therefore to some extent the land that is sold goes towards paying for the construction of railways and other public works. If our public estate were reserved for a special purpose, some other means would be necessary to find money for public works.

585. Would you be surprised to learn that in Victoria the Government put aside £200,000 for railway purposes, and that the total amount to their credit is over £2,000,000? No; but I think that that is a very good system.

586. Do you think a similar principle might be adopted in connection with our railways? Yes. I think there is enough good land between the Hunter and Grafton to pay for a railway, and if a railway were made there the proceeds from the line might be retained to pay for it.

587. Would you favour a railway being constructed on such lines? I think it is an excellent way of paying for a railway.

588. You think the railway should be constructed before the land is sold? I think the land would fetch more after the construction of a railway than before. If people bought land they would benefit by the construction of a railway, and they would benefit the line by the traffic which they would give it.

589. You think an increased value could be obtained by the Crown? I should not put too high a value on Crown land, because the first cost of the land is the least part of it. The cost of clearing land whether the work is done by a man's family or by others is enormous, and varies from £5 to £10 an acre, which is a great deal more than the first cost. The timber on a great deal of this land is worth an enormous sum of money, and I have always been alarmed to see such enormous quantities of timber wasted as are destroyed in what is called clearing land. It is almost impossible to estimate the value of timber destroyed to make 100 acres of land available for grazing or agriculture.

590. All the timber along the route of this proposed line is of a very good class of hardwood? Some of it is—ironbark and gum.

591. There is also tallow-wood there, and other kinds of good timber. I suppose you are of opinion that a good deal of that timber will find its way to different markets if the railway is constructed? A considerable quantity of timber comes from the Clarence now. A good quantity has gone to be used by the Melbourne Harbour Trust, and a considerable quantity has been bought by the New Zealand Government, or has been sent to Sydney and Newcastle for sleepers. It is a magnificent timber country.

592. Have you, during your long connection with the river, known it to be better or safer than it is at present? No.

593. It has been very much improved? Yes, although it has always been a good harbour. I have never had my ships bar-bound there for want of water, though I have had them detained when an easterly gale has been blowing, just as they might be detained at Sydney Heads because it would be dangerous to proceed to sea.

594. The Clarence is without exception one of the best ports in the Colony, next to Newcastle? Yes; and when a steamer is detained at the Clarence she would be detained at Newcastle. My boats would be detained at Newcastle precisely as they have been detained at the Clarence.

595. I think I understood you to say that you favoured a connection from Grafton to the table-land by way of Glen Innes? I say that that is the most direct route, and if a line could be taken that way at a reasonable cost, if would be cheaper and better than any other.

596. You know the country between Grafton and Glen Innes very well? Yes.

597. Is there any worse country in Australia than between Grafton and Glen Innes? It is stony country.

598. The major portion of it is very rugged and broken country? It is like all our mountain country between this and Goulburn, or between this and Bathurst.

599. Is it not even worse than the mountains? No.

600. What value do you put on country of that kind? It depends upon what it is used for. If it were used as a sanatorium it would be worth as much as land on the Blue Mountains is worth. I would not put any value on it for farming. You will probably see it occupied as a sanatorium, and for fruit-growing.

601. What population is there between Glen Innes and Grafton? There are a good many people at Dalmorton, perhaps 500, then there are people at Newton-Boyd, and there is some other settlement along the road.

602. What is the population between Newton-Boyd and Glen Innes? Including Dalmorton, 2,000 people. I do not mean to say that there is that population on the road. You have to get back into the bush to find the people.

603. Do you know how many selections there are off the road, say 10 miles back? I do not know. I should not say there are many. There are a great number of timber-getters.

604. You are aware of the estimated cost of this line? The original estimate was £2,000,000. Another route has been pointed out which would go through a portion of Yugilbar and Gordonbrook. That line would traverse an enormous quantity of good country, and would be much cheaper than the route which has been already surveyed.

605. You could not possibly recommend the construction of a line of railway from Glen Innes to Grafton? Not for the purpose of serving the country immediately between Glen Innes and Grafton; but

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but to give the people of the north-west country, which is some of the richest in the Colony, facilities for getting to the coast. I think a line would be justified on that ground, precisely as the line over the Blue Mountains was justified because it served Bathurst. I say that a line across the Blue Mountains would not be justified if it served nothing but the population of the mountains. As a line to connect the metropolis with the back country it is justifiable.

606. Do you think that we should spend £2,000,000 on 100 miles of railway? Yes; undoubtedly, for the purpose I have said. The whole of the trade between Wallangarra and Armidale is now conducted for actually no return. That line of railway is run, practically speaking, for nothing. I pointed out to the Committee before that Armidale people sometimes find it cheaper to have their goods sent to Glen Innes and brought back again than to get them direct.

607. What trade would come to Grafton from the table-land, or from Casino and the Richmond? The whole of the trade of Inverell, Glen Innes, and the north-west district.

608. What portion would find its way to Lismore? Whatever supplies they wanted. I look upon the Inverell country as one of the finest we have for the growth of cereals, and it would be called upon to supply the requirements of the north coast. The north coast people would send their maize, sugar, and a variety of things for which the climate is suited.

609. Would it not be the means of drawing from the northern line to Grafton a large portion of the trade which now comes to Sydney? Yes, probably it would; but very likely that line could be utilised for something else. It is now worked for nothing, and it might be utilised to greater advantage if it took trade where it would pay. If it were employed to convey goods to a nearer depôt than Newcastle and Sydney it might pay. Inverell goods at present have to travel 400 miles to get to the sea-board, whereas if they could go to Grafton they would only have to travel 150 miles, and it will be cheaper, and, in fact, necessary to get their goods sent by the shortest route.

610. Would you favour the construction of a line of railway to Lismore to stay there until the question of the North Coast Railway is settled? No. I look upon it as a portion of the North Coast Railway, and if one portion is not justifiable another is not.

611. Would you favour a railway from Casino to Tenterfield? No.

612. Do you think it would be fair to the Clarence to make a railway from Tenterfield? That does not enter into my consideration, but such a railway would not serve the purpose it would be intended to serve. It would not serve the people in the north-west district. It would be practically a railway to the Queensland border, and goods from the north-west district would have to be hauled up to the border and then be brought back again. Goods from Inverell would have to be sent to the border and then have to be taken back to Casino, and if intended for Grafton, they would have a still further journey to make. It would be a double zig-zag.

613. A railway from Casino to Tenterfield or Glen Innes would not serve the Clarence? No; and it would not serve the other place. Of course the Tenterfield people wish to have the line made there.

614. Do not the Casino people? Yes; I know that.

615. But the line would not serve the producers of the two great rivers? I put them out of it almost entirely, and I say that that portion of the Colony, which the railway is intended to serve, would not be served profitably and advantageously, except by a more central line. The Queensland border is already tapped by a railway from the coast, and a railway to Tenterfield would not serve the people of Armidale, Glen Innes, and Inverell, as well as a railway further south would.

616. You would not favour the construction of a line from Lismore to Grafton, unless there would, in the near future, be the continuation of a connecting link from the table-land? I should favour it as a North Coast Railway undoubtedly, but there must be a connection between the northern railway and the coast.

617. At present, you favour the construction of a line from Grafton to Lismore? Yes.

618. Looking to the future for its continuation? Looking at it as a line which will pay.

619. *Mr. Neild.*] When you say looking at the line as one which will pay, do you consider that it would pay as a local line, or as part of a larger system to be extended either southward to the neighbourhood of Newcastle, or westward to the table-land? I do not think it would pay entirely as a local line.

620. You advocate it rather as part of a greater whole than as a separate work? I have already said that I do not think any part of the northern line, or of any line which has been constructed in the colonies would pay by itself.

621. Do you think it would be desirable to construct this line without determining the direction of future connections with it? Yes; I do not think it will make any difference to the ultimate construction of the table-land line whether this line stops at Casino or whether it goes to Grafton. If it is ever intended to give Grafton communication by rail it must go to Grafton. If it remains at Casino now, it will ultimately have to go Grafton. If the railway went from Tenterfield to Casino the same thing would have to be done as if it went to Grafton. If we determine to make the railway from Tenterfield to Casino, and people on the Clarence are to have railway communication, it must go on to Grafton, but I think the people on the table-land would be better served by some other route than the Tenterfield route.

622. Do you think it would be desirable to construct a line from Lismore to Grafton in advance of a determination to construct a line south or west of Grafton? I think the whole of the North Coast line ought to be undertaken as speedily as possible.

623. I want to know whether you think it desirable to go ahead with the present proposal, and leave the extension of it to the indefinite future, or to go ahead with the whole plan? I should go ahead with the whole plan.

624. In view of the difficulties surrounding the raising of loans, do you think the Colony would be justified in incurring the present proposed expenditure without some definite prospect of the line paying by its extension? Yes.

625. Do you, as Colonial Treasurer, think the Colony would be justified? Yes; I am a thorough believer in the North Coast Railway, and I do not believe that any line which has been made would pay better. I think the possibilities of the North Coast line are beyond our conception, and even beyond my own conception, although I know more than anybody here about the great resources of the district. I remember the time when the Manning, the Macleay, the Bellinger, the Nambucca, and the Clarence were comparatively nothing but bush. That is within the last thirty years, and now there are 100,000 people settled there, and an enormous output of various productions. If all that has been accomplished with bad bars, want of roads, and a thousand and one things that were requisite, what would be accomplished if the people had railway facilities?

626.

626. Would not the proposed railway compete seriously with existing communication by water? Probably it would; but that would not weigh with me. Hon. J. Sec, M.P.
627. If the line were constructed as you propose, do you think it would be at all able to compete with steamers in the carriage of either goods or passengers? I think the trade which would spring up between the heads of the rivers which are not reached now would be enormous, and a large amount of trade would go to other markets that would be opened up. I know that goods have gone from Grafton to Newcastle, and then been sent on to Inverell. Sugar has been taken from the Richmond or the Clarence to Sydney, and then sent on by rail to Armidale or Tenterfield. 1 Sept., 1892.
628. I suppose you recognise that the question of public finance is one that must enter very largely into the consideration of lines which would only pay prospectively? Yes.
629. Having regard to that fact, you are of opinion that the construction of this line is justifiable in the public interest? Yes. I do not expect that the North Coast Railway will be made—that is, the whole of it, under the most favourable circumstances, for the next six or seven years. This is not a very favourable time to borrow money for the construction of a railway. That is because of the crisis in the money market, which is somewhat difficult to manage just now. They do not doubt our securities; but they say that while the unrest remains money will be more difficult to borrow than it has been. We have never had any difficulty in getting any money we wanted for railways, and our railways have paid 3½ per cent., which is a pretty good sign that they have been a benefit to the Colony.
630. You spoke very strongly in favour of a line from Grafton to Glen Innes, what is your opinion of the land on the table-land? For a few miles from Glen Innes it is very good.
631. All the rest of the way to the top of the Big Hill it is worthless? Yes; it is a mountain country.
632. I am speaking of the table-land. Is it not all poor, sour stuff, between the top of the Big Hill and Glen Innes? I do not remember much about it from the Big Hill. I know that there is a great deal of good country outside the town for a few miles.
633. You are under the impression that there is a population of 2,000 between Grafton and Glen Innes? Yes, including Dalmorton.
634. Have you been there lately? I am including settlers, sawyers, timber-getters, men, women, and children.
635. You spoke of the trade on the road? Yes, before the differential rates were introduced on the railway, there were over 400 teams constantly employed on the road between Glen Innes and Grafton, and Lawrence and Tenterfield.
636. The differential rates have destroyed all that? Yes; but still wool comes down and produce goes up that way. Galvanised iron and other things sometimes go when the road is good. A great deal of the northern trade, however, is carried practically for nothing, and the differential rates apply to the bulk of carriage—flour, sugar, and so on, so that the teams cannot compete with the rivers.
637. You said that if the line from Grafton to Casino were constructed, the Upper Richmond district would use the railway to Grafton to get to a port of shipment. What would be sent along it? A great many things. They would certainly grow a large quantity of maize, and produce a large quantity of butter and cheese.
638. You mentioned Kyogle—is any maize grown there? Not now.
639. You think that if the railway were constructed they would use it? I think that if they had facilities for getting to market they would use it.
640. But some of the people along the line would be miles from the railway;—would it pay them to haul goods so many miles to a railway, and then truck them 82 miles to the port of shipment? Some of them would do that.
641. Do you know that it does not pay to cart maize 7½ miles to water-carriage on the rivers? It may not pay them, but still they do it.
642. Some of them allege that they are leaving their land idle on that account? I do not know of any farm which is idle only because they are 7½ miles from navigable water. There may be other reasons.
643. Do you think it would pay to cart maize a long distance to the railway to send it 60 or 70 miles by rail, and then to pay shipping freight on it? I think so. A great deal would depend upon the price of maize.
644. The trade you speak of from the Upper Richmond is not at present in existence, but would come into existence if the railway were constructed? Yes. There is a considerable amount of stock on the river, and probably some of it would be sent by rail.
645. But do you think it pays to truck stock for a short distance like that? It depends upon circumstances. If they wanted to ship fat stock quickly, I daresay it would pay. I do not think, however, that that would be a big factor in the traffic on this railway—not so much as in the trade from the table-land.
646. If you knew that pastoralists in the Upper Richmond district gave evidence of the fact that they would not truck cattle for so short a distance, would you esteem them to be good judges? I should, though people do not always anticipate the results that follow railway construction. Sometimes it has been said that railways, if made, would not be used for trucking stock, but where good accommodation is given, we know that they are used extensively.
647. But they are only used to deliver fat cattle at a place where slaughtering goes on, or to take them away from drought-stricken districts? That is the chief reason, I think.
648. There would be no prospect of a drought in this district causing cattle to be trucked? They never have a real drought there. They have an enormous number of rivers and creeks, and never suffer from a scarcity of water.
649. I suppose that is the best watered portion of land in the Colony? Yes. There are 8,000 miles of water-shed to the Clarence, and about 250 tributaries.
650. You are aware that there are only about 12 feet of water for steamers at Grafton wharf at present? I do not know the exact depth at present. I know that H.M.S. "Lizard" was up there not long ago.
651. You are aware that going past Lawrence she had to go dead slow on account of the shallowness? Yes.
652. In your opinion, can the difficulty of shallow water be overcome? I said that there were perhaps 5 or 6 miles of shallow water; the rest of the river is comparatively deep. The shallow parts are easily dredged. I remember when there were only 8 or 9 feet on the Elbow.
653. Has not £60,000 been spent there—three dredgings costing £20,000 each? I do not know what the

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the dredging has cost. We used to look upon it as a very dangerous place, because the turn was so sharp. The danger was twofold; first, the steamer might run into the bank; or, second, she might stick upon a flat. I have seen vessels stuck there, but not recently.

654. What do you think the line would be used for at present, if constructed? As a local line?

655. Yes? There would be a large number of passengers on the railway and a great deal of traffic from land which would be thrown open for settlement which cannot be used now. If the North Coast Railway were completed I do not think there is any railway in the country, especially with a connection between the two systems, which would give the same results.

656. Your recommendation of the scheme is largely dependent upon its extension as a part of the great North Coast line? Yes. No part of the North Coast line would, in my opinion, pay unless the whole of the line is made. The whole line, in my opinion, is indispensable, but as some part of it must be made first, I should say that any portion of it that was recommended was necessary.

657. It is on that ground that you recommend this line? I do not recommend it only as a local line, but as a national line.

658. *Mr. Collins.*] In view of the large amount of money which has been spent on the different rivers in the north, would you recommend the construction of this line to compete against those rivers? Undoubtedly I would recommend it. I think the money already spent has been spent to make the rivers more available for the trade that would be brought by rail from the interior.

659. Would not the railway take the trade away from the rivers? No; it would bring it to the rivers.

660. Do you not think it would be more advisable to make feeders to the rivers than to make a North Coast line? This line will be a feeder to the river as well as a connection with the table-land.

661. If the rivers are improved, as I suppose they will be, what traffic will there be on the railway? There will be an enormous quantity of traffic backwards and forwards to the table-land if the railway is made. An immense quantity of land will be opened up, to which there is now no access.

662. We have had a great deal of evidence from people on the North and South Richmond, who say that they will not use the line at all, but would use the Richmond in preference. How would the line pay, if they did not use it? It would not pay, but then in point of fact they travel by coach from the Richmond to the Clarence now.

663. Only a few? A very large number. Not enough to make a railway pay, but still a considerable number.

664. If the harbours are improved, they will travel by the steamers? Yes; but that trade is purely local. If the Colony was not to expand—if we had exhausted our resources, and there was no prospect of improving, I should say—Do not make the railway. The same remark would apply to all parts of the Colony.

665. You would not make the railway to serve the land between Casino and Grafton? Not entirely; though there is a great deal of good land there. It would not be justifiable to construct a railway simply to serve that land, though it would be justifiable to make it as a part of the North Coast Railway, and a connection with the table-land.

666. You are aware that many thousands of acres of land there have been abandoned by the lessees of runs? I do not know that. The leases fell in on the east coast.

667. They have abandoned a tremendous lot of land—they are not using it at all? I know as a fact that one half of the runs that fell in by the operation of the Land Act are now being used by the squatters for nothing. The reason why land is not selected is that there are no means of getting produce from it to market. It is no use for a farmer to select 640 acres of land if he cannot get his produce away from it, and such an area would not be large enough for grazing purposes. The squatter gets the use of this land without paying rent for it, because he says that it is no good to him on a short tenure.

668. *Dr. Garran.*] Supposing the red line on the map, marked as the route, instead of going direct to Grafton after it crossed the Richmond Range, were to make straight for Lawrence, and then to Grafton, would it not serve both purposes? No.

669. Why not? Because, as part of the North Coast line, it would be going out of its way to go to Lawrence. It is 40 or 50 miles from Lawrence to Casino, and from Lawrence to Grafton is, I suppose, 25 miles.

670. You can see by the line on the map that the railway as marked out is not very straight. Would it be very much further to go round by way of Lawrence? A great deal.

671. How much further? It is 82 miles from Grafton to Lismore, and 45 miles from Lawrence to Casino. It would be almost as much from Lawrence to Lismore as from Grafton to Lismore.

672. How much would it extend the line? Twenty miles at least.

673. You do not think that that would be a practicable route? I do not think it would be any good, and certainly as a North Coast line it would not pay. You would have two rivers to cross from Lawrence—the North and South Arms, and that would obstruct navigation.

674. You said you thought that the line from Grafton to Casino would be a great help to settlers on the Upper Richmond. Where do they ship their produce now? I do not think there is much land there occupied. I suppose they ship at Casino.

675. Do they get their stores there? I suppose so. Some would probably go from Lawrence. There is a road from Lawrence to Tenterfield.

676. Where would they head the proposed railway? Between Casino and Grafton and above Casino.

677. Practically they would come to the same place as they come to now? Those nearest to Casino.

678. They would have a railway to Grafton as well as the Richmond River navigation? I have already said that the South Arm of the Richmond from Casino is blocked up.

679. They would have a better river in addition to the railway? Yes.

680. When the river was available they could use it, and when it was not available they could send to Grafton and use the Clarence? Yes.

681. They would use the Richmond when it was available? I suppose they would.

682. The railway would only take their produce when the Richmond was not available? That I do not know. It would depend entirely upon the relative freight. The more difficult navigation is the higher the rates are.

683. The line of railway from Grafton to Casino would compete to a certain extent with the river navigation to the Richmond? Possibly it would; but on the other hand it would establish an independent trade. I think there is sufficient good land along the line of railway to feed the railway. 684.

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684. So far as the settlers on the North Richmond are concerned they would still send their produce by river unless it paid them to send it by rail? Yes. I think the bulk of the people who use the river now are below Casino, on the sea side of it.
685. You think the nearest point on the railway would be somewhere between Casino and the Richmond Range? Yes; there are not many settlers above Casino.
686. Where does Tabulam get its produce from? They do not do much there. It used to be a town on the line of road from Tenterfield to Lawrence in the old team days, and it is a centre for stations. There are a number of diggers there.
687. Was it not a centre for diggers? Yes.
688. Where did they get their stores from? Lawrence chiefly.
689. Not from Casino? Lately there has been an effort to get things from Casino, but the bulk of the stores used to come from Lawrence. In point of fact, although Casino was nearer to Tenterfield than Lawrence is, Lawrence has always been the depôt, which proves that it is the natural depôt for that part of the country.
690. Casino is not much of a depôt? No.
691. It never has been? No.
692. Would the railway make it one? I do not think so. You might force the trade there, but all things being equal the trade of the table-land has gone from the Clarence, notwithstanding what has been said about the facilities afforded by the Richmond. I know that recently an effort was made to make Casino a depôt for Tenterfield, but it soon died out.
693. You give as a reason for making this line that it would stimulate the growth of maize? Yes; I believe that there are large quantities of land where maize would be grown.
694. How is the market at present? It is selling well.
695. Has the market been glutted? Yes.
696. Is there any inducement to go in for maize? If it brings 3s. 6d. to 4s. it is a good crop—it can be used to feed pigs, and nothing pays better than they do. Barley, pumpkins, pig farming and poultry are, I suppose, the best things they can go in for. It is generally understood that eggs and poultry will pay for the feed of a family.
697. Is there much inducement to go in for maize? A good deal. I think if you were to travel about the country you would find that no farmers were better off than the maize farmers.
698. Is there much demand for oats? There was a greater demand a little while ago than there is now. When a larger number of railway works were going on, most of the horses being used were New Zealand horses. Horses are very much like men, and whatever they are most accustomed to eat they like best. If you bring up a horse on oats, he will not take maize, and *vice versa*. These horses coming from New Zealand created a great demand for oats, and besides that, we had one or two droughts. Usually there is not a big demand for oats, except for carriage horses.
699. Is there a free market for oats? A large quantity of oaten hay is used.
700. There is a better market for hay than for grain? A combination will pay.
701. Would the hay have to be sent to Sydney? A good deal is consumed locally.
702. In the country itself? Yes. A great quantity of chaff is, in certain seasons of the year, sent from Sydney to these rivers.
703. When you speak of the railway stimulating the occupation of the land, where do you think the market for the production will be? Some will come to Sydney, and some will supply local demand. Everything helps in farming. I do not think that oat-growing should be taken by itself as sufficient, because pig farming, horse breeding, cattle rearing, and dairying all helps. New impetus has been given to dairying by reason of the separators and the cooling chambers, which have come into use.
704. Do you think that the people along the railway could compete in growing produce with the farmers in the Big Scrub, or the Richmond? I do, because they could occupy a larger area.
705. But 1 acre there is equal to 10 acres here? Yes; but it would cost ten times as much to clear. An acre of land on the Big Scrub would cost £10. If you can buy 10 acres already cleared for the price of 1 acre and get the same results, you might just as well have 10 acres as 1. Of course, if a man could grow as much off 40 acres as off 400 he had better farm forty, but in the matter of grazing it would not make much difference.
706. Do you think there is much of a market for fruit there? There would be in Sydney.
707. Do you think people there would be able to compete with those who are growing fruit in other parts of the country? I think so, because the freights from the Clarence are very much cheaper than they were.
708. They would have to pay railway freight and then water freight? I admit that that is something to be considered, but they would not be in a worse position than many others. We bring produce from the Clarence for about 12s. 6d. a ton, and if you add 5s. 6d. railway freight to that it would only bring the cost up to 18s.
709. You are twenty-four hours on the passage? Yes; but if we had proper cooling chambers and appliances, as we should have, that would not matter.
710. Would you take the freight you mention in chilled chambers? I think so.
711. You would not charge any more? No. It would not be expensive as long as we could get plenty of freight. If the Company could be insured a certain freight they could do it almost as cheaply as they can now.
712. Do you look forward to carrying butter and fruit in chilled chambers? Yes.
713. Without any marked increase in rates? Yes. The tendency on all these rivers has been for freight to lower. The greater the facilities given for navigation the cheaper the freights and rates of passage per ton.
714. Can you find a market for the produce the steamers bring down? A market has always been found for them.
715. At present your ships go half loaded very often from the Clarence and the Richmond? We do not know of it.
716. A previous Committee was told at one time that there were more steamers in the trade than there was trade for? I always have trade for my ships. I would not run a steamer if I could not fill her. If I could do the work with two steamers instead of with three I should only have two. The evidence you

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are thinking of was given at a time when there was very severe competition between another Company and myself, and that compelled me to take what steps I could to obtain freight. I was a very large purchaser, mainly to get freight for my ships, and no doubt that dispossessed the other Company of some of the freight which they otherwise would have had. Now, however, there is an altered state of things. We have amalgamated, and the first step we took after our amalgamation was to reduce our freights 15 or 20 per cent. all round. I quite recollect the sense of your examination of another witness on the occasion you refer to.

717. Have the number of boats been reduced since the amalgamation? Yes.

718. Do you run each boat now more profitably than you did? We are running three steamers in the trade now, where formerly we had four, but they are larger than the others were. The "Kallatina" carries half as much more as any of the others.

719. Then really the accommodation has not been diminished? No.

720. Has Casino ever had a good road to Tabulam? I could not say.

721. Has there been a better road from Tabulam to Lawrence? It is one of the main roads.

722. Would not that be a reason why the trade has gone to Lawrence? Probably; but the trade has always gone that way. We used to carry stuff there for Tenterfield and the intermediate places.

723. But by mere distance Tabulam is nearer Casino than Lawrence is? Yes.

724. With equally good roads, and if you could get away from Casino by water, the traffic would go there? Yes; undoubtedly.

725. You spoke of this line catching the trade of the Upper Richmond. I do not understand you to pretend that it would carry the trade of the Lower Richmond? No.

726. Nothing lower than Coraki would come to this line? No.

727. Nothing below Casino itself? I should not think so. Passengers might.

728. Freight would all go by the river below Casino? Wherever the largest steamer runs and the best facilities are given, passengers go.

729. You are aware that there are three separate lines before the Committee—from Tenterfield to the Richmond, from Glen Innes to Grafton *via* Newton-Boyd, and from Grafton to the table-land lower down;—are you in a position to tell the Committee whether the Government have decided to adopt any of these? They have not.

730. The mode of communication between the table-land and the coast has not been settled as a matter of policy? No.

731. Supposing it should turn out that the line from Tenterfield to Casino is the best, and the route that should be adopted, would that diminish the justification for the immediate making of this line? No; because, unless they had a connection with Casino, they would not have any advantage at all, assuming that that is understood to be the better route. The Clarence could not have communication with the table-land unless it had communication with Casino.

732. Supposing the Don Dorrigo line were adopted, would that diminish the justification for this line? No; because the Richmond people would want communication with the south. At whatever point the connection was made the construction of this line would be justifiable.

733. As part of the coast line, would it not be more natural to begin at the south and work north than to begin at the north? No; we have already begun at the north.

734. But that is a local line, the main object of which was to give an opening to the Big Scrub? Yes; but it was also carried out as part of the North Coast line.

735. The crying want of the district was, that although it had the best land in the Colony, it could not get to market? That was the most urgent need.

736. The line was made primarily as a local line? I cannot say what the object of the Committee was in recommending it; but I looked upon it as more urgent, as part of the North Coast Railway.

737. But it is not usual to begin a line at the most distant end? My idea is that it ought to have been commenced at both ends at once.

738. You would not begin a line from Bourke to Sydney at Bourke? I say that you should begin at both ends, because the line is required. I say that it is necessary to open up the Woolgoolga country. It is as necessary that those people should have railway communication as that the people in the Big Scrub should have railway communication. There is as much good land in one place as in the other, and it is necessary that it should be opened up.

739. Are there not more settlers in the Big Scrub than in the Orara? Possibly; but I know that on the Upper Orara there are hundreds of settlers who are languishing, not for the want of land, but for the want of means to get their produce to market.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

RAILWAY FROM GRAFTON TO LISMORE.

REPORT.

1. Mr. E. W. O'Sullivan, M.P. (Chairman), The Hon. John Davies, C.M.G., M.L.C., and Messrs. J. C. Neild and C. Collins, M.'sP., the Sectional Committee appointed to take evidence upon the proposed line of railway from Grafton to Lismore, discovered as they proceeded with their work that it was impossible to come to a satisfactory decision, if the proposal were to be treated merely as one for a local line between the two towns mentioned. They, therefore, deemed it to be their duty to inquire into the principal side issues which were raised during their investigation. The claims of the residents of the Clarence that their river was the only possible port for the districts to the north of it; the equally strong assertions of the residents of the Richmond that their river would prove the best port, if the entrance were improved; the statements of its advocates that Byron Bay would render either the Clarence or the Richmond River harbours unnecessary; the merits of the North Coast line; the connection with the table-land of New England, *via* Tenterfield or Glen Innes; the influence of the proposed line from Grafton to Guyra, *via* Don Dorrigo scrub; the service to the Upper Richmond district, the rival proposals for railways from Casino to Lawrence, from Lismore to Maclean, *via* Coraki, and from Woodburn to Maclean or Iluka—were all matters which had to be taken into account by the Committee in framing their report. The Sectional Committee were strengthened in their belief that the course they proposed to take was the correct one by the statements made by Mr. Barling, Under Secretary for Public Works, when giving evidence on the proposed line of railway before the General Committee on 14th June, 1892. In that evidence Mr. Barling showed clearly that it is the ultimate intention of the Secretary for Public Works to place before Parliament proposals for certain sections of the North Coast Railway, and that surveyors were already at work preparing for such a line in the country between Taree and Kempsey and Kempsey and Glenreagh. Indeed, Mr. Barling made it clear that the Minister desired the Parliamentary Standing Committee on Public Works to consider the proposal not as a line from Grafton to Lismore, but as part of a great system which has weighty claims for mature consideration. Under these circumstances, the Sectional Committee felt that the complicated question confided to them could only be decided by a searching inquiry into the various aspects of the case, and they therefore proceeded to those localities where the best evidence on the disputed points could be obtained.

2. The Sectional Committee left Sydney on Thursday, 14th July, 1892, and proceeded to Glen Innes, where the evidence of Messrs. J. F. Utz and W. G. Cameron, the two leading storekeepers, was taken as to the prospect of a trade with the Richmond River districts, *via* Grafton. The next day the Committee started for Grafton, resting for the night at Newton Boyd. Here two of the residents were examined, the chief fact brought out being that a revival in gold-mining had taken place at Dalmorton. On July 17th, Grafton was reached, *via* Dalmorton, where the Sectional Committee learned that the statements as to a revival in gold-mining were correct, there being 150 miners at work in the locality. On Monday, 18th July, the sittings of the Committee at Grafton were commenced. Mr. P. R. Donaldson, the District Surveyor, testified to a large increase in the area of settlement

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in the country between Grafton and Lismore, since the leaseholds were thrown open in 1890, no less than 93,141 acres having been taken up there. Mr. O. Lloyd, C.E., who has recently been employed in revising the surveys of the proposed line between Grafton and Lismore, expressed the opinion that, irrespective of the bridge across the Richmond River at Casino, it could be constructed for £6,000 per mile, which is £2,000 per mile less than the departmental estimate, which includes the bridge referred to. He also stated that there was an abundance of ironbark and spotted-gum trees, as well as ballast, on the proposed line. At the request of the Committee, Mr. Lloyd afterwards went over the line, and was re-examined at Casino, where he stated that he then believed the line might be made for £5,000 per mile. Among the other witnesses examined was Mr. T. Bawden, formerly Member for the Clarence district in the Legislative Assembly. He delivered a very able and elaborate statement of the claims of the Clarence district to communication with the table-land, giving the preference to the Glen Innes route. He would not, however, recommend the proposed line as other than portion of a national system of railways. He submitted that not only is the Clarence the natural port of the districts inland of it, but also as a port it is the best on the north coast, and when the complete scheme of improvements now in hand is carried out it will be second only to Port Jackson. Further, its situation is central as regards the North Coast districts, and to be reached from every part of the table-land by a shorter average length for haulage from a central point on the Great Northern Railway than any other port, present or prospective, on the North Coast or elsewhere. In dealing with a scheme of railway construction for the North Coast districts, he contended that the Macleay River district had a right to be considered. It was important that all the North Coast districts should be connected with the existing railway system by the shortest length of line, and in such a manner as would confer the greatest benefit upon the districts on the coast, as well as upon the districts on the table-land. This would be effected by connecting the Macleay district with the Clarence and Glen Innes by rail. Mr. Bawden also suggested that a branch line of railway should be run from the Flying Horse (a point about 20 miles on the Grafton-Lismore route) to Lawrence on the Clarence River, where deep water would always be assured for over sea ships. Mr. Samuel See also gave valuable evidence as to the products of the district and the probability of the Clarence being required as a port for the districts to the north. He, however, preferred the Don Dorrigo and Llangothlin line as the best route to the table-land. He also contended that good mineral lands would be opened up by the proposed railway. It was shown by Mr. S. See and other witnesses that the Clarence district was now producing two crops of potatoes per annum; that the cultivation of sugar and maize had largely increased; and that tobacco, tea, coffee, cotton, arrowroot, and all sub-tropical fruits were grown in the district. Oranges, bananas, and lemons are especially abundant, but there appears to be no satisfactory market for them with the facilities at present afforded. It was also stated that there were a few abandoned runs in the upper Clarence district. Mr. W. H. Waterhouse described the timber resources of the district, and stated that there had been until recently a considerable exportation to the other colonies. Mr. H. Maurice and Mr. W. A. Manning gave evidence as to the superior quality of the land to the south of Grafton, towards Orara and Don Dorrigo, where splendid timbers were said to abound. During the first day's sitting Mr. T. Page gave the statistics of the district, showing that there had been an increase in almost every particular during the past few years. The electoral returns for Grafton, however, produced by the police, indicated a decrease of population. The Hon. T. H. Smith, M.L.C., of Gordon Brook, stated that part of the land traversed by the proposed railway was good to inferior, and that the construction of the work would make it worth £2 per acre. Other witnesses placed the value at £5, and they varied as to its carrying capacity per acre. The land was said to be suitable for the growth of English barley, maize, and vines. There were also valuable timbers on the route. The sub-collector of Customs gave evidence as to the trade of Grafton, and related his experience with regard to the marked change effected by the improvement of bar-harbours.

3. On 19th July, after visiting at Harwood the large mill of the Colonial Sugar Refining Company, the Committee proceeded to the Clarence River Heads and inspected the breakwater and training-walls. The evidence of Pilot M'Auley

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and Mr. M. L. M'Lean, officer in charge of harbour improvements, was taken at the Pilot Station. The pilot showed from his record of soundings that there had been a depth varying from 13 feet to 19 feet on the bar at high water from September, 1891, until March, 1892, and stated that the Clarence River was now a comparatively safe port to enter. He was of opinion that the recent floods had made a deeper and better channel. Mr. M'Lean, after corroborating Pilot M'Auley, expressed the belief that a depth of 24 feet could be obtained permanently when that portion of Sir John Coode's scheme, recommended by the previous Public Works Committee, was carried out. He also stated his belief that the modified works would be quite as effective for practical purposes as the full scheme designed by Sir John Coode.

4. The Sectional Committee then went up the Clarence to Chatsworth, where they rested for the night, after taking the evidence of several witnesses. Mr. A. Loban, inspector of schools for the districts between Port Macquarie and the Tweed, gave a general description of the various localities likely to be affected by the proposed railway, and expressed unbounded confidence in the prosperity and resources of the Clarence district. He said there were eighty-six schools in the Clarence Valley and 87 in the Richmond River district. Wm. Neill, coach proprietor, testified to the existence of a considerable passenger traffic between Chatsworth and Woodburn, on the Richmond River. Mr. J. Reid, and other witnesses, spoke of the resources of the neighbourhood, but admitted that there were some abandoned runs in the country, between the Clarence and the Richmond.

5. On 20th July the Sectional Committee called at Maclean, *en route* to Grafton. Here they took the evidence of Messrs. D. See, S. M'Naughtan, D. Shearer, J. M'Millan, W. A. Folbigg, and J. Bale, the general purport of their testimony being that Maclean was in a sound and prosperous condition. Some of the witnesses would approve of the proposed line of railway if it were to form portion of a North Coast line; but if it were proposed only to connect the two rivers then a line from Coraki to Maclean would offer superior facilities to those afforded by the Grafton-Lismore route.

6. Proceeding to Lawrence, *via* the South Arm, the Sectional Committee took the evidence of Messrs. W. McPherson, G. Davidson, T. T. Bawden, junr., and others, who all favoured the proposed line between Grafton and Lismore. They stated that the agitation for a line from Casino to Lawrence had been abandoned by all but one resident. Mr. Bailey, one of the witnesses, stated that he had taken up a selection at Myrtle Creek, on the proposed line, and other residents had done the same. Some of the witnesses stated that on the proposed line there was good timber, consisting of ironbark, mahogany, blood-wood, tallow-wood, &c.

7. On July 21st the Committee resumed the taking of evidence at Grafton, and among the witnesses was Mr. Clarke, the Warden of the district, who gave statistics showing the increase which had taken place in mining. Mr. E. Shiels, an advocate of the Lawrence-Casino route, forwarded a letter to the Committee, stating that there were flats in the river just above Lawrence, upon which £60,000 had been spent in dredging, and that H. M. S. "Lizard" had to be taken up the river very slowly during the recent visit of Lord Jersey to Grafton. Evidence rebutting these statements was subsequently given by Mr. S. See.

8. On 22nd July, the Committee proceeded to Copmanhurst, on the Upper Clarence, where they saw some magnificent agricultural soil. Maize and cattle appeared to be the chief products of the locality. On the return journey the Committee went up the Orara River to Ramornie, where the evidence of Mr. Tindall, the manager of the station and meat preserving works, was taken. The figures adduced show that a considerable trade in preserved meats, hides, &c., is carried on with Great Britain, by way of Grafton and Sydney.

9. On July 23, the Committee concluded the taking of evidence at Grafton, and on Sunday, July 24, proceeded along the proposed line of railway to Travellers' Rest, and thence to Myrtle Creek. Here the Committee took evidence early the following morning, and were shown some samples of sugar-cane, root crops, maize, vegetables, &c., grown in the neighbourhood. The statements of Messrs. Woolnough, Olive, and others, went to show that there was a considerable amount of settlement

settlement in the vicinity of Myrtle and Myall Creeks, although cultivation was not carried on to any great extent. The selectors appeared to obtain their living chiefly by grazing. The Committee then concluded their journey to Casino. There was seen abundance of ironbark, spotted-gum, and other valuable timbers *en route*, but the land seemed to be of an inferior character, interspersed with a few moderately good patches. The country is undulating for the first 20 miles. Then several low hills are met with, and the remainder of the route is almost a dead level. Looking at the country from an engineering point of view there appeared little doubt that the estimate of £8,000 per mile is too high, and the Committee believe that the statement of Mr. Lloyd, as to the possibility of constructing the line for £5,000 per mile, will be borne out by results if it should be decided to adopt the route referred to.

10. The Sectional Committee commenced their sittings at Casino on Monday, 25th July. From the evidence it was at once apparent that there was a stronger desire on the part of residents of the Upper Richmond for connection with the table-land, *via* Tenterfield, than for connection with Grafton. Mr. F. Crouch, formerly M.P. for the electorate and a leading storekeeper in Casino for some years, was of opinion that the line should be brought from Casino to Lismore and then taken on to Tenterfield. He explained the difficulties under which business men in Casino laboured in getting their stores from Sydney. Owing to the obstruction to navigation on the south arm of the Richmond River goods are brought as far as Coraki in ocean steamers; thence they are taken to Irvington by droghers, and then conveyed in drays to Casino. Mr. Crouch pointed out the rich character of the soil on the Upper Richmond, and explained the nature of the trade done from Casino. He thought the line from Lismore to Grafton might be constructed as a portion of the North Coast line. Mr. Clark Irving, grazier, proprietor of Tomki Station, about 5 miles from Casino, said that a few runs had been abandoned in the district owing to the high rents placed upon them. No sheep were grazed in the district beyond those required for local consumption. The value of land for stock was from £1 to £3 per acre; for agriculture £10, if cleared. He is successfully working a cheese and butter factory, and there were others in the district. A large number of cattle were consumed on the rivers, and some were sent to Tenterfield. Six acres were required to feed a beast on unimproved land, and 4 acres to a beast on improved land. Mr. R. Page, Mayor of Casino, stated that there had been a substantial increase in commerce and production since the visit of the last Sectional Committee, though the district had been persistently neglected by the Government. A number of passengers went from Casino to the Clarence, as there was more certainty about the entrance, and the steamers trading there gave better accommodation. He strongly favoured the connection with the table-land *via* Tenterfield, and contended that such a route would be most advantageous to the district, as well as give a shorter line to Brisbane. A charge of 5s. per ton was made by the carters who brought the goods from Irvington to Casino. Mr. E. Y. Harrison, dredge master, stated that a dredge had to be continually employed to keep the South Arm, near Irvington, clear of obstructions. Mr. D. Campbell, grazier, of Broughton Station, said there was abundance of clover, perennial, rye, and cocksfoot in the district. Cattle had been driven to Lawrence, on the Clarence, for shipment. There were a number of large cattle stations in the district. Pending the construction of a line to the table-land, cultivation was not carried on to a large extent. Sugar and maize could be grown in the neighbourhood. The proposed line would be of no use to the Richmond district, as the people desired to be connected with the Northern Railway. Other witnesses testified to the fact that Casino is the centre of a considerable trade in the Upper Richmond River districts, and that the connection with the table-land, *via* Tenterfield was highly desirable. In fact, there was a general concensus of opinion in favour of the route referred to. F. B. Gully, also a large storekeeper of Casino, in his testimony stated that many passengers for Sydney from the Upper Richmond, went *via* Lawrence, or the Clarence, and others proceeded to the metropolis by way of Tenterfield. Formerly the district did a considerable trade with Adelaide, Melbourne, Sydney, and even Noumea (New Caledonia). He also dwelt upon the inconvenience the business men of Casino were subjected to through the impediments to navigation in the south arm of the Richmond, and named a number of centres with which Casino traded to the west and north-west, such as Tabulam, Drake, Pretty Gully, Tooloom,

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Sandy Creek, Deep Creek, and Myall and Myrtle Creeks. There was splendid timber still in the Sandilands and other ranges near Casino. M. C. Pennefather, surveyor, deposed that there was excellent land in the Upper Richmond district. It was better fitted for agriculture than grazing, though it was mainly used for the latter. The land between Casino and Lismore was also well fitted for agriculture.

11. On Wednesday, 27th July, the Committee proceeded to Runnymede station, in the Upper Richmond district, and saw some magnificent agricultural soil *en route*. They held a sitting at the station, at which the evidence of Mr. C. Edwards, the proprietor, and Mr. R. Walters, selector and road contractor, was taken. The testimony adduced went to show that there was a small amount of settlement going on, but that the selectors were undergoing a severe trial. The land was principally used for cattle-raising. Some splendid logs of pine were observed on bullock waggons on the way up and down, and this was stated to be the produce of the ranges to the north-west. The roads were merely tracks across black mud.

12. The Sectional Committee arrived at Lismore on 28th July, and before proceeding to Coraki and Ballina took the evidence of two witnesses. The Very Rev. J. J. Doyle, D.D., Roman Catholic Bishop of Grafton, testified to the steady progress of the districts of the Richmond during the last ten years, and was of opinion that the State would be justified in constructing a railway from Grafton to Lismore as a section of the North Coast railway. Mr. F. A. Ridley, land agent, stated that the greater portion of the land in the vicinity of the Richmond River was under cultivation, growing cane and maize, and was valued at an average of £5 per acre. A great number of the settlers holding the richest land were in difficulties. Many who took up land knew nothing of farming, while others took up more land than they wanted to farm, and held it for speculative purposes, but it had proved ruinous to many. A large number of the landholders were mortgaged to the banks and storekeepers. In consequence of the statements made by the last witness, regarding the financial condition of the farmers in the district, the Committee, on their return to Lismore on 1st August, took the evidence of a large number of agriculturists, who carry on operations over a wide area of the Richmond River district. Mr. A. Johnston of Eureka, stated that he had been dairy-farming for ten years, and during the last two years had been a member of a co-operative dairy company. Several such companies had lately been established in the district, and had proved highly successful. The position of all the dairy-farmers in his district was improving. Mr. A. C. Alcorn of Newrybar, said, that he had also made dairy-farming a thorough success. Mr. H. Strong of Rous, had 120 acres under sugar-cane, and was increasing the area of that crop every year. It was a paying one, and he had bettered his position by coming to the district. The sugar-planters generally were improving themselves, and although there had been some failures, he did not know one practical farmer who had been unsuccessful. Mr. J. Ball of Gunderimba, cultivated 50 acres of cane and 20 of maize, from which he made a good living. Twenty acres similarly cultivated would support a family of four or five persons. Mr. R. Campbell of Byron Bay, stated that he owned 640 acres, portion of which he cultivated, but most of it was used for dairying. Byron Bay was used by himself and neighbours for shipping produce, and was very satisfactory. There was not much Crown land in the neighbourhood available for sale as most of it was in reserves; but many private holders would be ready to part with portions of their selections if the law would permit. In several cases farmers found that they had selected too large an area. Mr. K. M'Pherson, Wyrallah, cultivated 50 acres of sugar-cane and found he was able to make it pay. Cane was the most profitable crop in the district, and all the cane growers of his acquaintance were in a sound financial condition. Mr. J. Barrie, Mayor of Lismore, stated that the population of the town and district was rapidly increasing. In too many cases people had taken up larger areas of land than they had capital to utilise. Forty acres of land under sugar-cane was ample for any family. The district would be permanently and profitably occupied if means of communication were given by the construction of harbour works and the extension of the railway from Lismore to Casino and thence to Tenterfield. He could not see that any benefit would be conferred upon the Richmond River district by taking the railway beyond Casino to Grafton. Several other witnesses gave evidence to the same effect.

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13. On the afternoon of 28th July, the Sectional Committee proceeded to Coraki, down the North Arm in the launch "Unara." They sat in the evening at the "Palace Hotel." Mr. W. Yabsley, one of the pioneers of Coraki, and a saw-miller and grazier, produced a plan for a rival route to the Clarence. The route proposed was from Lismore, running down the west side of the North Arm to Codrington; then crossing the South Arm it proceeds to Coraki, and on to Maclean *via* Mooneebar. It was claimed that this would give a better service than that from Casino to Grafton, and would run through coal-bearing country and more settlement. There was still abundance of good timber on Bungawallbin Creek, which would also be served by the proposed rival route. Mr. C. J. McRae, storekeeper, considered that the line from Grafton to Lismore would not benefit the Lower Richmond, and that the Coraki-Maclean route was the best to connect the two rivers. Everything was to be gained by tapping the table-land *via* Tenterfield. He also gave some valuable testimony with regard to the shipping of the Richmond River and the products sent from there. There had been fifty-eight steamers and eleven schooners noted as having arrived from 26th April to 26th July this year. Thirty-three per cent. of this commerce was done from Coraki. Potatoes, chaff, hay, and pollard had been imported from Sydney. He thought the depression in the district had been caused by men of small capital occupying the lands too freely and taking up large areas; but most of the settlers would retreive themselves. Mr. James Stocks thought the advocates of the North Coast Line should be called upon to give good reasons for their proposal. It was a line for defence purposes. They could ship all the year round from the Richmond, and Byron Bay was also available, though it was an open roadstead. Mr. Stocks and others gave information of a useful character.

14. Early on the morning of 29th July, the Sectional Committee left Coraki by the steam launch for Ballina, calling at and inspecting the Colonial Sugar Company's splendid mill at Broadwater. At Woodburn took the evidence of Mr. W. Gollan, farmer and sugar manufacturer, who stated that the town and district had progressed very rapidly during the last seven or eight years. A large number of people came from Lismore and Ballina to take the coach from Woodburn to Chatsworth, on the Clarence, in order to catch the steamers from Grafton to Sydney. They took this route because of the uncertainty of the steamers being able to cross the bar at the entrance to the Richmond River. Mr. J. Betteridge, coach proprietor, stated that from Woodburn there was one coach per day to Chatsworth and one to Harwood, both running the same road. There were about eighteen passengers per week each way. The Committee called at Wardell, and then proceeded to the Richmond River Heads to inspect the harbour improvement works in progress there. They were joined at Ballina by Mr. T. W. Keele, the officer in charge of works. The launch "Unara" grounded upon the crossing, but the delay was only of a temporary character. The Sectional Committee sat in the Court-house in the afternoon and evening. Mr. Keele, the officer referred to, stated that he had been three years in the district, and since his arrival a great change for the better had taken place in the channel. It had shifted bodily to the southward and was more direct in its course. He believed the works already constructed had something to do with the change. The total cost of Sir John Code's scheme was £336,350, of which £58,000 only had been expended. Of the northern work 1,430 feet had been carried out; of the southern training wall, 2,050 feet. It would take seven or eight years to complete the works; but a great deal would depend upon the manner in which the plant was supplied. He was hampered in his operations for want of punts. The completion of the first section of the works would give 12 feet, and the complete work, 17 feet of water at low tide. It was possible that the Richmond would yet become a port for over-sea vessels of 3,000 tons. He considered Byron Bay at present to be an unsuitable place for loading and unloading in bad weather from east and south-east. The construction of Mr. Darley's breakwater would alter this. Pilot Fraser, who has held his post for two and a half years, considered that the Richmond entrance would soon be as good as Newcastle. The previous evening a vessel called the "Cairo" had been taken in after dark. There was a subsidised tug and a private tug at the entrance. When the bar was bad vessels could only take part cargoes. This was often the case with the "Tomki," "Coraki," "Oakleigh," and other steamers. He also produced a record of the soundings for the

the last twelve months, showing that the greatest depth had been 12 feet, and the lowest 7 feet 6 inches. The average depth was 8 feet 6 inches. Captain T. Fenwick, a resident of Ballina, and owner of the subsidised tug and several other steamers, took a somewhat pessimistic view of the trade of the Richmond. Formerly there had been forty sailing vessels trading there; now there were only eight. There were five steamers permanently employed in the trade. They could not always get cargo, and some went out in ballast. He thought one steamer could do all the work. The sailing vessels took most of the sugar, and there was not maize enough grown to to feed the local horses. Formerly there was a considerable trade in timber, but the foreign timber had destroyed it. He received £1,800 per annum as subsidy for his tug, and there was also a charge of 4d. per ton. He would not continue to work his tug, if the subsidy was stopped. Ex-Pilot G. Easton said he had been pilot at the Richmond Heads for thirty-three years, and was of opinion that the channel was much better now than it used to be. The channel had gone straight once before the works were commenced, but he considered that the improvement was due to them. There had only been one loss of life at Richmond Heads, though several wrecks had occurred there. The wrecks were not caused by the shallow water on the bar, but through temerity or carelessness. The timber trade had fallen off, because the cedar was not so accessible now as it used to be. It was felled in the ranges and left in the creeks till a fresh floated it down. Mr. E. Ross, J.P., considered the future of the port depended upon the improvements. Mr. W. Jones, master of the dredge employed at Ballina, considered the Richmond River entrance would become a second Newcastle. Mr. T. Temperley, journalist, and late Inspector of Fisheries, gave useful information with regard to the falling off in the timber trade and other matters. He held that the northern breakwater was responsible for the blocking of the channel which occurred some time ago. Mr. R. B. Jones, journalist, and clerk to Captain T. Fenwick, said the exports were now 300 per cent. larger than they were seven years ago. The district seven years ago imported butter, but dairying on the co-operative plan had proved a great success, and butter was now largely exported. Owing to the numerous insolvencies of small millers, the sugar-planters have no confidence in any other purchasers than the Colonial Sugar Company. The timber trade was depressed, but maize cultivation was increasing. To show the safety of the entrance he stated that a sailing vessel, the "Amphitrite," had made thirty-eight trips to Sydney in three years. The "Daphne" had made eight trips from October to June. The steamer "Tomki" had made nine round trips to Sydney in nine weeks. Passengers to Sydney went from Ballina to the Clarence because there was better accommodation on the steamers leaving the latter river. There was one vessel trading between the Richmond and the Clarence, but she only took molasses to the Colonial Sugar Company's distillery at Harwood. Mr. Keele, on being recalled, stated that the jetty at Byron Bay was 1310 feet long, and there was a depth of 19 feet at the end. He had the utmost confidence in Mr Darley's scheme for a breakwater there at a cost of £242,000; when that was completed there would be a depth of 24 feet, and 500 acres of water available as a harbour.

15. The Committee left Ballina on the morning of 30th July for Lismore, and took evidence on the way at Alstonville. Mr. C. H. Staff, a farmer at Rous, stated that he cultivated 200 acres, and found that cane-growing on the high land, away from the banks of the river, was successful. Rous was the centre of what was becoming a great cane-growing district. There was a sugar-mill at Rous, formerly owned by a company, but now carried on by Mr. A. Bennet. It was not a fact that many of the landholders in his neighbourhood were heavily mortgaged. They were all in a fairly prosperous condition. Dairying and cane-growing were combined to a large extent, and proved successful. Mr. R. Gibson, dairy-farmer, Alstonville, had been dairying for five or six years, and made it pay. He sold his milk to the Springhill co-operative factory. He did not think there were four farmers about Alstonville who were mortgaged in any way.

16. The Committee took a large amount of evidence at Lismore on Monday, 1st August. A summary of the statements made by the witnesses has already been given in paragraph 12. On Tuesday morning the Committee proceeded to Byron Bay *via* Bexhill, Clunes, and Eureka. It was observed that the soil had been well cultivated

cultivated in these localities, although here and there were seen selections on which the timber had been felled, and the holdings apparently abandoned. When approaching Byron Bay several large dairy-farms were passed. The soil along the whole route was of very rich quality. On arrival at Byron Bay the Committee inspected the jetty and site of the proposed harbour works. In the evening evidence was taken respecting the progress already made in the town and district of Byron Bay, and especially with regard to the capabilities of Byron Bay as a shipping port. Captain French, of the s.s. "Tweed," said he had been trading to Byron Bay for about two years, and his steamer made regular weekly trips there. Three steamers called at Byron Bay regularly. He experienced no difficulty in loading and unloading cargo at the jetty. He had only once been prevented from loading or unloading in fourteen months, and that was caused by a heavy north-east gale and heavy sea. Even without a breakwater he was of opinion that Byron Bay was a safe harbour in moderate weather. If a breakwater were constructed it would become a harbour of importance. Mr. J. Hoeguard, wharfinger, stated that during the three years he had filled that position, the traffic over the jetty at Byron Bay had increased tenfold. A great deal of the extra shipping and traffic was owing to the landing of contractors' plant, but there was a large increase of ordinary traffic, and the exports had doubled. Occasionally vessels were placed in jeopardy when bad weather set in. No material delay was caused by the weather in the shipment or landing of goods. Byron Bay was far superior to Richmond River as a harbour, so far as the detention of vessels was concerned. Since 1st January, 1892, seventy-eight vessels had entered the bay, bringing 3,744 tons of cargo and 284 passengers. The exports were not nearly so large. Mr. D. Jarman gave evidence as to the rapid increase in the population of the town and value of landed property. A half-acre allotment was sold six years ago for £60. That land had been sold lately for £500. Mr. D. E. McDonald, C.E., in the employ of Mr. Danaher, railway contractor, stated that all the railway plant had been landed safely at Byron Bay. He had had fourteen years experience of marine works, and had given considerable attention to the question of improving Byron Bay. He submitted to the Committee a sketch plan of a proposal to extend a breakwater from Cape Byron to the Juan and Julia Rocks. He contended that his proposal would give greater security to shipping in south-easterly gales than would be afforded by Mr. Darley's proposal. There would be from 50 feet to 60 feet of water inside the breakwater. The cost of his proposed scheme would be less than £1,000,000. Mr. G. M'Lean, storekeeper and grazier, gave evidence as to the large increase of dairy-farming in the district during the last three years. Mr. J. B. Kelly, licensed surveyor and farmer, stated that two years ago there were not more than twenty houses in the town. Now substantial premises were going up in all directions. At least 100 people had come lately to Byron Bay from Sydney and Brisbane, and they stated that they intended to reside in the town permanently. The present population of the township was about 500, and about 200 were likely to be permanent residents. It was expected that the railway would be open for traffic in two years, and in anticipation of that event many farmers were planting sugar-cane. Mr. T. W. Keele, C.E., was recalled, and stated that since he gave evidence at Ballina he had inspected the jetty and site of the proposed works at Byron Bay. He had lately received instructions to report upon the widening and strengthening of the jetty, and also upon its extension. It was proposed to strengthen the jetty to allow of the running of a locomotive and tram upon it. Without a breakwater it would be safe for vessels of 1,000 tons to lie alongside the jetty, except during heavy weather. A railway pier was not necessary at present for the traffic of Byron Bay. Mr. C. H. Caswell, railway surveyor, stated that he was employed at present by the Government in surveying routes for railway feeders or tram lines in connection with the Lismore to the Tweed railway. There were eight proposed feeders, each running an average distance of 3 miles from the main line. The object was to aid the sugar-growing industry, and furnish traffic to the main line. On August 3, the Sectional Committee started on their return journey, *via* Murwillumbah, Point Danger, Southport, and Brisbane, where they took train for Sydney.

From the foregoing summary of evidence it will be seen that the matter which the Sectional Committee had to inquire into was complicated by a number of

issues

issues incidental to the adoption of a railway route from Grafton to Lismore, *via* Casino. First, there is the claim of the residents of the Clarence Valley that their river offers the only safe and reliable harbour for the north coastal districts. The evidence adduced, however, shows that the Richmond River entrance is now available for vessels of light draught throughout the greater portion of the year, and that when the harbour improvements under construction are completed there will be a comparatively safe entrance for vessels of moderate size even at night. When to this is added the fact that Byron Bay is at present being used as a port of shipment, and for the unloading of horses and heavy railway material, it will be seen that the residents of the Richmond and Tweed districts are not dependent upon the Clarence as a port for the shipment of their produce. Should the proposed breakwater at Byron Bay be carried out, a depth of 24 feet of water will be secured in a harbour large enough to load and unload all the produce and stores likely to be sent to and from the Richmond and Tweed districts for generations to come. This testimony, then, removes one argument in favour of the immediate construction of a line of railway between Grafton and Lismore.

A second argument in favour of the proposed line, to the effect that there is likely to be an exchange of products between the Clarence and Richmond River districts, is also unfounded. The products of the two districts are almost similar, save that the Clarence is able to grow maize and two crops of potatoes per year, and the Richmond does not at present grow potatoes, and cultivates but little maize. A small passenger traffic exists between the two rivers, but this seems to have arisen through the better accommodation afforded by the steamers going to the Clarence, and the greater regularity with which they ply. When vessels could not get through the Richmond Heads, the tradespeople of towns on the Richmond have on a few occasions obtained temporary supplies from the Clarence, but this inconvenience is likely to be removed when the railway is running from Byron Bay to Lismore and Casino. The passenger and goods traffic would not be sufficient to justify the construction of the line proposed.

Another matter which seriously complicates the proposal under discussion is the rival route from the north coastal districts to the table-lands. The residents of the Clarence Valley contend that the railway route should be from Grafton to Glen Innes or from South Grafton to Llangothlin, *via* the Don Dorrigo scrub. On the other hand, the inhabitants of the Richmond district are unanimously in favour of the connection with the table-lands at Tenterfield. Both parties look forward to the development of a considerable trade with the New England and Inverell districts by an interchange of products and the shipment of wool, frozen meat, tallow, &c. While the witnesses in the Richmond district deprecate the idea of the connection with the table-lands *via* Grafton, the majority are not averse to the line going from Casino to Grafton as a portion of the contemplated North Coast Railway. They, however, contend that that is the only argument in favour of taking the line beyond Casino. A perusal of the evidence collected by the Sectional Committee with regard to Byron Bay is absolutely essential to the consideration of the question at issue. It shows that, in addition to the large number of persons employed upon the railway works, there is now a permanent population of about 200 in the town, which has also made considerable progress in buildings since the previous Sectional Committee visited it three years ago. It is anticipated that the Colonial Sugar Company will shortly establish a mill near Byron Bay, and if this is done a great impetus will be given to cane-planting, and thousands of acres now lying idle be utilised. The railway authorities have apparently recognised the prospect of this increased cultivation, as surveys are now being made in the neighbourhood for a number of tramlines, which are to serve as feeders to the railway by bringing in the sugar-cane from the plantations. It is expected that the railway workshops for the Richmond and Tweed system will be established at Byron Bay, owing to its central position and the facilities for the unloading of heavy material there, and if this should take place then the future of Byron Bay as an important port is assured, and the construction of the breakwater is likely to follow as a natural sequence. The success of the attempt to create a port at Byron Bay has, therefore, a very material bearing upon the selection of a railway route to the table-lands from the north coastal districts.

Though

Though damaging statements were made with regard to the solvency of many of the settlers in the Richmond River district, it will be seen from the evidence of farmers and planters specially summoned by the Sectional Committee to give evidence on that point, that there is little cause for alarm on the point. If the proposed law to give selectors the right to sell portions of their conditional purchases (in order that they may redeem the remainder) is passed, this, added to increased facilities for the transport of their products to market, is expected to afford the necessary relief to the settlers whose properties are mortgaged to banks or storekeepers. At all events, it is shown in the evidence that the dairy-farmers and the majority of the sugar-planters are in a sound financial condition, and there is reason to believe, therefore, that the district will recover from a partial depression, which appears to have been caused by over-speculation, and the taking up of large areas of densely-scrubbed land by those whose financial capacity was not sufficiently great to enable them to turn their full holdings to account without the assistance of the monetary institutions. These remarks apply more particularly to the Richmond and Byron Bay districts. In the Clarence Valley the settlers appear to be in comfortable circumstances, their chief trouble being the scarcity of alluvial lands for their families. The electorate of Grafton shows a falling off in population, and the trade of the town appears to have been checked, but the latter has apparently arisen through the development of new centres of commerce down the river, such as Maclean, and the imposition of differential railway rates on the northern line, which have almost annihilated a considerable traffic, formerly existing between Grafton and Glen Innes.

Reverting to the proposed line of railways between Grafton and Lismore, the Sectional Committee are of opinion that the cost of the work has been considerably over-estimated. The evidence of Mr. Octavius Lloyd, the engineer who recently went over the proposed line with the Committee, goes to show that instead of £8,000 per mile the work will not cost more than £5,000 per mile, exclusive of the cost of the bridge over the south arm of the Richmond, near Casino. Mr. Lloyd's estimate, therefore, reduces the cost of the entire line by fully one-third. From what the Sectional Committee saw upon their journey along the line from Grafton to Lismore, they are disposed to believe that Mr. Lloyd's estimate will be much nearer the mark than that placed before the full Committee by the Public Works Department. For the first 22 miles the line goes through undulating country and over a series of low hills. Near the Traveller's Rest, a point about 23 miles from Grafton, there are three hills of considerable extent, but these may be avoided. From Myall Creek into Casino the country is almost a dead level, though subjected to inundation. The chief engineering difficulties lie between Casino and Lismore, but even there the line should not cost more than £6,000 per mile. There is abundance of ironbark, spotted gum, bloodwood, and other good timbers between Grafton and Casino, and ballast will be easily obtained over the greater portion of the proposed line. The land between Grafton and Casino is generally of inferior quality, but it is said to be suitable for the growth of English barley and vines, and for grazing purposes. There are a few patches at Myall Creek, Myrtle Creek, and elsewhere, where vegetables and even sugar-cane are grown. The country between Grafton and Casino is almost unsettled, there being not more than ten homesteads in sight from the road, though from the evidence it transpired that a considerable area had been selected. Most of the land between Casino and Lismore is well fitted for agriculture, and there is luxuriant growth of sub-tropical scrub and other vegetation upon portion of it. Here, again, there is a paucity of settlement, said to be due to the fact that the lands in the locality are chiefly the property of a few individuals. It appears to your Sectional Committee that if the line between Grafton to Casino is constructed it should only be carried out as a portion of the proposed North Coast Line, or as a continuation of the proposed route from Llangothlin to Grafton, with the foreknowledge that the section referred to cannot be expected to pay for a considerable period.

The rival routes proposed for the purpose of connecting the Richmond with the Clarence were also investigated by the Sectional Committee, but it is clear from the evidence that they would only be useful for local purposes. In addition to this, if the line from Lismore and Coraki to Maclean were carried out, it would have to compete with water carriage a greater portion of the way, and would also impede

the navigation of the Clarence. The same remarks apply to the proposed line from Lismore and Woodburn to Maclean. The advocates of the Lawrence line (with one exception) appear to have abandoned their agitation, and are now willing to see the connection go *via* Grafton.

If a railway is to be taken from the Richmond River district to the country to the southward, either as a portion of the North Coast Line, or as a continuation of the Don Dorrigo route, then the Sectional Committee is of opinion it should proceed *via* Grafton. There appears to be some doubt as to whether vessels drawing more than 12 feet will be able to load at Grafton without extensive dredging, but, in the event of ships of deeper draught being required for the trade of the future, that difficulty may be got over by running a short line from a point known as the Flying Horse, on the Grafton-Casino section, to Lawrence; where a much greater depth of water can be obtained. The evidence also shows that the proposed connection of Grafton and Llangothlin, *via* Don Dorrigo, is worthy of consideration, as it would tend to develop a considerable area of virgin country, and materially extend the commercial sphere of Grafton. The lands of the Upper Richmond are of superior character, as the Sectional Committee testify from personal observation. They are well suited for agriculture, though at present chiefly occupied by graziers. If a railway were taken from Lismore to Casino, however, it is more than probable that there would be a considerable settlement of farmers, as well as a better utilisation of the forests to the west, and north-west of the last mentioned town.

Bearing in mind the fact that the route for connecting the north coastal districts with the table-lands has not yet been selected, as well as the other complications which surround the question they have investigated, and the financial compass of the community at the present time, the Sectional Committee think it will best serve the general interests of the people of New South Wales to move slowly with regard to the proposed line of railways from Grafton to Lismore. They consider that the line should be constructed from Lismore to the town of Casino only, and remain there till the route connecting the coast with the table-land is chosen, or the continuation of the North Coast Railway decided upon. Whichever line may be eventually decided upon, the connection between Lismore and Casino must be made, and therefore its construction now will not be money misspent. It will form a portion of the North Coast line, a portion of the Grafton-Don Dorrigo line, a portion of the Grafton-Glen Innes line, or a portion of the Tenterfield connection, should any one of these be chosen. It will promote the cultivation of the belts of excellent land between Lismore and Casino, and develop the agricultural resources of the Upper Richmond. It will also assist in the establishment of Byron Bay as a port, and modify the large expenditure now going on through the attempt to keep open a channel in the south arm of the Richmond, as the stores required for the inhabitants of Casino and the Upper Richmond will then be brought by railway from Lismore or Byron Bay, and their produce go by the same routes.

The Sectional Committee are unable to express any opinion upon the proposed line, Lismore to Grafton, as forming a portion of the Great North Coast Line, as submitted to the Committee by the Minister for Works, as per the Under-Secretary's evidence, the full Committee having directed that the Sectional Committee had no warrant to take evidence to the south of Grafton.

In the event of the Sectional Committee's recommendation being adopted they think it would be advisable for the Government to curtail the expenditure now being incurred in dredging and snagging the south arm of the Richmond River.

E. W. O'SULLIVAN,
Chairman.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

RAILWAY FROM GRAFTON TO LISMORE.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

FRIDAY, 15 *JULY*, 1892.

[*The Sectional Committee met at the Court-house, Glen Innes, at* 2·30 *p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.

Charles Collins, Esq.

The Sectional Committee proceeded to consider the proposed Railway from Grafton to Lismore.

Mr. John Frederick Utz, storekeeper and miller, Glen Innes, sworn, and examined:—

Mr. J. F. Utz 15 July, 1892.

1. *Chairman.*] Do you do business with the coastal districts in the vicinity of Grafton and Lismore? With Grafton, not Lismore.

2. What is its nature? I buy a large quantity of sugar in Grafton, and I get goods from Sydney by way of Grafton, and they are brought here by teams.

3. Do you send any of the products of this district to the Grafton district? I have on a few occasions, but not very often. The cost of land carriage is too great.

4. What products were they? Flour as far as Grafton, and potatoes as far as Dalmorton; also oats to Grafton.

5. If a line of railway were constructed from Grafton to Lismore, is it probable that you would purchase the products of the Richmond River district? No; I do not think I would; because the Grafton district is nearer, and we can get the same produce at Grafton as at the Richmond.

6. In view of the possibility of a large population being served in the Richmond district, is it probable that you would send the products of this district there? Yes.

7. Is there a sufficient supply for all your requirements in the Grafton district? I have never known them to fail.

8. Do you think it probable that there would be an increasing market for the productions of this district around Casino and Lismore? Yes; from Grafton all the way to Lismore, especially for breadstuffs, which do not grow in the coastal districts. If there is a connection made with the table-land of New England, the coastal districts must get their breadstuffs from here.

9. Pending the construction of that connecting line of railway, do you think that wheat from the Inverell district, and the productions of this district, would be in demand in the coastal districts? I do.

10. To such an extent as to make the carriage of these an important factor on a line of railway from Grafton to Lismore? Yes; provided there is eventually a connection made between this district and the coast. Without such a connection I do not think there could possibly be much flour or breadstuffs sent either to Lismore or Grafton by teams. That could only be done in some seasons, when flour would be at a very high price in Sydney and Melbourne, and there would be a large surplus stock here.

11. Still, you think there would be a small trade? Yes.

12. Do you know of anyone sending any ordinary products of this district down to Grafton? There are a number of carriers constantly on the road, from twenty to twenty-five, who, when they go for loading to Grafton, take down potatoes on their own account, and sell them about Dalmorton. They have also taken oats.

13. Given a railway, which would provide cheap and speedy transit to Casino, Lismore, Byron Bay, and other parts of the Richmond district, would that trade be likely to increase largely? Undoubtedly this district would supply them with potatoes and flour, but only if prices were high in Sydney and Melbourne. The land carriage is always too great between here and Grafton; and while we have no railway connection it is impossible to compete with 7s. 6d. per ton, which is the average rate of freight from Sydney to Grafton.

14. Do you think it is likely that a timber trade will arise between Lismore and Grafton and this district? Cedar will be brought here from those districts.

15. Will that cedar be carried by the railway from Grafton to Lismore? Yes. I look upon the North Coast Railway as being eventually a connection with New England, and then the whole of the North Coast, as far as the Tweed, must be supplied from this part of New South Wales.

16. *Mr. Neild.*] What is the rate of freight for breadstuffs from Glen Innes to Sydney? Wheat from Glen Innes to Sydney is 16s. 8d. Flour is the same rate. That is the rate from the month of February to the month of December. From the 1st of December to the 1st of February it is 22s. 8d. a ton.

17. What is the freight by team for the same goods from Glen Innes to Grafton? £2 per ton for down loading, and £3 10s. per ton for up loading.

Mr. J. F. Utz. 15 July, 1892.

18. Then it would be cheaper at the present time for you to send breadstuffs to Grafton by way of Sydney than by teams? Yes; to send it by Sydney would cost about 30s. per ton.
19. Do the teams which go from here to Grafton take much loading? No; only in the wool season. They take wool to Grafton; but after the wool season is over they go as often empty as not.
20. Would it not pay them better to take a lower rate and go loaded? That should certainly be the case; but that class of men probably do not see it in the same light as we do, and they would rather go empty.
21. I suppose there is some combination amongst the carriers to maintain rates? There is, no doubt; that exists all over the country.
22. I understand from you, that without railway connection between the table-land and the coastal districts, say somewhere in the vicinity of Grafton, there is not likely to be any material trade from here to the coast? Yes.
23. Consequently, the construction of a coastal line of railway, without a connection with the table-land, would not increase the volume of trade to be transacted between the coast and the table-land? Not to any very great extent.
24. Can the Clarence supply all the sugar required for this district, without tapping the supplies from the Richmond River? It could supply all this part of the district, but I do not say that it could supply the whole of the western districts. It would certainly supply the district for a radius of 20 or 30 miles from Glen Innes.
25. I suppose the view you take is, that as far as the table-land of New England is concerned, it is of very small interest to you what coastal lines of railway are constructed unless these coastal lines are connected with New England? Yes.
26. *Mr. Collins.*] What quantity of sugar comes from the Clarence into this district? About 500 or 600 tons in twelve months.
27. What freight do you pay per ton? £3 10s.
28. Would it pay you to get it from Grafton by way of Newcastle? Certainly not. We would have to pay 7s 6d. per ton from Grafton to Newcastle, and from Newcastle to Glen Innes £3 10s. per ton.
29. If a railway were constructed from Grafton to Glen Innes, would you get most of your goods from Sydney by way of Grafton? Yes; nearly the whole of them.
30. Consequently you would not use the railway between Sydney and Glen Innes? No; so far as merchandise is concerned.
31. Consequently the railway from Sydney to Glen Innes would not be of much advantage? I would say between Armidale and Glen Innes. Those people would still get goods by the northern line.*
32. Suppose a line were constructed from the coast to Armidale, or somewhere there? If a line were constructed from the coast to Armidale the northern line would be affected from a point north of Tamworth. Certainly, as far as Glen Innes is concerned, the northern line would not be of very much service for merchandise. The same thing applies to Tenterfield.
33. Do you send much flour to Grafton? No; I have sent flour on a few occasions, but the land carriage is a great handicap.
34. If a railway were made from Glen Innes to Grafton would you then be handicapped? Not in the slightest. If a railway were made, and the present charges were in existence, I would be able to compete against any flour that would go there, because the distance is only 110 miles.
35. Are you aware that the present rates do not pay the railway? We have been informed so, but I fail to see the correctness of it, because the trucks, as a rule, have to run up with merchandise, and I fail to see why it should not pay to load those trucks back with produce rather than run them empty.
36. Do you know that it is stated by the officials that they run produce at a loss? Yes. If they want to be paid the same amount of money for back traffic as they get for the up traffic, undoubtedly the produce is run at a loss.
37. Do you send much corn from this district? Not to Grafton, because it is a corn country.
38. Do you grow much corn here? Sufficient for our own requirements.
39. Do you not import corn from Queensland? On a few occasions. Sometimes we have sent corn from here to Newcastle and Sydney.
40. Are you importing corn now from Queensland? I am not aware of it.
41. If there was a railway from Glen Innes to Grafton, and produce was carried at the same rate as at present, what would be the rate from Glen Innes to Grafton? About 7s. 6d. per ton.
42. At what price are you now selling flour? £12 5s. to £12 7s. 6d. per ton.
43. Consequently it would cost £12 15s. per ton to deliver flour at Grafton if you had the same railway rates as at present? Yes.
44. At what price is flour now sold at Newcastle? £12 10s. to £12 15s. 6d., the best flour.
45. Are you sure that they are not selling the best flour now at Newcastle for £11 per ton? Not according to the quotation given to me a few days ago.
46. If Adelaide flour is sold at Newcastle at £11 per ton, would it not be cheaper for the Grafton people to get flour from Newcastle than from Glen Innes? Yes; if it is sold now at that price, even if there was a railway.
47. *Mr. Davies.*] What is the distance from Glen Innes to Grafton? About 110 miles.
48. Have you any teams of your own travelling? Not my own property: but people in the district carry for me constantly all the year round.
49. Do you send very much produce from here to Grafton? Not much. It would certainly not exceed 50 or 60 tons of produce.
50. What do you take in return? About 500 tons a year.
51. What is it made up of? Sugar, wire, galvanised iron, and general merchandise.
52. Do most of the goods which come here go to Grafton by water carriage? Yes
53. In the event of the railway from Grafton to Casino being constructed, it will form part of the Great North Coast Railway;—in your judgment, where would be the best point for that railway to connect Grafton with this district? Undoubtedly Glen Innes is the nearest point, and it is the only point which will serve New England. You could not possibly get a more suitable point.
54. Are you aware that a survey has been made from Grafton to Guyra? Yes. 55.

* NOTE (*on revision*):—All merchandise required from Armidale to the Queensland border would come *via* Grafton, therefore the northern line would only be used for merchandise as far as Armidale.

Mr. J. F. Utz. 15 July, 1892.

55. What do you think of that proposal? It could never possibly serve the whole of the people on the table-land of New England.
56. As a resident in this district of thirty years' standing, what is your opinion as to the best point at which connection should be made, in the event of the line from Grafton to Lismore being made? My honest conviction is that Glen Innes is the best point, and the only point that will serve the whole of the people. In time, if the connection is made, it must suit the Armidale people. It will bring them within about 160 miles of the coast, and the same thing will apply to the people living between here and Tenterfield.
57. Are you aware of the rough nature of the country between here and Grafton? Yes; but it is a great deal magnified. People who travel along the rough road are 15 or 20 miles away from the proposed line of railway. Surveyors are the only people who know the nature of that country.
58. Are you aware of the estimated cost of constructing the line from Glen Innes to Grafton? Yes; according to the Department, it would cost £1,500,000, or even £2,000,000, but I have also been informed by a surveyor who went over the line some years ago, that it would not cost anything like that amount.
59. If a railway were made from here to Grafton, would it be cheaper for you to get your goods from Grafton than from Sydney by rail? Yes; nearly the whole of the supplies for the table-land would come to Grafton by water and then by rail here.
60. Would that not take a great deal of traffic from the existing railway? From this side of Armidale it would.
61. *Chairman.*] You are an old resident of Dundee, and know the Tenterfield district very well? Yes.
62. Can the Tenterfield district compete with this district in the production of root crops? Certainly not.
63. Therefore, if there was a market in the Richmond River district for root crops, this district would be very likely to supply it? This is the district the supplies would have to come from.

Mr. William Graham Cameron, storekeeper, Glen Innes, sworn, and examined:—

Mr. W. G. Cameron. 15 July, 1892.

64. *Mr. Davies.*] Have you been resident for some time in this district? About ten years.
65. Have you business transactions with Grafton? Yes, continuously.
66. What is their nature? Principally in the sugar trade.
67. To a large extent? A little over 100 tons per annum.
68. Is there much else beyond that? It is the question of time that interferes; otherwise I should do a very much larger trade.
69. Is it not a question of freight? That is another item; but I would get a great deal more of my supplies by way of Grafton if it was not for the delay. Sometimes I would pay a little more for freight if I could get the supplies more speedily.
70. What is the length of time occupied in the transit of goods between Grafton and Glen Innes? On an average, about six days.
71. Have you given any attention to the question of connecting the table-land with the railway from Grafton to Lismore, if it is constructed? I am sure I could then do a very much larger trade; but at present there is very little trade done from here to Grafton, except during the wool season. There is a very large trade done then.
72. Does a large proportion of the wool go from here to Grafton? Yes, by teams and then by water-carriage to Sydney.
73. Is that much cheaper than by rail? I cannot give the figures; but I know that a large quantity of wool goes down. The teams ask for loading back.
74. What do they charge in cases of that kind? Up to a recent date I have paid £4; but lately it has been £3 10s. per ton.
75. Is not that much heavier than by rail direct? No. It costs £7 per ton by rail from Sydney. There are certain items upon which we pay a smaller rate—such as flour, salt, and sugar. If we get them in certain quantities they cost £4 a ton; but it is cheaper to get them by Grafton even at that rate. If we get a smaller quantity than 6 tons we have to pay more.
76. Do you know of any trade being done in root crops with the Grafton district? I believe we have sent potatoes down to Grafton, but not often.
77. Is it likely that a trade in potatoes and other root crops would be opened up with the Richmond River district if a railway were made from Grafton to Lismore? I cannot say, but I believe if there was a railway from Glen Innes to Grafton there would be a large trade done in root crops with the whole of the coast districts.
78. But with your present means of transit to Grafton, and with a railway from Grafton to Lismore, what trade is there likely to be? I cannot give an opinion.

Mr. John Frederick Utz, storekeeper and miller, Glen Innes, sworn, and further examined:—

Mr. J. F. Utz. 15 July, 1892.

79. *Chairman.*] Do you wish to make any further statement? With regard to the expense of making a railway from Grafton to Glen Innes, the figures I gave were based on statistics several years old. Within the last twelve months a new trial survey has been made, and the steepest grade is 1 in 50. Formerly it was 1 in 33. That bears out my remark that the expense of the line would not be nearly so great as it is reported.
80. *Mr. Neild.*] Does it follow that because the grades are reduced the cost of construction would be reduced? It should, to a certain extent.
81. Might there not be a great increase in cost with an improved grade? There might be; but it does not happen in this instance. I can say so from my knowledge of the country.
82. *Chairman.*] Have you heard of the discovery of any auriferous country in the neighbourhood of Grafton, which is likely to increase the population, and thus create traffic for a railway between Grafton and Lismore? Not between Grafton and Lismore; but there is a new place between Grafton and Glen Innes; it is the Dalmorton gold-field.
83. What distance is it from Grafton? About 45 miles.
84. *Mr. Collins.*] Would you recommend the construction of a line from Glen Innes to Grafton, involving an expense of £50,000 a year for interest, without working expenses? I would recommend it, considering the country that would be served by the line. If it only had to serve Glen Innes I would not recommend it; but it will serve a district fifty times as large as Glen Innes. It would serve the whole of the country from Goondiwindi to Grafton, and from Grafton to the Tweed.

Mr. J. F. Utz. 15 July, 1892.

85. *Chairman.*] Would you favour the construction of a line from Grafton to Lismore as portion of a line connecting the coastal district with the table-land? Yes.
86. *Mr. Neild.*] Do you trade with Goondiwindi? Yes; and as far as Moree.
87. Is that trade in general merchandise or in breadstuffs? General merchandise. Inverell is a better district for breadstuffs than ours.
88. *Mr. Collins.*] Has the chilled meat industry been taken up in this district? There is a movement here now for the establishment of chilled meat works.
89. Would not that give a great deal of traffic between here and Grafton? Yes.
90. Would the stock come from the plains district to be chilled at Glen Innes? Yes.

SATURDAY, 16 *JULY*, 1892.

[*The Sectional Committee met at the Rosemont Hotel, Newton Boyd Road, at 7·30 p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.
Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Alfred Brown, farmer, Newton Boyd, sworn, and examined:—

Mr. A. Brown. 16 July, 1892.

91. *Chairman.*] What is the size of your holding? Ninety acres freehold; no leasehold. I cultivate corn, and sell it locally.
92. Do you obtain your supplies from Grafton? Yes.
93. Do you do any business with the district between Grafton and Lismore? No; and none of the residents here do any. We get corn from Grafton.
94. Are you sufficiently well supplied from Grafton for all your needs? Yes.
95. How long have you resided here? Twenty years.
96. *Mr. Neild.*] Do you think, if a railway were constructed between Grafton and the Richmond, that products from that part would find a market in this district? I do not think there are sufficient people here for that purpose.
97. Is there any large area of agricultural land in this district? No.
98. Has there been much increase of population between here and Glen Innes during the last twenty years? No; there has been between here and Grafton.
99. If a railway were made, would the Clarence district be able to supply all the sugar and other products required without calling upon the Richmond? Yes. Corn and oats are produced here.
100. If a railway were carried south of Grafton, would that open up any trade with this locality? No.
101. Supposing the line were extended all the way to Newcastle, would produce from this district be sent by rail to Sydney or by steamer from Grafton? By steamer. The freight would be lower. Passengers would go by rail.
102. *Mr. Collins.*] What has caused the increase of population between here and Grafton? Gold-mining. It is paying very well. The mines are about 20 miles from here. There is a population there of 300 or 400. They have come within the last two years.
103. Where are the mines? At Dalmorton and Mount Poole.
104. What stock are kept about here? Generally cattle; very few sheep.
105. Does much wool go from Glen Innes to Grafton? There is a little. There used to be a good deal before the railway reached Glen Innes. There are now twenty or thirty teams on the road. We get our sheep from Glen Innes and Inverell.
106. How much corn is produced per annum between here and Glen Innes? About 5,000 bushels.
107. Do many persons go from here to the Richmond for work? Yes; generally for cane-cutting. They find employment.
108. *Mr. Davies.*] What is the general character of the district as to quality of soil and the growing of maize? It is very good.
109. Is the land better between here and Grafton than it is between here and Glen Innes? Yes.
110. If a railway were constructed from Grafton to Lismore, would it give an impetus to farming between this point and Grafton? No.
111. What additional settlement has taken place in this district during the last twenty years? Between here and Glen Innes there is an increase of 200 settlers, and between here and Grafton about 300 settlers.
112. *Mr. Neild.*] Can you see the residences of the settlers between here and Glen Innes from the road? No; they are in the valleys. They are mostly on the top of the Big Hill.
113. What do they grow? Hay and corn.
114. Is the country much the same north and south of the road as it is along the road itself? Yes; but there are places much better. There is some very good soil on the top of the Big Hill. Some of the holdings are much larger than they are on this side of the Big Hill.
115. *Mr. Collins.*] Are there 200 distinct holdings between here and Glen Innes? Yes; some of them are 200 and 300 acres in extent.
116. Are there more than 50 acres cultivated on each holding? Yes; and more on some. They do not cultivate all that is fit for cultivation.
117. Do they grow fruit? No; fruit does not grow well below the Big Hill.
118. How far are those farms from the road? About 20 miles on each side.
119. Do they get access to their farms from the main road? Yes.
120. *Chairman.*] Is there much gold-bearing country between here and Grafton? Yes; a good deal. All the ranges about here are gold-bearing.
121. If 2,000 or 3,000 persons were attracted here, would that create a market for the products of the district between Grafton and Lismore? Certainly it would.
122. Could the Grafton district supply maize enough for any new settlement that might arise here? Yes.
123. Is there only a remote probability of new centres of population between here and Grafton providing trade for a railway between Grafton and Lismore? Yes.

Mr.

Mr. Alfred Bowen, butcher, Newton Boyd, sworn, and examined:—

Mr. A. Bowen. 16 July, 1892.

124. *Mr. Davies.*] How long have you resided in this district? About six months. I lived on the Manning River previously.
125. Do you know the country between here and Casino? I have been at Yulgilbar and Gordon Brook, which are in a direct line between here and Casino.
126. Have you had large transactions with stock? Not more than fifty head. I simply supply the local wants.
127. Do you travel between here and Grafton? Yes; frequently.
128. If a railway were constructed between Grafton and Lismore, would it increase the traffic between here and Grafton? It would largely increase the population, because there is good country between here and Casino. If produce is grown there now it will not pay to take it to Grafton by water carriage.
129. Is there much traffic between here and Grafton by teams? Yes. It consists of the carriage of cedar, pine, and sometimes hardwood. The cedar is obtained up the Mitchell, Mann, and Henry Rivers. The hardwood is obtained between here and Grafton. The timber finds its way to Grafton at present.
130. *Chairman.*] Where do they sell the fat cattle from this district? Grafton and Glen Innes. The cattle fattened here supply the local wants, and there are some to spare. Sometimes store cattle are sent here from the Richmond, and sometimes we send store cattle there.
131. If a railway were constructed, would there probably be some cattle traffic between here and the Richmond? Yes.
132. *Mr. Neild.*] Have you a personal knowledge of the country between Grafton and Lismore? No.
133. Do you know the Macleay district? Yes; very well.
134. If a railway were extended from Grafton to the Macleay, would that produce a large amount of trade and open up good country? I know a lot of country there which would be opened up and selected. It is good level country.
135. Is it difficult to carry on shipping operations in the Macleay River? During the last five years the bar has been very good. At the Nambucca and Bellinger Heads it is very different.
136. If a line were constructed between the Macleay and the Clarence, would the produce of the Macleay still be shipped at the Macleay? I think so.
137. If the railway were carried on to Newcastle, would the produce be sent there? If it would be cheaper to send it by rail than by steamer it would go by rail.

Mr. Charles Woods, coach proprietor, Glen Innes, sworn, and examined:—

Mr. C. Woods. 16 July, 1892.

138. *Mr. Neild.*] Are you the proprietor of the coaches running between Glen Innes and Grafton? Yes. I have a thorough knowledge of the traffic on the road.
139. Does much wool go down to Grafton from Glen Innes? Very little. Most of it is sent down by squatters. About twenty loads are sent down in twelve months. It is shipped at Grafton.
140. Has there been much growth of population on the road between Grafton and Glen Innes? Very little.
141. What is the total population within a reasonable distance of the road between Newton Boyd and Glen Innes? About fifty. It has not increased very much during the last four years.
142. Has there been much increase between here and Grafton? Only at Dalmorton. It has increased about 300, in connection with the gold mines.
143. Do many people come from the Richmond River in this direction? Very few.
144. Do you think that the construction of the Grafton to Lismore railway would bring any business, in the shape of passengers or goods, from the Richmond River this way? No.
145. Is there a large passenger traffic between Grafton and Glen Innes? No; it is decreasing. Either the railway is more used or the public are not travelling about so much as usual.
146. Do you think that the construction of a railway from Glen Innes to Grafton would materially increase the traffic? No.
147. *Chairman.*] Do any passengers go from Inverell and Glen Innes district to the Richmond River by Grafton? Very few. Four or five in twelve months.
148. Do you think that if a railway were constructed between Grafton and Lismore it would lead to a larger number of passengers going that way? No.
149. Do you think they would be more likely to go by way of Tenterfield? Yes; or by water from Sydney.
150. *Mr. Collins.*] Have you seen much increase in the population since you have been on this road? No; except at Dalmorton.
151. If these fields are not permanent will not the population go away? Yes.
152. What crops are grown about here? Corn generally; but not much. There are only two farms here.
153. Are there more farms near Glen Innes, off the road? I have never been off the road; but I have never heard of any.
154. *Mr. Neild.*] In passing along the road do you see any branch roads? There are none. I know pretty well all the farmers about there. There are no farms off the road, except grazing paddocks for sheep and cattle.
155. *Mr. Davies.*] Has there been much settlement between this point and Glen Innes in your time? None that I know of.
156. Has the traffic increased or decreased? Decreased.
157. Is there anyone in a better position to have a knowledge of the settlement along the road? No.
158. If a railway were constructed do you think the passenger traffic along here would increase? No.
159. Do you think a railway would pay? No.
160. Do you think that if a railway were constructed from Grafton to Lismore it would pay? I am not sure that it would pay, because I have never been over the country. I have heard that it is good land.

MONDAY, 18 *JULY*, 1892.

[*The Sectional Committee met at the Court-house, Grafton, at* 11 *a.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.

Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Walter C. Casey, Inspector of Police, Grafton, sworn, and examined:—

Mr. W. C. Casey. 18 July, 1892.

161. *Chairman.*] How long have you been stationed here? Five years.

162. Is the district giving evidence of progress? Yes. The land is becoming more settled further back from the river than it was when I came here. Land has been taken up in all directions.

163. What is the number of electors on the Grafton electoral roll? The following is a return for six years:—

Year.	No. of Electors.
1892–93	2,667
1891–92	2,640
1890–91	2,525
1889–90	2,405
1888–89	2,293
1887–88	2,136

The exact population returns, as collected by the police, are as follows:—Grafton proper, 5,083, and fourteen Chinese; South Grafton, 2,168, and fourteen Chinese.

164. How do those figures compare with previous returns? For Grafton proper there is a decrease during the last two years, but there is an increase at South Grafton. That bears out what I have said, that the people have gone out and settled in the country. There is an increase in nearly all the other townships on the river. Some of the Grafton people have gone to the Richmond, and some have settled on the land.

165. Why have they left Grafton? Want of employment. There has been no public or other works, and they have gone to other pursuits.

166. Have many of the settlers on the soil left the district? No; only the floating population.

167. *Mr. Davies.*] Is there much settlement between Grafton and Lismore? Not on the road between here and the half-way house. After you leave the very rich lands near the river, there is a tract of rather sandy country between here and the half-way house, from here to Casino. On that tract there is not much cultivation. About Myrtle Creek there is a good deal of settlement.

Mr. Patrick Riddle Donaldson, District Surveyor, Grafton, sworn, and examined:—

Mr. P. R. Donaldson. 18 July, 1892.

168. *Chairman.*] How long have you been in this district? Thirty-one years. Since I first came to the district I have seen it emerge from its wild state into what it has now become. The banks of the river were lined with semi-tropical vegetation, with an occasional break where farmers had commenced clearing. The progress of the district has been gradual. The town of Grafton itself shows, perhaps, the least sign of progress, because of the other towns which have sprung up along the banks of the river, and which have taken business away. On the banks of the river the land is very rich, and it will carry a very large population. The back country is forest land generally, and is not nearly so good; but in comparison with land in other districts it is good. From the 1st of August, 1885—when the Land Act of 1884 came into force—to the 1st June, 1892, there has been selected within 10 miles on each side of the railway line between Grafton and Lismore, by conditional purchase and conditional lease, 92,857 acres.

169. Is that settlement of a permanent character? Yes. Very few of the settlers have sold out. One or two have forfeited.

170. What is the average size of the holdings of the new selectors? Five hundred and twenty-one and a half acres, including the conditional purchases and conditional leases. Within 10 miles on each side of the proposed railway there are now available 240,000 acres of land of the same character as is already sold, and 118,000 acres of reserves for railway, timber, and other purposes, which can be alienated after the railway is constructed. In addition to that, there are within the population areas of Grafton, Casino, and Lismore, 27,600 acres. Of the reserves referred to, 45,000 acres are for the railway, 60,000 for timber, and 13,000 for water supply and other purposes.

171. What would be really available for settlement after the railway was constructed? The timber is now being gradually worked out, probably not on the reserves, but all along that part of the country. No attempt has been made to secure all the good timbered country, but only parts of exceptional value, and where such reserves would not be likely to interfere with settlement. The only block to settlement is the reserve for railway purposes, a mile on each side on the proposed line. It is on that account that there is comparatively no settlement between here and Casino along the road.

172. Pending the construction of the railway, is that land useless to the State? Not quite. A lot of it is held for pastoral purposes, or on annual lease. A number of the runs have been so cut into by selection and otherwise, that it has served the purposes of the lessees or holders of runs to abandon them, and take out what they require by annual lease.

173. If the line were constructed, would all those reserves be occupied by agriculturists? The land would be all occupied, either by agriculturists or for dairying and mixed farming. The hardwood on that land consists of ironbark, stringy-bark, tallow-wood, blood-wood, blackbutt, and oak. Considerable quantities of hardwood are being constantly shipped from the Clarence for public works in New Zealand and Victoria, for piles, girders, &c. The railway sleepers for the contracts now being carried out on section 3 of the Lismore-Tweed railway are being obtained on the Clarence and shipped to Byron Bay. For contract No. 2 a great number of the sleepers are being obtained between Casino and Grafton, near the Casino end of the proposed line. I believe there would be a good deal of timber traffic on the proposed railway

railway for a considerable time. There is a large extent of good timber country, besides the reserves, within 10 miles of the railway. Timber is now drawn more than 10 miles to be shipped at the Clarence River. Since the leasehold areas were thrown open in July, 1890, up to 1st June, 1892, nearly two years, 93,141 acres of land have been taken up by conditional purchase and conditional lease in the Grafton and Casino districts out of these leasehold areas only, exclusive of other Crown lands, or an average of about 47,000 acres per annum. On the Upper Orara River special areas have been proclaimed, and there has been selected to date an area of 6,247 acres by fifty-seven selections, giving an average area for each holding of 109½ acres. The prices realised were:— Mr. P. R. Donaldson. 18 July, 1892.

1 selection, 48 acres, at £6 per acre.	} Non-residential, 47 section.	
2 selections, 109 acres, at £3 per acre.		
15 „ 891 „ „	} Residential.	
39 „ 5,199 acres, at 30s. per acre.		

I notice by the *Statistical Register* for 1891, that the average area of holdings throughout the Colony was 323 acres. In this case the average area of holdings is 109½ acres. The average area of holdings in the Richmond was 326 acres; Grafton, 313 acres; the Clarence, 136 acres. Grafton embraces a large pastoral district; the Clarence commences below Grafton, and includes the lower part of the river, and the agricultural population. The length of the Clarence is 240 miles from the mouth, in a westerly and northerly direction, to its source near Maryland; and from the mouth of the river, westerly and southerly, the distance is 250 miles to near Ouvra and Ben Lomond—the distance in a north and south line between those two points is 150 miles. The river, in its course, overlaps the Tweed, Brunswick, Richmond, and Bellinger, and embraces an area of 9,000 square miles. When I say that it overlaps these rivers, I mean that it passes behind them to the west. The course of the other rivers is, therefore, much shorter. The watershed of the Richmond and Tweed is about 2,000,000 acres, and of the Tweed about 350,000 acres.

174. What is the length of the navigation? On the Clarence River there are 93 miles suitable for ocean boats, and 77 miles for droghers and river steamers, making a total of 170 miles. That includes the Coldstream and the South Arm, the Orara only as far as the meat works, or a little beyond. On the Richmond there are 84 miles navigable for ocean steamers, and 73 miles more for droghers and river steamers, making a total of 157 miles. That is the whole of the navigable water.

175. Have there been many forfeited selections in this district? Not in comparison with others. I think the reason why they have been forfeited arises from the want of communication, and the difficulty of getting anything to market. There is very little in the district in the way of selling out to selectors or large proprietors. Something of the kind may go on in the upper part of the river, where pastoral operations are carried on.

176. Do you mean towards Dalmorton and Newton-Boyd? No; that is the poorest part of the whole district. It is almost worthless compared with any other part. Until the last year or two there has always been a good demand for land in the agricultural part of the district, but since the floods of 1890 there has been a good deal of depression in the district, and land has been almost unsaleable. I think the real cause is the depression which exists throughout the colonies, because this district recovers itself very rapidly after a flood. Throughout the whole of my district, even where the railway is now being constructed, there is no sale for land.

177. Were the prices which you have given as being realised for land at Orara extra good prices? Yes. If a line had been constructed through that district before the land was sold, it would have fetched a great deal more money. It would not be quite so valuable as land on the Clarence, because there would be the cost of railway carriage as against water carriage. But a lot of the land there is nearly as good as the land on the banks of the Clarence.

178. Has there been any increase in mining here lately? There has been a slight general revival within the last two or three years.

179. Do you consider that the Clarence district is progressing and likely to progress? Most decidedly. It is thoroughly sound in every respect.

180. Do you consider that an impulse to progress would be given if a railway were constructed between here and Lismore? I have no doubt of it, but I think it should only form part of a coastal railway.

181. *Mr. Collins.*] How many runs have been abandoned in this neighbourhood? Wooroolgan has been pretty well eaten out by selectors, and a large area has been bought by the holders of the runs. The residue has been taken up by the run holders and others as annual leases. There is very little of the run itself left.

182. Do you get any rent for the part which is left? No.

183. Why? The residue has been offered under occupation license, and the upset price was supposed to be too high. The reason is, that the people can get exactly what they want by annual lease, and in that way they need not take up a mass of useless country. While it does not exceed 1,920 acres in one application they have a preferential right to it.

184. Who uses that land principally? On that particular run the lessee does not use it.

185. Who uses the land not paid for? The owners of the annual leases, and settlers in the vicinity; they put on more stock than their land can carry, and they use the other land.

186. Should not the stock inspector prevent that? It would be utterly impossible—it would take an army of inspectors to attend to it.

187. How many acres of Crown land are on this run which are not paid for? I cannot say exactly at present, but I will supply the information.

188. What other runs have been abandoned in this district? Gordonbrook.

189. How many acres are on that run which are not paid for? I do not think there are more than a couple of thousand acres. I made a recommendation about that the other day, that as the pieces left were so small they were almost useless, and I recommended that two portions—I think about 2,000 acres—should be offered at auction.

190. Has the land been peacocked so as to leave those 2,000 acres useless? No; it has been taken up on annual lease. The holder of the run has taken a great number of annual leases, and the rest has been principally taken up by one other person.

191. Then two persons own this run? Practically so.

192. How far is it from Grafton? About 35 to 50 miles.

193. Are there any other runs in the same position, where land is being held by the lessees without payment? That is a misunderstanding. I did not say that this land was being held without payment.

194. Have you not said that there are 2,000 acres so held? Yes; but that is only out of 60,000 or 70,000 acres. Two thousand acres may not be paid for at present, but it will be as soon as it is advertised for sale.

Mr. P. R. Donaldson. 18 July, 1892.

195. What are the names of the other stations in this district? The two I have mentioned are the principal ones. Glenreagh is another.
196. Is there much land on that run not paid for? There is a great deal of land on that run which is not paid for by anybody.
197. Are there 20,000 acres? Yes. I believe that land is used by the late lessee of the run, and by the selectors generally.
198. Do they use it without payment? Some annual leases have been taken out of it, but the residue is not paid for by anybody. It has been offered at auction at very low prices, but no one will take it.
199. Have those portions of the run been abandoned in order to get the land for nothing? I think they were abandoned because they were not supposed to be payable.
200. Are there many agricultural holdings on those runs? Yes; they probably average about 300 acres.
201. Can people make a living on 300 acres when they only keep cattle? They manage to do so somehow. They probably cut timber, or do some carrying.
202. Are the difficulties of getting to the Sydney market greater from Grafton than from the Richmond? Certainly not; there is never any difficulty in getting from Grafton to Sydney now. The steamer does not come in at night, but that is because there are no beacons.
203. How much per acre do the people pay for annual leases? Probably from ½d. to 3d. The average would be a little over 1d.
204. Are there any conditional leases? Half of the areas which I have mentioned are conditional leases. The rent paid for them varies from 1d. to 10d.—the latter is paid for the very richest land.
205. Is that paid for running cattle? No; such land is used for agricultural purposes. 4d., 5d. and 6d. is paid for grazing land.
206. *Mr. Neild.*] What is the proportional area of conditional purchases and conditional leases 10 miles on each side of the proposed railway? In the Grafton district the proportion of leases is one-half, and in the Casino district two-thirds. That is in round numbers.
207. How are these conditional purchases held—by the old pastoral lessees or by selectors? In the pastoral country conditional leases are taken up by the selectors principally.
208. In the pastoral country are not the conditional purchases largely taken up with a view to securing conditional leases? Yes. In this district I estimated that one-tenth were probably taken up when the leasehold areas were thrown open by holders of conditional purchases at that time, and the rest were taken up by new people. In this district nine-tenths of the whole of the new selections were taken up by sons and relatives of people living in the district.
209. Were these lands taken up along the proposed railway line by pastoralists or agriculturists? They were not taken up by pastoralists in the strict sense of the term, that is, by squatters. They were taken up by people who use the land for pastoral purposes at present.
210. Are these lands in actual occupation, or are they only occupied simply for the purpose of holding them? I think that they are held by *bona-fide* selectors.
211. Were those selections induced by the prospect of the railway being made? That may have influenced it to some extent, because without the railway the land would be useless for agricultural purposes, or for dairying, or for mixed farming.
212. Has there been very little selection during the last two years? Yes. After the rush, when the leasehold areas were thrown open, there has been scarcely any selection or sale of land in any part of my district, from the Tweed to the Manning.
213. From Lismore to the Tweed, has the bulk of the best land being alienated? The bulk of the land was gone before the railway was passed.
214. Has not this falling off in selection, between here and Lismore, occurred since the railway line was reported against by a previous Sectional Committee? There has been a great falling off, but it has not stopped altogether.
215. Do you not think that the vetoing of that proposal has much to do with the falling off in selection? Yes; if that line had been passed, a very large proportion of the country would have been gone by this time.
216. What are the proportions of land within the population areas which you have mentioned? In Grafton and South Grafton, about 40 acres of town land, 250 acres of suburban land, and 18,000 acres of country land. In Casino there are 110 acres of town lands, 1,600 acres of suburban lands, and 7,000 acres of country lands, making a total of 8,710. Lismore, 600 acres of suburban lands; no town and no country lands.
217. I suppose the fact of the railway being taken to Lismore caused all that land to be mopped up? No, it was gone before that. People went rashly into speculation.
218. What is the area of cultivation in the Clarence? About 40,000 acres.
219. What is the area of land under cultivation in the Richmond district? About 30,000 acres.
220. What are the principal crops? Maize and sugar.
221. Are any root crops grown? Yes; I think the climate is rather hot for them, but potatoes do grow well, and they fetch the highest price in the Sydney market.
222. Then it would not be necessary to build a railway to New England in order to supply you with potatoes? No; but potatoes have to be imported here, because our potatoes do not last all the year. Those which now come here from Circular Head and Warrnambool would be brought from New England if we had a railway.
223. Do you anticipate that tobacco, and other sub-tropical products, will be grown in this district? Yes; so many new things have been started here that I should not be surprised to find numbers of other products grown in future.
224. Have the new things succeeded? Yes, sugar-cane is one of them. I planted cane in my garden twenty years ago. Cotton has been grown here, but the labour difficulty prevented it from being a success. Tobacco has grown luxuriantly here. I do not think it is much grown now. I do not think tea has been grown practically. The tea plant, however, grows well. If communication were possible with Sydney within a reasonable time, many choice fruits could be grown here.
225. What is the ordinary time of transit? About thirty hours.
226. Is that prohibitory for fruit? I have sent date plums to Sydney, and they have gone bad in that time. No doubt good packing would be an improvement.

Mr. P. R. Donaldson.

18 July, 1892.

227. In the country lying between Grafton and Camden Haven, is there a great deal of cultivation going on? Not very much—not so much as there ought to be.
228. Is there much Crown land suitable for cultivation to the south of Grafton? Yes, in patches.
229. Does the land between Grafton and Casino fairly represent the land to the south of Grafton, towards the Macleay? There is a good deal of difference in the character of the land, but in point of value one would be quite as good as the other. The land to the southward would be, if anything, of greater value.
230. In travelling along the proposed line to Casino, would the Committee gain a knowledge of the country to the southward as well? It would be scarcely a fair test. You would go through better country if you were going southward. If you go by the road, along the proposed railway, you will travel through rather worse country than the general run of the district.
231. Would the difficulties of railway connection be greater or less towards the Macleay than towards the Richmond? I think it would be slightly greater towards the Macleay. There is a piece of more broken country to the southward.
232. Will there be sufficient timber left for railway construction between here and Casino? Yes.
233. *Mr. Davies.*] What advantage would accrue to the people of this district, and to the State generally, if a railway were constructed from Grafton to Lismore? It would facilitate their getting to a market.
234. What would they get to market? If they go into agriculture they will get their crop to market; if they engage in dairying they will be able to get their dairy produce to market.
235. If a railway were made, what produce would be brought in this direction from Lismore and the district beyond? I do not think there would be much interchange of produce.
236. As a professional man, do you think that a railway, constructed at £7,000 or £8,000 per mile, from Grafton to Lismore would pay? I doubt its paying at present.
237. Do you think it would pay for the next ten years, and that it would pay interest on the outlay, even apart from working expenses? I have not given that question any consideration.
238. Are there any large holdings under cultivation on the proposed line? No.
239. If the railway is made what produce do you think will come in this direction? I do not know of any, except what may be grown on the land after the line is constructed.
240. In the event of the line being constructed, and continued south of Grafton to the table-lands, so that the distance between Sydney and Grafton by rail would be 537 miles, do you think that any produce would go by that railway in competition with water-carriage from this port? I think the principal use of the line would be to bring in produce from the various places, between the large and important rivers, to be shipped. I think the Clarence would have a very large share of such traffic, because of the difficulties in the way of navigation in some of the smaller rivers. There was a time, not long ago, at the Richmond, when there were only 5 or 6 feet of water on the bar.
241. Do you think any produce would be taken from here to Glen Innes and then on the northern line to Sydney? No; it would not pay to send produce that distance by rail.
242. Can you supply the Committee with a statement of the number of conditional purchases and leases during 1890 and 1891 in the Casino, Lismore, and Grafton districts, and also the number of conditional purchases and leases forfeited, and the amount of land available for sale, &c., within 20 miles on each side of the proposed railway? I will supply all that information at a later stage.
243. Why should the railway come to Grafton from Lismore, instead of tapping the Clarence River lower down? Grafton is the principal town, and another reason is the ease with which the line could be constructed. The principal reason would be that the river could be crossed easily, so as not to interfere with navigation.
244. Would the railway, if brought to Grafton, increase the amount of business? I presume it would. A railway is presumed in some way or other to add to the business of any town to which it is brought.
245. Are you not aware that, in many cases, a railway passing through a town has taken the trade away, and has not contributed to the prosperity of the country? Yes; but I do not think that that will ever be the case with Grafton, on account of its position on the river, and the quality of the land round about Grafton will save it from that fate.
246. Do you think that the railway would pay for the next ten years? I doubt whether it would by itself.
247. *Mr. Neild.*] Is there not a valuable tract of country a short distance from South Grafton, known as the Don Dorrigo Scrub? Yes; I reserved that scrub myself many years ago.
248. Is it valuable land? Yes; but it is very much over-rated, in my opinion.
249. Would it be superior to the bulk of the land between here and the Macleay? Yes; very much superior. What I mean to say is, that the extent of the land is over-rated.
250. Supposing the line were continued south of Grafton to form the proposed coast line, would that line run sufficiently near the Don Dorrigo Scrub to open it up? I am afraid it would need a branch line.
251. Has a line been surveyed through the Don Dorrigo Scrub? Yes; the proposed Guyra line. I think it would connect with the proposed coast line about 30 miles from here.
252. Are you acquainted with the route of the proposed line from Grafton to Lismore? Yes; it is easy country. It does not require an engineer to see that.
253. *Mr. Collins.*] Why was tobacco-growing discontinued in this district? I think it was because other crops paid better, such as maize.
254. If the railway were constructed, would it increase the rents of the annual leases? I think so. The railway would increase the price of everything in that way, because it would give facilities which do not exist at present.
255. Is there much stock traffic between Grafton and Lismore? Comparatively none.
256. Would there be any traffic if a railway were made? No. There is land closer to the Richmond district than Grafton for stock-raising purposes. At present the Richmond people send a great deal of stock to Tenterfield to be taken on the train there. If the railway were made they would probably send them here for shipment by sea, and also to the meat works.
257. *Chairman.*] Which would form the best port for the north coastal districts, Grafton or Lismore? There is no question that Grafton would form the best port. Steamers of much larger size can come to Grafton than can come to the Richmond. The Richmond has a more difficult bar and is a narrower river.
258. You have practically said that the line would not pay, but do you consider that the indirect advantages, such as the increased value given to Crown lands, the settlement of the people on the soil, reduction

Mr. P. R. Donaldson. 18 July, 1892.

of cost of maintenance of roads, &c., should induce the Government to construct this railway? Yes; I think the Government would be justified in making the railway on those grounds. I think the returns from the sale of land would go a very long way towards building the railway.
259. Is there much passenger traffic between the Clarence and the Richmond Rivers? Yes; from the lower part of the river.
260. *Mr. Neild.*] If a railway were constructed from Grafton to Lismore, would the people from the lower parts of the Richmond River come round by rail by way of Casino, or would they stick to the present coach route? I do not think they like the coach route very much.
261. What is the length of the coach route? It is only some 23 miles from Woodburn to Chatsworth, on the North Arm, and then there is another distance of 7 miles to Harwood, on the main river.
262. Do you think they would prefer to travel 82 miles by rail rather than go that short distance by road? Personally, I would prefer the railway—the road is very bad.
263. Do you think the public benefit to be gained by the proposed railway would be to increase the facilities for exporting the produce of the Richmond River by way of the superior harbour on the Clarence? I do not think the Richmond people will ever ship from the Clarence if they can possibly help it. The local jealousy is too great, unless their bar silts up.
264. Then what traffic would the railway obtain? The traffic which the settlement of the country between here and Lismore will bring about. That country, without a railway, is almost useless.
265. Then the produce of the country which this railway would open up would come to Grafton for shipment? Part of it would come to Grafton, and part to Lismore.
266. If the line were continued south to Newcastle and Sydney, do you think that much of the produce of the land in question would be sent on by rail? No; the distance is too great. The railway could not compete with cheap water carriage.
267. Then the line would be used as a local line from river to river, and not as a national line, connecting the whole of the coastal districts of the Colony? I believe it would be used more as I have said than as a through route, although it would be used also as a through line for passengers and mails, and probably for choice articles, which it was desirable to get quickly to Sydney.
268. Then the Committee, in considering this line, will have to consider not the transference of produce already grown from one river to the other, but rather the produce that is to be grown on the lands which this railway will open up? Yes.

Mr. Joseph Kempnich, farmer, Chatsworth, near Grafton, sworn, and examined:—

Mr. J. Kempnich. 18 July, 1892.

269. *Mr. Davies.*] How long have you resided in the district? Thirty-seven years.
270. Is the land between Grafton and Lismore wholly occupied for grazing purposes? Yes; for raising cattle.
271. Do you know of any trade, or of anything existing between the two points, which would be sufficient to pay interest on the cost of construction of a railway at the rate of £7,000 or £8,000 per mile? If the railway were made, it would enhance the price of land, and it would encourage people to settle down and cultivate the land. It is not possible for them to do so at present.
272. From what point would produce come to this railway? Between Grafton and Casino, produce will be brought to Grafton to be shipped by steamer to Sydney.
273. What would be the probable amount of produce which would come from the country which you think will be occupied shortly after the construction of the railway? Some of the land will grow 50 bushels of maize to the acre; some of the land will grow potatoes and tobacco.
274. Would you be surprised to learn that the interest on the cost of this railway, apart from working expenses, will be £26,000 a year? I do not consider that that would be a bit too much.
275. Do you think that any trade would be developed, sufficient to justify expenditure of that kind? I have no doubt that ultimately the railway would pay. I should say it would pay in ten or twelve years.
276. Outside of Grafton has there been any large settlement within the last five years? Parties have settled down along the route of the railway. They are mostly engaged in grazing or in driving teams. Some of the land they have taken up is good, and other land is indifferent.
277. Do you know of any dairies or butter factories being established in your district? The only one is at Ulmarra—the industry is young yet.
278. *Mr. Collins.*] How much land do you hold? Five hundred acres. I have about 100 acres under cultivation, and the rest is used for grazing. I cultivate mostly sugar-cane, and also maize. We have to grow maize in turn with sugar. Those two crops pay. I live 40 miles down the river, towards the Heads. I send my corn to Sydney.
279. What is the average price which you obtain? Lately, 3s. This year is the lowest that has been for some time. Generally I get from 3s. to 4s. 6d. Three shillings is a very low average.
280. Do you send any corn to New England? No; I have a readier market in Sydney.
281. Why was tobacco-growing discontinued? Because other things pay better. Most people have gone in for sugar-growing.
282. *Chairman.*] Is the sugar-growing industry on a sound basis? Yes; it is a far better crop for farmers than any other.
283. Is that the reason why maize is not so much grown as it used to be? Yes.
284. Have you any difficulty about selling your cane? I manufacture my own sugar and dispose of it in the Sydney market, or sell it to the storekeepers on the river. There has always been a certain and regular market for sugar.
285. Have you heard of any sugar planters or farmers selling out? Yes; there are always some failures. The cause generally has been improvidence and speculation.
286. Did they find they could not make cultivation pay owing to want of knowledge? Yes.
287. Would it suit you better to have a railway made from Grafton, rather than from a point lower down? I think Grafton is the proper place. I regard it as the capital of the district.
288. Do you look upon it as the best place for a harbour and depôt for stores in the district? Yes.
289. *Mr. Neild.*] Do you regard Grafton as the centre of the district? Yes; as the head of navigation.
290. Where is the bulk of the agriculture carried on—is it above or below Grafton? There is most cultivation between Grafton and the sea.

Mr. J. Kempnich. 18 July, 1892.

291. Between here and Casino is the land suitable for sugar-growing? No; the climate would not allow of it.
292. What is it suitable for? The growth of potatoes or cereals. I daresay it would grow hemp. I believe it would grow maize, up to 60 bushels an acre in some places.
293. Would it grow wheat? I believe it would. It is better drained land than I have seen in other districts where they do grow wheat.
294. In the vicinity of the proposed line, do you think wheat could be grown to supply the requirements of the district? Yes; under favourable circumstances. The land is quite good enough.
295. What is the nature of the land between the line and the coast? It is good; but it is more patchy towards the coast.
296. What is the nature of the country west of the railway line? With the exception of one or two places, such as Deep Creek, I do not think much of the land there. It is fine land for grazing. There is a splendid rainfall, in comparison with other places.

Mr. Octavius Lloyd, railway surveyor, sworn, and examined:—

Mr. O. Lloyd. 18 July, 1892.

297. *Chairman.*] Have you surveyed the proposed line from Grafton to Lismore? I have made some modifications and improvements over about 25 miles of it.
298. Has a permanent survey been made of the line, and has it been staked out in the usual way? Yes.
299. Have you travelled over the proposed route? Yes; I know most of it intimately.
300. What is the nature of the country between here and Lismore? When I surveyed the line, four years ago, it was a very good season, and the country was remarkably well grassed at that time.
301. What is the nature of the land between Lismore and Casino? Most of it is very rich land. The land between Casino and Grafton is very good grass land, under good conditions of rainfall.
302. Are there many engineering difficulties on this line? There are few, with the exception of the crossing of the Richmond River; that will be a heavy work.
303. What is the width of the river? Twenty-three or twenty-four chains of flooded ground.
304. How is it that the cost of the line is so high? My estimate, given before the Public Works Committee at Lismore, was £6,000 per mile; I do not think it will be that.
305. Do you not know that the departmental estimate is £8,000? That includes a lot of other things—railway plant, station buildings, and resumption of land.
306. Do you mean to imply that £6,000 per mile, from your point of view, would pay for all these, as well as construction? I am inclined to think so.
307. What is the ruling grade? One in 50 is the determinate grade, but there is very little of that. The grades are all very easy.
308. Did you survey a deviation near Casino? Yes; a deviation starting about 13 miles from Casino, and in connection with the Tenterfield line.
309. Does that lengthen the line? Yes. We altered the crossing of the river.
310. Does the lengthening of the line reduce the cost per mile? It all depends upon the working of the line. It may considerably reduce it if it tends to lessen the working expenses, by easing the grades.
311. Is the total cost of the line, with the deviation, greater than the cost of the original line? No; it is less, I think, because we escape some flat ground which might be flooded. The deviation has not been worked out. It takes very much higher country, and altogether, I think, it is a general improvement.
312. Do you know the estimated cost of the proposed bridge across the Richmond? No; but I imagine it to be £30,000 or £40,000.
313. Would it not be possible to dispense with that bridge by using a steam punt, such as they have at Sacramento and Detroit? I do not think so. There is a fearful current in the Richmond River, which would militate against the working of such punts.
314. Is there any scrub country between Casino and Lismore? No; it consists principally of black soil flats. It principally consists of private land. The Armstrongs and Dawson own a lot of it. The land is pretty well all alienated. It is all good land.
315. Have you now arrived at a decision as to which is the best route for the line? Yes; the line now adopted is altogether the best route. I do not think there is likely to be any further revision of the survey.
316. *Mr. Collins.*] Did you survey a line from Tenterfield to Casino? Yes; I have just finished it.
317. Do you think it is more advisable for the railway to come to Grafton from Casino rather than to take it to Tenterfield? Along the surveyed line to Tenterfield the country is of a very inferior character. The average quality of the land between Casino and Grafton is superior to that between Casino and Tenterfield.
318. Is there much settlement between Casino and Tenterfield? There is scarcely any settlement, except at Drake.
319. *Mr. Neild.*] Does your estimate of £6,000 a mile for the proposed railway include a bridge over the Richmond? No; that estimate is exclusive of the bridge. I stated before the Public Works Committee, with reference to the Tweed line, that I thought the first and second sections could be let for £9,000 a mile, and that this one could be let for £6,000 a mile. The contracts have been let for about £8,500 per mile, so that I was not far out.
320. Does your estimate include the cost of land resumed? Yes. The present labour conditions are very favourable for works of this kind.
321. Are you aware of the official estimate for this line? No.
322. Are you not aware that the official estimate, inclusive of land and compensation, is £8,000 a mile? I was not aware of that.
323. Were you in the district when the Railway Commissioners visited it? Yes; I was on the Tweed line at that time.
324. There is a statement in the Commissioners' report as to the existence of cedar along the proposed line between here and Casino;—do you know of any cedar there? No.
325. Is there ballast on the line? In places there is not; but there is plenty of good timber. The cuttings would be very short leads, and it would not be necessary to carry the soil any distance.
326. What surveys have you conducted? Cootamundra to Gundagai, the North Coast line, this line, the Tenterfield line, and several lines in Victoria.

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327. Speaking from the knowledge you have gained, do you think that the land from here to Casino along the proposed line of railway is suitable for settlement? Yes; most of it. In some places for agricultural settlement, but pastoral settlement would predominate. The proportion would be four or five pastoral to one agricultural. Along Myrtle Creek there is a good deal of settlement. A settler there told me that he grew a very good crop of oats. The cattle on the stations there always look very fat.
328. Have any surveys been made between the lower parts of the Richmond and Clarence Rivers? I am not aware.
329. *Mr. Davies.*] How far is Myrtle Creek from Grafton? About 50 miles.
330. Did you make a survey of the line at the junction with the proposed line to Tenterfield? I made the preliminary survey, and an assistant made the actual survey.
331. Will the deviation shorten the line? Yes; I think it will make a difference of something like a mile.*
332. Have you surveyed the point at which it is suggested to make the connection with Tenterfield? Yes.
333. Is the country there very much of the same character on the Tenterfield side as it is at Myrtle Creek? There is a strip of very fair land at one place, but you get into the coal measures and poor land across the Richmond range. There is very good land on the river bank, near Tabulam.
334. Are the earthworks along the line surveyed very heavy? No.
335. Is there not a run of 30 miles, with 20 to 30 feet cuttings? Yes; but the cuttings are very short.
336. What is the character of the stone? It is fairly soft.
337. How long were you in the district engaged on this work? For four years and a half.†
338. Are you of opinion that this line can be constructed from Grafton to Lismore at a price not exceeding £7,000 a mile? Yes; excluding the cost of the bridge.
339. Are you aware that the Engineer-in-Chief for Railways has included in his estimate the cost of the bridge? I was not aware of that.
340. Would that not make his estimate pretty much the same as yours? I daresay it would.
341. Do you make your estimate so low because the labour market is so depressed? Partly that, and also owing to the presence of timber along most of the line; and then I take the cost of other lines in country of the same character. For instance, the Cootamundra to Gundagai line, which was let for about £5,000 per mile. At that time a good many works were going on simultaneously.
342. Do you think that this line would pay interest and working expenses within the next ten years? I think it would. There is no doubt that a lot of land along the line will be cultivated, and if the entrance to the Richmond River is bad, I should always look for a lot of traffic from that side.
343. If all the land along the line were cultivated, would there be sufficient traffic between Grafton and Lismore to enable the railway to pay an annual charge of £40,000? I do not think so for some years.
344. *Chairman.*] If you included in your estimate the cost of a bridge over the Richmond River, what difference would it make per mile? £500.
345. That would make the railway cost £6,500 per mile;—are you inclined to repeat your statement that you think the line would pay (say) within ten years? I think it would. There is no doubt there would be a great amount of settlement if the railway were constructed.

Mr. Thomas Page, accountant, Grafton, sworn, and examined:—

Mr. T. Page. 18 July, 1892.

346. *Mr. Neild.*] How long have you been a resident in the district? Thirty-seven years. I was engaged in business for some years as a bookseller, and of late years as an accountant and financial agent.
347. Do you wish to make a statement to the Committee? Yes. Grafton was incorporated a borough town 19th July, 1859. The area within municipal boundaries is 3,072 acres, and embraces the town of Grafton and Grafton South, connected by steam ferry and steam punt. The population on 5th April, 1891, was:—East Ward, 924; West Ward, 1,516; North Ward, 1,187; South Ward, 818; total, 4,445. The number of householders in the borough is 805. The length of streets is 48 miles. The capital value of the unimproved ratable property for 1892 is £65,119; the capital value of improved ratable property, £659,370; I estimate the capital value of unratable properly (including churches, Government buildings, public schools, schools of art, hospital, park lands, &c., vested in trustees) at £120,000; making a total capital value of land and buildings, £844,489. The income of the borough for the municipal year ending 1st February, 1892, was:—From local sources, £1,934 19s.; from Government, £726 11s. 7d.; or a total of £2,661 10s. 7d. The expenditure was £2,448 4s. 2d. The ordinary rate of 1s. in the pound for the present year will yield a revenue of £1,650. The amount of risks covered by fire insurances within the borough exceeds £300,000. The population of the suburbs of Grafton, on the north side:—Carr's Creek, 401; Alumny Creek, 475; Southgate, 561; total, 1,437. On the south side:—Southampton, 733; Clarenza, 309; total, 1,042. Grand total, 2,479—making the total population of Grafton and its adjoining suburbs, 6,924. The number of mails despatched from the post offices at Grafton and South Grafton each week, are:—

	Grafton.	South Grafton.	Total.
River mails	123	24	147
Southern districts	4	14	18
Table-land	13	12	25
Northern districts	2	...	2
Sydney, by steamer...	6	6	12
Total	148	56	204

The number of letters, newspapers, and packets posted at Grafton and South Grafton Post Offices for the year ending 31st December, 1891, was:—

	Grafton.	South Grafton.	Total.
Letters	312,387	11,738	324,125
Newspapers	323,949	5,558	329,507
Packets	65,571	714	66,285
Total	701,907	18,010	719,917

The

* NOTE *(on revision)*:—This I find to be incorrect.
† NOTE *(on revision)*:—I was engaged not on the Casino to Tenterfield line during the period mentioned—four years and a half—but on the Grafton to Casino, Casino to Lismore, Lismore to Murwillumbah, and Casino to Tenterfield lines.

Mr. T. Page. 18 July, 1892.

The telegrams transmitted from Grafton and South Grafton for the year 1891, were:—Grafton, 19,813; revenue, £1,465; South Grafton, 3,315; revenue, £178; total number, 23,128; total revenue, £1,643.

348. How do you think that the construction of this railway line between Grafton and Lismore will affect the despatch of telegrams from Grafton, or how will the despatch of telegrams affect the construction of the railway? I give the figures to show the importance of Grafton as the chief centre of the north coast district. Grafton is the chief centre of the school inspectoral district, extending from Cape Hawke to Point Danger. In this school district there are 269 public schools, with pupils enrolled, on 31st March last, to the number of 13,223. Grafton has a Superior Public School, with separate departments for boys, girls, and infants, and has 720 enrolled pupils. South Grafton Public School has 197 pupils enrolled. The total number of enrolled public school pupils in Grafton is, therefore, 917. Applications for the establishment of High Schools for boys and girls, and the erection of school buildings for that purpose, is now under the consideration of the Minister of Public Instruction, and is being taken up by the public as a matter of interest to the cause of public school education in this portion of the Colony. Grafton is the head office of the local Land Board, district of Grafton, which embraces that portion of the eastern division from Camden Haven to the Queensland border. Grafton is the assize town for the north coast district, and Supreme Court sittings are held here twice a year. The county gaol for these districts is now in course of erection in Grafton, within the town boundaries, at a cost of £17,711. The Australian Joint Stock Bank has branches in Grafton and South Grafton, and the Bank of New South Wales, Commercial Bank, and English, Scottish, and Australian Chartered have branches in Grafton. The Grafton branch of the Savings Bank of New South Wales is the seventh largest branch of that bank in the Colony, and on the 31st December last it had 749 depositors, with the sum of £27,161 balance to their credit. The Church of England, Roman Catholic, Presbyterian Synod of Eastern Australia and General Assembly, Wesleyan, Baptist, and German Lutheran each have substantial brick churches, and with the exception of the Baptist and German Lutheran, have also substantial parsonages attached; and all, except the German Lutheran, have resident ministers. The tariff rates for marine insurance on merchandise are:—From Sydney to Grafton by steamers, 10s. per cent.; by sailing vessels, 25s. per cent.—as against the rate to Byron Bay, and other ports; by steamer, 25s. per cent.; by sailing vessels, 40s. per cent. The population of the electorate of Grafton in April, 1891, was 9,852; the Clarence, 8,221. Total for the Clarence district, 18,073. Householders in electorate of Grafton, 1,890; in the Clarence, 1,516. Total for the Clarence district, 3,406. Four river passenger steamers ply daily from Grafton to all the towns on the river, and a regular steamship twice a week between Grafton and Sydney; there is a passenger coach from Glen Innes to Grafton four times a week, and from South Grafton to the Bellinger twice a week. Grafton is supplied with gas by a private company, with a capital of £8,000, all subscribed and expended in the construction of the works, and in laying of mains. The price charged for gas supplied is at per 1,000 feet, and the Company pays a good dividend—8 to 10 per cent. per annum—on its shares each half-year, and has a reserve fund of £850. The Borough Council contracts with the Gas Company for supply of gas for street lamps, and a lighting rate of 3d. in the £ is levied, yielding £412. No permanent water supply has yet been provided for Grafton. A scheme has been reported on by the Engineer-in-Chief for Harbours and Rivers for a supply from the Orara River, about 9 miles from South Grafton, and the cost is estimated at £27,500, exclusive of cost of reticulation. The Grafton Hospital has accommodation for twenty-six indoor patients, and is under the management of a trained nursing staff. During the year 1891, 162 indoor patients, and forty-three outdoor patients were treated in this institution. The ordinary income for the year was, from local sources, £530 8s.; from Government, £311 10s. 2d. The total cost of the institution for the year was £750 14s. 9d.; the average cost of indoor patients treated, £4 12s. 8d. During the year 1891, the Grafton Benevolent Society rendered assistance to 193 persons. The total expenditure of the Society was £310 16s., and the income from local sources, £109 14s. 10d.; from Government, £106 6s. 5d. In connection with this Society there is a small cottage home. The Clarence Pastoral and Agricultural Society has its exhibition grounds and buildings in Grafton. The number of members for the present year is 226. The total income for the year ending 30th June last, was, from local sources, £771 9s. 6d.; from the Government, inclusive of a special grant, £300; and district national prizes, £236=£830 12s., or a total of £1,602 1s. 6d. The expenditure for the year was £1,667 11s. 9d., and the Society debit balance, £895 2s. 11d. The value of the Society's plant and buildings is over £3,000, exclusive of the land, which was a grant from the Crown. The Society was established in 1866.

348½. Are these statistics correct, to the best of your knowledge and belief? Yes; they are supplied from official sources.

349. Do they apply to the affairs of the city and district of Grafton during the past twelve months? Yes.

350. Can you give the Committee, for the purposes of comparison, statistics with relation to the affairs of the district for five or ten years past? I have not prepared them.

351. Then you are not prepared to state whether there has been progress or a retrograde movement? From my knowledge of all these institutions, I know there has been marked progress every year.

352. Has there been an increase in the population? Yes; but not within the municipal limits since 1890. There has been a regular increase of population in the rural parts of the district. That is due to natural increases, and from people coming from other places.

353. Are there no coaches running between Grafton and the Richmond? There are none from Grafton, but there are between the lower parts of the rivers.

354. So that although there is a road between Grafton and Casino, practically along the route of the proposed railway, there is no traffic from point to point? There is not at this end of the road. People in Grafton wishing to go to Casino, instead of following the road, go down the river to go by coach. There is very little traffic along the road near to Grafton, because it is almost impassable. The traffic goes from Lawrence to Casino, simply because it is a much better road.

355. Do the settlers along this line of proposed railway come south to Grafton along the road? No; they come from Casino to the Cross Roads, thence straight to Lawrence, or up to Grafton.

356. You have mentioned steam-ferries in your statistics—are they private ventures? No; they are Government property—they are very extensively used.

357. Can you give any idea of the revenue and working expenses of those ferries? I cannot give official figures, but I believe that for some years the Department have professed to spend over £1,000, as the net earnings of the ferry. That is voted on the Parliamentary estimates.

358. How much will the new gaol cost? About £17,700.

359. At what value did you estimate the present gaol building in your statistics? £3,000.

Mr. T. Page. 18 July, 1892.

360. Is the present gaol overcrowded? It has been reported on several occasions to be considerably overcrowded, and consequently an agitation was got up.
361. From what source do you expect the proposed railway will get its largest income? For a considerable time I think a very large trade will be carried on in timber in hardwood.
362. Is the hardwood in this district superior to hardwood in other districts? Yes; it is exported from here to Melbourne and New Zealand.
363. Does not the district already possess facilities for the shipment of timber superior to those in other parts of the country? Yes.
364. What increase of facilities would there be if the railway were made? To bring the timber to a place of shipment.
365. Do you consider that this railway should not only be brought from the Richmond here, but that it should be extended southwards? I think the only argument in favour of constructing this piece of railway is, that it is part of the coastal line.
366. What would be the trade of a coastal line? It would act as a feeder to the rivers in the first instance, and it would be a convenience for the travelling public who wish to go right through, and it would convey goods that could not be sent by steamer; that is, goods required in a short time, and perishable produce.
367. What is the time, by steamer, from here to Sydney? Thirty-six hours.
368. What would it be by goods train? About twenty-four hours.
369. Would that make it worth while to send goods by rail? Yes.
370. Do you ever get Tasmanian fruit here? Yes.
371. Is it seriously damaged when it arrives here? Yes; fruit does not carry very well.
372. Then it must be a matter of great surprise that fruit can be shipped from Australia to England? They take more care in packing it than when they send it here.
373. Do you think it would be better to send fruit indifferently packed by railway than to take the trouble to pack it properly and send it by sea? Yes; because you would have a certainty of the fruit arriving, whereas by sea you have to wait for a steamer.
374. How many steamers are there running per week here? Two regularly each week, and others when required.
375. Has there been much increase in the area of land under crop in the Clarence district during the last few years? Yes.
376. Has there been any increase in steamer communication? Not, perhaps, in the number of steamers since the amalgamation of the steam companies took place, but when a great many steamers were running they were not running full. There has been an improvement in the class of steamer. The freights are as low now as they ever were.
377. Is it not a fact that a certain quantity of goods from New England now comes by way of Grafton along the Newton-Boyd road, and is sent by sea in preference to being sent by rail? Yes; but not so much as there was before the railway was made.
378–9. If this proposed railway is made, what will be the principal source of revenue? First, from the sale of Crown lands along the line, at present reserved and blocked against settlement. Then the produce of the land and the timber. The land will be taken up for dairy-farming and pastoral purposes. All the Crown lands along the line are reserved.
380. There is only a total of 358,000 acres of Crown lands and reserves in a total area of 1,640 square miles between here and Lismore, along the railway route. Do you think that if the railway were constructed the whole of the area would be purchased? Yes.
381. What would this land be worth per acre, taking the good and bad together? If there had been selection without any special restriction, it would have been sold at the ordinary price of £1 per acre.
382. Might the 358,000 acres bring £500,000 as special areas? Yes.
383. If the timber were all cut what would the land carry? It would be used for agriculture, dairy-farming, cattle-breeding, and fattening. There would be the carriage of cattle by rail for consumption and export.
384. Is it customary in Australia to truck cattle for short distances? If the line were constructed, I believe they would be trucked instead of driven.
385. Are you in the habit of shipping fat cattle? A considerable number were sent to the Sydney market last year, and two years before that. There would also be the carriage of maize which would grow on good agricultural land along the line, besides hay, oats, and barley.
386. Is that produce which would have to be exported from here to find a market? A good deal of it would be consumed locally, and a good deal shipped to Sydney.
387. Are these articles now produced locally? Yes; and there is a surplus for export.
388. Would there be much passenger traffic? Yes; there would be a considerable passenger traffic. All the traffic between the rivers would be done by the railway.
389. *Mr. Davies.*] If a railway were constructed from Grafton to Lismore, and not continued to the table-land, would it be of little or no service to this district? It would be of service in this way, that a considerable portion of the trade of the Richmond River would be done by way of the Clarence.
390. Do you think any large proportion of the produce of the Richmond and Tweed would come here? A large proportion of the trade of the Upper Richmond would come this way for shipment to Sydney, and, I believe, it would be cheaper for that district to get its supplies from Sydney by Grafton.
391. Are you aware that the distance by rail from Grafton to Sydney would be 534 miles? Yes.
392. And that the estimated cost of construction of a line from Glen Innes to South Grafton is something like £2,000,000? Yes.
393. And that the proposed line before us, in conjunction with the railways at present in course of construction, will cost about £1,700,000, making a total of nearly £4,000,000? Yes.
394. Is there any probability of a trade being developed along those lines in the near future which would pay interest on such a large sum of money? I believe it would pay, directly and indirectly, within a reasonable time—that is, five or ten years after the completion of the whole of the lines. I reckon that on the table-land of New England it would be quite possible to settle at least a quarter of a million people within ten years of the construction of the line to Glen Innes.
395. Are you aware that within a radius of a few miles of Glen Innes there is splendid soil, but that the land is unoccupied at present? Yes; for the reason that the settlers cannot get their produce to market. I understand that when the produce amounts to a certain output they burn the surplus.

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396. Supposing a railway were constructed from the table-land at Glen Innes to Grafton, where would the produce go? It would first supply the local consumption, and the rest would be exported by steamer.
397. Do you think that a large proportion of the products of the Richmond and Tweed Rivers would find their way to Grafton? Yes; because they would grow a class of produce which thrives there better than on the Clarence, and flour and other produce could be sent to them in return.
398. Are you aware that there is a larger proportional increase of settlement on the Richmond and Tweed Rivers than there is in this district? Not larger in proportion, when compared with the corresponding years when the district here was settled.
399. What about the last three years? I do not think the population there has increased very much during that time.
400. What about 1890 and 1891? In 1890 a large amount of land was taken up, but the population there now is rather decreasing than increasing.
401. One hundred and forty thousand acres of land have been taken up there, as against 40,000 acres taken up here. Does that not show a large increase during the last ten years? The Clarence had the same impetus to settlement previous to that time as the Richmond has had since.
402. Unless this proposed railway is continued to the table-land (say) at Glen Innes, will it be of any material advantage to this district? With a connection it would be of greater advantage than it will be without a connection with the table-land. If the settled population in this district opened up new industries between here and the Richmond there would be a great increase in the importance of the trade.
403. What kind of industries do you refer to? More particularly the dairying industry, and small holders, carrying on cattle raising.
404. Are there any dairy factories in this district? One. It is quite a new industry.
405. Do you require a railway to establish that industry? We want a railway for the purpose of settling population along the line. A dairy farmer will not go 20 miles into the bush unless he has an opportunity of getting his produce to market.
406. Would it not reach the best market by steamer? I am speaking of land 20 miles away from the port.
407. Are you aware that in the southern districts many dairy factories are fully 20 miles away from a railway, and that they give splendid profits to the shareholders? I believe that that would be also the case here within 20 miles of the surveyed line.
408. If the railway carried the whole population as passengers, would it pay the annual charges? I believe these districts are only beginning to be settled. They are only one-quarter occupied at present.
409. *Mr. Collins.*] Do you think that if the railway were connected with the railway system of the Colony at Morpeth, passengers would pay the heavy cost for travelling by rail rather than by steamer? A great many of them would, although the majority, of course, would consider the question of £ s. d.
410. What is the cost of travelling by steamer from here to Sydney? £2 each way, and £3 10s. return.
411. Would not most of the produce be sent by steamer? Most of the produce would be sent by steamer from all the rivers, notwithstanding the railway.
412. Therefore, we cannot expect much traffic in the shape of produce? No; except as the railway would act as a feeder to convey produce to the river for shipment.
413. Do you know that produce is generally carried at a loss on our railways? I believe that is the case at present on some of the railways. That is on account of the rates which are charged to prevent the trade from going into other channels.
414. Consequently, if produce was carried on this railway line it would not be profitable to the State? Not all the way, but I believe full rates might be charged for 50 miles each side of the rivers.
415. Is this climate favourable for wheat-growing? No.
416. Is much butter imported to Grafton? Very little. Cheese is mostly imported.
417. Do any of the storekeepers import condensed milk? I have not heard that that is the case.
418. Is there a great deal of fruit imported here? Bananas, oranges, tomatoes, and pine apples grow luxuriantly here, and are consumed locally. Fruits which we cannot produce are imported.
419. Are there any fruit-preserving works here? No.
420. What is done with the fruit grown here? It does not pay to export it, and it practically goes to waste.
421. Would not fruit-preserving pay in this district? Yes; if taken in hand by somebody who understood the initial process.
422. Is there a large importation of jam and other preserves? Yes.
423. You have sugar and fruit produced locally, and yet you have to import jam from other places? Yes.
424. *Chairman.*] What are the industries of this district? Sugar growing on the lower portion of the river, and on the upper portion maize and cattle raising.
425. Have you no canning factories? There is a small fish cannery at the Heads, and tinned meat works. Those industries are well established, and profitable.
426. Do you think it probable that any industries will be started here, in making jams and preserves? I believe it could be done easily by somebody who understood the process, because the large buildings and plant in connection with sugar mills, which are now idle, could be utilised as factories.
427. Do any of the local residents make preserves? Most of the farmers in the district make their own preserves.
428. Is it probable that there is a very good opening for establishing industries of that kind? Yes; but nobody is in a position to go into the business on a large scale,
429. Have you any boot factories here? Yes; there is one extensive establishment in town, and many others on a smaller scale.
430. Is the leather tanned here? Yes.
431. What makes you speak so confidently about the railway from Grafton to Lismore tapping a large proportion of the Richmond trade? Commercial considerations. I believe that the requirements of the people in the Upper Richmond will be met at a cheaper rate by means of the railway, than by any other means. Owing to the difference in freight, insurance, and time, it would be possible to land goods at Casino, by way of Grafton, much cheaper than in any other way.

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432. Do you think that the people of the Upper Richmond would favour this line? I believe they would change their minds after the line was constructed. As a matter of sentiment, I have no doubt that they would say at present that they would not patronise it for any consideration.
433. *Mr. Neild.*] You have stated that the people of Glen Innes are not able to grow wheat, although they have very good soil, because they cannot afford to pay the railway freight? Yes.
434. What is the rate of freight for wheat or grain from Grafton to Sydney, by steamer? 15s. 6d. per ton.
435. If you grew wheat in Grafton, could you afford to pay that freight to Sydney? Yes.
436. Do you know the proposed rate which the railway authorities say they would charge for the carriage of wheat from Glen Innes to Grafton, if this line were made? No.
437. The amount is 12s. 1d. To that will have to be added 15s. 6d. for steamer freight from Grafton to Sydney, making a total of £1 7s. 7d. per ton from Glen Innes to Sydney. Do you think that that would be any advantage to the people of Glen Innes, or that it would increase the trade of this locality? It would be so much less than the present rate on the northern line of railway.
438. Are you aware that the rate of freight for wheat from Glen Innes to Sydney, during nine months of the year, is only 16s. 4d. per ton? If the same differential rate were charged for the distance from Glen Innes to Grafton, it would not amount to 12s. 1d.
439. Do you not recognise the fact that over long distances goods are carried at lower rates, proportionately, than they are over short distances? Yes.
440. As long as 15s. 6d. per ton is charged by steamer, will it not be necessary to bring wheat from Glen Innes to Grafton, a distance of 110 miles, for about 10d. a ton, in order to make the freight equal to the present rate charged from Glen Innes to Sydney? If wheat came to Grafton in sufficient quantities it is probable that instead of the freight being 15s. per ton to Sydney as at present, it would be 5s. per ton. Commercial enterprise would regulate that.
441. Do you think it would pay to carry wheat at such a rate? Yes; just as it pays to take goods from Newcastle to Sydney at a low rate. It is only a question of so much coal.
442. If steamers get 15s. 6d. a ton at present, instead of 5s. per ton, must not the proprietors be making a handsome income? Not exactly, because they may run the steamers without their being full.
443. Do you think that any goods would be sent 537 miles by rail? Yes.
444. Have you ever heard of any goods being sent between Sydney and Melbourne by rail? Yes; I have a recollection of some drapery being sent from Melbourne to Sydney. They were original packages, sent on to Sydney.
445. Do you recognise the fact that water carriage is very much cheaper than railway carriage? Yes.
446. Has the chief idea which has actuated you and others, in advocating this railway, been to make Grafton, with its exceedingly fine river, the great shipping depôt of the northern portion of the Colony? Yes; and to do something more. I think nature has already made this the chief shipping port of the north coast districts, and we want to do something to hurry up the work.
447. You think that the construction of a line from Grafton to Lismore would have the effect of increasing the trade of the Clarence River? Yes, to a great extent.
448. And that the construction of a line which would connect this proposed line with the table-land of New England would also have the effect of sending a large volume of traffic to Grafton? Yes; and with a connection further south.
449. Would you look for more goods coming this way than the other? I should look for a larger amount of produce from the south of the Clarence than from the north.
450. And that output would be shipped from the Clarence? Yes.
451. *Chairman.*] Do you wish to make a correction in any part of your evidence? Yes. I stated that the freight, per ton, for maize from Grafton to Sydney was 15s.; I should have said that it was 10s. per ton.

MONDAY, 18 *JULY*, 1892.

[*The Sectional Committee met at the Crown Hotel, Grafton, at* 8 *p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (CHAIRMAN).

The Hon. JOHN DAVIES, C.M.G. | JOHN CASH NEILD, Esq.

CHARLES COLLINS, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Captain Henry Creer, s.s. "Kallatina," sworn, and examined:—

Captain H. Creer. 18 July, 1892.

452. *Chairman.*] How long have you been trading to the Clarence River district? Thirty-three years. I am thoroughly acquainted with the entrance to the river, and have a good knowledge of the district generally.
453. Will you give your views as to the Clarence River and the future of the district, and as to what should be done to aid it? The first twelve years that I was trading to the Clarence River we had 9 or 10 feet of water at the outside on the bar, and we thought ourselves well off. In those days we scarcely made four successive voyages without being detained for days, owing to the sea rolling in at such a height. Once I was seventeen days detained, and another captain was twenty-one days, and the vessels we used then were very suitable ships for the trade. I consider that the whole of the improvement which has taken place on the Clarence bar is owing to the northern breakwater. Before it was built the ebb tide flowed along the north beach instead of going out due east as it does now. There is now a constant scour in the channel. Formerly we had only 8 or 9 feet of water, where we now have 18 feet regularly. I have been running my ship during the last twelve months without being detained for an hour. I can take her over the bar at any state of the tide. I think if the breakwater were taken 500 or 600 yards further we should have a still better and deeper channel.
454. Do you know what improvements are now in progress at the Heads? Yes; I have seen the plans. The sea wall which they contemplate may be a very good thing if they can get a bed rock foundation for it,

Captain H. Creer. 18 July, 1892.

it, but it is a sandy bottom, and very deep. I am afraid that when there is a fresh the great scour will undermine the sea wall.
455. Were the first works constructed at the Heads successful? No; I never thought the southern breakwater was wanted, because the South Head serves as a breakwater. The only other obstruction is a reef projecting north from the South Head. Through that reef there is a channel of 4 fathoms. The late pilot used to bring in deep-loaded vessels through this channel, where there are quite 4 fathoms of water. If that channel had been made a little wider the ebb tide would have cut a channel there, whether there was a south breakwater or not. I pointed that out to the late Mr. Moriarty.
456. Will the blowing away of that reef improve the entrance? Yes; I was three days anchored off the bar outside. My ship was drawing 8 ft. 6 in., and there was only 7 ft. 6 in. of water in the channel at the top of high water. I had to wait until the ebb tide scoured the channel. That was twenty-six years ago.
457. Does not the bar at the Clarence Heads shift very considerably at times? It does not do so now—it did at one time.
458. Have the improvements already made secured a depth of 18 feet? Yes.
459. Do you consider that the blowing away of the reef, and the extension of the northern breakwater, will still more improve the entrance? Yes.
460. What depth do ocean-going steamers require when they come fully loaded to the Clarence? My ship draws 11 ft. 6 in.
461. Is there ample depth on the bar for vessels of that class? Yes.
462. Granted that the improvements are carried out, do you think the entrance to the Clarence River will be safe in all weathers? Yes; I am sure the day is not far distant when there will be 28 feet of water on the bar.
463. What depth of water is there in the river? You can get almost any depth, but it is apt to shoal up, owing to constant freshes in the river.
464. Once over the bar, is a vessel drawing 13 feet pretty secure, so far as depth is concerned? Yes; the gun-boat which came here drew 13 feet.
465. What is your opinion with regard to the construction of a railway to connect the Richmond River district with the Clarence? I think it is very urgently required.
466. What points of the river should the railway strike? Grafton, Casino, and Lismore. That would be a continuation of the North Coast railway.
467. Why would you prefer to come to Grafton? Because the head of the navigation is always preferable.
468. Has Grafton become the centre of the trade of the whole district? Yes.
469. Is it possible to so utilise the Clarence River at Grafton as to make this the harbour and depôt for the trade of the north coastal district? Yes.
470. Would the proposed railway have the effect of making Grafton the entrepôt for the trade of the north coast district? I decidedly think so.
471. What is your opinion with regard to the stability of the district? It only wants a little assistance to make it a go-ahead place.
472. A few years ago, was it a very thriving place? Yes; when the teams used to come down from Glen Innes, Armidale, and Tenterfield.
473. Do you bring many passengers from Sydney to the Clarence? Yes; the steamer is nearly full every trip.
474. Are many of these passengers for the Richmond River district? Yes; a great many. They come this way because there is a greater certainty of getting to Sydney than if they went by the Richmond. Our boats run regularly.
475. Then it is probable that if a railway were made to connect the Clarence and the Richmond, there would be a fair passenger trade? Yes.
476. *Mr. Neild.*] What is the tonnage of your steamer? Six hundred and eighty tons.
477. Is the draught of your steamer greater than the draught of your former vessel, the "Agnes Irving"? Yes; by 2 feet.
478. Is there a good depth of water at the Elbow? So much that I have never touched bottom with my ship.
479. Have any improvements been carried out there? Yes, and they are permanent. The Elbow itself is completely dredged away. There is no sudden turn now, and the scour in the channel seems to carry a larger body of water with it.
480. Has there been any marked improvement in the exports and imports of merchandise at the Clarence? Yes, very much. The population has increased here to such an extent as to counterbalance the loss of the New England trade. My ship is nearly always full.
481. Has there been any material increase in the population of the towns on the Lower Clarence? Yes; there has been a great increase, principally at Maclean.
482. Do you think that, if the railway were made from Grafton to Lismore, it would cause persons from the Lower Richmond, who desire to reach the Clarence, to travel round by way of Casino, rather than use the coach? Yes. They would do so on account of the bad state of the roads.
483. If it were possible to thoroughly improve the navigable water at the Richmond Heads, would there be less likelihood of trade coming thence to the Clarence? Yes; but I think the Richmond cannot be improved to any great extent. There is no south head there such as we have on the Clarence, and we have the best bar on the coast.
484. *Mr. Davies.*] Can you enter the Clarence Heads at any time without risk to life and property? Yes.
485. Do you come in at night? I have come in for many years, and several times at night with moonlight. We could come in at night easily enough if we had a series of lights, but it would hardly be fair to ask for that.
486. Some years ago was it very difficult to cross the Clarence bar? Yes, it was very difficult indeed.
487. Were a number of vessels lost on the bar at different times? The "Urara" went over the end of the reef because the buoy was washed away. The "New England" was lost from some other reason. She was lost on the bar, when it was in a very bad state. There were not more than 12 or 13 feet of water on the bar at that time.

Captain H. Creer. 18 July, 1892.

488. Has the trade increased very much since you have been trading here? Yes, very much. When I first came we could only get a few casks of tallow and some hides. Then maize began to be cultivated.
489. What is the nature of your outward cargoes now? Maize, sugar, molasses, potatoes, and various other kinds of produce. Wool occasionally finds its way down here. We have had a good many bales lately—it comes from Glen Innes. We do not get so much wool now as we used to before the northern railway was built.
490. Is the falling off in the wool made up by the increase in other commodities? Yes.
491. Have you more tonnage now than you used to have when large quantities of wool were shipped? Yes.
492. What are the other rates for freight between Grafton and Sydney? Five shillings a bale for wool, and 12s. 6d. per ton for other commodities, except when a very bulky article is brought. We carry maize at 1s. a bag. At one time we used to charge 3s. a bag, and £1 a bale for wool.
493. What is the charge for passengers between here and Sydney? First-class single, £2; return, £3; second-class single, £1; return, £1 10s.
494. Has the passenger traffic increased during the last twelve months? Yes, very much.
495. Has that occurred since the amalgamation of the companies? I cannot say that, because there were a great many coming before; but there were more steamers running. There are only two now, the "City of Grafton" and the "Kallatina." A third steamer runs occasionally, and she is always full.
496. Is the capacity of the boats now running equal to the capacity of the whole of the boats which were previously running? The capacity of the present boats is more than equal. We run with greater regularity with two large ships, and the capacity is greater than that of the former steamers. Before we never ran two ships a month, now we run four ships a month.
497. Has the carriage of goods and passengers increased during the last twelve months? Yes.
498. Have the facilities for getting in and out very much improved? Yes; there is no risk whatever now.
499. Is the river silting up? No; there is ample depth, and we can steam up and down the river at any hour of the night.
500. Which is the shallowest spot in the river? The Ulmarra Crossing, and a spot just below Grafton. We sometimes touch there.
501. What is the depth of the shallowest part? About 11 feet at low tide.
502. Has it silted up there to some extent? Freshes have sometimes left a little deposit.
503. Do you think that any passenger traffic, or other traffic which could be developed, would be likely to pay the interest on the cost of constructing this railway, together with the working expenses? Railway communication always encourages traffic. Hundreds of passengers who would not go by sea would use the railway.
504. Are you not aware that railways have been constructed at great cost in some instances in the Colony, and yet the traffic is not sufficient to pay the cost of grease for the wheels? Yes.
505. Would it not be a waste of money to incur such great expenditure for this railway? I think if Grafton had been connected with Glen Innes years ago, there would be a very large trade established to-day.

TUESDAY, 19 *JULY*, 1892.

[*The Sectional Committee met at the Pilot Station, Clarence River Heads, at 2 p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.

Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Henry M'Auley, pilot, sworn, and examined:—

Mr. H. M'Auley. 19 July, 1892.

506. *Chairman.*] How long have you been pilot here? About ten years.
507. Was the navigation of the entrance safe when you first came here? Not in all weathers. It was safe in fair weather, for vessels drawing 11 feet 6 inches or 12 feet.
508. Have there been any wrecks since you came here? One; the "Mary Ballantyne."
509. What is the state of the entrance now, as compared with the time when you first came here? It is much better now; both for water and for working. At present there are 19 feet of water on the bar at spring tide.
510. Has the breakwater on the north side of the entrance improved it? I do not think so. I think the improvement is due to floods and the straight channel opening out from Rabbit Island.
511. Is there any sign of the bar increasing between flood times? No; the bar has not increased to any extent for the last four years.
512. Do you consider that if Sir John Coode's scheme is carried out the entrance will be materially improved? Yes. I think the works will give a greater depth of water, and they will make the entrance comparatively safe in ordinary weather.
513. Have any vessels been bar-bound during recent years? There have been none detained for want of a sufficient depth of water, but they have been detained on account of the weather.
514. *Mr. Neild.*] Do many sailing vessels enter the port? Not many lately.
515. Is the entrance now as good, or better, for sailing vessels than it was when you first took charge? It is better.
516. Has there been any alteration in the direction of the channel? Yes; the channel has been of late a straight channel, east and west, in and out.
517. Has the straightening of the channel produced a scour? Yes.
518. Had you experience as a mariner before you became pilot? Yes; I was in three sailing vessels trading to this river.
519. Do you think that it is now much easier, or only a little easier to work a sailing vessel into harbour than it used to be? It is only play to work a sailing vessel into the harbour now compared with what it used to be.

Mr. H. M'Auley. 19 July, 1892.

520. Do you think that the proposed straightening of the channel will tend to deepen the water still more? Yes.
521. Is 18 and 19 feet the extreme depth at high water? We have had more than that lately. We have had 20 feet and 21 feet at spring-tide.
522. What is the depth at ordinary low water during the year? About 15 feet at low water.
523. Do vessels come in at night? No; they lie off. Some of the steamers have come in at night.
524. Has Captain Creer ever brought in his steamer at night? Not to my knowledge. I have towed vessels in and out at night.
525. Is there a Government tug-boat here? Yes; I took the vessels in before the Government tug-boat came here.
526. When further improvements are carried out, will it be possible for vessels to enter at night? Yes.
527. Will that be due to having deeper water, or a straighter channel? A straighter channel.
528. Is this port as equally well buoyed and lighted as other ports? Yes.
529. Do you think that further lights would simplify the entrance, so that steamers could enter at night? I do not think it would be possible.
530. Do the steamers go out at night? Not unless it is a very fine, clear, moonlight night. Sailing vessels do not attempt to go out at night unless they are towed.
531. Is the shipping increasing? Not lately.
532. Is the tonnage greater? Not during the last few months.
533. Do you know the entrance to the Richmond River? Yes; I have traded there.
534. Is the Richmond River entrance as good as the entrance to this river? No; it is more shallow and crooked.
535. Do you think it is likely that the Richmond River entrance can be made equal to the entrance here? I hardly think so.
536. *Mr. Collins.*] What is the largest vessel that has come in here lately? The "Fiona," which is in sight now. She carries 1,050 tons.
537. Did one of the large warships come here? Yes; the "Lizard" went right up to Grafton. She got right through, up and down, without trouble.
538. *Mr. Davies.*] Is it your opinion that the works carried out up to the present have been of little or no service in improving the channel? Yes.
539. Would you set up your opinion against that of engineers? I do not pretend to do so. The Chairman asked me if I considered the north breakwater had improved the entrance. Of course, I only gave my opinion.
540. What do you attribute the improvement in the channel to? To the floods, and not to the works.
541. If the floods had occurred without these works having been carried out, do you think that you would now have quite as good a channel? I do not say that. I know that before the floods the channel was worse than I ever know it to be before.
542. Do you know that there were any number of floods long before you came here? Yes.
543. Why should not those floods have scoured out the channel when the works did not exist? That would depend on how the channel worked out. The channel never did work out here before at any of the floods.
544. Is not the present improvement, therefore, attributable to the works carried out? I do not know.
545. How many men are employed on this station? Six, all told, including myself and the light-keeper.
546. What is the cost of the station here? I do not know; but the wages come to over £60 a month.
547. What allowances are granted? A house is found.
548. What other Government establishments are in this locality? The post and telegraph office, and the Harbours and Rivers Department. There are two in the telegraph office.
549. What is your opinion with regard to Sir John Coode's plans for the improvement of the entrance? If they are carried out they will make a good port of the Clarence. Of course there will always be easterly and south-easterly gales, but when the sea is not too heavy this will always be a safe port to enter. It is tolerably safe now.
550. Do you know of any harbour on the coast which is in any way equal to this harbour? Outside Newcastle, there is none.
551. Do you think that when Sir John Coode's plans are carried out the harbour will be safe for much larger vessels than those which now come here? Yes; it will then be safe for vessels drawing 17 or 18 feet, and perhaps more.
552. Do you take soundings yourself? Yes; once and twice a week, and sometimes oftener.
553. Do you observe a continual changing of the channel? No. When the channel changes much we sound oftener than I have stated. It is most necessary to take soundings after a flood or a storm.
554. Can you give us a record of the soundings? Yes; the following soundings were taken at high-water:—September, 1891, 19 feet; September 25, 18 feet; September 28, 18 feet 6 inches; October 6, 18 feet; October 7, 19 feet; July 8, 1892, 18 feet.
555. What was the depth of water after February, 1890? Seventeen feet on 9th February, 1890. That was before the flood.
556. What was the depth of water in March, 1890, after the flood? On March 2, 13 feet and 15 feet—the small beacons in line. The next sounding is 17 feet on the 19th March. That was the first sounding after the flood.
557. How do you account for that? The flood cleared it out, and cut away the inner bar.
558. Since then have the soundings been almost uniform? It has not been anything like it was before the flood.
559. Has the channel been very much improved since March 19? Yes.
560. Has it been a uniform depth since? No.
561. You have read out a depth varying from 17 to 19 feet? Yes; after the flood the depth increased, when the muddy water cleared away.
562. *Chairman.*] You read out one sounding of 17 feet before the flood. How do you account for having that depth of water without the aid of the flood? The place was closing up then—the depth fluctuates.
563. In those days were there two channels? Yes.

Mr. H. M'Auley. 19 July, 1892.

564. What caused them to go into one channel? The floods. There was no other cause that I know of.
565. Did not the dredge break loose and strike the sand-bank? The channel was clear then.
566. Do you think that the drifting away of that dredge had anything to do with making the two channels into one? No.
567. Are the whole of the breakwaters constructed by Mr. Moriarty to be utilised for the breakwater recommended by Sir John Coode? No.
568. Therefore, will the money spent on them be altogether wasted? No.
569. *Mr. Collins.*] How long is it since you have been on the Richmond River? Just before I came here.
570. What was the largest vessel that could then go into the Richmond? The barque "Examiner," 260 tons, went in.
571. Is that the largest vessel you know of which went in there? Yes.
572. *Mr. Neild.*] Is the northern breakwater part of Sir John Coode's scheme? No.
573. Is it proposed to extend it further? No. A lot of it is to be lifted and to be used in the making of the new breakwater.
574. Where is the new northern breakwater to be constructed? North of the present northern breakwater.
575. In what direction is it to be taken? Speaking roughly, it will be, E.S.E. or S.E. by E.
576. When you were giving evidence, did you mean to say that this was the best harbour connected with a river on the coast, except Newcastle? Yes.
577. *Chairman.*] Are we to understand from your statement that it is impossible to light the inner harbour, or inner portion of the entrance, so that a ship may come in at night? Not until the improvements are effected, or beacons are put there.
578. When improvements are carried out, how could you light the entrance so as to make it safe for shipping at night? You could have a light-house at the end of the training wall.
579. Would you light the buoys by electricity? I have never seen that done, but I suppose it could be.
580. Do you think that by the ordinary method of lighting it could be done? Yes. That would be sufficient to guide vessels coming in at night in fair weather, but there should be other leading lights as well.

Mr. Mordaunt Leyburn Maclean, civil engineer, sworn, and examined:—

Mr. M. L. Maclean. 19 July, 1892.

581. *Mr. Neild.*] Are you at present resident at the Clarence Heads? Yes; I have been here ten years.
582. Are you the officer in charge of the works being carried out by the Harbours and Rivers Department? Yes; I have had charge during the whole of that time.
583. What has been the influence of the improvements already carried out at the entrance to the river? So far, I think, the influence has been very slight, because the works are at such an incomplete stage. I do not think they have had any material effect.
584. Has there been any material improvement in the depth of water? Yes; and in the straightening of the channel.
585. Has that been owing to the works carried out, or to natural causes? To natural causes—floods.
586. Have the works been of an expensive character? Yes; they have cost about £230,000.
587. Does that include the staff expenses at head-quarters? I think so. Everything is supposed to be charged to the votes for the work.
588. Has this expenditure of nearly £250,000 been practically without result? It has had a very slight result. It was never expected to have any result, as far as it has gone.
589. Have the works which you are now carrying out been designed by Sir John Coode? Yes.
590. Does the £230,000 expenditure cover any of the preliminaries of Sir John Coode's scheme? Yes; I think about £20,000.
591. Does the scheme which you are now carrying out differ materially from the old plans? Yes; there is an entire alteration.
592. Will it have the effect of still further straightening the channel? Yes.
593. Do you anticipate that the further straightening of the channel will effect a further deepening? Yes.
594. Is there any estimate of the depth which will be obtained when the improvements are all carried out? Sir John Coode expects a depth of 24 feet at high water.
595. Is the depth of water at present on the bar sufficient for the class of vessels trading here? Yes.
596. If there were a greater depth than at present, would there be trade for larger vessels? Yes; and there would be much more safety in bad weather for the existing vessels.
597. What will be the cost of the improvements you are now carrying out? Sir John Coode's estimate of his scheme was £590,000.
598. What are you proposing to carry out now? At present there is only to be the southern training-wall, and only a small portion of the southern breakwater, bringing it back to where it was some years ago. It is not really an extension.
599. Are you going to touch the northern side at present? I have no instructions to that effect.
600. Is it part of the scheme to do away with the whole of the northern breakwater? Yes.
601. It is not intended to do that at present? Not as far as I know.
602. If you were informed that the Committee have received evidence to the effect that the improvement of the entrance is chiefly due to the northern breakwater, would you be inclined to adopt that view? Certainly not. I do not think the northern breakwater could possibly have improved the entrance at present.
603. What depth of water is expected to result from the portion of the improvements you are now carrying out? I believe it will make as much water on the bar as Sir John Coode expects from his complete scheme.
604. What is the nature of the works you are now carrying out? We are going to make the training wall up the river from Freeburn Island down nearly to the southern reef, and to repair the old breakwater.
605. Are any works to be done on the northern side in your present scheme? The scheme I refer to more particularly is that recommended by the last Sectional Committee—that is, the southern training-wall, repairs to the southern breakwater, and the protection of the northern side of the channel.
606. What is the nature of the protection proposed to be given to the northern side of the channel? Stone protection along the face of the present Iluka shore.

607.

Mr. M. L. Maclean. 19 July, 1892.

607. That is practically strengthening the breakwater? It is really keeping the shore in its present position.
608. What is the nature of the improvements or repairs to the southern breakwater? Only an extension to where it was a few years ago. It has been washed away. It formerly ran between 400 and 500 feet to eastward, nearly in a due easterly direction.
609. Will the straightening of the wall on the south side be the particular work which will straighten the channel? Yes; and direct the water in a certain direction on to the bar.
610. The object will be to improve the scour? Yes.
611. How long will it take to carry out the proposed work? About five years.
612. Will it take a much longer time to carry out the works as a whole? If the works were being carried on simultaneously the whole of it would be done almost as quickly.
613. *Mr. Davies.*] What is your staff? An assistant and a clerk at present.
614. Has that been the staff all along? Yes.
615. Has the work been carried out by contract? Yes; and I have had to supervise the work of the contractors.
616. What are the salaries of yourself and staff? I have £450 a year; my staff assistant, £285; and clerk, 6s. per day.
617. Have you expended £230,000? Yes; and £109,000 has yet to be spent.
618. Is that to carry out the improvements recommended by the Public Works Committee, and approved of by Parliament? Yes.
619. Do you think that the carrying out of that modified scheme will secure a permanent and safe harbour for all vessels that may trade to this port? Yes; it will give them a safe passage at all times.
620. Have you a pilot steamer here? There is a subsidised tug.
621. Is that under the control of the pilot? Yes. I have nothing to do with that steamer. She is under the Marine Board.
622. Are there any harbour dues charged here? No; nothing but pilotage, which is only collected from unexempt vessels. Three passages in and out exempt the master of a vessel.
623. Do you know of any river harbour on the coast equal to that of the Clarence River? I do not think there is any river on the coast equal to it. Certainly not for the body of water. There is no harbour on the coast so safe at present, except Newcastle.
624. *Mr. Collins.*] Have you had any other harbour works under your supervision? No.
625. Do you know the Richmond River? Not very well.
626. If the same amount of money were spent on that river as has been spent on the Clarence do you think that it would be as good as the latter? No.
627. *Chairman.*] Do I understand you to say that the works recommended to be carried out by the Public Works Committee will make the entrance to this river as safe as if Sir John Coode's full scheme were carried out? Yes.
628. What reason have you for forming that opinion? I think the breakwaters which Sir John Coode proposes to place here are unnecessary. We have seldom any sea here of any consequence. I have never been here when there was a sea to prevent vessels coming in. It has only been a question of the depth of water.
629. Then the Public Works Committee, by their recommendation in that respect, have actually saved the country the money that would have been required to complete the scheme? They have saved the cost of the breakwaters entirely, as only a small portion of the south breakwater is to be constructed.

Mr. Frederick Thomas Kimpton, in charge of ferries at Grafton, sworn, and examined:—

Mr. F. T. Kimpton. 19 July, 1892.

630. *Mr. Davies.*] Have you charge of the ferries at Grafton in connection with the Harbours and Rivers Department? Yes. I reside at the Ferry Cottage, South Grafton.
631. What steamers have you charge of? The "Ruby," "Swift," and "Nellie." They run between North and South Grafton. The "Nellie" is a relieving steamer.
632. What is the name of the boat which runs the ferry between North and South Grafton? The "Ruby."
633. What is the weekly cost of the management of the "Ruby" for coal and labour? About 4 tons of coal per week, and the wages of two men. One man gets 9s. per day, and the other 8s. per day. I have charge of all the steamers.
634. What are the weekly takings for passenger fares on the "Ruby," between North and South Grafton? About 2,000 passengers a week.
635 Have you made out a return showing the weekly passengers carried between North and South Grafton from 14th February to 16th July of the present year, and also the number of vehicles, &c.? Yes. The return is as follows:—

Traffic at Grafton Ferry for the last twenty-two weeks—14th February to 16th July, 1892.

	Foot Passengers.	Horses.	Vehicles.		Foot Passengers.	Horses.	Vehicles.
1	2,018	490	181	13	1,033	532	197
2	1,722	464	180	14	1,719	360	145
3	1,906	436	172	15	2,013	346	141
4	1,945	443	168	16	1,895	459	146
5	1,663	429	136	17	1,949	431	158
6	1,599	354	122	18	1,653	371‡	126‖
7	1,408	413	155	19	2,064	522	173
8	1,518	81*	20†	20	2,312	534	205
9	2,013	583	163	21	2,230	458	177
10	1,945	317‡	92§	22	2,277	633	196
11	2,135	500	197				
12	3,033	648	217		43,550	9,813	3,467

* Flood. † Punt one day. ‡ River up § Punt five days. ‖ Punt six days.

Mr. F. T. Kimpton. 19 July, 1892.

636. What is the amount charged per horse and buggy? One horse and buggy, 9d.; coach, with three horses, 1s. 3d.; 6d for a vehicle, and 3d. for each horse, for return on same day.
637. Does the cost of maintenance which you have given include the cost of running the steam ferry between North and South Grafton? No; there are two more men for the steam ferry—one each shift.
638. Does that ferry pay? None of them pay at present.
639. Is it the only means of communication between North and South Grafton? At Dobie-street there is a ferry run by the municipal corporation.
640. Has the traffic increased during the time you have been in charge? It has slightly increased. At first the rates for passengers was 3d. each way, 1s. for one vehicle, and 6d. for a horse. Now, the passenger fare is 1d. for return ticket. We really carry double the number of passengers, which is shown in the figures, which I have handed in. On an average, we have twelve or thirteen monthly tickets, and about five weekly tickets.
641. What is charged for those tickets? Two shillings for a monthly ticket, and 6d. for a weekly ticket.
642. Is the ferry carried on at a great loss? Yes; at a loss of about one-half.
643. Is that because the fare is not equal to what it ought to be? Yes.
644. *Mr. Collins.*] Is it merely local traffic which is carried on between North and South Grafton? Yes; there may be a few passengers from outside.
645. Are there other ways of getting in to Grafton than by this ferry? People come into North Grafton by the Richmond and Casino Road, and they go across from South Grafton by the Dobie-street ferry. There is a great deal of traffic by steamer which does not come to the ferry. There are also a large number of passengers carried free on the ferry—Government officials, school children, and people going to church on Sundays, and to funerals.

TUESDAY, 19 *JULY*, 1892.

[*The Sectional Committee met at "Daniel's Hotel," Chatsworth Island, at 7·45 p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.
Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Alexander Lobban, District Inspector of Schools, Grafton, sworn, and examined:—

Mr. A. Lobban. 19 July, 1892.

646. *Mr. Neild.*] How long have you occupied your present position? Four years and a half.
647. What are the boundaries of your district? From Cape Hawke in the south, to the Tweed River in the north, and westward to the edge of the Dividing Range.
648. Have you travelled much over your district? Yes.
649. Do you know the proposed railway line between Grafton and Lismore? Yes; I have travelled the road more than once.
650. Is there much population along that road? There is not between Grafton and Casino. There is settlement at Myrtle and Myall Creeks.
651. Are there public schools at those places? There is not a school at Myrtle Creek. There is not a larger population at Myall Creek, but there are more children, and a school has been established.
652. How are the settlers engaged along the proposed line? Some of them are engaged in pastoral pursuits. I have not seen much agriculture.
653. Was there a good deal of selection along that line a couple of years ago? Yes.
654. Do you think that the proposal to build a railway in that direction induced many of the purchasers? Some of them.
655. Is the land of as good a description as the land in the neighbourhood of the Richmond River? It is a different class of land. At Myall and Myrtle Creeks there is good land, and also at other parts along the road. The land along the line is certainly suitable for pastoral pursuits, and along the creeks and river banks it is suitable for agricultural pursuits.
656. Is the land nearer the coast inferior or superior? Towards the coast in some places it gets swampy, but there is good land all along, between the coast and the proposed line.
657. Are the opportunities for the shipment of produce from the Richmond River as good as from the Clarence? Not by any means. The bar is bad. It is deep enough up the river, but not at the Heads.
658. Are the products of the two rivers alike? Yes; but chiefly cane is grown on the Richmond, and cane and maize are grown on the Clarence.
659. If the railway were constructed between the two rivers, would there be much produce to exchange? I think there will be some interchange. There is an interchange of cattle and other stock. I think there would be a considerable traffic in this direction.
660. Can you name any article which is likely to be purchased by the inhabitants of one river district from the inhabitants of the other? There will be considerable traffic in timber. The beech of the northern rivers cannot be obtained on the Clarence for building purposes.
661. Do you think that the proposed railway would be used to bring the products of the Richmond River to the superior shipping facilities of the Clarence River? Yes.
662. Do you know that it is proposed to extend this railway right on to Maitland, to connect with Newcastle and the metropolis? Yes.
663. Do you think that the producers of the Richmond River would be likely to send their produce the whole way by railway to Newcastle, remembering that the distance from here to Sydney is 537 miles, or would they ship their produce at the Clarence? I think they would ship largely at the Clarence.
664. Is it only special articles that you would expect to be sent by rail the whole way? Yes.
665. Has there been a large increase of population in the Clarence district during the time you have resided there? I can only speak as to the juvenile population, and that has regularly increased.

Mr. A. Lobban. 19 July, 1892.

666. Do you notice this increase in the Lower Clarence as much as in the Upper Clarence? Hardly so much. In the Orara scrubs and back places there is more settlement.
667. Do you find the same growth of juvenile population in the Richmond district? Yes, within the last year or two the increase has been very great.
668. To what do you attribute the unusual increase? To the railway works forwarding settlement. Towns are springing up, and sugar mills and dairy factories being established.
669. Are the townships likely to be permanent, or are they merely railway camps? On the railway line some are merely railway camps, but where the railway stations are the towns will probably be permanent.
670. Are not the people of the Richmond more likely to regard Byron Bay as their port rather than the Clarence? I would not say that. I think that if a railway were built it would carry the traffic south.
671. Do you think that the people of the Upper Richmond would be more likely to send their produce along to the Clarence than a shorter distance to Byron Bay? I expect that will be the case until Byron Bay is made a safer port than it is at present.
672. Are the products of the dairy factories here fairly equal to the products of dairy factories in other parts of the Colony? Yes.
673. Are the dairy factories joint stock companies? In some cases they are.
674. Are you aware that joint stock dairying companies have been successful in other parts of the Colony? Yes.
675. Do you think that the same enterprise would be successful in these districts? So far, they have been successful.
676. Is there any fruit production carried on in the Richmond district, and in the district lying between here and there? I have seen nothing worth noticing.
677. Is agriculture in rather a primitive condition in the eastern district? It is primitive when you get a little beyond the valley of the Richmond. The Richmond River Valley is a valley of sugar-cane, and the people seem to be devoting their whole attention to that product.
678. Are there many people travelling between the Clarence and the Richmond Rivers? I meet a great many. Harwood to Woodburn is the popular route.
679. Have you noticed much development of cane, or maize, or other agriculture in the Lower Clarence? Yes, lately.
680. Have the people begun to plant cane on the higher ground? Yes, and it is successful.
681. Is that likely to lead to a considerable increase in the area of cane cultivation? Yes.
682. Has cane-growing been successful on the Clarence and the Richmond? Yes, highly successful. It is far better than maize-growing.
683. Have many new mills been opened on either river? I do not know of any new ones; but many mills have been enlarged in this district and on the Richmond.
684. Are there not several mills standing idle in this district? They were all idle when I came here. I think they were always failures.
685. Do you think that if this railway were constructed, involving the yearly expenditure of £40,000 or £50,000, there would be sufficient traffic to enable the railway to yield a revenue which would meet that charge? It might not pay for some time; but the rate at which the population is increasing speaks well for the future.
686. *Mr. Collins.*] If a considerable amount of money is spent in improving the Richmond River bar, do you not think the Richmond River people will use that river for the shipment of their produce? No doubt they will use it if it can be made deep enough for large steamers.
687. Seeing that water-carriage is much cheaper than railway-carriage, are they likely to use the railway? I know that water-carriage is cheaper; but the people of the Richmond can always be sure of getting their produce away by the Clarence River.
688. If the Richmond can be improved, would it not be quite as sure as the Clarence River? If that could be effected, of course it would make a difference.
689. Then the return from the railway would not be so great as you anticipate? Perhaps not.
690. Do they send any produce from the Richmond now to the Clarence by steamer? There is a traffic between the sugar-mills.
691. Do they send any timber from the Richmond to the Clarence? Yes; but I fancy that it goes by way of Sydney.
692. Why do they not send it direct to the Clarence? There is no steamer trading regularly.
693. Do you think that the passenger traffic would come by railway? Yes; largely, because the people would be sure of being carried to their destination without delays by the way.
694. Will not the improvements at Richmond River Heads make the entrance deep enough for passenger boats? They may. Probably the passengers will go that way if the boats on the Richmond are as good as the boats on the Clarence.
695. Has not more money been spent upon the Clarence harbour than upon the Richmond? That may be the case.
696. *Mr. Davies.*] How many public schools have you in the district of Grafton? The enrolment in the schools in the Clarence River district for the last quarter was 3,960. The average attendance was below that; that is, for the quarter ended 30th June. We have about eighty schools in the Clarence Valley, two of them being Superior schools. Including the Brunswick and the Tweed, there are 4,495 children enrolled in the Richmond district. The number of schools is eighty-seven.
697. Then there is a larger number of children attending the schools in the Richmond district than there is in the Clarence district? The Richmond district is larger. I have only given the Clarence River Valley, whereas I have given the Richmond, the Brunswick, and the Tweed, and up to Fairfield and Tabulam. Drake has a large school.
698. From the figures you have given us there certainly must be a larger number of children attending the public schools in the Richmond than in the Clarence district? Yes; because the district is considerably larger, including the Brunswick and Tweed, as well as the Richmond.
699. Is not the population larger? It is not, acre for acre.
700. Must not the population be larger on the Richmond than on the Clarence? These figures show that there are more children in the whole Richmond district than in the Clarence Valley.
701. Has there been an increase in the electoral districts of Grafton and Clarence, or has there been a larger increase in the Richmond district? I know they have increased in all the districts, but there has been a larger increase in the Richmond district.

Mr. A. Lobban. 19 July, 1892.

702. Do you think that any possible development of traffic or settlement between Grafton and Lismore will justify the expenditure of £8,000 per mile on this railway? I am of opinion that the prospects of the district would warrant the expenditure. My opinion is, that farms will be taken up near the railway line, and that the land there is fit for farming. The old districts are being closely settled.
703. Do you not know many districts in the Colony where railways have been constructed where there is good agricultural land, and where it has not been taken up and cultivated—for instance, Glen Innes? My idea is, that if a railway were constructed here, the excellent water communication would be certain to provide traffic. More land would be opened up, and the goods would be brought to the rivers for shipment.
704. Is it your opinion that the products of the Richmond Valley would all find their way to Grafton, to be sent thence by steamer to Sydney? By no means.
705. What products are we to expect from the land which will be taken up? Grain would be produced, and perhaps fruit.
706. Have you ever seen wheat grown in the district? No: it would not pay at present.
707. What is the distance from Woodburn to this place? Twenty-six miles.
708. What is the distance from Woodburn to Lismore? Forty-five miles by water.
709. If a railway were constructed between those two points, would it serve the two rivers as well as the line from Grafton to Lismore? Certainly not. All the Upper Richmond and all the Upper Clarence would be left out.
710. Is the passenger traffic between Chatsworth and Lismore by coach much greater than it is between Grafton and Lismore? There is no coach traffic between Grafton and Lismore. The traffic is from Harwood and Chatsworth to Woodburn, and also from Lawrence to Casino.
711. Do you think that a railway from Lismore to Grafton would be of any material advantage to the people of Grafton if it were not continued to the table-land? You cannot say at once what the interchange of trade may be. I have no doubt there would be a considerable interchange of trade, and considerable passenger traffic to the north. The Tweed is a beautiful district, and the products of the Tweed are not identical with the products of this district.
712. Do you see any prospect of sufficient traffic existing to pay for the cost of making a railway from Lismore to Grafton, and from Grafton to Glen Innes? It would be no more expensive, comparatively, than the railway which has been made from Sydney to Bathurst. With this great ocean highway of ours, we should be connected with the table-land.
713. No matter what may be the cost? Yes; it would pay by-and-bye.
714. *Chairman.*] Are you of opinion that Grafton ought to be the port for the north coast districts? Yes.
715. Do you consider that the entrance to the Richmond River is of such an uncertain character that the people there had better rely upon the Clarence as their port? Yes.
716. Although the land between Grafton and Casino is not first-class, do you think the railway should go that way as a portion of the North Coast Line? Yes.
717. Supposing this line is built, and another line is carried on from Grafton, *via* the Don Dorrigo Scrub, to Guyra, would that line serve as a connection with the table-land, and at the same time provide a good port for the whole of the north coast districts? Yes.
718. Would you prefer that line to the Glen Innes line? From a national point of view, I should say that the line should go to Glen Innes. The first thing to do is to connect the north coast district with a certain port, and that is Grafton.
719. Do you consider that it would be an advantage to the State to construct this railway between Grafton and Lismore for the purpose of providing a good harbour for the whole of the northern districts? Yes.
720. Do you think that this line will promote settlement, increase the price of Crown lands, cheapen the cost of transit, reduce the cost of maintaining main roads, of carrying mails, and so forth? Yes.
721. If the Great North Coast Line should be ever carried out, would a line between Grafton and the Don Dorrigo Scrub form a portion of that line? One portion of the line would be common to both.
722. What is the nature of the country from the Orara to Don Dorrigo? It is all fine agricultural land, with nice river flats and hills; but it is of a different formation to the Richmond country.
723. Is there much settlement about Orara and Don Dorrigo? There is not much about Don Dorrigo; but there is about Orara, and it is being cultivated.
724. Is the reason why there is not much settlement about Don Dorrigo the fact that it is reserved from selection? People cannot get to market from there easily, and a large area has been reserved.
725. Do you favour the proposal to construct this line in the hope that it will provide a market for the northern districts, and that ultimately Grafton will be connected with the table-land *via* Don Dorrigo, and also by a portion of the North Coast Railway? I consider the connection between the coast district and the table-land must certainly be south of Tenterfield, and it must take either the Don Dorrigo or the Glen Innes route.
726. What is the reason why the settlements about the Clarence are improving and progressing, while the town of Grafton itself appears to have been stagnant for some time? I do not think Grafton is stagnant. While the adult population may have scattered a little, I cannot say that the juvenile population has decreased.
727. If the facts point that way, what would you think was the reason? No public works have been going on at Grafton since I have been in the district; whereas in other parts of the district, and on the Richmond especially, large public works are going on continually.
728. Do you think that the trade formerly done by Grafton is now, to a large extent, done by Maclean, Lawrence, Chatsworth, and other little centres on the river? No doubt that is one reason.
729. Therefore, the fact that Grafton is not progressive does not indicate in any way that the Clarence River district is retrograding or even stationary? The Clarence district is not retrograding, it is progressing.
730. *Mr. Neild.*] You have said that a railway from Chatsworth to Woodburn would not suit the purposes—that a line more westerly would suit—because it would leave out the Upper Richmond River and Grafton? Yes; supposing the people of Lismore ship to Woodburn, they would have to unship there, transfer to train, unload, and re-ship at Harwood, the cost of which would be much more than the freight itself.

731.

Mr. A. Lobban. 19 July, 1892.

731. Do you think it would cost more to load and unload per truck than to pay freight for 55 miles more of railroad? There would be 45 miles of water carriage to Woodburn, then 25 or 28 miles by train; then there would have to be a bridge across the arm of the river here, and, in my opinion, a railway from Woodburn to Harwood is utterly impracticable. There would be this broad river to cross.
732. Do you consider that that would be insuperable? I consider the route impracticable.
733. How would you get a train from Don Dorrigo, and the district south of Grafton, into Grafton, except by crossing the river? You would not have such a river to cross as there is here in getting to South Grafton.
734. Is the river at Grafton narrower than it is here? There is South Grafton; I do not see any necessity for bridging the river there at present.
735. Would you favour a break in the railway communication? I think it would be quite practicable.
736. Would it be more difficult to make a railway across the north arm of this river than across the Richmond River? Yes; it is considerably broader here than the Richmond at Lismore, and the banks are lower.
737. Are you of opinion that this district is entitled to railway communication, irrespective of any prospect of the railway paying? I am honestly of opinion that the district is entitled to railway communication, and that the money already given to the country for land sold in the district would fully justify the claim of the district to the expenditure, and I am of opinion that future prospects will warrant the country in undertaking the expenditure.
738. Does the district of the Clarence always produce more than sufficient maize for its own wants? When the flood swept away all the maize we had to import some.
739. Where did it come from? I have bought maize that came from San Francisco.

Mr. John Reid, storekeeper, Chatsworth, sworn, and examined:—

Mr. J. Reid. 19 July, 1892.

740. *Mr. Collins.*] How long have you been here? Fifteen years.
741. Do you know anything of the Richmond River district? I know the district between here and Woodburn. Woodburn, by road, is only 18 miles from Lismore. It is 26 miles from here to Woodburn.
742. Has there been any proposal made with regard to a railway from Woodburn to this place? There was a proposal made, and an original survey made to Iluka. There are no engineering difficulties in that line at all. That line was surveyed fifteen or sixteen years ago.
743. Was there any reason why it was not carried out? The Richmond River people got jealous, and thought it would make a lot of the Clarence, and ruin the Richmond; and they petitioned Parliament to stop it, so as to prevent their trade coming to the Clarence.
744. If a line were constructed from Grafton, *via* Casino, to Lismore, do you think the Richmond people would object to that? No; I think they have more sense now.
745. Do you think that if a line from Woodburn to this place were now proposed the Richmond people would object to it? No.
746. Would it be a more favourable line than a line *via* Casino? It would go through better country.
747. Is the country between here and Woodburn good? It is good for grapes all the way through. At New Italy they are growing very good grapes.
748. Has the land been alienated? For 5 miles out there is no Government land.
749. Would there be any benefit gained by the sale of Crown land? No; there is some land 10 miles further out which is now used for grazing. It is now open for selection. The station which held it gave it up.
750. Why? Because they got better land up the river. It was Vickery's station. They have abandoned the lower end of it.
751. How far is this land away from any port? It is only 5 miles from here.
752. And people will not take up that land? They could not take it up for growing cane.
753. Could they not take it up for grazing? No; because they can run their cattle there free.
754. Do you trade with the sugar planters? Yes; all my trade is with them.
755. Is it a prosperous industry? Yes.
756. Do you use much of the Clarence River sugar? Yes; second-class sugar.
757. Where do you get your first-class sugar? From Queensland, because it is £1 cheaper than the Sugar Company supply it from Sydney. The Company does not sell or refine sugar here. I get Queensland, because it is £1 to £1 10s. a ton cheaper. I buy it in bond from the Sydney agent. I do not get anything by taking it in bond.
758. Are there any other productions which you sell in your store which might be manufactured in this district, but which are imported? I get tinned meats from New Zealand because they are cheaper.
759. Do the farmers grow maize? No; because it pays better to grow cane. We buy a great deal of maize up the river.
760. Do you do any business with the Richmond River district? No; when the Richmond bar is closed, as it is very often, we send flour, potatoes, and other things over there.
761. Where do you get your flour from? Sydney.
762. Do you send flour to Woodburn? Yes; that is only when the bar is closed.
763. Do any of these goods go to Lismore? No.
764. How do they get goods when the bar is bad? They are in a position to keep larger stocks.
765. If the line were made, would there be an interchange of products between the two districts? Yes; there would be oranges. Bananas are grown in both districts; but the industry has been closed here because freetraders allow the Fiji bananas to come in free.
765½. Would you be surprised to hear that there are no bananas grown on the Richmond River? I think there must be some grown there. If not, we could send them bananas which would grow here.
766. Why do you not grow bananas here and send them to the Richmond now? Because there is no carriage. We would have to send them first to Sydney and then to the Richmond.
767. Do you send oranges from here by steamer? There is not a great number grown here, but I do send oranges from here almost every week.
768. Do they pay you? Yes; simply because the oranges in this district are better than they are in Sydney, or up the river.
769. *Mr. Davies.*] What is the character of the country between this district and Woodburn? It is grazing country. A great deal of the timber has been cut down.

Mr. J. Reid. 19 July, 1892.

770. Did you say that the interchange between the two districts would be principally oranges? I believe that there would be a large trade between the two places, and I believe that even the fruit trade would be good. Our brewery at present has to send its beer to Sydney first, before it is sent to the Richmond.
771. Do you think it would be a paying transaction for the Government to construct a railway at a heavy cost for the purpose of carrying oranges and beer? There is timber as well. We have hardwood on this side which they have not on the other side, and they have timber over there which we have not on this side.
772. Do you think that the construction of a railway between Grafton and Lismore would be of any advantage to the district on this portion of the river? What benefits one part of the district must benefit all. If the Grafton people have a better outlet for their productions we can produce a great many things better than they can.
773. If a railway were constructed to Glen Innes and the Richmond from Grafton, do you think that the produce of the Clarence River would be sent to Grafton to be forwarded by rail to those other places? I believe that our sugar would be sent to Glen Innes, and that Glen Innes would send us wheat and flour.
774. As a business man, do you think that any of the products of this district could afford to pay railway freight to Sydney, which would be a distance of 537 miles? No.
775. Do you think it would be wise for the State to construct a railway for such a long distance, to carry fruit and products of that kind, without any hope of the line paying? No; but at the same time the sugar going up and the flour coming down would pay.
776. If all the flour used in this district and in the Richmond were brought by rail from Glen Innes, would it pay for the cost of the railway? Certainly not.
777. Would it serve better to have a railway between this point and Woodburn than to have it between Lismore and Grafton? No; because the railway would have to be constructed further to reach deep water. It would have to be taken to Harwood.
778. *Mr. Neild.*] As a business man, do you consider it would pay equally as well to send sugar from here to Grafton by steamer, and then to send it by rail to Glen Innes, as to send sugar from the Richmond to Glen Innes by rail, without any water carriage? I should think it would pay best to send it from the Richmond.
779. Then it would be to the advantage of the Richmond, rather than to the Clarence, to construct such a railway? Yes.
780. What distance is it from Harwood to Lismore, by land? It is 6 miles from here to Harwood by road, 26 miles from here to Woodburn, and 18 miles from Woodburn to Lismore.
781. Would that be only half the distance, as compared with the road from Grafton to Casino and Lismore? Yes.
782. What sort of bananas were grown here some time ago? Ladies' fingers, plantains, and three or four different sorts.
783. Were not plantains the principal ones? Yes; there were six plantains to one of the other sort.
784. Has not the consumption of plantains entirely gone out of fashion in the metropolitan market? Yes.

Mr. William Neill, coach-driver, Chatsworth, sworn, and examined:—

Mr. W. Neill. 19 July, 1892.

785. *Chairman.*] Do you drive the coach between Chatsworth and Woodburn? Yes.
786. How many times a week? Three times there, and three times back.
787. Are there any other coaches besides yours running? Yes; two others.
788. How many passengers do you take per week? My passenger traffic is between twelve and fourteen a week each way.
789. Are there 100 passengers a week altogether? No; I think there are sixty passengers per week in the three coaches. That is about thirty each way.
790. Do most of those passengers reside in the Richmond River district? They come this way when the Richmond River bar is bad. The road is bad, but the bar is worse than the road.
791. Is the road a very bad one? Yes.
792. Notwithstanding the bad state of the road, people come from the Richmond River district for the purpose of taking passage from the Clarence River to Sydney? Yes.

Mr. James Kirk, cane-grower, Chatsworth, sworn, and examined:—

Mr. J. Kirk. 19 July, 1892.

793. *Mr. Davies.*] How long have you resided here? Twenty-eight years. I have been engaged in my present business for twenty years.
794. What area of land have you under sugar? About 120 acres.
795. What is the average yield per acre? Thirty tons. The yield was higher when the land was new.
796. Is it becoming exhausted? Yes.
797. Is your land subject to flood? Yes; the flood renews the land.
798. How do you dispose of your crop? We sell it to the Colonial Sugar Refining Company.
799. Do you think that a railway from Grafton to Lismore would be any benefit to the Clarence River district? Yes; it would increase the facilities for the transport of goods and passengers, and it would increase trade.
800. Do you think that any trade would be likely to exist between the Richmond and the Clarence, sufficient to pay working expenses and interest on the outlay within a reasonable time? I think the railway would pay in twenty years.
801. Do you think that the people in this district would be served by a railway from Glen Innes to Grafton? Yes.
802. Would you prefer to have a connection with the existing northern line rather than a connection between Grafton and the Tweed? A connection with the northern line would serve us better.
803. Do you expect that much of the produce of the Richmond district would come to Grafton if the railway were constructed? Yes; there would be a deal of traffic, principally in timber, which we do not grow here.
804. Do you think that the construction of this railway would increase the value of the Crown lands? Yes; that ought to go towards compensating for the cost of construction.

Mr.

Mr. John Hackett, farmer, Chatsworth, sworn, and examined:— Mr. J. Hackett. 19 July, 1892.

805. *Mr. Neild.*] How long have you been in the district? Twenty-nine years.
806. Do you grow sugar? Yes.
807. Do you know the country between Grafton, Casino, and Lismore? Yes; it is of fair quality.
808. Is it as good as the Clarence country? No. It is suitable for growing maize. One-fifth of it would be good for that purpose. The land would be good for grazing cattle and horses.
809. How many acres would be required to feed a beast? Four acres.
810. Would the portions of the land suitable for maize produce as good crops as are produced in the Clarence Valley? No; except on the creek banks.
811. Would that be a small portion of the whole area? Yes.
812. Have you had any experience in wheat-growing? Yes; but I gave it up here, because it took the rust.
813. Would the land between Grafton and Casino be suitable for wheat-growing? Yes.
814. If wheat could be grown on that land, would there be an ample market in the district? Yes.
815. What is the nature of the timber along the line? It is good hardwood.
816. Is there an export of hardwood from the Clarence now? Yes; a lot of it goes to Melbourne, New Zealand, and Sydney.
817. Where is it cut? Ten or fifteen miles from the banks of the Clarence, and it is brought in by bullock teams.
818. Would the timber along the proposed line be equal to the timber now exported? Yes; it is fully equal to it.
819. Is that land heavily timbered at present? Yes; it would require to be ringbarked, in order to carry any large amount of stock.
820. Would it require to be ringbarked in order to carry a beast to 4 acres? No; it would do that as it stands.

WEDNESDAY, 20 JULY, 1892.

[*The Sectional Committee met at the Court-house, Maclean, at 10 a.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).
The Hon. John Davies, C.M.G. | John Cash Neild, Esq.
Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. David See, agent of the North Coast Steam Company, Maclean, sworn, and examined:— Mr. D. See. 20 July, 1892.

821. *Mr. Neild.*] Have you been a resident of the Clarence River for a long time? Almost continuously for thirty-one years. I have been at Maclean for seven or eight years. I was the first Mayor of the town, and held office for three years consecutively.
822. Do you now represent the North Coast Steam Shipping Company? Yes, since the amalgamation, and prior to that I represented John See and Company, here.
823. Do you attribute the improvement of the bar, at the entrance, to the works which have been carried out there? I think the present improvement in the condition of the bar was brought about by the last disastrous floods.
824. What is the depth of water at Maclean? From 18 to 20 feet, and in some places considerably more.
825. What is the depth of water at Grafton? The average depth is about from 12 to 12½ feet.
826. Then larger ships could come to Maclean than could go up to Grafton? Yes.
827. Then Maclean, rather than Grafton, would be the most important point for shipping on the river? Yes, for deep sea vessels, under existing conditions.
828. Does the depth of the river vary much when floods occur, between here and Grafton? I have never heard of any appreciable alteration in the depth of water between here and the Heads; but I have between here and Grafton. In some places it fills up, and in others it scoops out. There are serious obstructions at present at what is called the Ulmarra Crossing, and one or two smaller obstructions lower down.
829. Is the bulk of the sugar and maize grown between Maclean and the sea, or between Maclean and Grafton? I should think it would be about equal. This is about the centre of the cane-producing district.
830. Is the current strong in the river, so as to interfere with the traffic of punts and droghers up stream? Not at all; they ply at all times.
831. Has the population of Maclean increased very materially of late years? Yes, very much during the last six or eight years. The business prospects of the town have also increased very much, and the town has been incorporated during that time.
832. Do all the vessels trading to the Clarence call here? Yes, all belonging to the regular line of steamers.
833. Is Maclean well situated with regard to the main river channel, and the North and South Arms? Yes, it is the centre.
834. Has Grafton made anything like proportionate progress? Grafton has made no progress at all during the last six or eight years. It has retrograded, as far as my knowledge goes.
835. Have you several banks here? Yes; the Australian Joint Stock, the Commercial, and the Bank of New South Wales.
836. Are the residents here fairly well to do? Yes; some are exceedingly well to do.
837. Are the resources of the district limited to the strip of land under cane along the river and the arms? The land lying to the back of the South Arm, and directly behind Maclean, is excellent, and most of the land which is fairly high could be utilised for growing wheat and oats. I cannot say what is its exact area, but there is a large quantity of it. It would grow maize. There are also swamp lands, which, if drained, could be brought to a high state of cultivation.

Mr. D. See. 20 July, 1892.

838. Have you a fairly large area of pastoral land? Yes; I think it is quite sufficient for the requirements of the locality. We have a very large common, and land outside of that.
839. Is it customary for selections to be abandoned in this district? I never heard of anything of the kind about here.
840. Is the whole of the land here alienated? Yes. There are only suburban lots in connection with the town which could be sold right out very easily.
841. Could the lands in private hands carry a much larger population than they do at present? Nearly double.
842. Why have they not been more fully utilised? The owners and occupiers do not seem to realise its value, and they let it lie in its natural condition.
843. How does the land between Grafton and Lismore compare with the land in the vicinity of Maclean? Some of the land on the north side, directly opposite Maclean, is exceptionally good. Thousands of acres which are not utilised are exceptionally good. Hundreds of acres lying in the immediate neighbourhood of Maclean would grow almost any crop. There are thousands of acres in the vicinity of Grafton which are not utilised as they should be. The quality of land there varies considerably more than it does in this neighbourhood. There are hundreds of acres there of very rich forest land, consisting of small patches of brush, but there are other portions of land on which the spotted gum grows. That denotes impoverished land. That kind of land is found in considerable quantities between Grafton and Casino, on the Grafton side of Myrtle Creek.
844. Could the district in the neighbourhood of Maclean be opened up quite as usefully as the districts between Grafton and Casino? Yes; as far as carrying a population is concerned.
845. Has there ever been a proposal to connect Maclean with Coraki by a railway? Yes. There are no engineering difficulties. The country is about the same as on the other route.
846. Do you know the Richmond River? Yes.
847. Can it compare with the Clarence River as a shipping port? No; and never will, notwithstanding that a large sum of money is to be spent there.
848. Will it be possible to find an outlet at Byron Bay for the produce of the Richmond River? It is the wrong place altogether. It is like taking the produce from this side up hill and away from home.
849. Do you look upon the Clarence as the shipping port for the produce of the Richmond River? Yes; under existing conditions, and certainly for the Upper Richmond when the railway is constructed.
850. What is the distance from Maclean to Coraki? I think it is 30 or 35 miles.
851. Would Coraki be as central for the business of the Richmond as Maclean is for the business of the Clarence? It is just the same. It is at the junction of the two arms of the Richmond River. It has been suggested, especially by shipowners, that it should be the terminus for ocean-going steamers. The channels beyond it are intricate and dangerous.
852. What is the character of the country between Maclean and Coraki? It is equal to the country on the Clarence River. There is some of the richest fruit land I have ever seen, and some splendid timber. It is very good grazing land. When you get near the Richmond River there are fairly large open plains, and land of the richest quality.
853. In your opinion would it be more advantageous to connect the Richmond River with the Clarence by way of Coraki and Maclean than by way of Grafton and Lismore? If we were narrowed down to the question of constructing a railway only, I should say construct it by the nearest possible route. But I also take into consideration the number of people to be served, the connection with other localities, and the general advantages which would arrive from the construction of a railway from Grafton to Lismore, as compared with a railway from Maclean to Coraki. Before I gave an answer I should have to consider the whole question carefully.
854. Which would be the most advantageous route to connect the two districts—Grafton to Lismore, 82 miles, or Maclean to Coraki, 35 miles? By all means Maclean to Coraki.
855. *Mr. Collins.*] Would it be an advantage to this district if the Grafton to Lismore line were constructed? It would be an advantage to the Clarence River district from one end to the other. Trade would be concentrated at first at Grafton, but there would be a distribution of passenger traffic.
856. If the line were extended from Grafton along to the north coast or to the table-land, would it be a better line than one from Coraki to Maclean? In the event of the Glen Innes-Grafton line ever being constructed, certainly Grafton is the proper place to carry the line from Lismore.
857. If a line were constructed from Lismore to Grafton, and thence to the table-land, would it be more advantageous than making a line from Coraki to Maclean? Decidedly.
858. *Mr. Davies.*] Would a line from Coraki to Maclean serve this portion of the Clarence River better than a line from Lismore to Grafton? It would serve the lower part of the Clarence very much better, especially for passenger traffic and interchange of products.
859. To what do you attribute the great progress in the neighbourhood of Maclean during the last twenty years? I think it is on account of the natural advantages of the locality. It is very suitable for the growth of tropical productions, and people have found out its capabilities.
860. What crops are raised besides cane? The cultivation at present is nearly all cane, but maize, potatoes, and cereals, can be cultivated.
861. Why do producers confine themselves to sugar-cane? They think it pays best. Some think it is the easiest crop that can be grown.
862. Do you think that a railway from Grafton to Lismore, costing £8,000 per mile, would pay? It would, in the course of time. It is not usually expected that a railway should pay at the outset. I cannot understand what good could be derived from the construction of a piece of railway from the Tweed to Lismore, unless it is extended further.
863. If the railway were extended from Grafton to Glen Innes, do you think that any produce would find its way from Grafton or Lismore to Glen Innes? Yes. There would be an interchange of products—sugar, flour, timber, and an enormous passenger traffic would be created.
864. Do you think that some portion of your produce would go to Glen Innes and Sydney? To Glen Innes, but it would be a mad thing to send produce to Sydney by rail, when there is good water communication.

Mr. Samuel MacNaughton, storekeeper, Maclean, sworn, and examined:—

865. *Mr. Davies.*] How long have you been in business here? Twenty-eight years. Mr. S. MacNaughton. 20 July, 1892.
866. Has great progress been made here during the last twenty years? Yes; steady progress all the time.
867. Are the people all fairly well off? Yes.
868. Would a railway from Grafton to Lismore be of any service to this district? It would benefit the people of the Tweed and Richmond Rivers, but I do not see how it could benefit Maclean.
869. Would it cut you off altogether? It would do us no harm, but it would not do us any good.
870. If there was a direct line connecting the two rivers, do you think there would be any great interchange of products? No. As long as the Richmond River bar is not closed they will not send their products here.
871. *Mr. Neild.*] Do you know the country between here and South Grafton, along the bank of the river? Yes.
872. Is there any road? Yes; there is a good road, about 28 miles long.
873. In the event of a railway being made from Coraki to Maclean, would it be possible to carry the railway on to South Grafton by the south bank? Yes.
874. Are there any engineering difficulties? There are creeks to be crossed.
875. Would it be possible to connect Maclean by rail with South Grafton, and thence to New England, if required? Yes.

Mr. Donald Shearer, farmer, Maclean, sworn, and examined:—

876. *Chairman.*] How long have you resided here? Thirty years. Mr. D. Shearer. 20 July, 1892.
877. Do you know the country between the Maclean and the Richmond River? Yes; it is fairly good, but not what could be called extraordinarily good country. It is not so fertile as the land on the banks of the Clarence. The country between Casino and the Cross Roads, and from that point to Lawrence, is much about the same as the country between Coraki and Maclean. There is a patch of country about Myrtle Creek which might be better.
878. Which route would you prefer to connect the Richmond and Clarence Rivers? From Maclean to Coraki. It is shorter and would be less expensive than any other. The distance is about 26 or 30 miles.
879. How far is it from Coraki to Lismore? I think it is 14 or 16 miles.
880. Looking at the question from the standpoint of the general interests of the people of the Colony, which would be the best route for connecting the two rivers and at the same time providing a point of departure from the New England table-land? From Grafton to Lismore. The general welfare of the country will depend more upon a railway from the Clarence to New England than upon any other line I know of. The North Coast Railway would be most advantageous to the country if taken to the head of navigation in all the rivers. As a local line, I should like to see a railway from Coraki to Maclean.
881. *Mr. Neild.*] Have you made up your mind as to what should be the point of connection between the coast districts and the table-land? No.
882. If a line were made (say) from Guyra to Grafton, by way of Don Dorrigo Scrub, would that have any material effect upon a line between Grafton and Lismore? I do not think so.
883. You might as well come down from South Grafton, along the south bank of the river to Maclean? Yes.
884. The whole thing would depend upon the point of connection with the table-land? Yes.
885. *Mr. Davies.*] Is there any possible trade which could be developed which would be likely, during the next twenty-five years, to pay interest on cost and working expenses of a railway from Lismore to Grafton and on to the table-land? Certainly, the country from the Richmond to the Tweed is at present lying idle. If settlement is brought about by railway construction the proposed railway would pay in five years.

Mr. John Bale, farmer, Maclean, sworn, and examined:—

886. *Mr. Collins.*] How long have you been living in this district? Forty-four years. Mr. J. Bale. 20 July, 1892.
887. Do you know the road between Grafton and Maclean? Yes; well.
888. Do you know the road between Maclean and Coraki? Yes; I have been along that road several times. There is not much difference between the character of the country on the two roads. The country on the Coraki road is the best timbered, and might be better suited for growing fruit and vines than the country on the other road, which is better suited for grazing purposes.
889. What is the character of the country from Coraki to Lismore? It is very good all through. The distance is about 15 miles from Coraki to Lismore by land.
890. What is the country like between Casino and Lismore? Very good. It is not so good as the country between Coraki and Lismore.
891. What is the nature of the country between Maclean and South Grafton? It is very good land; it is worth about £10 an acre. A farm was sold a short time since for £25 an acre. The distance is about 36 miles. There is no Government land there.
892. What is the value of the land between Maclean and Coraki? About £2 per acre.
893. What is the value of the land between Coraki and Lismore, where the railway would run? About £10 an acre, along the river. A Government reserve there was recently sold for £15 an acre. The land between Casino and Lismore is worth about £2 10s. per acre.
894. What is the value of the land between Grafton and Casino? About £2 per acre.
895. Is there much Government land in that neighbourhood not occupied? Yes.
896. Why? I suppose principally because it is reserved, and in some places it is too far away for water-carriage.
897. Do you think it would be advisable to construct a railway from Coraki to Maclean, and from Maclean to South Grafton? It would be a great advantage to this part of the river.
898. Would it be an advantage to the country? It would be more expensive than a line from Lismore to Grafton.
899. Why? There would be more low land to cross, and the South Arm would have to be crossed twice. The line from Lismore, *via* Casino, to Grafton would be the best one, in order to connect with the main lines of the country.

Mr. J. McMillan, butcher, Maclean, sworn, and examined :—

Mr. J. McMillan. 20 July, 1892.

900. *Mr. Neild.*] How long have you been a resident of Maclean? Twenty years.
901. Have you a knowledge of the grazing country about the Clarence and Richmond Rivers? Yes.
902. Is there abundance of grazing land in the vicinity of Maclean, to provide cattle for the requirements of the Clarence district? It is not very good grazing country about Maclean.
903. Is there better grazing country in the neighbourhood of the Clarence River? As you go up the river, on the north side, it is better. It is sour country near the coast.
904. Have you seen a large increase of population upon the Lower Clarence? Yes; the towns here have almost come into existence during the last twenty years.
905. Do you know that it is proposed to extend the railway from Lismore and Grafton to the Hunter River and Sydney, *via* the Manning, Hastings, and Macleay Rivers? Yes.
906. Do you think that such a line, costing upwards of £10,000,000, would be much used by the people of these districts? Yes.
907. Would it be used for business purposes and the conveyance of goods? I cannot say, because water-carriage is very cheap.
908. Have the rates of freight been falling on the rivers? Yes; on account of the amalgamation of the steamship companies. They charge low rates to keep out competition.
909. Do you know the country between Grafton and Casino? Yes. Most of it is good for cattle breeding. About one-half of it would do for fattening.
910. Is there much of it suitable for agriculture? A good many patches are very good about Myrtle Creek.
911. How many acres would be required to feed a beast? The average would be one beast to 15 acres.
912. What is the nature of the country between here and Coraki? The same class of country as that between Grafton and Casino.
913. Would there be more agricultural land to the square mile between Maclean and Coraki? Yes; on the Clarence side.
914. Would any of the land be fit for sugar and maize growing? Yes; on this side.
915. Would any of the land between Grafton and Casino be fit for maize growing? In patches it would. I do not think it would do for sugar growing. The Upper Clarence is too frosty for sugar-cane.

Mr. Walter J. Folbigg, Town Clerk, Maclean, sworn, and examined :—

Mr. W. J. Folbigg. 20 July, 1892.

916. *Mr. Davies.*] Have you prepared some information with regard to the growth of the municipality? Yes.
917. In what year was Maclean incorporated? 1887. About that time the value of property was £18,074. In 1892 the value is £22,804, being an increase of £4,730. The rates in 1887 were £135 12s. 1d., in 1892, £421 5s. 9d., being an increase of £286. The rate for the first year was 1s. in the £; during the last three years it has been 1s. 3d. in the £. The population of the municipality, according to a return compiled in May last, was 1,025. The area of the municipality is 1·87 square miles. The number of electors on the roll for the Clarence electorate is 2,126.
918. Has there been a great natural increase of settlement and a steady growth of population in the district during the time you speak of? Yes. Almost three to one; and the district is still progressing.
919. *Chairman.*] Is Maclean likely to become the most important centre of the Clarence, owing to its splendid site and advantageous position? Yes; it has tended that way during the last few years.
920. Has it made more progress than any other town on the Clarence? Yes.
921. What is the general opinion of the people with regard to the proposal to connect the Clarence district with the Richmond? That a line from Lismore to Grafton would be most advantageous to the district as a whole, but with regard to the Clarence River alone the opinion is that a line from Maclean to Coraki would be the most advantageous.

WEDNESDAY, 20 JULY, 1892.

[*The Sectional Committee met at the School of Arts, Lawrence, at 3 p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.
Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. William Macpherson, farmer, Lawrence, sworn, and examined :—

Mr. W. Macpherson. 20 July, 1892.

922. *Mr. Davies.*] How long have you been farming in the Clarence district? Thirty-two years.
923. Do you know the surveyed line of railway between Grafton and Lismore? Yes.
924. Do you know of any other route which would be more acceptable for railway communication? No, I think the surveyed route is the proper one. It is evident we cannot have a railway to every man's door.
925. Do you think that a trade would be developed between those two points sufficient to pay interest on cost of construction and the expense of management? Yes; it would be a means of placing people on the land. Sheep farming could be carried on there very profitably.
926. What would be the annual receipts from goods and passengers on a line between Lismore and Grafton? That would depend upon how the population was settled upon the land. Where the railway is now proposed the land is all available for settlement.
927. Have you not found that where railways have been constructed the districts have not been improved thereby? That is the case between Sydney and Newcastle, but it would be impossible to improve the country there. This district is quite different. Here you can grow anything you want.
928. Where would the produce go which would be conveyed to that railway? To the nearest shipping port, which would be Grafton, and thence by water-carriage to Sydney.

Mr. W. Macpherson, 20 July, 1892.

929. Has the traffic increased very much in this district by the river? Yes; within the last three years.
930. Has that been brought about without a railway? Yes; two months ago the people in Casino had to get their flour from Lawrence by the mail coach.
931. Is the general prosperity here attributable to the industry and perseverance of the people on the rivers, and to the good quality of the soil? Yes.
932. *Mr. Neild.*] Do you know the surveyed line from the Cross Roads to Grafton as well as the road from the Cross Roads here? Yes.
933. What is the value of the land along the latter line of road? About £5 an acre.
934. What would it be worth if the railway were constructed? I think it would enhance the value of the land along the railway, and double its present value.
935. Have you had any experience in sheep farming? Yes.
936. How many acres of land would it take to feed a sheep? That would depend upon how the land is subdivided, ringbarked, and cleared.
937. Taking it at £10 an acre, ringbarked and fenced, how many sheep could you feed on that land? I think it would carry three sheep to an acre.
938. Land at £10 an acre, calculated at 5 per cent., would make each acre worth 10s. a year—would not that be very dear? If people took up 640 or 1,280 acres they would not depend upon keeping sheep.
939. Do you think that sheep farming would create much traffic for the railway? Yes. Sheep would be sent to market, and there would be wool and other articles of traffic.
940. Would fat sheep be sent to Grafton by rail, and sent away by steamer? They would be sent away by steamer.
941. Do you think such a railway would be likely to yield a revenue of £800 a week? It would be impossible for me to estimate the earnings, because at present the country is in its natural state.
942. Supposing the line were continued to the south of Grafton, do you think there would be much traffic to Sydney? There is fine land south of Grafton.
943. Would the line, then, be more useful to bring trade to the Clarence? Yes.
944. Would the produce grown here and on the Richmond River be likely to be sent by rail? No; I think it would be shipped at the nearest port.

Mr. George Davison, contractor, Lawrence, sworn, and examined:—

Mr. G. Davison, 20 July, 1892.

945. *Mr. Collins.*] How long have you been in this district? About thirty years.
946. Do you know the proposed railway line between Grafton and Lismore? Yes.
947. Would that railway serve the interests of the Clarence River generally? Yes; it would enable people to take up selections, and carry on dairying
948. Is not the land occupied now? No; it will hardly pay for a man to take up land there now.
949. Is the land bad? No; it will grow very good oats and potatoes, and it would do very well for dairying purposes.
950. Are any persons growing produce there now? There are a few places here and there.
951. What is the average value of the land between Casino and Grafton? About £2 an acre.
952. How many acres could be sold to the Government if the line were constructed? At present there is good land 10 or 12 miles away from the line that is absolutely useless for want of communication.
953. Do you know that most of the land has been abandoned by the lessees of the runs? The best of the land is included in the reserves and leaseholds. The other parts which have been thrown out of use are no good at present. They, however, would be re-selected, and the reserves could be thrown open.
954. Would it not be better for the Crown to keep the timber reserves, rather than let the land go for £1 an acre? The Government sell the timber at so much a tree. I have paid 5s. for one tree myself.
955. Would it not be better for the Government to keep the timber and sell it at 5s. a tree than let it go for £1 an acre? No; the trees vary very much. There might be five or six good trees on one acre, and more on another.
956. Do you pay for an annual license? On Crown lands where it is open to cut timber, you can cut it for an ordinary 5s. license, but on reserve Class A, you pay 10s. a month.
957. Which are the reserves for which you have to pay 5s. a tree? Class B, I think. The squatter does not want to take up that sort of land, because he knows it will be selected.
958. Do you think that the land between Grafton and Casino would be suitable for sheep farming? Portions of it would be. Five thousand acres would be the most that would be fit for sheep farming. The rest of the land would be fit for cattle and dairying purposes.
959. Is it not strange that the land is not taken up now? The land is pretty well taken up with timber reserves, which are turned to very little account. Five shillings a tree was paid for piles which were sent to Melbourne, but that contract is now finished.
960. Would it not be a great injury to the State if that fine timber were destroyed and the land converted into cattle runs? At the present time the squatter has a leasehold, and he gets a permit to ringbark the rest of the timber.
961. Have the lessees ringbarked trees on the Crown lands which are worth 5s. each? Yes. The ironbark timber is very valuable, and the squatters have spoilt a great deal of it.
962. *Mr. Davies.*] Is there any traffic between Lawrence and Casino? Yes; the mail coach goes twice a week from here, and there are a good many vehicles.
963. How many passengers travel backwards and forwards per week? About seven or eight people go each trip. One coach goes twice a week, and the fare is £1.
964. What kind of a road is it between here and Casino? It is a very good level road. The country is good grazing land all the way.
965. Is it better than the land on the line between Grafton and Casino? It is about the same.
966. Is there much Crown land between this point and Casino? It is nearly all Crown land, with the exception of a few selections.
967. What is the distance between here and Lismore? About 78 miles.
968. Then there will not be much difference whether you go from Grafton or this point? No; the difference would be about 15 miles.

Mr. G. Davison. 20 July, 1892.

969. If a line were constructed from Lismore to this point, would it serve this neighbourhood as well as if it were constructed from Grafton to Lismore? Yes; it would answer this district well enough.
970. Would it serve this district as well? Yes; it would suit the inhabitants here.
971. Would it suit the inhabitants of the river generally as well? No; it would cut off the largest portion of the river. If the railway came here it would save some extra mileage. I believe that a line to Grafton would serve the district generally better, because it would open up more country.
972. Do you think that any large quantity of goods, or any considerable passenger traffic, would come from Lismore to Grafton by the proposed line? Yes; because you cannot depend upon steamers getting over the Richmond bar.
973. Do you think that the people living on the Richmond River would come by railway to Grafton in order to take the steamers to Sydney? I am sure they would.
974. Do you think many of the products of the Richmond River would go by railway to Grafton? Yes; they would not have to pay such heavy insurance.
975. What produce would be carried by rail from the Richmond River? The people there are going into dairying. There would be butter, eggs, and other produce.
976. Would not all small coasters take that kind of produce from the Richmond? Not long ago they had to throw eggs away, because there was no sale for them. I believe some of them came over here to Lawrence.
977. What is the longest period you have known small coasters to be bar bound at the Richmond? Three and four weeks.
978. Was that long enough to destroy the eggs? Yes.
979. Would it destroy butter? No.
980. Are there many dairy farms and butter factories in the Richmond district? Yes; a good many have begun there.
981. Are there many dairy farms in this district? They are on the eve of starting. There is a factory at Ulmarra, and two or three others are being started.
982. Are you in favour of an extension of the line from Grafton to Glen Innes, or in any other direction? I think the coast line will be most beneficial to the people. It would best serve the public interests by crossing the heads of the rivers between the main range and the coast, joining the main line at Newcastle.
983. Do you think it is possible for any trade to be developed between the Tweed, the Richmond, Grafton, and Glen Innes, which would pay interest on the cost of constructing such a railway, and the annual expense of working? I cannot see what benefit there would be to take the railway to Glen Innes, but I believe that the line would pay if it were carried from the Richmond to Grafton, and along the coast.

Mr. Thomas Trefusis Bawden, manager of the Australian Joint Stock Bank, Lawrence, sworn, and examined:—

Mr. T. T. Bawden. 20 July, 1892.

984. *Mr. Neild.*] How long have you been a resident of Lawrence? Four years. I am a native of the Clarence district.
985. Can you give the Committee any information with reference to the proposed line from Grafton to Lismore? I know the country pretty well between Grafton and Casino by road, and through the bush.
986. What is the value of the land along the proposed line? Taking the land as a whole, it is worth £3 an acre as it stands to-day.
987. Is a great deal of that land available for selection at £1 per acre now? Yes.
988. Are you aware that there has been little or no selection along that line for two years? Yes; that is because there are no facilities for the carriage of goods.
989. What is the nature of the land behind the strip of land on the banks of the Clarence River which is used for cane and maize growing? The land behind is used for grazing purposes.
990. Is it fully used for that purpose? No; there is a large forest reserve which comes in 8 miles from Grafton, and it comes right in to the back of Lawrence. That is all locked up.
991. Do the actual selections run back some distance from the river? Yes.
992. What is done with the back portions of the selections? They are used as grazing paddocks.
993. Is the land fully occupied with cattle? Yes; at the back of some of these farms there is swamp.
994. Has much of that land been ringbarked or improved? The selectors are gradually ringbarking the trees.
995. So that when the selections already made on the Clarence are ringbarked and improved they will be able to carry more cattle than at present, and there will be a much larger population here? Yes; the selections are quite capable of growing oats, hay, and in some cases corn.
996. Do you think that the construction of this railway would induce much settlement? Yes.
997. Where would the settlers come from? At present on this river there are ten or twelve men competing for one farm. If facilities are given for them to carry produce they would go out into the back country, instead of raising the rent of farms by competing for them. I suppose on the other rivers it is the same. Young fellows compete for farms against their fathers.
998. Do you think that the connection between the two rivers should be by Lismore, Casino, and Grafton? Yes.
999. Would that line be a better connection for goods and passenger traffic than any other line? Yes, it opens up more country.
1000. What is the nature of the land between Lawrence and the Cross Roads? On the banks of the creeks there is good agricultural land, quite equal to what is to be found on the river banks.
1001. What is the distance between the Cross Roads and Grafton? Twenty-eight miles, and from the Cross Roads to Lawrence the distance is 11 miles.
1002. Seeing that the character of the land is almost identical, and that on one route the distance is twice that on the other, why do you favour the longer route? There would be more country opened up.
1003. Do you look upon the line, not from the standpoint of making a connection between the two rivers, so much as from the standpoint of opening up farming land? Yes; and settling the population.

1004. Do you see any prospect of a railway from Grafton to Lismore earning something like £800 or £1,000 a week? I do not think that it would earn that amount at once, but I think it might in the near future. Mr. T. T. Bawden. 20 July, 1892.

1005. *Chairman.*] Is the population of the Clarence Valley increasing? Yes.

1006. After the line is completed and in full working order between Grafton and Lismore, do you think that, with the increase of population now going on, and an increased volume of trade, there would be a probability of the railway paying working expenses? Yes; with the settlement which is going on now. There is a lot of land being taken up. When there was a prospect of this line being made a great many people left the Clarence, and took up land between Casino and Myrtle Creek, with the object of farming the land. However, they have had to give up farming and go in for grazing, for want of communication.

1007. Have you heard of any agitation to take the line from Casino to Lawrence? When the other Committee was here there was some talk about that.

1008. Have the people of Lawrence abandoned that idea? I think the idea was only entertained by one or two people. The general opinion of the people of Lawrence is that a branch line should be constructed from the Cross Roads to Lawrence. They believe that the main route from Lismore to Grafton is the proper one.

1009. Do you think that if the line is constructed from Lismore to Grafton it will probably go on to the table-lands of New England, and also on to the Hunter River, as a North Coast line? Yes.

1010. With the full knowledge that if the railway is constructed at Grafton there will not be much chance of a branch line to Lawrence, do you think that the Grafton to Lismore route should be adopted? Yes.

Mr. Edward Bailey, farmer, near Grafton, sworn, and examined:—

1011. *Mr. Davies.*] How long have you resided in this district? Thirty years. Mr. E. Bailey. 20 July, 1892.

1012. Have you any evidence to give in connection with the proposed railway from Grafton to Lismore? Yes; we have been waiting a long while for that railway. I took up land along the line in expectation of the railway being made. I took up a selection at Myrtle Creek, under the non-residential clause, at £2 an acre. I took up 138 acres. I have ringbarked the land; I took it up about three years ago, and I have ringbarked about 50 acres. I did the work myself.

1013. Is that the only improvement you have made? Yes.

1014. What advantage do you think a railway from Grafton to Lismore would be to the district generally? It would open up the country, so that there would be more settlement.

1015. Is the land open for selection now? Yes.

1016. Did you take up your land in the expectation that the line would be made? Yes.

1017. Did many others do the same thing? Yes.

1018. Is your land good? Yes.

1019. How far is Myrtle Creek from Grafton? About 50 miles.

1020. Does the surveyed line go close to your selection? Yes; about 2½ miles away.

1021. What products would be raised if the line were made? There would be plenty of maize and farm produce. The country is also very good for dairying.

1022. Is there any vacant land available for selection in this district? Yes, about 7 or 8 miles from here.

1023. Is that not a very short distance from the waterway on the Clarence? Yes.

1024. If a railway is constructed, do you expect that settlement would only go 7 miles away from it? Settlement would go 10 or 20 miles away from it.

1025. Why should you have gone to Myrtle Creek to take up land, when you say that there is land available for selection within 7 or 8 miles of the Clarence? Plenty of people go from here to the Brunswick to take up land. I can get better land by going farther back.

1026. Is the land at Myrtle Creek better than the land which you say is available for selection 7 or 8 miles from here? Yes.

1027. How do you propose to utilise your selection? By farming and dairying.

1028. Is there any dairying done at present in this district? No.

1029. Would you send butter or milk to Grafton by rail? Yes.

1030. Would those who have taken up land near you do the same? Yes.

1031. Would it be good country for growing cane? There is land along the creek which would grow cane.

1032. Is it as good as the land on the banks of the Clarence? Yes.

1033. Suppose the whole of the land were occupied for 7 miles on each side of the railway, do you think that the products which would be raised between Grafton and Lismore would be sufficient to provide freight to pay for grease for the wheels? Yes; and a good deal more.

1034. Would there be freight sufficient to yield £1,000 a week? I daresay there would be, when the country was opened up.

1035. How long would it take to do that? A year or two.

1036. What produce could you get off the land in a year, from the best land you have got? Three crops—two crops of potatoes and a crop of corn.

1037. Is that done now in this district? Yes.

1038. How many tons of potatoes to the acre would you get? Four or five tons, and about 50 or 60 bushels of maize to the acre.

1039. Could you get that on your selection at Myrtle Creek? Yes.

Mr. James Murphy, contractor, Lawrence, sworn, and examined:—

1140. *Chairman.*] Do you know the country between Grafton and Lismore? Yes; the greater part of the land is good agricultural land, and a great deal of it would be good for vines and oats. I have seen vines growing in worse country. Mr. J. Murphy. 20 July, 1892.

1041. Have any selections been taken up there recently? Within the last five years several selections have been taken up at Myrtle Creek.

1042. Were they taken up for speculative purposes? They were taken up with the prospect of the railway being made, so that they would have communication with their homesteads.

Mr. J. Murphy. 20 July, 1892.

1043. Do you think it was intended to sell the land to other people, or to hold it and work it? Selectors are compelled to sell at times, but I believe that if they had communication they would hold and work their land. There is splendid timber on this country—ironbark, gum, mahogany, tallow-wood, bloodwood, and other hardwood. There is enough ironbark there for all the railways in New South Wales.
1044. Is there any feeling in this neighbourhood in favour of a line being taken to Lawrence? Yes; I have a feeling that way myself. I would sooner see the railway come here, because it would enhance the value of my own property; but I believe the line from Grafton to Lismore would suit the taxpayers of the country better.
1045. *Mr. Neild.*] Is it not a fact that where ironbark grows the soil is of poor quality? No.
1046. Is that not the case all through New South Wales? Not that I know of. I have always believed that where good timber grows the land is good.
1047. *Mr. Collins.*] Does not ironbark grow on ridges? Yes; principally.

Mr. William Pullen, shipping agent, Lawrence, sworn, and examined:—

Mr. W. Pullen. 20 July, 1892.

1048. *Mr. Collins.*] How long have you resided here? Between eleven and twelve years.
1049. Can you give us any reason why a line from Grafton to Lismore should be constructed, at a cost of about £7,000 per mile? I believe it would cause people to settle upon the land, which is capable of growing any sort of fruit, oats, barley, and potatoes. It is splendid timber country. I have had a good deal to do with timber which has come from every part of the country. We ship a great many ironbark railway sleepers. Between 600 and 700 a week are now going to the Government.
1050. What do the timber-getters receive for the sleepers? Three shillings each they get on the bank of the river. A lot of bloodwood, mahogany, and tallow-wood is shipped here for Melbourne and New Zealand.
1051. If the timber comes from there now, where is the necessity for a railway? I daresay if the railway was made the timber would be used for railway purposes, and it would be taken to different parts on the rivers.
1052. Is there not as good timber on the other rivers? I do not think so.

THURSDAY, 21 JULY, 1892.

[*The Sectional Committee met at the Court-house, Grafton, at 10 a.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.
Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Hon. Thomas Hawkins Smith, M.L.C., grazier, Gordonbrook, near Grafton, sworn, and examined:—

Hon. T. H. Smith, M.L.C. 21 July, 1892.

1053. *Mr. Collins.*] How long have you resided in this district? About forty years
1054. How far is your residence from Grafton? Thirty-five miles.
1055. Have you any statement to make showing the necessity for a railway from Grafton to Lismore? I suppose that it will form part of what will eventually be the North Coast Railway. There is not much doubt that a railway to the table-land should start from Grafton. Therefore, a line from Lismore would be a great advantage, and is absolutely required. I look upon the railway now being constructed from the Tweed to Lismore as only part of a general scheme. The railway from Lismore to Grafton will go through some very good country.
1056. Is this the natural port for that land? Yes; and for all the northern districts, and it will be the port for the inland railway, when it is made.
1057. Is there any necessity for the immediate completion of the line? I have not been along the proposed line myself during the last few years; but I am informed that there is a large settlement between here and Casino.
1058. Is your station on the proposed line? Not within 20 miles of it. Some part of the station might be, perhaps, within 10 miles.
1059. What kind of a run is yours? Cattle. I run about 7,000 head of cattle on about 120,000 acres.
1060. Are there many settlers on your run? No.
1061. How many settlers would be benefited by the railway on your run? None at all—it would not benefit me, as it would go in a different direction.
1062. Have you much purchased land? Yes.
1063. Do you lease the whole of your run? Part is resumed area and part leased.
1064. Are you using the resumed area or is it abandoned? I have applied for it, but it has to be assessed.
1065. Do you know any of the runs in the immediate vicinity of the proposed line? Yes. Their names are Saltwater Creek, Camira, Myrtle Creek, and Wooroowoolgen.
1066. If the railway were constructed, would the residents on those stations be benefited? Yes, and the selectors would be very much benefited.
1067. Is there any unalienated land on those runs? Yes, I daresay there is a great deal.
1068. Do you know the reason why that land has not been taken up? No. A good deal of the land that has been abandoned is not on the line of railway—it is not good country.
1069. Would any of the country be taken up if this railway were constructed? Not at the heads of the creeks and under the range—the land along the railway would be taken up
1070. What is the quality of the land within 10 miles of the railway? It is nearly all agricultural land. Some of it is better than other parts. When Sir John Robertson, who was not a bad judge of country, came up here with Lord Belmore he said, "All this is agricultural land."
1071. Do you think it would be good agricultural land? Very good to indifferent, but the greater part of it would be agricultural.

Hon. T. H. Smith, M.L.C. 21 July, 1892.

1072. Is the land worth £1 an acre without a railway? Yes It is not worth more in its present state, but it is capable of great improvement.
1073. If the railway were constructed, what would be the value of the land? I do not think I am competent to judge, but I should say it would be worth £2 an acre.
1074. Would it be worth more? In its natural state it would not, but if it were improved it would be worth a good deal more.
1075. How much an acre would it cost to clear or improve that land? It is difficult to answer that question. Ringing would be the first process; that would only cost from 1s. to 2s. an acre. If it were then left for ten yearrs it would burn off easily and cheaply—it might not cost more than £1 an acre. If it was burned off a year or two after it was ringed it would cost £2 or £3 an acre.
1076. Then the land is worth £1 an acre now, and if it were cleared, and the railway were made, it would be worth £5 an acre? Yes.
1077. Would the whole of the land between Grafton and Casino be worth an average of £5 an acre? Yes.
1078. What would that land be used for, or be fit for? The greater portion of it would be fit for agriculture.
1079. And pastoral purposes? Yes; some of it would be very good indeed. It would do for dairying, very well.
1080. If it were cleared would it be good land for sheep? I do not think so. All our experience has shown that sheep do not thrive on the coast, although when country has been cleared and ringbarked it makes a great difference. I keep forty or fifty sheep for table use, and they do very well.
1081. Do you think that the railway would increase the value of the runs? I do not think runs are increased much in value by a railway.
1082. If graziers could get their stock to a depôt by means of the railway, would it not be more valuable to them? We have a depôt or market close at hand, without the railway. We have a large meat preserving establishment.
1083. Then the railway would be of no benefit to the graziers in this district? No.
1084. If chilling works were erected in the Clarence district where would be the best place for them? Close to Grafton, so as to be near the steamers.
1085. Have you much surplus stock in this district? It is all used up by the meat preserving works.
1086. Would graziers derive much benefit from chilling works here? That would depend entirely upon the price of cattle. If the price in Sydney went up, the meat works could not afford to buy. Then if we could send out meat by the chilling works to Sydney it would pay better.
1087. If there is a better market in Sydney you would not use the meat works? The meat works cannot give more than a certain price.
1088. How do you dispose of your cattle? We have shipped a great many from this district when the price is high in Sydney. We ship them alive.
1089. Would it not be better to have the meat chilled instead of sending the cattle alive? Yes; but the railway would not assist us very much, because we would not send the cattle such a short distance by rail.
1090. Do you send fat stock to the Richmond? No.
1091. Do the Richmond stations send fat stock to Grafton? Yes, very often.
1092. Do you think that the railway will be used for sending stock from the Richmond to here? No; the distance is too short.
1093. Have the people in the Upper Richmond district any access to a market by water? All the settlers up the Richmond River, above Casino, would send their products by rail. The river below Casino is very much choked up by trees, and it is a great obstacle to traffic.
1094. *Mr. Neild.*] Would dairying give any large amount of traffic for the railway? I do not think so.
1095. Would there be much passenger traffic by the proposed railway? I think there would between here and the Richmond, and there would be a large passenger traffic up to Queensland.
1096. Would it pay to truck cattle between Casino and Grafton? No; it does not pay to truck cattle such a short distance.
1097. Have the grazing areas on the Clarence undergone any improvement to enable them to carry larger numbers of cattle? Yes; all the purchased land in the district has been ringbarked and improved.
1098. Do you think the Clarence is fully stocked? No.
1099. What would be necessary to enable it to carry a greater number of cattle? Better prices.
1100. Do you think that it is stocked to 50 per cent. of its carrying capacity? No: 20 per cent.
1101. Would the railway be likely to improve the price of cattle? No. When the chilling process is adopted, and we have an exportation to England, we may get a better price.
1102. *Chairman.*] In ringbarking, is it the practice to make any distinction with regard to good timber? I always do so. My instructions to the ringbarkers are to leave all timber which is likely to split or is straight. I do not know whether that is the general practice.
1103. What quantity of stock will the country carry which this line of railway will serve? In its unimproved state it will take 15 to 20 acres to keep a beast. If it were improved, 50 per cent. would be added to its carrying capacity.

Mr. Frederick W. Twine, Sub-Collector of Customs, Grafton, sworn, and examined:—

Mr. F. W. Twine. 21 July, 1892.

1104. *Chairman.*] Have you any returns showing the volume of trade at this port? Yes. I have been here only three years, but I can give you the revenue since 1880. It is as follows: 1880, £1,277 16s. 4d.; 1881, £1,127 5s. 10d.; 1882, £1,280 15s. 10d.; 1883, £1,372 19s. 5d.; 1884, £1,011 2s. 8d.; 1885, £1,208 0s. 9d.; 1886, £1,217 0s. 10d.; 1887, £1,487 10s. 7d.; 1888, £876 14s. 1d.; 1889, £321 18s. 9d. The falling off of revenue in 1889 was due to the circumstance that the principal source of revenue for the previous years was cut off—that is to say, wines, spirits, beer, and things of that sort, which up to that time had been sent under bond from Sydney, were totally discontinued, and, therefore, the revenue for 1889 is composed of pilotage and harbour rates. The sending of spirits in bond has been discontinued ever since.
1105. What is the cause of that? I cannot understand it. I cannot give any official opinion, but I suppose the spirit merchants prefer to fix up the grog themselves. In the year 1890 a better revenue was made up from a totally different source. There were £1,337, derived from importations from Great

Mr. F. W. Twine. 21 July, 1892.

Great Britain and other places. Mr. McKitrick, of South Grafton, commenced importing direct during that year. Had the present tariff been in operation that year, I daresay the revenue would have been £1,000 more. The following are details of the revenue received for the dates specified.—

Revenue received at Customs House, Grafton :—

	£ s. d.	£ s. d.
For 1889—		
Pilotage, harbour and light rates, shipping fees		321 18 9
For 1890—		
Raw sugar	498 17 6	
Specific duty	547 13 6	
Pilotage	228 10 4	
Harbour and light rates	58 8 4	
Shipping fees	3 18 0	
		1,337 7 8
For 1891—		
Specific duty	280 13 0	
Ad valorem duty	16 16 4	
Pilotage	126 4 0	
Harbour and light rates	29 3 8	
Shipping-master's fees	1 0 0	
		453 17 0

Export of timber (chiefly to Victoria), 1890—
4,545 piles, estimated at 2,313,000 superficial feet.
Sawn timber, amounting to 1,781,000 superficial feet.

Total value—piles	£9,000
Total value—sawn timber	10,000
	£19,000

Imports for 1890—

From Great Britain		£7,500
From Victoria (chiefly flour)		6,500
From Queensland—		
100 tons raw sugar	£2,300	
1,240 tons coal	1,200	
		3,500
		£17,500
Number of Intercolonial sailing ships cleared and entered		38

Exports for 1891 :—

Victoria—	
3,034 hardwood piles	£5,964
774,752 feet sawn timber	3,900
48 cedar logs	250
	£10,114
New Zealand—	
427,160 feet sawn timber	£2,967
Levuka—	
81,500 feet sawn timber	£350

Imports for 1891 :—

From Great Britain	£3,550
From Victoria, 137 tons flour, £1,632 ; 29 tons chaff, £116 ; 100 bushels bran, £5 ; blasting powder, £20 ; iron spikes, £18	1,791
From New Zealand, 20 tons chaff, £80	80
	£5,421
Number of vessels entered and cleared	36

Exports for 1892 (to 19th July) :—

Victoria—	
959 hardwood piles	£1,895
New Zealand—	
123 piles	200
14,200 feet sawn timber	120
	£2,215

Revenue (to 20th July) 1892 :—

	£ s. d.
January	14 1 3
February	191 4 0
March	94 1 8
April	50 0 3
May	28 12 0
June	49 19 0
July (to 20th)	98 13 0
	£526 11 2

Statement of Revenue received at Custom House, Grafton, during the year 1890.

For quarter ending 31st March :—	£ s. d.	£ s. d.
Raw sugar	248 15 0	
Pilotage	85 8 4	
Harbour and light rates	15 18 4	
Shipping-master's fees	1 0 0	
		351 1 8

For

	£ s. d.	£ s. d.
For quarter ending 30th June :—		
Raw sugar	250 2 6	
Pilotage	47 6 8	
Harbour and light rates	9 0 8	
Shipping-master's fees	0 6 0	
		306 15 10
For quarter ending 30th September :—		
Pilotage	43 11 4	
Harbour and light rates	16 3 4	
Shipping-master's fees	0 4 0	
		59 18 8
For quarter ending 31st December :—		
Specific duties	547 13 6	
Pilotage	52 4 0	
Harbour and light rates	17 6 0	
Shipping-master's fees	2 8 0	
		619 11 6
		1,337 7 8

Revenue received at the Custom House, Grafton, during the following months of 1892.

	£ s. d.
January :—	
Ad valorem, 15 per cent.	5 15 10
,, 10 per cent.	8 5 5
	14 1 3
February :—	
Specific duties	172 1 0
Ad valorem, 10 per cent.	16 11 8
Pilotage	2 11 4
	191 4 0
March :—	
Ad valorem, 10 per cent.	93 19 8
Shipping-master's fees	0 2 0
	94 1 8
April :—	
Specific duties	9 16 6
Ad valorem, 10 per cent.	35 15 1
Harbour and light rates	4 8 8
	50 0 3
May :—	
Pilotage	17 6 8
Harbour and light rates	11 5 4
	28 12 0
June :—	
Ad valorem, 10 per cent.	49 19 0
July (to 20th) :—	
Specific duties	63 8 10
Ad valorem, 10 per cent.	35 0 2
Shipping-master's fees	0 4 0
	98 13 0

1106. Have you had any experience in initiating a trade with England, or any other port? I was at Moreton Bay in 1850, when the first direct ship came there. She was a vessel of 500 tons.
1107. Was the Brisbane River then as free from impediments as the Clarence River is now? No. In 1851 I was chief officer of the first large sailing vessel which commenced running between Sydney and Brisbane. The impediments in the Brisbane River at that time were considerable. The bar at the entrance had only 12 feet at high water, and it was very troublesome to get across. We had to warp the vessel across. Then there were flats in the river, on which the ships ran aground. Those impediments were removed by the Government.
1108. Is the Brisbane River now comparatively safe to enter? Yes. My connection with the Brisbane trade ceased shortly afterwards. I paid a visit to Brisbane in 1854, and then I did not visit Brisbane again till 1876, and I found the improvements were marvellous. I saw several London vessels lying there.
1109. Would it be possible to improve the entrance of the Clarence River, so as to make it equal to the Brisbane River? I have not the slightest doubt of it.
1110. Would there then be a prospect of Grafton becoming an important shipping port? Undoubtedly.
1111. *Mr. Neild.*] What was the depth of the water at Brisbane in 1876? I do not know, but large vessels drawing 18 feet of water were lying there.
1112. Have you any knowledge of the improvement which has been effected on the Clarence bar? I visited the Clarence in 1851, and did not see it again until 1889, and found that there had been a great improvement on the bar. I should be disposed to think that that improvement is largely due to the floods.
1113. Have not the harbour improvements greatly assisted the scour? I do not think they were judiciously carried out at first from what I have heard, but I cannot give a competent opinion.
1114. Have not the harbour improvements narrowed the channel somewhat? No doubt that is the case.
1115. Are not harbour improvements made to take advantage of the floods? Yes.
1116. Do you think that the flood of 1890 was the biggest flood that ever occurred in the Clarence? It is said to have been.
1117. Amongst the shipping returns you gave, was there any shipping from foreign ports? From New Caledonia. They were mostly vessels which came in ballast to carry away timber.
1118. Is there a large importation of flour here? This year there has been only 20 tons imported under bond.
1119. Where did it come from? From Victoria.
1120. Are we to understand that a very large amount of mercantile transactions between the Clarence and the rest of the Colony is absolutely unrecorded in any Government Department? The trade, coastwise, has never been recorded here, as far as I know, except goods under bond.
1121. Is there no official record of the exports of produce from the Clarence River district? Not coastwise, except bonded goods.

Mr. Samuel See, shipping agent, Grafton, sworn, and examined :—

1122. *Mr. Davies.*] Were you Mayor of Grafton for many years? Yes; for eight years. I have resided in the Clarence district for twenty-two years.
1123. What has been your chief occupation? During the first six years of my residence I was farming; for sixteen years I have been representing steamship companies, maize buying, and shipping to Sydney, Melbourne,

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Melbourne, and different places, and storekeeping. I can give the Committee the result of the trade of the place during the last ten months, since the amalgamation of the two shipping companies. The Clarence River has been increasing considerably in its output. Ten months of last year give more results for exports than ten months of this year, because there was a flood this year, which caused considerable damage, and consequently the maize exports for this year are not so large. The following is a statement of the shipping for the last ten months, since the amalgamation of the steamship companies:—

The North Coast Steam Navigation Company (Limited).

Number of trips each month from August, 1891, to May, 1892 (ten months) inclusive.

Name of Steamer.	Tonnage.	1891.					1892.					Total trips.	Total tonnages.
		Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.		
"Kallatina"	650	5	4	4	5	4	4	4	3*	3†	5	41	26,650
"City of Grafton"	800	4	4	5	4	5	4	4	5	3†	4	42	36,600
"Helen Nicoll"	400	5	4	...	2	3	2	3	..	...	3	22	8,800
"Australian"	420	...	.	..	...	...	...	1	3	4	2	10	4,200
"Wyrallah" ‡	350	..	..	...	.	...	2	3	2	2	2	12	4,200
"Tomki"	800	And occasional steamers for excessive cargoes that regular raders are not able to cope with.										2	1,600
"Fernmount"	250											2	500
"Electra"	350											1	350
"Coraki"	250											5	1,250
"Macleay"	500											1	500
		Totals										138	81,650

* Engines broke down † Floods.
‡ Three of "Wyrallah" trips taking piles and girders to Byron Bay for second section of Lismore-Tweed Railway contract.

I may mention that three of the trips of the "Wyrallah" were made to Byron Bay with piles and girders for No. 2 section of the Lismore to the Tweed railway.

1124. Did these various steamers carry full cargo on these trips? Yes; the whole of the steamers.

1125. What was the nature of the cargo from Sydney to the Clarence? General merchandise, and coal. The cargo of the "Helen Nicoll" would be about half coal.

1126. What is the nature of the cargo taken from here to Sydney and elsewhere? Maize, and potatoes.

1127. How were the cargoes made up? The following is a list:—Maize, potatoes, pumpkins, sorghum, sugar-cane, barley, lucerne hay, oaten hay, eggs, poultry, pigs, calves, wild fowls, preserved meats, hides, tallow, wool, horns, bones, antimony ore, railway sleepers, girders, piles, telegraph poles, spokes, cedar boards and logs, pine logs, wattle-bark, fish, oysters.

1128. Was there much sugar-cane sent away? We sent away plants for Fiji, which shows that our sugar-cane must be good.

1129. Do you send away very much wool? Not much. The largest shipment in one steamer would be seventy-five or 100 bales. The total export for the ten months would not be more than 500 bales—it comes from New England.

1130. Do you expect to receive any great quantity from that locality during the next shearing season? Not under present conditions. We used to have the trade, but we have lost it. We have loaded the steamer "Australian" with wool.

1131. Do you ship sugar? Yes; we take away the crushing by the small mills, but generally the Colonial Sugar Refining Company take away all their own sugar.

1132. Have you included in this return sugar carried away by the company's steamers? No.

1133. Have you any data as to the quantity shipped by the company during twelve months? In a season like this they will be at work for six months. The "Fiona" carries 1,050 tons, and she could make seven trips in two months. They sometimes give sailing vessels cargoes when they bring up coal to them. Lately, the North Coast Navigation Company took 1,000 bags of sugar, which they could not deal with, and we bring up a lot of coal for them occasionally.

1134. That would have to be added to the gross tonnage? Yes. All that I have given merely refers to the North Coast Steamship Company.

1135. Have you a knowledge of the other coasters? The sailing vessels trade here also. Some steamers were trading here a few months ago. An opposition steamship company started and took some cargo away, but they gave it up.

1136. Can you give the Committee the gross tonnage carried by all classes of vessels during the past twelve months? No: but as far as steam is concerned there is not much to be added to what I have given you, except what was taken away by the Colonial Sugar Refining Company. The others are small vessels, and they principally carry timber to Sydney, Melbourne, Adelaide, and New Zealand.

1137. In former years was there very great difficulty in getting over the bar? Yes; the bar was bad, and the crossing inside was bad; there was no degree of certainty as to getting in or out; but since the flood of 1890 it has improved very considerably. It is now regarded as a perfectly safe port for vessels drawing 15 feet. The crossing is entirely removed. Inside the bar it has improved to a greater extent than outside.

1138. Are you aware that Parliament has authorised the expenditure of more money to improve the entrance? Yes.

1139. What is your opinion with reference to those works when carried out? I am not in a position to give a professional opinion; I am content to take the opinion of Sir John Coode, and from the opinions of captains who have traded here, I am confident that the works would be of lasting benefit. I would point out that from the Heads to Grafton, excepting at Lawrence, and some sand patches, which there was no difficulty in removing, we have had no dredging on the river since 1890.

1140. Do you think that the improved condition of things will be the means of developing a larger commercial interchange between your port, Sydney, and elsewhere? Yes. Years ago we traded very extensively

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extensively with Brisbane in maize, and if the district is developed I do not see why we should not supply Brisbane with potatoes and other produce. When there is increased population we shall have over-sea ships trading here. There is an effort being made now to get direct importations from the old country. I believe we could load a ship here with wool. The spoke industry is developing fast. There is an inquiry at home for our spokes, and there is a gentleman in town now in connection with that business; I am speaking of ironbark spokes. In conjunction with wool, hides, and timber, I do not see why we should not send maize to the home country. If we can show shipowners that the entrance is safe for vessels of 14 feet we can make a start at such a trade. I remember the port of Newcastle when it was not such a good port as the Clarence is now, and the Hunter River was not nearly so good as the Clarence River.

1141. What is the acreage under cultivation with cane on the Clarence? I think there is something like 17,000 acres—perhaps 20,000 acres. An average crop from 2-year old cane is 45 to 50 tons to the acre.

1142. What is the annual production of maize? If it had not been for the flood last year I should have estimated our output at 300,000 bags.

1143. Where does it come from? Forty-five miles north and 30 miles south of Grafton, from the creeks and from Lawrence, Maclean, and the whole of the surrounding districts of the Clarence River.

1144. Could you give the capital value of the gross earnings of the district? I do not think anybody could give that. I would not be prepared to accept the official returns which go in. Without reflecting on the police who prepared the returns, I do not think the returns prepared for this or any other district are reliable. The present production of the district does not come from land which would give very much to the railway, but I do expect that the land between here and Casino, and between here and Don Dorrigo, and between here and the table-land, and from the direction of the coast, will furnish the traffic for the railway.

1145. Do you expect that the Clarence River district will in any way contribute to the produce which will be carried by the railway which we have under consideration? The railway will carry the products between here and Lismore, while, without a railway, there would be no produce from that country. I think the railway will carry butter—it may carry maize, but I think most of the maize which will be grown between here and Lismore will go in the direction of the Richmond River. I think the principal portion of the butter produced between here and the Tweed will come here to be shipped to Sydney. There will also be a traffic with calves and pigs. It is impossible to foretell what will be done in the way of dairying on the table-land of the Richmond, which is known as the Big Scrub. I am sure that nearly the whole of the produce of that district will ultimately come to the Clarence River. In return we will send maize to the people of the Richmond, because I do not think that the Richmond is a maize-producing district. I am persuaded that we shall have traffic both ways.

1146. Do you think that the products you have mentioned, or any trade which is likely to be developed, will be sufficient to pay the interest on the cost of construction and the cost of management? I think the railway will pay; not, perhaps, for the first year or two, but I look at the question this way—We have an asset in the land, which, without a railway, is quite useless. At present that land is of no value whatever. The State, from the sale of that land, will probably recoup itself for the amount spent upon constructing the railway. If that is the case I do not think the railway should be debited with the interest on the money. If we had to purchase the land, of course I would hesitate about constructing the railway. The possibilities of this country are very great. I believe it would be possible to grow English barley on the country which would be opened up by this railway, and I speak with considerable experience. It does not require such strong land as other cereals, but it requires rainfall and sunshine, which we have got.

1147. Do you think that the proceeds of the sale of the land 10 miles on each side of the railway should be placed against the cost of construction? I think so. Considering that we have never had a railway, and that we have contributed towards making and supporting other railways, it is only fair that that should be done. Outside of that, I think that what I propose is a common-sense way of dealing with the matter.

1148. Do you think that the land would realise enough to pay for the construction of the railway? Yes. If it was my private estate, I would first construct the railway before I sold the land.

1149. Do you think that the land on both sides of the line should be reserved for sale and selection? Yes.

1150. And that the proceeds of the sale should go towards paying the cost of construction? Yes.

1151. Then, practically, the railway would cost the country nothing? Yes; I am supported in that opinion by the Railway Commissioners.

1152. Have you a knowledge of the country along the railway line? Yes; I know all the country about there.

1153. What is the present value of the land? I should say that it is worth very little at present.

1154. What would be the value of that land if a railway were constructed? It would vary from £5 to £10 an acre. It would probably average £7 10s. an acre if brought under agriculture.

1155. Would that be 10 miles on each side of the line? No; I am taking 2 or 3 miles on each side. I do not think that men would go 10 or 15 miles from the railway for a considerable time. Men will not go 15 miles away from the river. There are many reasons why men will not go out into that country without a road. People are different now to what they were twenty-five years ago. They are accustomed to civilisation, and they recognise that the education of their children is of some importance. A man who plants himself 20 miles away in the bush, might as well plant himself in Darlinghurst Gaol, and he would be better off in gaol, because he would not bring upon himself the responsibility of a large family. I would not take up land in that bush if it were given to me for nothing, if I had to live there without a railway. There are hundreds of men in this district who are in a position to buy land, and who would buy it if they knew that they could get their produce to market.

1156. If there are 622,000 acres of land within a radius of 10 miles on each side of the railway belonging to the Crown, and open for sale at £1 an acre, would that cover the capital cost of the railway? Yes; provided that the cost of the line is what you say it is. We should also consider the question of labour in the Colony. There are thousands of men out of employment, and I think it is better to let a man work for his living than to feed him on charity. That is one reason why the State should take into consideration the construction of railways through land which would become profitable—it would give employment, and

inducement

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inducement to settle upon the land. Therefore, I think we should now be able to get our railways constructed very much cheaper than we used to. There are hundreds of men in the Colony who would be glad to earn 6s. a day if they knew it was permanent.

1157. Instead of borrowing capital for the construction of the railway line, do you believe that the money can be raised by the sale of land? Yes. A man who would purchase this land would have an available asset at once in the timber. I am at present employing a number of men to cut railway sleepers, which we are sending to Newcastle. We sometimes ship a couple of thousand per week.

1158. Are you likely to have any large additional increase of population which would facilitate settlement? Population, by the ordinary process, is increasing rapidly. I expect that our gold-fields will take a start—new discoveries are being made every day.

1159. To make the railway pay, would you not require to have a large addition to the present population? If we could give people facilities of communication by means of a railway I believe they would come into a district like this, instead of wasting their money in going to Western Australia.

1160. If this railway were constructed, do you think that the shipping trade of the Clarence would be very much increased? Yes.

1161. This being the safest port, do you think that produce would be sent here from long distances? Yes. If the coastal railway were extended south, I believe that produce from the Bellinger and the Nambucca would come to Grafton. The shipping trade at Richmond is most precarious. The "Tomki," a valuable steamer, was bar-bound there the other day. Steamers are sometimes detained from six to fourteen days. We have had four steamers behind that bar. I am sure that where the best facilities are offered people will send their goods. The people at the Richmond may say that they will not ship at Grafton; but it is pretty certain that the bulk of them will send their goods here if they find it will be a commercial advantage. I am sure that the people of the Tweed will send their butter, fowls, and eggs to a safe port here. Since the amalgamation of the shipping companies, there has been a decrease of 20 per cent. in the freights charged. I see no reason why the freights should not be further decreased by 20 per cent., provided that larger steamers can be utilised on this river. I am not speaking with authority from my board, but from my knowledge of what has taken place I look forward to a further decrease in freights in a couple of years, and also to a decrease in passenger fares, and it will be quite as profitable, if not more so than the present rates. Outside the railway, people will soon get their produce taken for 7s. 6d. per ton.

1162. If there is more traffic there will be competition in the carrying trade? Yes; provided that passengers can get to Sydney and the outside world other than by steamer, freight would be further reduced, because you can build a cargo steamer for half the money which a passenger steamer will cost. If we had railway communication I do not think it would destroy the passenger trade; but I believe the bulk of the passengers will go by rail.

1163. What was the average number of passengers during the twelve months you have spoken of? Perhaps 100 a week in the saloon—the steerage passengers vary. When the mills were in working order, we had 120 coming up in the "Kallatina."

1164. Do you think that the major portion of the passengers would go by rail if the table-land were tapped? Yes. I am sure I would go, and the women and children would go. People who can afford to pay for a saloon passage would go by rail.

1165. If the North Coast Railway is to be connected with the table-land, where should the connection be made? Up to a certain point, people held that the connection should be between here and Glen Innes. Since then another agitation has taken place. A survey has been made of the Guyra route, and a good many of us think differently about the matter. We recognise that the nearest point to the table-land is Glen Innes; but we recognise that, perhaps, in the interests of the State and of Grafton, it would be better to make a detour and go by way of Guyra, because you would then absolutely go through good country. For the first 45 miles out of Grafton the country is good, and I am told that the country beyond that is better. Many of us think that perhaps it would be better, notwithstanding the detour of 48 or 50 miles, to go by way of Guyra. I have agitated for years for the direct line, but my impression is that the most acceptable line for the people generally would be *via* Don Dorrigo or the lower line, taking up the better country in the valley of the Orara. The longer the line the better, provided the country is good.

1166. Do you know the estimated cost of a line to Glen Innes? £2,000,000; and the Guyra route would cost about the same.

1167. Would any of the produce of the district go by the table-land and on to Sydney? It is very difficult for me to say whether it would or not.

1168. Is it likely? I do not know; but if the railway took all the produce between here and the table-land as far as Inverell, it would be about as much as the railway would do. I am looking forward to the time when we shall not have to talk about Sydney only in connection with our railways, but when we shall have to talk about Grafton. I look upon Brisbane as being one of our ports as well as Sydney, especially if we obtain federation. I do not look upon Sydney as our only port.

1169. Is not Sydney the best market? Yes, under present circumstances; but I look forward to the time when we shall be able to feed Brisbane and the table-land with potatoes. I am acquainted with the climate of the table-land, and I think that all their surplus will find its way to Grafton, and be shipped to Brisbane and other ports of the world.

1170. Would that be the means of increasing the trade of this port very largely? Yes. The best wheat I ever saw is grown in the vicinity of Glen Innes. Oaten hay is grown there also. We cannot use their hay here, because we cannot get it. We would use that hay and ship it. Although they have only one crop of potatoes a year on the table-land, they have exactly the same climate as Tasmania and New Zealand.

1171. By reason of the distance between Grafton and Sydney, is it not unlikely that the produce of this district will go by rail to Sydney? It is impossible to say what trade might be developed. Hillgrove is a great mining township, with about 2,000 residents. There is nothing to prevent its population from being increased to 10,000, and they will have to be fed. Armidale and Glen Innes are increasing in population, and so must Inverell.

1172. Do you think that produce from Armidale would come here? Yes; flour would.

1173. Seeing that the distance would be 530 miles by rail from here to Sydney, would any produce from Lismore or Grafton go over the table-land to Sydney? I think our produce would go by steamer.

1174.

1174. What is the quantity of potatoes produced in your district? I have sent 2,500 bags in one ship. I have loaded one ship with potatoes. The company has sent away 9,000 bags in a week. I do not think we should have much necessity to send produce to Sydney, because we would be in touch with Brisbane and the northern ports of Queensland, and I think that the trade of the northern ports of this continent would be of greater advantage than a trade with Sydney, because further north they do not produce potatoes. No matter what the tariff might be in the Sydney market, we would have to come into competition with Warrnambool potatoes. Mr. S. See. 21 July, 1892.

1175. Do you think that the proposed line from Grafton to Lismore would be of any great or permanent advantage if it were not continued to the table-land? Certainly it would.

1176. But would you prefer it to be connected with the table-land? Yes.

1177. Do you think it would be of greater service to be connected with the table-land than to be connected with this line to the Tweed? I think it would be of greater service to the State to construct a line to the table-land. As far as the people of Grafton are concerned, they are all getting something to eat, but there are hundreds and thousands of boys and girls growing up, and in the interests of the State we should settle them on the public lands, and if we could make it profitable to settle on the land by constructing a railway and extending it to the table-land we should do so. I do not think the table-land will ever be developed by means of the railway connection with Sydney, and the country here will never be developed without the railway. If you were to destroy the highway we have in the Clarence River nine-tenths of our farms would be vacated in a couple of years. The railway would take the place of the river. I should like to see all the rivers and the table-land joined by the iron horse. It would give employment for the people. It would find homes for the rising generation, and, perhaps, mop up some of the surplus labour of the old world.

1178. Do you know of any district which possesses a better highway than your district does already in the shape of the Clarence River? No. There is no traffic between here and the Richmond River. One point which should be brought out in this inquiry is the existence of coal-measures. The late Mr. Wilkinson has given evidence that coal-measures exist between here and the Richmond. The coal is being developed on the Richmond. It is good steam coal. I believe that the coal-measures which exist at Smith's Creek, Coaldale, extend as far as what are known as the Richmond Hill Coal-mines on the Richmond River. Supposing the coal is not found at a reasonable depth between here and Casino—although it passes along that way—it would pay to have a branch line from Coraki to the Clarence. If it were struck on the Clarence we should have the coal cheaper than it can be brought from Newcastle.

1179. Are the coal-measures payable? At Coaldale we have a seam of 9 feet, but there is some difficulty. Four hundred pounds or five hundred pounds have been spent on coal, but we had no means of getting it in. We have used the coal on board the steamer "Australian." It was obtained from Coaldale.

1180. *Mr. Neild.*] Where is the coal-mine on the Richmond River situated? Near Coraki—it is about 1½ mile from Swan Bay, on this side of Coraki.

1181. Would a railway from that point to the Clarence be useful for developing the coal? No. What I said was this, that the coal-measures exist at Coaldale, then further north the coal is discovered and is being developed at Richmond Hill, a little below Coraki and Swan Bay. Mr. Wilkinson, in his evidence, says that the coal-measures exist right along north and south. If it does, that would be another factor in proving that the line would pay. The line must necessarily pass over the coal-measures. Mr. Wilkinson, the Rev. Mr. Campbell, and Dr. Robertson were of the same opinion.

1182. The proposed line from Lismore to Grafton would pass over the coal-measures? Yes.

1183. But a long way from where the coal has been actually discovered? Within a radius of 15 or 20 miles out I can show you coal at Maclean, and at the junction, 3 miles from here.

1184. If the coal is in the vicinity of Coraki, how would the proposed line from Grafton to Lismore serve a mine at Coraki? I would not take the coal from that mine. I would bore for the coal elsewhere.

1185. On the expectation of finding the seam elsewhere? Yes.

1186. What is the size of the seam which has been discovered in Maclean? 2 feet 6 inches or 3 feet.

1187. Not thick enough to work? Not at present. Some years ago some boring was done, and a drive was put through about 100 feet. It did not widen very much.

1188. Has there been any coal found between here and Copmanhurst? Yes, at Coaldale, 30 miles from here, and within 5 miles of the proposed railway between here and Casino. The seam there is 9 feet thick. In a northerly line from there you will find the same measure on the Richmond River, consequently the railway will pass over the coal-measure. The opinion of experts is that the same measure which exists at Coaldale exists at Coraki.

1189. How far is Coaldale from water carriage? Fourteen to sixteen miles.

1190. Has any effort been made to lay down a tramway? No.

1191. Is there any demand for coal for sugar mills at the Richmond? Yes.

1192. Has there been any effort to develop the coal at Coraki? Yes; there is the Richmond Hill Coal-Mining Company.

1193. When you speak of supplying potatoes from New England to Queensland, do you mean the whole of the Queensland ports? Yes.

1194. Do you think it would be better to bring New England potatoes to Grafton to be shipped rather than make use of the existing railway from Sydney to Brisbane? I was speaking then in connection with the line of railway *via* Don Dorrigo. If we could grow potatoes at Don Dorrigo it would be cheaper to send them from Grafton by steamer than to take them on to the main trunk line and send them to Brisbane. I am looking upon Don Dorrigo as being equal to Inverell for producing potatoes. I include Don Dorrigo and the table-land country.

1195. You are referring to land which could be cultivated in the future, and not to land now under cultivation in New England? Yes.

1196. Could not potatoes be grown at Glen Innes as well as at Don Dorrigo? Yes.

1197. But they are not grown there now? My experience of farming is that the greater the competition the better the results. One hundred men will get better results from 100 selections of 40 acres each than one man will get from a selection of 40 acres.

1198. Then you favour settlement in agricultural areas rather than have scattered selections? Yes; I can speak from experience.

1199. Do you think it would pay to bring grain from the table-land to be shipped at Grafton for the metropolitan market? It would depend entirely upon the freight. I am looking forward to the time when a bag of maize will be taken to Sydney for 9d. a bag, that is 7s. 6d. a ton.

Mr. S. See. 21 July, 1892.

1200. Does it pay now to ship maize at 10s. a ton? Yes; it pays the producer.
1201. Would it pay the producer to pay the same rate for wheat? He can afford to pay more than 10s. a ton for wheat.
1202. Assuming the growth of a fair average crop, what freight could wheat, under ordinary circumstances, pay? Fifteen shillings a ton.
1203. Can you give any reason why, on the table-land of New England, they do not produce wheat, when the rate of freight is just about 15s. a ton? There are many reasons. You would have to enter into the tariff question. It is not fair to say that they will not do it, because they have not done it. I think they will do it.
1204. Would you advocate the construction of more lines of railway in the hope that it will be done? No; but with the assurance that they will do it.
1205. But if they have not done so up to the present, why should you expect them to do it in the future? I think if some inducement is offered to assist men in our own Colony to grow wheat they will do it.
1206. Have you stated that a farmer could afford to pay 15s. a ton on wheat from Grafton to Sydney? No; I was speaking of the table-land. It is highly probable that the farmer could get his wheat from Grafton to Sydney for 7s. 6d. a ton. At the present moment a man could get it carried for 10s.
1207. Do you say that the crop could afford to pay 15s. per ton? I was speaking of the Inverell farmer. At Glen Innes men can grow wheat successfully. I have seen 60 bushels of wheat to the acre grown at Glen Innes. If a man gets an average of 30 bushels to the acre of wheat he can afford to send it to Sydney.
1208. Whatever the rate of freight may be between Grafton and the table-land, coupled with the rate of freight from Grafton to Sydney by a steamer, the total charge must of necessity be more than the existing railway rates from New England to Sydney direct? I do not admit that.
1209. When you hear that the existing rate of wheat from Glen Innes to Sydney is 16s. 4d. per ton, would it be possible to bring the same wheat by rail to Grafton by any route which may be adopted, and ship it from Grafton to Sydney at a total freight of less than 16s.? In my opinion wheat could be landed at Sydney from the table-land by way of Grafton at as cheap a rate as by rail direct to Sydney from the table-land. The present rate of carriage from the table-land to Sydney is 16s. 7d. per ton. Taking from that distance 150 miles and the addition of the freight from Grafton to Sydney, even at the present rates the difference would only amount to 2s. 7d. If the freight from Grafton to Sydney were reduced 20 per cent., I claim that wheat grown on the table-land could be sent to Sydney by way of Grafton at a cheaper rate than it could be sent direct by rail to Sydney.
1210. Would not there be also the cost of handling the wheat, and extra time at South Grafton, taking the wheat from the railway trucks into steamers? We should be pleased to do that for the freight.
1211. Do you look forward to a reduction of the freights between here and Sydney of 20 per cent.? Yes.
1212. Then the lower the freights are reduced by sea the less it will be possible for the coastal railway from Grafton to Sydney to earn? Not necessarily so, because I am speaking of the Clarence River—I am not speaking of other rivers. Freights could be reduced here because we can get large ships to come here. I do not expect that the whole of the traffic would come here. I am confident that there is more than sufficient land between here and the Bellinger to place more people than there are on the Clarence River.
1213. How far back from the coast? Eighty miles, that would include the Don Dorrigo Scrub.
1214. Would that country carry as large a population as is now carried by the Clarence Valley? I am persuaded that it would carry a larger population. The area of agricultural land there is greater.
1215. What settlement is there in that direction now? It is just scattered about. I am speaking of the Orara country, Woolgoolga, and Coff's Harbour.
1216. Do you refer to those as places for shipment of goods at present? Steamers do call there.
1217. What accommodation is there? They call it a bay.
1218. Is it a roadstead, with a southern head? Yes, partly. In smooth weather you can load timber, but if there is easterly weather, which is the prevailing weather, you cannot.
1219. Can you load in south-easterly weather? No.
1220. If the timber can be loaded at certain times, could not also ordinary merchandise? Yes.
1221. You spoke of supplying the people of Hillgrove—what could you feed them with from Grafton? Potatoes.
1222. But have you not been putting in half an hour arguing in favour of bringing potatoes from the table-land? Yes.
1223. Could not the table-land supply Hillgrove with potatoes all the year round? The table-land cannot grow potatoes all the year round.
1224. Can any country grow potatoes all the year round? No.
1225. Do the people of Hillgrove want new potatoes always? On the Clarence River the winter yield of potatoes will give a supply during June, July, August, September, and October: the summer crop will supply during the months of November, December, and January—that is eight months of the year. I do not think the Hillgrove man would turn up his nose at a potato which came from the Clarence during those months. During the balance of the year the Hillgrove man could get his potatoes from the table-land. I think it is better to grow our own potatoes in our own country than to send to Tasmania and New Zealand for them. Another advantage would be that the seed which we use for our summer crop would be obtained from the table-land. At present we get the seed from Tasmania.
1226. Then you propose to supply potatoes from this district to the table-land, by the railway, for eight months in the year, and derive your supplies from the table-land during the other four months of the year? Yes, instead of getting them from Tasmania.
1227. If the construction of the railway is to bring such a large amount of traffic to the Clarence River, is there any large prospect for work for a line of railway to be constructed from here to the metropolis? I am looking forward to there being a very largely-increased population in the whole Colony.
1228. Would you regard the coastal line, of which the railway from Lismore to Grafton is a section, as a local line for feeding the rivers, rather than as a national line to connect the rivers with the metropolis? Yes, as far as produce is concerned.
1229. Would you look upon it as a passenger line, and not as a goods line? I would look upon the portion from here to Sydney as a passenger line; but as far as the goods are concerned, the line would be sufficiently employed in conveying the interchange of products between here and the table-land. I think the line would be kept going more profitably than any other line we have.

1230.

Mr. S. See. 21 July, 1892.

1230. Dropping the question of a line to the table-land, and assuming that a line from Grafton to Lismore is portion of a proposed national line to connect with the metropolis, do you think that the prospect which lies before such a line would be the carriage of passengers rather than of goods? The carriage of passengers from here; but there would be goods to carry along the main line. Between here and Maitland there is sufficient undeveloped land to keep the line going, independently of passengers, and of the export trade.
1231. Do you think that the line between here and Sydney would be useful for goods traffic some distance south from here, on account of the ports not being good ones? Yes. Moreover, there is a large quantity of land undeveloped at the heads of the southern rivers. Droghers cannot go up the rivers, and the roads are unmade, so that it is unprofitable to grow produce at present. My idea of the North Coast line is that it should tap the land at the head of the rivers, and the table-land. Such a line would not interfere with the present trunk line.
1232. Do you think that if the Lismore line were completed, additional meat-works might be established? Yes, and a large number of butter factories. One butter factory has already started in this district, and three more are under consideration.
1233. Why were the Broadwater meat-works closed? I do not know.
1234. Does the steamer "Fiona" make twenty-one trips during the six months she is engaged by the Sugar Company? Yes; that would be about the number of trips.
1235. Is the whole of the sugar which is sent by her produced in this district? Sugar is sometimes brought round by tenders from the Richmond; but the bulk of that sugar goes by the North Coast Navigation Company's boats.
1236. How much sugar does the cane yield? I think the average, previous to the use of improved machinery, was 15 tons of cane to the ton of sugar. Now, I think, 12½ tons of cane give 1 ton of sugar.
1237. How many tons of cane are obtained from an acre? Twenty. That is about 1¾ tons of sugar to the acre.
1238. Then your steamers must carry a good deal more than the Sugar Company turns out? Yes; last season the "Kallatina" took 2,000 sacks of sugar on several trips. There are several small mills, and they supply the local demand.
1239. Is there any white sugar produced in the district? There is one small mill refining.
1240. Is there any white sugar imported from Sydney? Plenty of it.
1241. Would you be surprised to hear that some of that sugar comes from Queensland? Not at all; there are good reasons for that. Queensland is earlier in the field than we are. The Colonial Sugar Company do not sell on the Clarence; they prefer to sell from Sydney direct, they refine in Sydney.
1242. What would be the average value of maize for twelve months on the river? About 2s. 6d. per bushel.
1243. Then, according to your figures, £150,000 worth of maize is raised on the river during the year? Yes.
1244. What is the depth of the river at Grafton? We can load a vessel here until she draws 12 ft. 6 in., and get out without difficulty.
1245. What is the depth of water at Rocky Mouth? Eighteen feet; it varies. I can get a depth of 60 feet of water above Grafton. I have loaded a steamer 14 miles above Grafton with piles on a draught of 9 ft. 6 in.
1246. Are we to understand that vessels can cross the bar at present which cannot make their way to Grafton? Yes; at present.
1247. Is it proposed to deepen the water up at Grafton? We are expecting a sand-pump dredge, which, according to the supposed output, should make it possible in three months for any vessel which crosses the bar to come to Grafton.
1248. Then there is a reason for deepening the water at the Heads? Yes.
1249. Has maize ever been imported here? I do not recollect it. There might have been a few bags imported after the flood of 1890.
1250. Did your firm import some? A little.
1251. Was that imported from New South Wales, or from over the sea? New South Wales; but I am not quite certain. We might have got a little from New Caledonia.
1252. Did you get some from South Africa? No; we have imported more flour from California than we have maize from South Africa. I have imported it for seed purposes.
1253. Is the land south of Grafton well occupied? There is settlement on the coastal side of the coast range, and settlement on the coast line and table-land. When I spoke this morning I intended to correct my evidence. On the coast side of the coastal range it is very sparsely populated, but on the other side of the range, in the Orara Scrub, there is a good deal of land taken up.
1254. Is there much land taken up about Woogoolga? A good deal of the land is taken up at the back of the ridges at Woogoolga and the Bellinger. The land is of good quality.
1255. Would the construction of a North Coast line tend to open up that country? Yes.
1256. Would it yield a trade to the Clarence to make a railway to the Don Dorrigo Scrub? Yes; save what might be shipped in the shape of timber. Some people might prefer Coff's Harbour, or Woogoolga; but it will be a long time before Coff's Harbour can be a competitor with the Clarence. There is abundance of hardwood there, and that cannot be conveyed through the surf.
1257. Do you say that the land between here and Casino cannot be sold without a railway? Yes.
1258. Would you be surprised to hear that about two-thirds of the land is alienated within 10 miles on each side of the railway? I am not surprised, but notwithstanding its alienation it is yielding no return to its owners or the State.
1259. Why do you think it was taken up? In recent cases because of the proposal to construct a North Coast Railway.
1260. Was it taken up more for speculation than settlement? It was speculation in the sense that men hoped to be able to make a home when the railway was constructed. From my knowledge of the men, I know that they had not sufficient money to invest in a speculation. I would like to hold a piece of land there myself if the railway were made, but I would not take 1,000 acres as a gift without a railway.
1261. Are you in favour of the proposed line from Grafton to Lismore in order to afford the produce of the Richmond River access to a good port to develop the country on the route, and to assist in its settlement? Yes.
1262. Are you more in favour of a railway connection with Grafton, and some suitable point on the table-land, than you are in favour of the continuation of the line coastwise? Not at all.
1263. If you had a choice which would you be in favour of? I would go to the table-land, of course.
1264. *Mr. Collins.*] Do you know the country between Coraki and the Maclean? Yes. The country is a little better than it is on the line of the proposed railway, the rivers come together there more closely, and as there is more hilly country there are consequently more valleys.

Mr. S. See. 21 July, 1892.

1265. Is the depth of water at Maclean deeper than it is at Grafton? Yes.
1266. What sort of country lies between Maclean and South Grafton, on the south bank? It embraces Woodford Island, and the great agricultural district of Ulmarra; behind that you have the Coldstream country, beyond that a little belt of swampy country in some places, and then you come on to the coastal country proper.
1267. Would you advocate a line from Coraki to Maclean and on to South Grafton, rather than the proposed line from Grafton to Lismore? Certainly not. If it were simply a question of connecting the two rivers I would go from Woodburn to Iluka, because that would be the nearest connection.
1268. If it were a question of connecting with the table-land? I do not think the connection *via* Maclean is practicable.
1269. But we have it in evidence that the distance would be shorter? I do not think that is correct.
1270. If the water is deeper at Maclean, and it would be possible to get down from the Richmond to that deep water, would not Maclean be better for shipping than Grafton? No, the freight is the same. There is no difference in the charge for freight on the Clarence River.
1271. Could not larger ships come to Maclean than to Grafton? If it is contemplated to make the connection with the Richmond River outside of Grafton, Lawrence would be the preferable port.
1272. If the river about Grafton were dredged, would it be accessible for large steamers? Undoubtedly.
1273. If it were not for a future connection with the North Coast line, or with the table-land, would you advocate the Grafton to Lismore railway? Yes, because Grafton is, geographically, the centre of the districts lying beyond it. I have had a map prepared showing the position of Grafton as compared with the outlying districts.
1274. What timber do you bring into Grafton for shipment? Ironbark and spotted gum.
1275. Does that timber come from the proposed railway line? Yes.
1276. Would it be much cheaper if this line were constructed to bring the timber by rail? Undoubtedly it would. Some of the timber is carted 20 miles at present by team.
1277. Does any large quantity of fat cattle go away from this district? Yes. A great many are fattened on Gordonbrook run, at the head of the Clarence, and also on the Yugilbar run. Formerly cattle were shipped to Sydney and Melbourne, but when the railway was extended to Tenterfield it was thought better to ship from Tenterfield to Sydney than to run the risk of shipping by steamer. I am of opinion that if a railway were made between here and Sydney, buyers of cattle would prefer to send them by train rather than by steamer.
1278. If the chilled meat industry were established here, do you think steamers would come here to take the meat to Great Britain? Yes. It would be difficult for me to say what the possibilities of these districts are. Knowing what the district does produce, I do not see why it should not be able to maintain the whole of the present population of the Colony. There is a tenth of the whole population of the Colony in this district, and it is quite undeveloped.
1279. If this railway were constructed, what interchange of products would there be between the Clarence and Richmond districts? I do not think there would be much interchange, but there would be a large passenger traffic, and there would also be a large passenger traffic to Queensland. Then there would be a local trade in maize which would go to Lismore, and other trade would come here. Then there is the timber trade, and I believe there would be a coal trade. The question of £17,000 a year for working the railway is not of very great magnitude when we consider that it is only equal to the yearly earnings of one steamer between here and Sydney.
1280. Seeing that it is proposed to spend a large amount of money at Byron Bay and Richmond River Heads, do you think it would be better to construct light lines of railway as feeders to the river, and to that port, rather than construct a railway from Lismore to Grafton? No; I think the proper course would be to make it possible for perishable goods to come on to the Clarence River. I look upon the Clarence River as the port for the north of the Colony. I do not suppose for a moment that all the produce of the Brunswick and the Tweed will come here. I think that butter, eggs, and fowls will come along here, and it is impossible for me to say what the rich country behind Byron Bay may produce.
1281. Do you think that the expenditure of this large sum of money on the Richmond River bar and Byron River is a waste? As far as expenditure on Byron Bay is concerned, I think it is a waste. It is creating a port to compete with the Richmond River, whatever that may be made.
1282. If the large amount of money now proposed to be spent on Richmond River bar, nearly £300,000, were already spent, would you be in favour of constructing the proposed railway to this port? Certainly.
1283. Would the country between Grafton and Casino be suitable for vine growing? Yes; eminently so. I anticipate that we should be able to grow large quantities of English barley.
1284. Is there not any quantity of land in New South Wales suitable for English barley, and yet people do not find it payable? I am not aware that that is so.
1285. Do you know whether the Engineer-in-Chief for Harbours and Rivers, Mr. Darley, went over the land between Casino and Grafton, and said that the land there was the poorest and worst in Australia? He may be a good engineer, but he is not a professor of agriculture.
1286. If he made that remark would you agree with him? No; I do not think he is a judge. I would put a farmer's opinion against his any day.
1287. What kind of soil is it? It varies considerably; some of it is sandy and clayey. I am not saying it is good, as compared with Clarence River land.
1288. Would it be of some value if cleared? Yes; if brought under control, the land would be good, and would realise sufficient money to pay for the proposed railway.
1289. If the Government gave you the land between here and Casino, would you construct the railway? Yes; I think I could find a syndicate to carry out the work.
1290. *Chairman.*] I gather from your testimony that you are in favour of the proposed line, for the following reasons: First, that it will make the Clarence River the port of the north coast district; second, that it will form portion of the connection with the table-land; third, that it will form portion of the North Coast Railway; fourth, that it will open up the land between Grafton and Lismore for settlement; fifth, that it will open up the land at Orara and Don Dorrigo, and make Grafton the emporium for the people in those regions; sixth, that it will provide a shorter route to Queensland; and seventh, that it will open up mineral land from which coal may be obtained? Yes.
1291. Do you wish to revise these opinions? No. In expressing an opinion with regard to the Don Dorrigo route, I did not give my opinion as a professional one, but I think it would be better to go through

land

land which is good, notwithstanding that the distance may be greater, than to go through land which is not good in order to reach a certain point. As far as I am individually concerned, I would be willing to await the decision of the Engineer-in-Chief as to which would be the better course to pursue. Mr. S. See. 21 July, 1892.

1292. Are you also of opinion that if this line were made from Grafton to Lismore, and if it were connected with the New England table-land, it would provide a good outlet for the produce of New England at Brisbane and other places to the north? Yes. If the line were carried on to Glen Innes it would pass the Dalmorton gold-fields. If it goes by way of Don Dorrigo it would pass what is known as the Nana Creek gold-fields. New discoveries are being made every day, and I am hopeful of a very good gold-field being discovered, and that old fields will be profitably worked by the application of new methods. A railway would make it profitable to work many gold-fields which at present are not worked, because the cost of living would be reduced. We have also evidence of silver existing in that country, as well as antimony, and a great many other valuable minerals. I have had samples of coal from there. The map which I hand in shows the position of Grafton, Casino, and Tenterfield, and it will be seen that Grafton is the centre of all the various points.

Mr. John Henry Munro, stock and station agent, Grafton, sworn, and examined:—

1293. *Chairman.*] Have you any statement to make with reference to this railway? When I was examined by the former Sectional Committee on this question, I had heard most of the evidence, and, in order not to waste time, I said that I could confirm most of what had been said. I also called attention to what I thought had been omitted. That was as to the revenue that would be derived by the increase of population along the proposed line of railway; also, that communication being opened up, a great deal of the land would be sold, and a portion of that land revenue should go in payment of the construction of the railway. Mr. J. H. Munro. 21 July, 1892.

1294. How much do you think would be obtained by the sale of the land within five years after the construction of the railway? I think it would be rash to guess. Knowing the district for eighteen years, I think the land on this line would be taken up just as it was in the Richmond district. It costs something like £10 an acre to put the Big Scrub country on the Richmond into a state fit for cultivation. The land on this line is not so rich, but it could be put into a state of usefulness for a few shillings an acre, because it is lightly timbered. If it were ringbarked it would at once become fair grazing land, and the character of the soil would improve with years.

1295. Do you think that 200,000 acres of land would be sold after the railway had been constructed five years? I should think that more than that would be sold between here and Casino.

1296. That would mean 200 families making a living there on the land, not counting the townships? Yes; and the people would have a market at both ends of the railway.

1297. If this railway were constructed, and it were continued to Guyra or Glen Innes, would there be a trade in live stock with the Sydney market? No; I think chilling works would be established on the Clarence, and meat would be shipped here.

1298. Do you advocate this line as part of a larger system of railway communication? Yes.

1299. What direction do you suggest that the railway extension should be carried? If railway communication is opened up with the table-land near Glen Innes the railway should be continued westward in a direct line to Moree; thence to the Barwon, at Mungindi, where it could be connected with the Queensland system of railways. That would open up communication with a good deal of sheep country, from which large supplies could be drawn for refrigerating works here, whence they could be shipped home.

1300. Do you think such a line would be more beneficial than a line *via* Don Dorrigo and Guyra, and thence westward? Yes; the line you mention would increase the distance by 60 or 70 miles.

1301. But would not the line *via* Guyra open up superior country? I do not think that would counterbalance the evil of increasing the cost of the traffic for all time for the western district.

1302. Are there any other reasons why you would favour this line? It will be seen from the map that the head waters from the Clarence River overlap all the rivers along the coast line for 250 miles, and the Clarence waters also come from the borders of Queensland. I, therefore, look upon Grafton as the natural centre of all that stretch of country.

1303. Coming to the local aspect of the question, can you give us any reasons why the line should be constructed between Grafton and Lismore? If it were only to be constructed from that point of view, instead of forming a part of a large system, if I were a statesman I would not construct the line at all. If it is to be constructed it must be as part of a large system which will serve the table-land and the country to the west of it.

1304. Have you formed any opinion with regard to the North Coast line? In all countries we find railways running along the coast, but I do not think it should be done until the interior districts are connected with the coast. I think it is much more statesmanlike to open up the interior of the country, and connect it with the nearest navigable water.

1305. *Mr. Neild.*] What is the centre of the western district that you desire to tap by railway? I should like to tap all the places I have mentioned, every one of them would bring freight and passengers to the line. Moree is the centre of the plains around there, Inverell is the centre of the western fall of the table-land, but none, I think, are points at which any line should stop.

1306. What is the value of the land between here and Casino? At present it is only valuable for grazing purposes.

1307. Would it be valuable for agriculture if the railway were constructed? A proportion of it would be, most of it is better than the land about Goulburn.

1308. What would be its value now, if opened up? £4 or £5 an acre.

1309. Do you think the produce of that land would stand the expense of carriage for a long distance to market? Yes; it would make good dairying country. In the Big Scrub it is principally dairying country now. It costs fully £10 an acre to clear the land. Along this line you could make the land suitable for dairying for £2 an acre.

1310. *Mr. Collins.*] Do you know the distance from Grafton to Inverell? About 150 miles. From Moree to Inverell is about 100 miles.

1311. How far is it to Glen Innes? One hundred and ten miles by the road.

1312. What is the distance from Moree to Newcastle? Two hundred and seventy miles.

1313. Would it be more advantageous to the people in the Moree district to have their stock shipped from this port than from Newcastle? I think so, I believe this is their natural port.

1314. Do you think that produce from this district could be sent out there? Yes.

Mr. Patrick Riddle Donaldson, District Surveyor, Grafton, sworn, and further examined:—

Mr. P. R. Donaldson. 21 July, 1892.

1315. *Chairman.*] Do you now produce information which was asked for when you were examined before? Yes; I have prepared the additional evidence requested by the Sectional Committee—the number and area of conditional purchases and conditional leases made at the Land Offices of Lismore, Casino, and Grafton for the last eleven years, viz., from 1881 to 1891, both inclusive, and also showing the number and areas of forfeitures in each year during that period, from which it will be seen that the total area conditionally purchased during that period was 632,569 acres, by 5,156 applications; the area conditionally leased during that period was 280,104 acres, by 789 applications, or a total of 912,673 acres. [*For details of each of the eleven years see Schedule A.*] During the same period the conditional purchases forfeited were 614, for 48,775 acres; and conditional leases 89, for 33,809 acres; total, 82,584 acres. [*For details see Schedule A also.*] During the same period there was purchased at auction, and by cash selection after auction, under the 25th section of the Act 1880 (now abolished), in addition to the above—

378½	acres of town lands, which realised	£15,613
1,173¾	„ suburban lands, „	18,591
52,027¾	„ country lands, „	66,078
Total of 53,580 acres.	Total amount realised	£100,282

(*For details see Schedule* B.)

SCHEDULE A.—Showing the number and area of conditional purchases and conditional leases taken up in the Land Districts of Lismore, Casino, and Grafton, for the years 1881 to 1891, both inclusive; also the number and area of conditional purchases and conditional leases forfeited each year.

Land District.	1881.				1882.				1883.				1884.			
	Selected.		Forfeited.		Selected.		Forfeited		Selected.		Forfeited.		Selected.		Forfeited.	
	Con. Pur.		Con. Pur.		Con. Pur.		Con. Pur.		Con. Pur.		Con. Pur.		Con. Pur.		Con. Pur.	
	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.
		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.
Lismore..	481	64,744	15	931	705	75,070	8	523	356	39,853	47	2,716	219	20,869	16	1,172
Casino .	147	13,235	2	80	142	19,425	7	453	113	17,539	17	1,604	143	24,088	8	651
Grafton	143	10,503	10	510	289	22,244	11	904	216	18,098	22	1,640	214	19,257	31	2,089

Land District.	Selected.				Total.		Forfeited.				Total.	
	Conditional Purchase.		Conditional Lease.				Conditional Purchase.		Conditional Lease.			
	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.	No.	Area.
1885.												
		Acres.		Acres.		Acres.		Acres.		Acres.		Acres.
Lismore	49	7,872	42	13,287	91	21,159	33	2,109	...	....	33	2,109
Casino	121	16,550	71	36,837	192	53,387	4	277	...	.....	4	277
Grafton	117	16,636	63	16,724	180	33,360	45	2,888	...	.....	45	2,888
1886.												
Lismore	70	6,939	9	2,630	79	9,569	29	2,002	...	.....	29	2,002
Casino	44	10,296	17	9,771	61	20,067	6	923	...	.....	6	923
Grafton	174	18,706	70	17,405	244	36,111	17	1,301	...	.....	17	1,301
1887.												
Lismore	37	3,201	9	1,752	46	4,953	12	1,277	...	.....	12	1,277
Casino	47	9,790	19	6,751	66	16,541	11	1,312	...	.....	11	1,312
Grafton	160	16,164	44	10,209	204	26,373	2	180	...	.....	2	180
1888.												
Lismore	87	7,326	6	1,145	93	8,471	55	3,468	...	.....	55	3,468
Casino	75	14,452	35	17,895	110	32,347	22	2,797	1	1,898	23	4,695
Grafton	137	13,112	2	7,393	179	20,505	56	4,050	...	.....	56	4,050
1889.												
Lismore	131	13,378	13	2,348	144	15,726	25	1,756	2	755	27	2,511
Casino	54	9,469	25	10,287	79	19,756	5	490	3	347	8	837
Grafton	154	19,512	52	12,940	206	32,452	36	3,722	12	3,545	48	7,267
1890.												
Lismore	61	6,927	10	2,120	71	9,047	12	1,183	6	2,219	18	3,402
Casino	219	61,096	138	72,896	357	133,992	10	2,428	10	5,881	20	8,309
Grafton	107	16,544	42	13,527	149	30,071	14	1,065	18	4,382	32	5,447
1891.												
Lismore	25	2,181	5	715	30	2,896	8	445	7	3,073	15	3,518
Casino	67	12,355	51	17,673	118	30,028	4	684	22	10,519	26	11,203
Grafton	52	5,138	26	5,799	78	10,937	14	1,145	8	1,190	22	2,335
Grand Totals.												
Lismore	2,221	248,360	94	23,997	2,315	272,357	260	17,582	15	6,047	275	23,629
Casino	1,172	208,295	356	172,110	1,528	380,405	96	11,699	36	18,045	132	30,344
Grafton	1,763	175,914	339	83,997	2,102	259,911	258	19,494	38	9,117	296	28,611
	5,156	632,569	789	280,104	5,945	912,673	614	48,775	89	33,809	703	82,584

SCHEDULE B.—Area of land sold at or selected after auction for the years 1881 to 1891, both inclusive, with amounts realised, in the Land Districts of Lismore, Casino, and Grafton.

Mr. P. R. Donaldson. 21 July, 1892.

	Town.		Suburban.		Country.	
	Area.	Amount.	Area.	Amount.	Area.	Amount.
	Acres.	£ s. d.	Acres.	£ s. d.	Acres.	£ s. d.
1881	29¼	1,207 0 0	150½	3,060 0 0	3,136	3,949 0 0
1882	10½	156 0 0	29	116 0 0	35,237	38,233 0 0
1883	85½	2,337 0 0	142¼	4,526 0 0	1,706	2,108 0 0
1884	30¾	2,542 0 0	86	3,515 0 0	856	2,374 0 0
1885	1	30 0 0	55¾	567 0 0	795¾	3,327 0 0
1886	54½	2,626 0 0	283½	2,805 0 0	2,857¼	4,586 0 0
1887	25½	1,426 0 0	111½	2,065 0 0	1,393½	2,341 0 0
1888	30½	1,091 0 0	27	191 0 0	2,819	3,385 0 0
1889	80	1,390 0 0	97½	783 0 0	854¼	1,575 0 0
1890	20	783 0 0	2½	25 0 0	1,141½	2,230 0 0
1891	10½	2,025 0 0	188	938 0 0	1,231	1,970 0 0
	378½	15,613 0 0	1,173¾	18,591 0 0	52,027¾	66,078 0 0

Summary for each district.

	Acres.	£ s. d.	Acres.	£ s. d.	Acres.	£ s. d.
Lismore	121	7,983 0 0	440¾	11,611 0 0	710¼	1,106 0 0
Casino	104½	3,400 0 0	200	2,280 0 0	39,107½	44,058 0 0
Grafton	153	4,230 0 0	533	4,700 0 0	12,209¾	20,914 0 0
	378½	15,613 0 0	1,173¾	18,591 0 0	52,027¾	66,078 0 0

1316. Is that the total amount received for all lands sold from Grafton to the border of Queensland, during the last eleven years? No; the returns of the Murwillumbah Land Office are not included. Those returns refer to Grafton, Casino, and Lismore.

1317. Have you a return showing the amount of all land available? The area of land now available, exclusive of reserves, between Grafton and Lismore, within 10 miles on each side of the proposed railway, is 240,000 acres, and 118,000 acres in reserves for railway, timber, &c., that can be alienated after the railway is constructed, or a total of 358,000 acres. In addition to the above there are, within the towns of Grafton, Casino, Lismore, and their population areas, 27,600 acres, viz., in Grafton and South Grafton, 40 acres of town land, 250 acres suburban, 1,800 acres country, total 18,290 acres; in Casino, 110 acres of town land, 1,600 acres of suburban, 7,000 acres of country, total 8,710 acres; in Lismore, 600 acres of suburban land only. The amount of land available for selection within 20 miles on each side of the proposed line is 554,000 acres. That is available for selection at present. That is a strip of land, 40 miles wide. In addition to the above, the area that can be revoked after the timber is removed and the railway is constructed, is 228,000 acres, and the area within the town, suburban, and population boundaries of Grafton, Casino, and Lismore, is 27,600 acres, making a total area of 809,600 acres available. The value of the land must be an assumption, but I have given it to the best of my judgment. The present value of the whole area, I estimate at £557,800, without the railway.

1318. What would be its value with a railway? £787,550. The latter sum does not include any increased value for any new towns and villages that may spring up on the line.

1319. *Mr. Neild.*] Could you give an accurate or rough estimate of the acreage of land selected within 10 miles of the Clarence River, on each side, from Copmanhurst to the Heads? Approximately, 300,000 acres within 10 miles of the river, on both sides. Copmanhurst is at the head of the navigation. It is 36 miles in a direct line from the Heads, and 70 miles by the river.

1320. Would that estimate of 300,000 acres include the whole of the land under cultivation on the river? No; there is land above Copmanhurst, the produce of which is shipped at Copmanhurst.

1321. Would there be much population outside the limit of 300,000 acres? No; the population is scattered outside the 10-mile limit.

1322. Would the land between here and Casino and Lismore carry anything like so large a population to the square mile as the valley of the Clarence does? No; I do not think it would carry half the population.

1323. Taking the land between here and Casino, on an average, would it require a square mile for the support of a family of five or six persons? I think that would be a very liberal estimate.

1324. Judging from the population settled in other parts of the country, is the land along the line of this proposed railway of such a character as will carry a large population? The average holdings in New South Wales are over 800 acres. On the Richmond they are 326 acres. On the line of the proposed railway, I think 400 acres would be a fair thing.

Mr. John Henry Munro, stock and station agent, Grafton, sworn, and further examined:—

Mr. J. H. Munro. 21 July, 1892.

1325. *Mr. Collins.*] Were you a resident of Moree for nearly twenty years? Yes.

1326. Are you aware that it suffers from severe droughts? Yes.

1327. Do you think that if a railway were constructed from this district to Moree, that in time of drought stock could be sent from Moree and the districts out west to this district? Yes; very easily.

1328. Are droughts experienced very seldom here? There are never any droughts here.

Mr. William Clarke, Clerk of Petty Sessions and Warden, Grafton, sworn, and examined:—

Mr. W. Clarke. 21 July, 1892.

1329. *Chairman.*] How long have you been in the Grafton district? Over twelve years.

1330. Will you make a statement as to the mineral prospects of this country and the extent of mining now carried on? I have only held the position of Warden since February last year, and can only speak for that period. During last year there were the three divisions of Grafton, Nana Creek, and Dalmorton under my care. In Grafton two gold leases were applied for for an area of 12 acres; Nana Creek, eleven gold leases, with an area of 47 acres; Dalmorton, 104 gold leases, with an area of 632 acres 2 roods 18 perches.

Mineral

Mr. W. Clarke. 21 July, 1892.

Mineral leases: Grafton, one, area, 80 acres; Nana Creek, five leases, area 160 acres. The crushings from the Grafton division for last year were as follows:—1,428 tons 10 cwt; result, 1,286 oz. 1 dwt. retorted gold. Nana Creek, 248 tons 13 cwt.; yield, 217 oz. 4 dwt. 21 gr. retorted gold. Dalmorton, 341 tons 13 cwt.; result, 677 oz. 4 dwt. retorted gold. At Grafton there were issued 132 miners' rights and one business license, eleven mineral licenses; at Nana Creeek, forty-five miners' rights, two business licenses, one mineral license; at Dalmorton, 241 miners' rights, twenty-five business licenses, and ten mineral licenses. Five mining tenements were registered at Dalmorton, two water rights, fourteen business and residence areas. The revenue for Dalmorton for last year, and the previous year, was between £900 and £1,000 per annum. At Nana Creek the revenue was about £300 per annum for the last two years. The Grafton revenue for the last year was about £120. The reason of the smallness of the revenue at Grafton is that a great portion of the land that should have been placed in this division was placed in the Dalmorton division. The boundaries have been altered since.

1331. How many gold-field reserves have you here? The Cangai, the Orara, the Chambigne, the Dalmorton, which includes Mount Poole, and up towards Broadmeadows, and several others.

1332. Has there been a revival in mining lately? Yes; a great revival during the last year, principally in the Dalmorton division, and in the early part of the year at Cangai.

1333. Has it died away? I cannot say that it has at Dalmorton, although perhaps everything has not been carried on properly, owing to want of capital and machinery, but I believe it will be a permanent field.

1334. Is there much auriferous country about here? Yes; it is nearly all auriferous, except the agricultural land.

1335. How many miners have taken out rights in the three districts under your control? Four hundred and eighteen miners' rights were taken out last year.

1336. Have any new discoveries been reported recently? Not since last year. Mount Poole is the most recent.

1337. Are there any very large yields? The latest proved trial crushings from several of the claims are all good and payable.

1338. Is mining likely to be a lasting resource for the Grafton district? Yes; with proper appliances and a little capital I believe it will be permanent, and will give employment to a number of *bonâ fide* miners.

Mr. William Alexander Manning, solicitor, Grafton, sworn, and examined:—

Mr. W. A. Manning. 21 July, 1892.

1339. *Mr. Davies.*] How long have you resided at Grafton? Two and a half years.

1340. Have you any information you would like to furnish to the Committee? I am well acquainted with the country lying south of Grafton, which is known to be one of the richest portions of the north coast. That is one of the strongest reasons why the line now under consideration should be constructed, so that it may bring the upper section of the North Coast surveyed line into conjunction with the lower rich section lying immediately south of Grafton. It is one of the richest portions, and one of the easiest sections of country through which any railway extension could be constructed. The line through the Orara country to Coff's Harbour is not quite level, but it would be extremely easy for railway building. It goes through some fairly good grazing land for the first 30 miles, then up the rich Orara Valley for 15 miles, and then over the low saddle of the watershed on to the sea level. Besides the special areas on the Orara, spoken of by Mr. Surveyor Donaldson, there are thousands of acres there besides, some alienated and some Crown land. There is one Government reserve of fully 25,000 acres at the head of the Orara River.

1341. Can you tell the Committee anything about the land between Grafton and Lismore? No; I understood the Committee wanted information with regard to the whole of the line south of Grafton. I give this as a national reason why the line should be constructed, because it brings us into connection with a portion of country equally as valuable as that between Lismore and the Tweed, and which will eventually be as densely populated.

1342. Would you favour the construction of a line from Grafton to Lismore if it were not continued hereafter to the table-land? No; as an isolated section of railway I do not think there is anything in it.

1343-4. Do you regard it as a matter of no practical importance to this district? People would settle on the land, no doubt; but I am not well acquainted with that country, and from what I have heard about it, it is not so immensely good that it would be worth while making a railway through it. Another reason why I should say the railway ought to be made is, to cure the error already committed in making an isolated section of railway between the Tweed and Lismore, which it is known will be practically unpayable, and which must have only one result if left standing by itself—that is, to throw the trade of that territory into the hands of Queensland. If the line is brought down to these waters it will, as it were, create a current, and the trade will be diverted south.

Mr. William Small, junr., auctioneer, Grafton, sworn, and examined:—

Mr. W. Small, junr. 21 July, 1892.

1345. *Chairman.*] Have you an intimate knowledge of the country between here and Lismore, on both sides of the road? Yes; the country there cannot be classed among the best in the Colony; but it is equally as good as other country that has been selected. Before people will select country they will want facilities to get their produce away.

1346. Is that country more suitable for grazing than agriculture? If people could get their produce to market they would take up small holdings, and combine small dairy farms with agriculture.

1347. What crops would be suitable for that locality? It would grow oaten hay very well; but that will not stand land carriage for any great distance. The land is fit for the cultivation of vines.

1348. Are there many settlers out there? There are a good many selectors. They are generally carrying on grazing and agriculture, combined. There is a good deal of settlement around Myrtle Creek, but there would be a great deal more if they could get their produce away. They are 20 miles away from the nearest market, Casino, and then it has to be sent a great way by river, and then by sea to Sydney. If a railway were running they would have it in Sydney before they can now get it to Casino. There is a little settlement also at Myall Creek; within 3 or 4 miles from the road there are from eight to ten families.

1349. Is there much timber there? There is a very large amount of ironbark, which is brought into Lawrence, a distance of 14 miles, and shipped to Melbourne. Further away, towards Myall Creek, there is a very large quantity of ironbark which cannot be touched, on account of the very great expense in getting to water-carriage.

1350. Does the ironbark grow on the ridges? Yes.

1351. Is the good land you refer to at the foot of the ridges? The good land is on the flats; the ridges are not very high. The ridges would be suitable for grazing, and the flats for agriculture. There is also spotted-gum timber, but not much tallow-wood.

1352.

Mr. W. Small, junr
21 July, 1892.

1352. If the railway were constructed, do you think that country would be settled? I am certain that if facilities were afforded the people would go there.
1353. *Mr. Neild.*] On what kind of soil does the ironbark grow? Not the best of soil. I would not say that it is inferior soil.
1354. Is it not a fact that wherever ironbark grows the soil is poor? No; the country where ironbark grows is amongst the best grazing land in the country. It is poor country so far as the cultivation of cane is concerned, but it is not for the growing of oats.
1355. Where is the ironbark country that is used for the growing of oats? There is a good deal of it in the Clarence district. Between here and Orara the settlers grow oats for hay.
1356. How much do they get per acre? About 1½ to 2 tons.
1357. Do they grow oats exclusively on ironbark country? Yes. They also grow oats on other country.
1358. What sort of crops do they get on the other country? From 3 to 4 tons on some of the country.
1359. You say that the ironbark country is very good, but you now admit that it yields only half as much as other country under oats? I was speaking of the country where the ironbark grows between here and the Richmond. There are other places, on the flats, where there is no ironbark at all. That is spotted-gum country.
1360. Is one quarter of the country covered with ironbark? Yes.
1361. What is oaten hay worth per ton in Grafton before it is shipped? Eighty shillings. It is worth from 70s. to 80s. per ton in the metropolitan produce market all the year round.
1362. If more of it was grown up here would the price fall? Yes.
1363. From the 70s. to 80s. per ton which would be obtained in Sydney you would have to deduct the freight? Yes; about 10s. per ton.
1364. Would it not be rather a poor game to grow oats in that case? Yes.
1365. No matter what the value of the land may be, do you expect that if the railway were constructed you would be able to buy the land at £1 per acre? I would urge that there should be a classification of the land, and then land only fit for growing hay would not be so dear as the land on the flats.
1366. Suppose you wanted to buy land along the line of railway, would you be prepared to give £5 an acre for it? Not at the present time.
1367. Would you buy this ironbark country at more than £1 per acre? Seeing that the Government have allowed the people to pick the eyes out of the country at £1 an acre, it is only reasonable that they should allow the remainder of the land to remain at £1 an acre, especially seeing that it has always been supposed to be barren country.
1368. Is it regarded as barren land? It has been in the metropolis.
1369. Have the eyes been picked out of it? No.
1370. We have it in evidence that two-thirds of the land over a strip 20 miles wide along the railway line has been selected, do you not think that the people who have selected have taken up the best of it, and that the balance left is not very good. The people who took up the land probably only took it for grazing, therefore they would leave lands untouched that other people would take up for agriculture if they could get to market.
1371. Do people take up land in small quantities on conditional purchases for grazing? No.
1372. Is the land at Myrtle Creek taken up for grazing? Chiefly; there is not much land left fit for agriculture. They use it for agriculture, and also grazing.
1373. What sort of land has been selected along the line? I do not think the best of it has been taken.
1374. Is there a fair proportion of good land left? Yes.
1375. *Mr. Davies.*] Has much timber been taken off this land? About 12 miles from the Clarence some has been taken off, and also at Bungawalbin Creek, but there is a great deal left.
1376. Do you think that if this railway were constructed from Lismore to Grafton, there would be sufficient traffic to pay interest on the cost of construction and working expenses? Yes. I presume it is the desire of the Government to settle population and to sell the land. The land along the line will lie in its present state for years, and will not be conditionally purchased by anyone except the line is made. If the railway is made, and population is settled, the State will derive a large income from various sources. If the Government gave me the land available for selection, I would be quite prepared to construct a railway at a cost of £662,000.
1377. *Mr. Collins.*] What is the land along the line fit for at present? Only for grazing stock. It is used by station-holders principally.
1378. Do you know that most of the land between here and Casino has been abandoned by the lessees? Yes.
1379. Do you know the price they pay for the best part of this land for annual leases? Thirty shillings to £2 a section generally.
1380. Would the abandoned parts of the run be leased for about ¼d. an acre? Yes.
1381. How many acres of this land would be required to feed a bullock? In its present state, 15 acres.
1382. Then it would cost about 4d. a year to feed a bullock now? Yes.
1383. If the country were ringbarked, how much would it cost? I would [cost 1s. an acre to ringbark that country.
1384. Would it then take 7 acres to feed a beast? Yes.
1385. What would the land be valued at per year per acre when ringbarked? If a man had a 640-acre selection and wanted to lease it he would have no trouble in getting £50 a year for it.
1386. That would be 1s. 6d. an acre? Yes.
1387. You say it would take 7 acres to feed a bullock, so that it would cost 10s. 6d. to feed a bullock after the land was improved, whereas you can get sufficient land now for 4d. to feed a bullock;—therefore, would it not be better to leave the land as it is now? It is better as a run.
1388. *Mr. Neild.*] Do you say that it now costs 4d. a year to keep a bullock on unimproved land, whereas it will cost 10s. a year to feed him on the land if it is improved? Yes; but if the people took up that land they would not fatten bullocks on it. They would combine dairying with agriculture.
1389. Instead of fattening cattle you would grow oats for oaten hay? No; fattening cattle is not the best way to use the country.
1390. You said that if the Government gave you the available land for 10 miles on each side of the railway, you would build the railway yourself; would you build the railway if you got 358,000 acres there? No.

FRIDAY, 22 *JULY*, 1892.

[*The Sectional Committee met at Ramornie Station, Orara River, at 2 p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.

Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Charles F. Tindal, manager of Ramornie Station and Meat Preserving Works, sworn, and examined:—

Mr. C. F. Tindal. 22 July, 1892.

1391. *Chairman.*] Are you the manager of Ramornie Station and Meat Preserving Works? Yes.

1392. Can you give the Committee a statement with regard to the output of the works? I have made out a statement of the output. On an average we kill about 4,000 head of cattle a year, and the following is the result:—

4,000 hides and tongues	£ 3,200
560,000 lb. tallow	4,750
32,000 lb. extract	6,400
1,200,000 lb. preserved meats	17,500
84,000 lb. bones	450
240,000 lb. bone-dust	481
	£32,781

1393. How many men are employed here? About 100. About one-quarter of them are in constant employment, and two-thirds are at work for four months in the year. Some of the men work at sugar-mills for the remainder of the year, while others go to the meat works at Sydney.

1394. How long has this industry been established? About thirty years as meat preserving works, and they are still in successful operation.

1395. What do you do with your produce? We ship it at Sydney, and send it home to England.

1396. What is the size of Ramornie station? About 60,000 acres leasehold, and 10,000 acres freehold.

1397. Are there many selectors in the neighbourhood? On the station there is six.

1398. Is there any cultivation carried on at Ramornie? Yes; we let four farms, containing 350 acres in all.

1399. What rent do you get? For three of them 10s. an acre, the fourth is rented to my brother at a nominal rent.

1400. Do those selectors manage to make their selections pay at that rent? I suppose so, these are farms apart from the selectors.

1401. Do the selectors carry on grazing or cultivation? Mixed farming.

1402. *Mr. Neild.*] Are the meat works carried on by a public company or private enterprise? They were started as a public company, but now they are the sole property of my father.

1403. Would the construction of the Grafton to Lismore railway lead to the extension of this enterprise? I do not think it would affect us much.

1404. Would it tend to bring more cattle or sheep into the district? A railway to Lismore would not. I think that a railway from Grafton to Glen Innes would enable us to get sheep here from the table-land. I mean even if the line should be limited to Glen Innes.

1405. If a line were constructed from Grafton to Lismore, and it was afterwards extended to Casino and Tenterfield, would that have a tendency to bring sheep to these works? Not so much as a railway to Glen Innes would. The Tenterfield line would be a longer one, and I am not aware of any large sheep stations in the neighbourhood of Tenterfield.

1406. Would it be necessary, for the bringing of sheep from the table-land to your works, that the railway should approach you more nearly than Grafton or South Grafton? No; they could be driven thence to this place.

1407. Would a line from Grafton to Lismore be used for trucking fat stock here for killing? No; the stock in the neighbourhood of the Richmond are mostly cattle, and for the distance it would be cheaper and easier to drive them.

1408. Then your preference with regard to a railway would be in the direction of the table-land rather than towards the coastal lands? Yes; but that is only with a view to my own interests.

1409. *Mr. Davies.*] Is this a profitable venture at present with an output of £36,000 a year? It is profitable; but I do not think it would be if started as a new venture.

1410. Did the original company lose a considerable sum? I think so; but it is now giving a fair return.

1411. Is there a probability of its increasing its output? No.

1412. Have you appliances for increased trade? We could considerably increase the output if we could get stock.

1413. Have you any difficulty in obtaining fat stock? It depends greatly on the different seasons. In a year like this we can buy cattle easily and cheaply.

1414. *Chairman.*] Do you think that a railway running from the Tweed *via* Lismore, Casino, Grafton, and Don Dorrigo Scrub, joining the main northern line near Guyra, would be of any benefit to this establishment? No.

1415. Do you think it is not likely to be used for bringing cattle from other districts? No.

SATURDAY, 23 *JULY*, 1892.

[*The Sectional Committee met at the Court-house, Grafton, at* 9·30 *a.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.

Charles Collins, Esq.

The Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Thomas Bawden, Inspector of Stock, Grafton, sworn, and examined:—

Mr. T. Bawden. 23 July, 1892

1416. *Mr. Neild.*] How long have you been living at Grafton? Fifty-two years in the Clarence district.

1417. Were you a member of the Legislative Assembly for this district for some time? Yes; for eleven years.

1418. Have you been engaged in business pursuits here? Yes; auctioneering and storekeeping. I was wharfinger in connection with the steam companies, and in the early part of my life I was connected with squatting pursuits. I am at present Inspector of Stock and Returning Officer for the Grafton electorate, and I hold other small offices. I have been a magistrate of the territory since 1863.

1419. Have your operations extended to the Richmond district? To the Richmond, Tweed, and Clarence districts. I have occasionally visited the New England table-land.

1420. From your intimate knowledge of the country, and your experience, I have no doubt you can give us some valuable information with regard to the proposed railway from Grafton to Lismore? I may explain that the question of railway construction in these districts has engaged my attention for a great number of years. I have considered the question as a complete scheme, and any evidence which I give will scarcely be applicable to any isolated portion of that scheme. The scheme, with which I have had something to do, and which I have considered very carefully, is a scheme for serving the north coast districts, the table-land, and the western districts of this part of New South Wales. I have made some notes, which I should prefer to read:—

I have studied the question of railway extension in these districts for upwards of twenty-five years past. I took an active part in the origination of the agitation in favour of the Clarence system of railways. That system had in view the connecting of the table-land districts, and those to the west, together with the south-western districts of Queensland, with what I conceive to be the natural port of the table-land, the Clarence River. That proposed system also embraced the idea of connecting the whole of the north coast districts, from the Macleay to the Tweed, with each other, and with the table-land and western districts, by means of a line from Grafton west to Glen Innes and Inverell, Warialda, and Moree.

During the time the agitation in favour of railway extension in these districts has been going on, I have taken an active part in it. I have endeavoured to study the various phases of the subject as one of great national importance, one not only beneficial, if carried out, to the districts immediately interested, but, through their prosperity, to the whole Colony.

In my consideration of this question I am unable to treat the proposal as other than a complete scheme; or to give special evidence upon any one portion of it standing alone. To do so would be to denationalise the scheme, and to give to its particular parts specially local aspects.

When speaking of the north coast districts, I refer particularly to the Macleay, the Clarence, the Richmond, and the Tweed Valleys. While as to the table-land and western districts, I include the electorates of New England, Glen Innes, Tenterfield, Inverell, and westward. The distance on the coast line is some 195 to 200 miles. The distance on the table-land, along the course of the Great Northern Line, is some 174 to 180 miles. Westward from the central point at Grafton, the breadth may be taken to extend to 250 miles. That is to say, 100 miles beyond Inverell.

I take the Clarence River to be the natural port for the table-land and the districts west of that table-land, as proved by the fact that it is a port nearer to every part of those districts than any other port. And it is of the utmost importance, in the promotion of settlement and the development of agricultural pursuits, that land suitable therefor should be brought into communication with water-carriage by the shortest and most direct and speediest route. Then, I submit that not only is the Clarence the natural port of the districts inland from it, but also as a port it is the best on the north coast; and further, that when the complete scheme of improvement, now in hand, is carried out to completion, as recommended by Sir John Coode, it will be second in New South Wales only to Port Jackson; that besides this, its situation is central as regards the north coast districts, and to be reached from every part of the table-land by a shorter average length for haulage from a central point on the Great Northern Railway than any other port, present or prospective, on the north coast, or elsewhere; that the port of the Clarence, having those superior advantages, points it out as the port to which the trade of the table-land districts should be directed in the first instance, in view of over-sea traffic.

Apart from the over-sea traffic of the future, the question of distributing the produce of the table-land indicates the Clarence as the central point upon the north coast for best aiding in that distribution, by reason of its being centrally situate as regards the whole of that district, about equidistant from the Macleay on the south, and the Tweed on the north.

The Inverell and table-land districts are amongst the best, if not actually so, wheat-growing districts in New South Wales. On the north coast districts there is a large and rapidly-increasing population entirely dependent upon imported breadstuffs. The table-land, capable of producing a comparatively unlimited quantity of breadstuffs, has in the north coast districts, providing rail facilities are forthcoming, a large initiatory market for its breadstuffs. The points of connection which will confer the greatest benefit upon producer and consumer are undoubtedly Glen Innes and Grafton. That connection will, in my opinion, confer the largest amount of advantage upon the table-land and north coast districts and upon the country. There are some 80,000 people on the north coast. The average consumption of wheat in the Colony for the last thirty years has been slightly over 6 bushels per head. That would mean 480,000 bushels for the north coast. The production of wheat upon the table-land and in the Inverell districts for the year ending March, 1891, was only 163,784 bushels. From this it will be seen that the cultivation of wheat would have to largely expand in order to meet the requirements of the north coast people, causing a large increase in the employment of labour, and demanding commodities which, of necessity, would have to be conveyed to the table-land by rail. This, of course, would mean revenue for the railway.

Then, as regards sugar and maize from the north coast districts to the table-land, what is needed for developing agriculture upon the table-land is a market which can be conveniently reached at a cost of carriage which will defy competition. That market is to be obtained on the north coast, providing rail communication is established between each of the north coast districts, and those districts are connected with the central table-land by rail from Grafton.

What the farmers on the north coast need is a second market for their products, mainly maize, sugar, and other semi-tropical products, which will be produced in the near future. Maize and sugar are the staple products of the north coast at present. For those a second market is required, where they can be delivered at less cost than similar produce from elsewhere. That second market is to be obtained by means of the railway system I advocate—on the table-land—and in the districts west of the north coast.

As an instance of the necessity for a rail connection that would give such a market, it may be mentioned that not very long since maize was selling at Inverell at 5s. 6d. per bushel. The producers on the Clarence were barely realising 2s. Had the railway been in existence, maize could have been delivered at Inverell at 3s. 4d. per bushel. This would have been an immense advantage to the consumer and to the producer. Such a price would have led to more extensive consumption; and, taking advantage of the railway, the glut in the Sydney market would have been relieved.

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So with flour. Inverell could supply Grafton with flour at £10 per ton, or any part of the north coast at an average not exceeding £14 4s. per ton. The average freight rate from Sydney to any part of the north coast upon flour is 16s. 4d. per ton.

The results indicated can only be obtained, in my opinion, by connecting the north coast line by a line from Grafton to the northern railway at Glen Innes, and thence west.

I now append a schedule showing the distances and the railway rates from the chief parts of the table-land districts to Grafton, as compared with the ports of Sydney and Newcastle, and that projected at Byron Bay. From those distances and rates, compiled from the railway rate-sheet, the central position occupied by Grafton as the natural port of the table-land district will be confirmed.

Railway Merchandise Rates, as per mileage rate-sheet issued 29th June, 1891 :—

	Distance.	Per ton.											
		Special classes.				Classes.							
		A			B	1st			2nd			3rd		
	miles.	£	s.	d.	£ s. d.	£	s.	d.	£	s.	d.	£	s.	d.
Tenterfield to Sydney	479	1	10	10	2 19 3	5	18	8	7	7	6	10	5	6
Tenterfield to Grafton	157	0	14	1	1 5 7	2	11	5	3	3	8	4	8	1
Tenterfield to Byron Bay	133	0	12	4	1 2 2	2	4	5	2	15	0	3	15	11
Glen Innes to Sydney	422	1	8	0	2 13 7	5	7	3	6	13	6	9	5	11
Glen Innes to Grafton	103	0	10	1	0 17 8	1	15	5	2	3	9	3	0	2
Glen Innes to Byron Bay	190	0	16	3	1 10 0	3	0	2	3	14	8	5	3	6
Armidale to Sydney	358	1	4	10	2 7 2	4	14	5	5	17	6	8	3	6
Armidale to Grafton	167	0	14	9	1 6 11	2	14	1	3	7	0	4	12	9
Armidale to Byron Bay	254	0	19	7	1 16 9	3	13	8	4	11	6	6	7	1
Inverell to Sydney	464	1	10	1	2 17 9	5	15	8	7	4	0	10	0	7
Inverell to Grafton (145)	153	0	13	0	1 5 1	2	10	4	3	2	4	4	6	3
Inverell to Byron Bay	232	0	18	6	1 14 7	3	9	3	4	6	0	5	19	5
Newcastle to Tenterfield	377	1	5	9	2 9 1	4	18	3	6	2	3	8	10	1
Newcastle to Glen Innes	320	1	2	11	2 3 4	4	6	10	5	8	0	7	10	2
Newcastle to Armidale	256	0	19	9	1 17 0	3	14	0	4	12	0	6	7	9
Newcastle to Inverell	362	1	5	0	2 7 7	4	15	3	5	18	6	8	4	10
Inverell to Grafton, *via* Guyra and Glen Innes	236	0	18	9	1 15 0	3	10	1	4	7	0	6	0	9
Tenterfield to Grafton, *via* Guyra and Glen Innes	240	0	18	11	1 15 4	3	10	10	4	8	0	6	2	2
Glen Innes to Grafton, *via* Guyra	186	0	16	0	1 9 5	2	19	1	3	13	4	5	1	8
Armidale to Grafton, *via* Guyra	190	0	16	3	1 10 0	3	0	2	3	14	8	5	3	6

The rates of freight for agricultural products conveyed in 6-ton trucks during nine months in the year are as follows :—479 miles, 18s. 4d. per ton ; 157, 10s. 4d ; 133, 9s. 8d. ; 422, 16s. 7d. ; 103, 8s. 8d. ; 190, 12s. ; 358, 15s. 6d. ; 167, 10s. 8d. ; 254, 13s. 9d. ; 464, 17s. 5d. ; 145, 9s. 10d. ; 232, 13s. 4d. ; 377, 15s. 10d. ; 320, 14s. 11d. ; 256, 13s. 10d. ; 362, 15s. 7d.

In dealing with a scheme of railway construction for the north coast districts, the Macleay River district has a right to be considered. It is important that all the north coast districts should be connected with the existing railway system by the shortest length of line, and in such a manner as will confer the greatest benefit upon the districts on the coast, as well as upon the districts on the table-land.

The map will show the complete scheme which I refer to, and which I advocate.

There are some persons who object to what they call the tapping of the northern line.

Upon that point I would say the tapping, such as indicated in the scheme of railway construction I advocate, would be wholly for the advantage of the northern line. It would bring an existing population of 80,000 people, who are now cut off from railway conveniences, in direct communication with that line. It would prepare the way for a much larger population in the near future.

It is an undoubted fact that the northern line has not hitherto helped to create settlement as extensively as it should have done ; the cause being great length of haulage to the one market for produce, and undue competition when in that market. Even the differential rates have not succeeded in increasing settlement or promoting the agricultural output—*vide* 163,784 bushels of wheat for 1891. A short line to the coastal market would not only bring increased traffic, but it is the only true method for encouraging settlement and agricultural development along the route of the existing line. The need for differential rates would be at an end, and Armidale would benefit equally with the other towns upon the table-land. Now, as showing the importance of the districts proposed to be associated in the first instance by this system of north coast and table-land railways, they are the electorates of Glen Innes, New England, Inverell, Tenterfield, The Macleay, The Clarence, Grafton, and The Richmond, which includes The Brunswick and The Tweed.

The districts west of Inverell, Warialda, and Moree are interested in the subject, but I do not include them in my calculations.

The total area of the districts is given at 14,757,040 acres. Of this only 1,056,908 have been alienated. The area alienated only includes completed purchases, not conditional purchases upon which balances are due or in respect to which grants have not been issued. Of that area only 161,271 acres were under crop. Now, while we know that the immense areas of land in the electorates named are largely suitable for agricultural purposes, what do we find but that, mainly, owing to the absence of proper facilities for the interchange of products and for reaching proper markets, there is nothing to show, comparatively speaking, in the form of agricultural development. This may be mainly proved by the limited area under wheat amidst the best wheat lands in the Colony, districts that should have markets to the east and to the west of them. The acreage under wheat up to 31st March, 1891, was 11,018 acres, yielding 163,784 bushels ; oats, 3,970 acres, 57,484 bushels ; potatoes 3,222 acres, 11,055 tons ; maize 80,623 acres, 2,589,812 bushels ; sugar-cane 20,455 acres, 277,202 tons. So that out of 14,757,040 acres of land, only 119,388 acres are under cultivation for these staple crops. It is but right to state that the returns to the 31st March, 1889, showed 10,484 acres under wheat. So that in two years there has been an increase of only 534 acres, notwithstanding the demand for wheat production. The inference to be drawn from this naturally is, that the cost of delivery at market hampers the industry in respect to any surplus over mere local demand.

1421. Is it not a fact that there is a falling off in the area of land under cultivation in the Clarence district, or the Grafton electorate, of late years? I do not think so. On the 31st March, 1889, in the electorates of Grafton and Clarence, this state of things existed :—

	31st March, 1889.		
Maize	29,358 acres,	yielding	1,023,693 bushels.
Sugar-cane	6,275 ,,	,,	30,431 tons cane.
Potatoes	754 ,,	,,	1,688 tons potatoes.
	1891.		
Maize	30,793 acres,	yielding	1,305,178 bushels.
Sugar-cane	7,860 ,,	,,	124,899 tons.
Potatoes	620 ,,	,,	2,465 tons.

Value of the cane, 13s. per ton = £81,184.

I estimate the value of the sugar manufactured from the cane at £17 per ton—£210,313.

I take 10 tons of cane to the ton of sugar, which is a liberal allowance, 30 tons to the acre, plant and ratoons, would be a fair average.

1422.

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1422. *Mr. Davies.*] What is the commercial value of it? I think the price the Company are giving is 13s. a ton, and they cut it.

1423. *Mr. Neild.*] Do they pay a stated price for a ton, irrespective of the density of the juice as determined by the saccharometer? They have certain conditions for cultivation which they insist upon. They cut the cane themselves. With reference to maize and sugar-cane, the average production of maize for the whole Colony for 1891 was 29·89 bushels. The average for the Macleay was 24·52, and the area under cultivation 25,720 acres. The average for the electorate of Clarence was 41·51, and the area 15,994 acres. For the Richmond, the average was 30·50, and the acreage was 13,840. The average for the Grafton electorate was 43·33, which is higher than any other district in the Colony. The area under cultivation for maize in the Grafton electorate was 14,799 acres. With reference to oaten hay, which has been referred to in the evidence, it being stated that the land between Grafton and Casino is specially suited for the growth of that product, I find that in 1891 the average production per acre of oaten hay was 1·01 throughout the Colony. For the previous ten years the average production of hay throughout the Colony was 1·14. Something has also been said about the production of potatoes per acre. The average production in the Colony for 1891 was 2·72, and the average for the previous ten years 2·70. The sugar-cane production for 1891 was 33·23. That is above my estimate. The average for some years previously was 25·37. In ordinary seasons it is fair to estimate it at 30 tons per acre. With reference to wheat, I find that in the year 1890 the Colony was compelled to import, over and above its exports, no less than 1,867,381 bushels of wheat, or its equivalent in flour.

1424. Can you inform the Committee as to the production of oaten hay and potatoes in this district? I cannot say very much about the production of potatoes in the district, but my opinion is that, unless under very favourable circumstances, I do not look upon the district as a potato district. The land and its people can be better employed than in trying to grow potatoes, especially if we had the advantage of railway communication with a better potato district. Along the line between here and Casino, a short distance from Grafton, I have seen a very good crop of oats growing on the forest land, but the quantity produced has not been very large, for the reason that the cost of bringing it to town is too great. The land immediately in the neighbourhood of the bank of the river is not of suitable quality for the growth of wheat, and it can be made much more profitable by growing maize and sugar-cane. I would now go back to the question of conveying produce to and from the north coast districts and the table-land. I find that the rates by rail from the Macleay to Inverell, by way of Grafton, would come to about 14s. 9d. per ton by the truck system. From the Tweed to Inverell, by way of Grafton, the rate would be 14s. 6d., so that Grafton's position is a central one, about equidistant from each of those points. Both of those districts produce maize, and they would certainly take advantage of the second market to the west, if an opportunity was afforded them. I have here a list of the rates from the different points on the coast, giving the charges at per bushel, and also the mileage:—

Maize,	313	miles,	Macleay to	Inverell, *via*	Grafton	4¾d.	₱ bushel
,,	327	,,	,,	Armidale,	,,	5d.	,,
,,	363	,,	,,	Glen Innes,	,,	4¼d.	,,
,,	317	,,	,,	Tenterfield,	,,	4⅜d.	,,
,,	309½	,,	,,	,,	*via* Casino	4⅝d.	,,
,,	363	,,	,,	Glen Innes,	,,	5d.	,,
,,	413	,,	,,	Inverell,	,,	5¼d.	,,
,,	427	,,	,,	Armidale,	,,	5½d.	,,
,,	298	,,	Tweed to	Tenterfield, *via*	Grafton	4⅜d.	,,
,,	244	,,	,,	Glen Innes,	,,	4¼d.	,,
,,	294	,,	,,	Inverell,	,,	4⅜d.	,,
,,	308	,,	,,	Armidale,	,,	4⅝d.	,,
,,	103	,,	Grafton to	Glen Innes,	,,	2½d.	,,
,,	157	,,	,,	Tenterfield,	,,	3¼d.	,,
,,	153	,,	,,	Inverell,	,,	3¼d.	,,
,,	167	,,	,,	Armidale,	,,	4¼d.	,,
,,	190	,,	,,	,,	*via* Guyra	3⅝d.	,,
,,	186	,,	,,	Glen Innes,	,,	3⅞d.	,,
,,	236	,,	,,	Inverell,	,,	4½d.	,,
,,	240	,,	,,	Tenterfield,	,,	4½d.	,,
,,	175	,,	Tweed to	Tenterfield, *via*	Casino	3½d.	,,
,,	229	,,	,,	Glen Innes,	,,	4d.	,,
,,	293	,,	,,	Armidale,	,,	4⅝d.	,,
,,	279	,,	,,	Inverell,	,,	4½d.	,,

I have another list of figures bearing on the sugar question. For a number of years past large quantities of sugar have been purchased in the district from the manufacturers, and despatched by teams to the table-land and the western districts. This statement will show what the cost would be of conveying sugar from the Tweed, &c., to the various points of the table-land, *via* Grafton. The Richmond, the Tweed, the Brunswick, and the Clarence are sugar districts. No doubt along the coast there are places where the sugar-cane can be grown successfully between here and the Macleay, and possibly later on, when scientific information is supplied, the farmer will be enabled to guard against the effects of frosts. I have no doubt that even on the Macleay sugar will be grown profitably at some time. If a line were constructed to Glen Innes, the cost of conveying sugar would be as follows:—

	£	s.	d.		£	s.	d.
Tweed to Tenterfield, *via* Grafton, per ton	5	2	6	Grafton to Tenterfield, *via* Casino, per ton	3	1	4
,, Glen Innes, ,, ,,	4	9	0	,, Glen Innes, ,, ,,	3	19	0
,, Inverell, ,, ,,	5	1	6	,, Inverell, ,, ,,	4	11	6
,, Armidale, ,, ,,	5	5	0	,, Armidale, ,, ,,	4	15	0
,, Tenterfield, *via* Casino ,,	3	6	0	,, Tenterfield, *via* Glen Innes ,,	3	3	8
,, Glen Innes, ,, ,,	4	2	6	,, Glen Innes, ,, ,,	2	3	9
,, Inverell, ,, ,,	4	15	0	,, Inverell, ,, ,,	3	2	4
,, Armidale, ,, ,,	4	18	6	,, Armidale, ,, ,,	3	7	0

The average cost of conveying maize from the Macleay, *via* Grafton and Glen Innes, to the four towns on the table-land would be under 4¾d. a bushel. From the Macleay, *via* Casino and Tenterfield, it would be over 5d. a bushel. From the Tweed, *via* Grafton, it would be 4½d. From Grafton direct, *via* Glen Innes, it would be 3d. a bushel—from Grafton, *via* Guyra, it would be 4d. Sugar from the Tweed, *via* Grafton, would cost £4 19s. 6d. per ton. From the Tweed, *via* Casino and Tenterfield, £4 5s. 6d. per ton. From Grafton, *via* Casino and Tenterfield, £4 1s. 6d. From Grafton

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Grafton direct, *via* Glen Innes, £2 19s. 2½d. The average distance from Grafton to Armidale, Tenterfield, and Glen Innes and Inverell, *via* Glen Innes, is 145 miles. The rate per ton for that distance, per 6-ton truck, is 9s. 10d. for grain. The cost of conveying wheat and flour from Glen Innes to Grafton for nine months of the year, a distance of 103 miles, would be 8s. 8d. per ton. The freight to Sydney from Grafton in large quantities is at present 8s. 6d. per ton, or even less. If large bottoms were employed in the trade, there is no doubt it would be taken for 6d. per bag. The rate is now 1s. a bag. That would give a total cost of 14s. per ton. The present cost from Glen Innes to Sydney, for grain, a distance of 422 miles, is 16s. 7d. per ton. The average freight on flour from Sydney to the various rivers on the north coast is 16s. 4d. per ton. Flour and wheat from Glen Innes to Lismore, *via* Grafton, by rail, would be 11s. 6d. per ton. The average distance from the four principal towns on the tableland, by Grafton, is 145 miles—the average distance from Glen Innes to Grafton, Lismore, the Tweed, and the Macleay, is 121 miles. By adding those two averages together, we get at a mean average distance of 266 miles. The cost of conveying wheat or flour that distance would be equal to 14s. per ton. Hence grain could be delivered from the tableland at any point on the north coast at an average of 14s. per ton. The rate per ton on grain for 145 miles is 9s. 10d. The average freight from the Macleay, Nambucca, Bellinger, Coff's Harbour, the Clarence, the Richmond, and the Tweed, is slightly over 22s. per ton by water. It does not pay to send wheat from the table-land to Sydney at 19s. 7d. per ton, because of competition with other places in close proximity with that market. The following is a list of the exports by steamships from Grafton from 1st January to 30th June, 1892 :—

1st Quarter.	2nd Quarter.	Totals.
40 steamers	46 steamers	86
5 sailing vessels	8 sailing vessels	13
35,082 bags maize	61,047	96,129
5,346 bags sugar	1,500	6,846
5,285 bags potatoes	45	5,330
894 bags oysters	261	1,155
2,507 cases eggs	1,302	3,809
153 cases fish	95	248
381 coops poultry	278	659
1,747 hides	4,783	6,530
1,051 pigs	2,207	3,258
90,596 ft. cedar	30,000	120,596
8 cases tomatoes		8
97 casks tallow	468	583
58 kegs butter	109	167
76,322 spokes	45,150	121,472
36 horses	73	109
60,000 ft. hardwood	5,000	65,000
652 bales wool	44	696
28 calves	71	99
380 bags bones	615	995
550 hogsheads rum	435	985
157 casks ale	100	257
514 bags bark	131	645
1,358 melons	185	1,443
11 bags onions		11
15 tons machinery	20	35
2,604 railway sleepers	2,853	5,457
Cedar		66,840 ft.
„		p.c.o. 182
Sheepskins		41
Telegraph poles		71
30 cases honey	81	111
Wild ducks		3,798 pairs.
30 cases wine	38	68
Preserved meat		9,301 cases.
Chaff		25 bags.
Hay		48 bales.
Molasses		175 casks.
Antimony		247 bags.
Leather		7 bales.
Sugar-cane		50 crates, 97 bundles.
Fruit		30 cases.

1425. Do these returns show the general output of the district sent coastwise, as well as oversea? This is coastwise only. This fills up, to a considerable extent, what the Collector of Customs could not give in evidence.

1426. You heard the Committee desiring evidence from the Collector of Customs as to the goods sent by steamer coastwise, and are you now supplying evidence which will make up the deficiency then apparent? To some extent it will. There were sailing vessels coastwise of which we have no account. What I have read now is taken from the manifests of the steamers which trade between here and Sydney. There is still a gap, but not a very large one. There was another question asked the other day, with regard to the steamer "Fiona" and her cargo. I have not been able to get the full information which I should like, but I find that on one occasion, in November last, the "Fiona" left the river with 8,050 sacks of sugar, exclusive of rum and sundries. I do not know how many trips she makes. The following is a list of shipping returns for 1888 and 1891 :—

Shipping Returns.

	1888.	1891.
Maize	180,120 sacks	146,512
Sugar	15,423 bags & mats—2,542 tons.	21,590
Sugar-cane	216 bundles	390
Preserved meat	24,896	4,769
Potatoes	18,962 sacks	32,591
Eggs	4,816 cases	6,927
Melons and pumpkins	28,144	15,552
Hay	96 trusses	
Butter	205 kegs	514
Wool	1,669 bales	484
Pigs	4,246	5,455
Poultry	1,435 coops	1,344
Wild fowl	8,292 pairs	1,041
Fish, fresh	2,246 cases	745
Horses	218	115
Cattle	12	106
Calves	297	205
Molasses	1,396 hogsheads	1,115
Spirits	187,300 gallons	1,543 hhds.
Beer	733 casks	274
Oysters	6 sacks	346
Bones and horns	849 sacks	2,488
Skins	253 bundles	133
Hides	11,977	8,648
Tallow	1,162 hogsheads	711
Bark	988 sacks	210
Mineral ores	635 bags	977
Sundries	4,555 packages.	5,670
Honey	1½ tons	42 cases.
Timber—		
Spokes	87,992	143,404
Cedar	851 logs	613 logs=308,400 feet.
Cedar, sawn	40,721 pieces	226,350
Girders and piles	2,057	2,750
Hardwood, sawn	1,280,283 feet	1,773,858
Railway sleepers		2,148
Shipping—		
Steamships	314	160
Sailing vessels	47	35
Passengers (saloon)	5,667	
„ (steerage)	2,560	

With reference to the proportion of land under wheat in Glen Innes, Inverell, and Tenterfield, I find that it is 1 acre in 833 acres. The average yield per acre is 15·98, which is the highest in the Colony for 1891, the next being Tumut, with 15·74. In New England the proportion is one acre in 1,327 acres, and the average is 12·30. With regard to live stock in the sheep districts of Casino, Tweed-Lismore, and Grafton, of which I am Inspector, two of these are in the Richmond electorate. The third is the police district of Grafton, and embraces the electorates of Grafton and the Clarence. A considerable portion of what is called the Richmond

embraces

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embraces a considerable area of the Clarence River Valley. The Casino district, which includes a considerable portion of the Clarence River district proper, contains an acreage, according to the last return, of 1,454,950 acres; that included the runs then held by the pastoralists, and only that portion for which they were paying. I do not think it included all they occupied. The number of horses was 8,844, cattle 124,519, sheep 1,372; the Tweed-Lismore district showed an acreage occupied of 287,753, number of horses 7,913, cattle 31,208, sheep 620. The electorates of Grafton and the Clarence showed an acreage occupied of 1,140,537, horses 16,823, cattle 68,635, sheep 4,219. Something was said yesterday about the municipalities in this district. I would like to say, briefly, that the proposed connection between here and Lismore would connect two municipal districts and the Borough of Grafton. The statistics of those municipalities are as follows:—

Casino.—21,604 acres. Total property, £181,209; ordinary rates, £662. Rental, £10,449.
Lismore.—14,060 acres. Total value, £499,304; ordinary rates, £1,153. Rental, £19,113.
Grafton.—3,072 acres. Total value of property, £660,274; ordinary rates, £2,091. Rental, £26,299.

Another consideration in connection with the construction of this line as a complete scheme, and the desirability of connecting it with the northern railway, is the question of economy in the working of the railways themselves. Instead of having an isolated railway in one corner of the Colony, if we had all the railways connected with the main line, we should do away with the necessity of having separate workshops in different parts of the colony. Something more may be said in reference to the port of the Clarence, and the advantage which would be gained by using it as a port for the table-land. I have made some calculations which will show what I mean:—

Take the three classes of goods on the railway tariff, 1st, 2nd, and 3rd. From Sydney to Tenterfield the rates are £5 18s. 8d., £7 7s., and £10 5s., or, by striking an average of the three classes, £7 16s. 10½d. per ton. Taking Armidale in the same way, the average is £6 5s. 2d., Glen Innes £7 2s 2½d., and Inverell £7 13s. 5d. Now, adding these averages together, we find that the average cost from Sydney to the table-land, upon those three classes of goods, is £7 4s. 5d. So much for Sydney and the table-land trade by rail.

Now, if we turn to Grafton by rail, *via* Glen Innes, and thence by Sydney by sea, what do we find? The average from Grafton to Tenterfield, £3 7s. 5d.; Glen Innes, £2 6s. 4d.; Armidale, £3 11s. 3d.; Inverell, £3 6s. 4d. Taking an average of those rates, we have £3 2s. 10d. as the average cost of trainage from Grafton to the table-land towns. But then, there is to be added to that, taking things as they are at present, the freight from Sydney to Grafton, which, for measurement and dead-weight, now averages 13s. 9d. This would make the cost per ton from Sydney to the table-land average £3 16s. 7d., or a margin in favour of the Grafton route of £3 7s. 10d.—a sufficiently large saving to prove highly beneficial to those engaged in the labour of agricultural and mining development on the table-land. I have used the term, taking things as they are, for the reason that I look upon the improvement of the port, and the increase of trade which would follow the construction of these railways, as means for reducing the freight to and from Grafton and Sydney. That freight will probably in the near future not exceed 10s. per ton. More than that, as the construction of railways and the improvement of harbours at the present time is as much for future development as present utility, the time will come, if that object is kept in view, when the Clarence will be an over-sea port; to a very considerable extent independent of other ports in New South Wales, but, with them, contributory to the prosperity of the whole. About Casino, in the event of the railway being constructed, there will be an increase of agricultural development, which will be of a similar character to that which we have in other parts of this district, and mainly, I think, in the growth of maize, and so forth. It would be more profitable to persons cultivating maize about Casino and other parts of the Richmond River to use the railway to Grafton, rather than put up with the inconveniences which may continue for a number of years at the Richmond River Heads. The distance from here to Casino is 62 miles, and grain will be carried for that distance in 6-ton trucks, at 6s. 1d. per ton. The present freight from Sydney to Grafton is 10s. per ton. That would be a total of 16s. 1d. The freight from the Richmond to Sydney is 15s. per ton. The difference of 1s. 1d. per ton would be more than made up in the saving of time, and in avoiding the risk attached to the Richmond River bar. Goods from Sydney would, I think, also be conveyed from Grafton to the Richmond River. My reason for holding that view is, that some few years ago the trade done with Grafton and the table-land of New England averaged 25 tons per day for every day in the year. Owing to the construction of the Great Northern Railway, that trade was cut off, not because it was cheaper, but because it was more regular and gave greater dispatch. For instance, while it took our teamsters ten days or a fortnight to travel the distance between here and Glen Innes, on the table-land, the storekeepers on the table-land could order their goods by wire, and they would probably get them from Sydney in less than a week. I think the same thing would apply in connection with communication between Grafton and Casino by rail, and Grafton and Sydney by water. I have endeavoured to show what the average would be, in order to indicate that business men on the Richmond River are not likely to cast aside the advantages to be gained by regularity of communication, even if they had to pay a slight advance on what they ordinarily pay. The average of the three classes of goods from Grafton to Casino, by rail, would be £1 8s. 4d. per ton. The cost of goods from Sydney to Grafton at present averages 13s. 9d. by steamer, and to Coraki, on the Richmond River, the average is 16s. 3d. I believe there is a droghage now charged of 5s. per ton. I have no doubt that under favourable circumstances, or even ordinary circumstances, there are large quantities of goods which would be brought by steamer to Grafton and sent on to Casino, rather than by way of the Richmond River, if rail connection existed.

1427. Supposing the projected harbour works at the Richmond Heads realised the expectations of Sir John Coode, would not the Richmond River provide a waterway sufficient for the commercial requirements of that district? In the first place, we have to consider what Sir John Coode expected to accomplish. He never contemplated obtaining the depth of water at the Richmond River which he contemplated obtaining on the Clarence River.

1428. What depth of water did Sir John Coode expect to obtain at the Richmond? I do not think he expected to obtain more than 12 feet.

1429. That is only half the depth which he expected to obtain at the Clarence? Yes.

1430. Do you think that 12 feet of water at the Richmond would be prohibitory to the successful carriage of goods as against an increased depth of water at the Clarence, with railway communication for 62 miles? I anticipate that the improvement of the Clarence River will give such a depth of water as will enable the port to be visited by a larger class of vessels than it will ever be possible to admit to the Richmond River. In large bottoms, of course, the freight would be very much less than it can ever be in smaller vessels. Then again, in the course of time we shall be doing an oversea trade from the Clarence which can never be done on the Richmond. We shall not then be limited to one market in Australia for our productions.

1431. Do you contemplate the arrival of large oversea vessels at the Clarence? Yes.

1432. At what part of the Clarence? I do not see why many of them should not come to Grafton.

1433. What is the depth of water at Grafton? Not very long ago we had a vessel anchored off the town that drew nearly 13 feet of water.

1434. Would that be sufficient for oversea vessels? Certainly not; but I look forward to work being carried out here which has been carried out in other places—for instance, the Clyde, the Mersey, and the Mississipi.

1435. Has not dredging been done at Grafton? Very little.

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1436. Has there been any dredging on the flats near Lawrence? Some years ago. I think it was dredged three times. It was certainly not conducted on economical lines.
1437. Did that dredging cause a permanent deepening of the channel? No; because it was not followed up by a retaining-wall to get a scour.
1438. Did the "Lizard" get over the flats at Lawrence easily? I have not heard anything to the contrary.
1439. Did she come up at the slowest possible speed on account of frequently touching the bottom? I understand it is the rule in H.M. service, when entering a strange port, to only go at a certain rate of speed.
1440. Have there been three dredgings in twenty-two years without a satisfactory result as to permanence? I think there was a satisfactory result.
1441. Has the water been deepened? Yes.
1442. Would you be surprised if you were told that that mile of dredging cost nearly £20,000 each time, making a total of £60,000? I would not be surprised, because the expenditure was not made as well as it should have been.
1443. What was done with the silt when removed? It was deposited in the Broadwater.
1444. Do you think that not only dredging was necessary, but also the construction of training-walls? Yes; if that were done the dredging would be more permanent than it has been.
1445. Would not the river have to be deepened at Grafton itself? Not very much. It would not be necessary to dredge at Grafton in order to allow of oversea vessels coming there.
1446. Would you require retaining-walls at Grafton? I do not think so; but it would be necessary to construct retaining-walls where there are bars in the river.
1447. Is not the mountainous character of the headlands on the upper waters of the Clarence likely to cause a much greater quantity of silt to come down to the Clarence River than would be brought down by placid English streams? Yes.
1448. Would that not tend to create a greater deposit and require frequent dredging? That may be so.
1449. Below Ulmarra and Maclean is there a more permanent depth of water than there is to be found higher up? Yes; I have here a schedule showing the rates of freight and passenger fares from and to Sydney and the various ports on the north coast by steamers. It is as follows:—

Fares and Freights.

Port.	Miles from Sydney.	Dead weight.	Measurement.	Maize.	Potatoes.	Sugar.	Timber.	Figs.	Poultry.	Butter	Hides.	Fares. Saloon. Single.	Saloon. Return.	Steerage. Single.	Steerage. Return.	
		per ton.	per ton.	per ton.	per ton.	per ton.	per 100 supr.	each.	per pair.	per keg.	each.					
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	d.	s. d.	s. d.	s. d.	s. d.	
Byron Bay	345	16 0	20 0	16 per bag.	16 0	16 0	0 4	0 1	6 to 5	0 9	2 0	9	40	70	20	40	0
Richmond River..	328	15 0	17 6	1 3	15 0	15 0	0 3	0 1	6 „ 5	0 6 to 1	2 0	6	40	70	20	40	0 Coraki.
													42	72	22	42	6 Ballina.
													45	75	25	50	0 Lismore.
Clarence River ..	294	12 6	15 0	1 0	12 6	12 6	0 3	0 1	0 „ 5	0 6 & 1	2 0	6	40	60	20	40	0
Woolgoolga.....	270	20 0	20 0	1 9	20 0	20 0	0 4	0 1	6 „ 5	0 6 „ 1	2 0	8	40	60	20	40	0
Coff's Harbour ...	250	20 0	20 0	1 9	20 0	20 0	0 4	0 1	6 „ 5	0 6 „ 1	2 0	8	40	60	20	40	0
Bellinger River ...	228	20 0	20 0	1 9	20 0	20 0	0 4	0 1	6 „ 5	0 6 „ 1	2 0	8	40	60	20	40	0
Nambucca River..	219	20 0	20 0	1 9	20 0	20 0	0 4	0 1	6 „ 5	0 6 „ 1	2 0	8	30	50	15	30	0
Macleay River ...	212	12 6	15 0	1 0	12 6	12 6	0 3	0 1	6 „ 3	0 6 „ 1	1 6	6	30	50	15	30	0
Hastings River ...	172	12 6	12 6	1 6	12 6	12 6	0 4	0 1	6 „ 3	0 6 „ 1	1 6	6	30	50	15	25	0
Manning River ...	141	12 6	12 6	1 3	12 6	12 6	0 3	0 1	0 „ 3	0 6 „ 1	1 6	6	30	50	15	25	0

A question was asked yesterday, by Mr. Neild, with reference to the Broadwater Meat Preserving establishment. Those works were in operation about fifteen years. They were removed to the Fitzroy River, in Queensland. Mr. Whitehead came to the conclusion that he could get his cattle more cheaply in that part of Queensland than he could get them here, and, having the advantage of railway communication between Rockhampton and the interior, that he could get stock more readily, and at less cost, than he could get them from the western districts to Broadwater.
1450. When the works were in operation at Broadwater, did a large proportion of the cattle come from Queensland? Yes.
1451. Did the Clarence and Richmond Rivers not produce sufficient cattle to maintain the local meat works in addition to the Ramornie works? I do not think they do now. A large quantity of the cattle used at Ramornie comes from Queensland. The local consumption of fresh meat is large.
1452. Is there no probability of the establishment of an export of live stock, or of chilled or preserved meat, from the Clarence and Richmond districts? I think there is a probability of such an export.
1453. Under what circumstances? The breeders and others require a safety-valve to get away their surplus stock. At present they are using the meat preserving works, and the chilled meat depôt at Tenterfield.
1454. Are the Clarence and Richmond districts understocked at present? Yes.
1455. Could they carry more cattle if the land was ringbarked? Yes. There has been a check on the increase of cattle for some time among the larger pastoralists, because they cannot see the prospect of a profitable market.
1456. Would it be possible for the farmers to increase the number of live stock? Yes; the number could be increased 20 per cent., especially if they would adopt improved methods, such as artificial feeding. I have mentioned that I have dealt with this railway question as a complete scheme, and I would like to make some reference to a line of railway that has been projected and which, in my opinion, would certainly not come up to the national requirements. A great deal has been said recently about a line of

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railway from South Grafton to Guyra, *via* Don Dorrigo. The distances which I have given, and the figures, will serve to prove that such a line can never be as profitable to the country as a shorter line, which will contribute in giving almost equal advantages to almost every part of the table-land and every part of the north coast district. If the line mentioned were constructed, the people on the Tweed and the Richmond would not derive such advantages from that connection as they would from a line which would be central from Grafton. On the other hand, a line from Casino to Tenterfield would not give those advantages to the Macleay River people which such a line as I favour would give them. A good deal has been said at different times about the value of the land and its extent in what is known as Don Dorrigo. I have been there, and I know something about the land. I do not know anything about the engineering difficulties which the surveyors have not yet conquered, but I do know something about the character of the land and its extent, with regard to which there is a good deal of misconception. I have heard it stated, and seen it in print, that the sale of the Don Dorrigo land would pay the cost of the line. I think I dispose of that point when I say that there is not more than 25,000 acres in the Don Dorrigo country fit for farming purposes.

1457. Have you been all through the country? I have been backwards and forwards through it. As to the quality of the land, I think the Government or the Department would do well to have a perfect analysis made of land of that character in the early stages of survey, so that what it is capable of may be known and understood. Then again, a railway to connect the sea-coast with the interior is intended more for the development and service of the interior than for serving the coast. If the country known as the Don Dorrigo is suitable for profitable farming, it is certainly only that kind of farming which we have on the banks of our rivers. It is not a wheat-growing country, and my aim in advocating the line which I do is to get at the wheat-growing districts of this country, and to save the importation of breadstuffs, so as to give employment to our own people.

1458. With reference to the growing of wheat, on which you lay great stress, are you not aware that the carriage of wheat at existing rates, upon which your calculations have been based, is absolutely unprofitable to the Railway Department? That may be, but I say that differential rates would be, if not wholly, to a large extent abolished, or unnecessary, if those districts were brought into closer connection with water-carriage.

1459. Then you look forward to the increase of rates? There might be, but I do not think there would be any justification for an increase of the rates, because there would be a very largely increased production.

1460. If the line you advocate were constructed, do you think that the inhabitants would be willing to pay higher rates than are now charged upon the lines of the Colony, in order to have the advantage of more speedy and certain communication? I have no reason to doubt that the people would be willing to do that, provided there was an all round application of the charge, but I do not see that the people of these districts should be singled out specially for such a charge.

1461. Are you not aware that 30 miles of the Don Dorrigo line from South Grafton towards Guyra would serve equally well, and be used as part of the line to the Macleay, which you advocate as a portion of your great scheme? I understand that the survey which has been made from here towards Guyra follows the North Coast line up the valley of the Orara for a distance of about 30 miles, and then it turns into the Don Dorrigo country.

1462. So that 30 miles would serve equally for the route to Macleay and the route to Guyra? It would serve if it relates to the laying down of rails on which there will be little or no traffic, because such a line would cut you off from the northern districts. It would never, in my opinion, be used by the people of the Tweed and Richmond as a connection with the table-land.

1463. Would a line of railway 48 miles longer than a line from here to Glen Innes be prohibitory to the people of the Richmond River district? I think the cost of haulage would be prohibitory.

1464. Are you aware that the present rate for produce for 50 miles, on which you base your calculations, would be 4s. 10d.; and looking at it in that light, do you think that distance would be prohibitory? I think so. On agricultural products anything in the shape of increased cost would be prohibitory.

1465. Then your scheme is dependent on the fluctuation of something under 5s. a ton on goods—and is not that a very weak basis for the construction of a railway? I do not think so.

1466. Would not 5s. a ton make an infinitesimal difference on the price per bushel for maize? It would not make much difference per bushel.

1467. In your scheme, do you take the coastal district only as far as Macleay? Yes.

1468. Are you not aware that the proposed Railway from Grafton to Lismore is submitted to the Committee as part of a coastal scheme which is to embrace the districts from the Tweed to the Hunter? I believe so.

1469. Does your scheme propose to stop at the Macleay? Certainly not.

1470. All your proposals have dealt with the district as far south as the Macleay? Quite so; the traffic from any point below that would go the other way.

1470½. Do you think that the products of the coastal districts as far south as the Macleay Valley would be brought north to Grafton as a port of shipment? I think that under certain circumstances they would, but not the whole of them. I think the North Coast line will serve more to develop the intermediate country between the rivers than it will serve to bring produce from one river port to another, but those districts require a second market, and that is to be found in the west. To convey produce from the Macleay to that market it would come to Grafton. The port being made such as we look forward to, produce would also be brought here for shipment oversea.

1471. If we are to assume that the produce of the southern districts as far south as the Macleay would be brought northward to the Clarence for oversea shipment, or for transport to the table-lands on the westward, does it not follow that the line *via* Don Dorrigo would be more advantageous to the Macleay district than the line *via* Newton Boyd? Yes; but it would not be so advantageous to the people north of Grafton.

1472. Is it not a case of what one would lose another would gain? I do not know that. The Macleay River is a maize district only. The Tweed River is a sugar and maize district.

1473. Do you anticipate that the produce of the coastal districts south of the Macleay would find their port of shipment at Newcastle or Sydney? Yes.

1474. Then you recognise these two centres of shipment for produce along the coast—the Clarence for the northern portion, and Newcastle or Sydney for the southern portion? Yes.

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1475. In your view, the coastal districts south of the Macleay would not be able to compete with the districts north of the Macleay for the trade of the table-land and the western districts? I do not think they could reach there.
1476. Then the southern coastal districts would be dependent upon the metropolitan market, while the northerly portion would find a market to the west, and oversea shipment, and some portion of the market of the metropolis? I say the north coast districts would have three strings to their bow.
1477. Is the Clarence district fully populated? Nothing like it.
1478. Is there a good opening for further settlement? Yes; if we had the facilities which we are advocating.
1479. Is there such an opening between here and the sea? Yes.
1480. How are the farms under cultivation held by the owners, in fee simple, or by tenants? In the majority of cases by the owners, in fee simple.
1481. What rents are paid between here and the Clarence Heads, within 10 miles of the river? I let a farm not long ago of 45 acres for £35 a year; that is under £1 an acre. That was on Harwood Island. About 15 acres were suitable for cane-growing; the rest was a very low swamp. The portion not fit for cane-growing would only be fit for grazing a few dairy cows. The average rental of land is 30s, or £2 an acre. I have known maize land to be rented for £2 10s. per acre.
1482. Are there openings for sons of settlers in this district? Some of them settle in the district; others go out and take up new selections.
1483. Is the whole of the land suitable for cane-growing occupied? I do not think so. They are beginning to grow cane on the uplands, and it promises very well there.
1484. Is the whole of the maize land in the district occupied? No.
1485. Then there is an opening for further extension of population, and further development of industry, in both cane and maize-growing in the Clarence Valley? Yes.
1486. To what extent could the cultivation area be extended in the Clarence Valley? More than 50 per cent. There is a good deal of land now looked upon as poor land, and not cultivated because it does not come up to the standard of the rich land on the banks of the river, and that would not be the case if we had facilities to get the produce to the river.
1487. How far from water-carriage is it deemed profitable to cultivate? I should say not more than 10 miles, with the haulage they have at present. I think a railway would have the same effect as a river on land suitable for cultivation.
1488. What is the character of the land between Grafton and Casino? It is not equal in quality to the land between Lismore and Casino, but there is a great deal of it which, by improvement, might be made of great value to people who occupy the country. It is suitable for improved pastoral purposes or dairying. There are many places where maize and oaten hay could be grown profitably, and a great deal of it might be used for fruit-growing. It could not be looked upon as suitable for vine-growing. Sometimes very good wine is made, but our wet seasons come at a time very unfavourable to the manufacture of wine. We grow grapes in large quantities.
1489. If the railway were constructed, and the reserves cancelled and thrown open for selection, what would be a fair value to place on the land between Casino and Grafton? An average of £3 an acre.
1490. Do you know the land between Lawrence and Casino? Yes; it is much about the same as between Casino and Grafton.
1491. Is there much Crown land about that line? Yes. When you get out of Lawrence about 5 miles it is nearly all Crown land to the junction of the Grafton and Casino Road.
1492. What is the character of the land between Chatsworth and Woodburn? It is much the same as the land between Casino and Grafton. On that road there is an Italian settlement.
1493. Can you give any reason for the large increase of land sown with grasses in this district? Dairying. I think it is possible that the people have found that the land is more suitable for that purpose than they at first thought it was. I refer to the Richmond River district.
1494. Are there 50,000 acres laid down in artificial grasses? That is merely an estimate.
1495. Is there a large area of valuable land in the Orara district? Yes. I think the best of the Orara country is beyond the proposed junction of the Guyra and North Coast line.
1496. When I asked a question with regard to the flats near Lawrence, it is possible that it was misunderstood;—what I wished to convey was that the flats were on this side of Lawrence? Yes; the flats are just on this side of Lawrence, and I think they are caused by the water coming out of Sportman's Creek; that is why I said I thought a retaining wall would prevent obstruction.
1497. To summarise your evidence, do you approve of a line of railway from Grafton to Lismore, *via* Casino, as a separate line, or as part of a great whole? As part of a great whole.
1498. Would you give your support to a line of itself, irrespective of a connection southward or westward? I do not think I could give my support to such a line if it stood alone; I might do so with this consideration, that a time will come when it will be extended to the southward and west, but I could not support it as a line to terminate at Grafton for all time.
1499. Could the line, *per se*, have any prospect of being worked without a loss? We cannot omit to consider the fact that the line beyond Lismore would have some influence on this particular section of it. Considering the increase of population and settlement which may be expected along the line, the line may be a profitable one, but it would be far more profitable if it is carried out as part of the whole scheme I have suggested.
1500. Do you think that, simply as an extension to Grafton of a line now being constructed from the Tweed to Lismore, it would be likely to earn £26,000 a year interest, and a proportionate sum for working expenses? It might not earn that actual sum of money for some time, but as the railways are State property, there is another source of revenue for the State, and that is the settlement of the people on the land, and the amount which will be yielded from taxation.
1501. As a taxpayer, if you had to choose between a line connecting Grafton with the Richmond River, or a line connecting Grafton with the table-land, which of the two would you support? Certainly the line to the table-land is the one most important to the country—that is, to the national exchequer.
1502. You advocate a line from Grafton to Lismore on these grounds—first, that it would connect the Richmond River district with Grafton as the great shipping centre of the north coastal districts? Yes.
1503. Secondly, because Grafton is the great commercial centre for the whole of the north and north-east portion of the Colony? Yes.

1504.

Mr. T. Bawdon. 23 July, 1892.

1504. Thirdly, that, because without railway connection between the great agricultural districts of the north and north-east portions of the Colony, it would not be possible to properly develop the agricultural resources of those districts? Yes.
1505. Fourthly, because you look forward to the Clarence, in the near future, becoming an oversea port, and you do not consider the districts in the north and north-east portions of the Colony can profitably compete in the metropolitan market in the matter of breadstuffs and grain supplies? Yes.
1506. Fifthly, and this is the chief ground of all, because the proposed line is to be part of a railway system connecting the coastal districts as far south as the valley of the Macleay, and as far west as 250 or 300 miles, connecting the great pastoral districts of the north and north-west, and connecting also with the breadstuff producing table-land of New England? Yes; that is the great reason.
1507. Presuming that there were engineering difficulties in the way of establishing a deep-sea shipping emporium at the town of Grafton, where, in your opinion, would it be desirable that such a depôt should be established on the river, bearing in mind that the same course has been followed at Brisbane, Melbourne, and Adelaide? I assume, in the first place, that the North Coast line, or that portion under special consideration now, would be constructed in any case, not merely to connect the Richmond and the Clarence, but as a North Coast line. That being so, I think the proper place to establish the shipping emporium of the port, so that there should be no obstruction, would be Lawrence. I would run a railway (say) from what is called the Flying Horse to Lawrence. That, however, would not do away with the necessity for constructing a North Coast line.
1508. How would you connect Lawrence with the lines to the south and west? I would not connect them at all, except with the line that passes through Grafton.
1509. Would you not propose to carry a line along the south bank of the Clarence. Certainly not. I would only make a line to Lawrence to reach the navigable waters in the event of engineering difficulties preventing ships coming up to Grafton. I would have nothing to do with a railway on the bank of the river opposite Lawrence.
1510. *Mr. Davies.*] Do you think it possible that in the near future there would be any traffic developed sufficient to pay interest and working expenses on the large expenditure which would be incurred in carrying out the general scheme which you advocate? I think the expenditure necessary would be fully justified by the importance of the interests involved, and although it might not within a few years pay the interest and working expenses in actual money, I have not the slightest doubt that in a very short time after the completion of the whole scheme, it would give an ample return to the State for the money expended.
1511. Do you regard the construction of a railway from Grafton to Lismore, and terminating at Grafton, as any material advantage to the Clarence district? It would be an advantage to Grafton, but it would not be of so much advantage to the country, because such an isolated line would be more expensive to manage.
1512. *Mr. Collins.*] In view of the proposal to spend such large sums of money on harbour improvements at Byron Bay and Richmond River Heads, would you still advocate a line from Grafton to Lismore as well as that expenditure? Certainly I should. The expenditure proposed for those ports can never bring them into comparison with the great central port of the Clarence River.
1513. Do you think it would be better to have this line from Grafton to Lismore than to construct railway feeders to the various ports? I think that, to a very large extent, a through line would act as a feeder to the ports, so far as their capacities go; but, as in the case of Newcastle and Sydney, the great traffic would go to the better port.
1514–15. Might not the large amount of money to be spent on Byron Bay and Richmond River make them into ports quite as good as the Clarence River? No amount of expenditure on Byron Bay or the Richmond River can make them equal to the Clarence River with half the expenditure.
1516. Do you know of any other place on the coast which would be equal to the Clarence River? Certainly not.

Mr. Samuel See, shipping agent, Grafton, sworn, and further examined:—

Mr. S. See. 23 July, 1892.

1517. *Chairman.*] I wish to direct your attention to the following extract from a letter I have received:—

Lawrence, 22 July, 1892.

I may add, however, that just opposite the North Coast Company's wharf the flats begin, and 1 *mile* of these flats has been dredged *three times* during the last twenty-two years. This 1 mile has cost £20,000 each time. Thus, 1 mile has already cost £60,000; and is now in need of dredging again. It is so shallow that the "Lizard" touched over it nearly all its length; and only that the pilot kept her moving at snail's pace, she would have stuck. I heard that she was drawing 12 feet 6 inches, and as she came to this place at the top of high water, and while there were 6 inches of a fresh in the river, they managed to get her over. If they had steamed a little faster she certainly would have stuck, because the propeller would have reduced the depth of water beneath her.

I have, &c.,
EDWARD SHIELDS.

E. W. O'Sullivan, Esq., M.P.

Have you any statement to make with regard to that? The statement as to the cost of the work may be correct, but I do not think that Mr. Shields is in a better position than I am to give an opinion with regard to the Lawrence flats. Even if the work did cost £20,000 each time, that is no guide as to what the cost should have been with proper appliances. Furthermore, I do not think the statement is correct with regard to the distance of 1 mile. Mr. Shields is a wheelwright, and I am not aware that he is a civil or marine engineer.
1518. Is it correct that the "Lizard" touched on the flats, and that if she had not gone at a snail's pace she would have stuck fast? I do not know. The "Lizard" came up much more slowly than it is usual for steamers to come, but on the trip down from Grafton to Maclean, I think she proceeded as fast as any ordinary ocean steamer.
1519. Have you any other statement to make? I wish to refer to the evidence which I gave with reference to the depth of water in the channel from Maclean to Grafton. The crossing known as Ulmarra Crossing, is not more than 1 mile in length, but it varies in depth. There is another crossing not more than 100 feet long, and then there is the Elbow at Lawrence. They consist of pure sand, and could be easily removed. Save, and excepting these impediments, the average depth of water between Maclean and Grafton is 17 feet. Since I was in Court this morning, I have taken the trouble to sound the river immediately opposite the Company's wharf, and I got an average depth of 17 feet from the wharf to the other

Mr. S. Sec. 23 July, 1892.

other side of the channel, and the greatest depth I obtained was 17 feet 6 inches. That, I submit, is fair evidence that the channel is very wide and deep. There is a greater depth above that.

1520. *Mr. Davies.*] What is the greatest draught of your steamers? About 12 feet.

1521. Could a steamer drawing 12 feet go over a channel where there is a depth of only 13 feet? If a steamer is going fast the displacement is about 2 feet.

1522. You do not mind taking your steamers through a few inches of mud? No; but we do not take them through mud. I was asked a question the other day as to the average price of maize on the Clarence River. I have prepared the following statement, showing the average price of maize for twelve years, to be 3s. 0½d.; that is the price which the farmers received:—

1880.	1881.	1882.	1883.	1884.	1885	1886.	1887	1888.	1889.	1890.	1891.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
2 6	3 3	5 3	5 3	4 7	4 9	4 0	4 6	3 11	3 6	3 3	3 0
2 4	2 10	5 1	4 2	4 1	4 6	3 8	4 6	3 6	3 4	3 5	2 6
2 0	3 0	6 9	3 0	4 10	3 8	3 6	4 6	2 6	3 8	3 6	3 0
2 6	3 2	5 3	3 0	5 3	3 1	3 6	3 0	2 5	3 5	3 6	2 3
2 5	2 10	5 9	3 1	6 1	3 3	3 8	3 3	2 7	3 4	3 3	2 3
2 0	3 0	5 6	2 10	4 6	3 1	3 6	3 4	2 9	3 4	3 6	2 4
2 2	2 10	5 1	2 11	4 6	3 0	3 5	3 6	2 8	3 5	3 8	2 4
2 1	3 3	5 1	2 11	4 6	3 6	3 4	3 8	2 10	3 2	4 3	2 4
2 6	3 2	5 0	3 3	5 2	3 10	3 6	3 11	3 2	3 3	3 6	2 4
2 2	3 2	5 6	3 3	4 10	3 9	3 4	4 0	3 0	3 4	4 0	2 4
2 1	4 6	4 8	3 0	5 0	4 3	3 4	4 0	5 0	3 2	3 7	2 5
2 6	4 6	5 7	3 2	4 9	4 0	3 11	4 0	4 0	3 3	3 11	2 4
12)27 3	12)39 6	12)64 6	12)39 9	12)58 1	12)44 8	12)42 8	12)46 2	12)38 4	12)40 2	12)43 4	12)29 5
Sydney 2 3¼	3 3½	5 4½	3 3¾	4 8½	3 8½	3 6½	3 10	3 2¼	3 4	3 7¼	2 5½
Local 1 9¼	2 9½	4 10½	2 9¾	4 2½	3 2½	3 0½	3 4	2 8½	2 10	3 1¼	1 11½

Average for twelve years—3s. 0½d.

I submit a map showing that Grafton is the centre of all the towns in the western district, bringing in Armidale, Glen Innes, and Tenterfield.

Mr. William Henry Waterhouse, Grafton, sworn, and examined:—

Mr. W. H. Waterhouse. 23 July, 1892.

1523. How long have you resided in this district? Twenty-three years.

1524. What is your occupation? Up to the last twelve months I was managing one of the largest saw-mill plants on the Clarence River, since then I have been engaged in the railway sleeper and timber business in various ways.

1525. Can you give the Committee any information regarding the timber trade of the district? During the last twenty-five years a large number of saw-mills have been engaged in the district, cutting timber for home use and exportation—both hardwood and softwood, but principally hardwood; consequently, the timber has, to a large extent, been cleared away from both banks of the river for a considerable distance. We exported 1,000,000 cubic feet of hardwood in three years. One reason for the construction of this railway is, in order that the Clarence may retain its position in the supply of timber, in which business no other district in the Colony can excel it. The railway would bring the timber within reasonable distance of haulage.

1526. Is the district between Grafton and Lismore well timbered? Yes; and the timber consists principally of ironbark, which is in great demand for Government purposes. If the railway were constructed, the people who take up the land along the line will be in a position to dispose of the timber at a reasonable rate, in order to get the land cleared for use. During the last twenty-three years I have resided here, and for five years I resided on the Richmond. The usual plan has been to chop down the timber and burn it. That is a very laborious process, and a great hindrance to those who desire to cultivate the land, because it is three or four years before it can be brought into cultivation. The railway would, therefore, be an advantage to individuals as well as to the State.

1527. How many good large trees would there be to the acre on this proposed line? From 20 to 50.

1528. Would each tree be worth 5s.? A great deal more than that.

1529. Is it true that the timber-getters have to pay 5s. for some of the trees? It costs them, including their license, 3s. 2d., that is what some of the parties are paying.

1530. What is the price for a timber license in this district? It varies according to the position. They pay on Crown lands 5s., and on reserves 15s.

1531. Have they to pay any royalty beyond that? The royalty has to be paid. We pay 1s. for haulage on every railway sleeper. Some are brought 16 miles, and some 12 miles. When we have to go 2 or 3 miles further back the industry will have to cease unless there is railway communication, or a larger amount ought to be obtained for a sleeper, simply because the timber will be out of haulage distance.

1532. Is the timber on this line suitable for railway sleepers? There is the best ironbark in the Colony. The timber was used for girders until it got to be too far out for saw-milling purposes.

1533. Is the land fairly good after it is cleared? Yes; the cattle have a remarkably good appearance, and are always fat.

1534. Do you think the railway would be the means of settling the people on the land and developing trade? Yes.

Mr. Henry Maurice, auctioneer and valuator, Grafton, sworn, and examined:—

Mr. H. Maurice. 23 July, 1892.

1535. *Mr. Collins.*] How long have you been resident in this district? Fifteen years.

1536. Have you any statement to make to the Committee in addition to what we have heard? During the inquiry the question was asked whether persons would travel by railway instead of by sea to Sydney, and whether they would ship goods to Sydney. It was stated that the distance would be 537 miles by rail. It would not be that distance by the coast line of railway, and the distance to Sydney from Grafton, by way of Glen Innes, is only 525 miles. By the coast line the distance would be about 294 miles from Grafton to Sydney. It is 350 miles by river and sea from Grafton to Sydney.

1537. Do you think that goods would be sent by railway instead of by steamer? Some classes of goods would be sent by railway. The passenger traffic would all pretty well go by railway. Most people prefer to travel by railway, and it would be much shorter than by sea.

1538.

Mr. H. Maurice. 23 July, 1892.

1538. Do you think they would do so notwithstanding the greater expense? Yes.
1539. Are the residents in this district fairly well off? Yes; and as sound as in any district in the Colony.
1540. Have there been many business failures in this locality lately? Not to any great extent.
1541. Has land increased in value about Grafton? Yes, until the last few years, when it has depreciated.
1542. What is the cause of the depreciation? The floods in 1887 and 1890, and the want of railway communication.
1543. Have you not got good water communication? We have to Sydney, but we cannot go inland.
1544. Have you not got water communication with Newcastle? We have no trade with Newcastle.
1545. Have you much business with the other northern ports? We have no steam communication with the rivers to the north.
1546. Have you any direct communication with Newcastle? No.
1547. There is not sufficient traffic between the two ports to induce steamers to trade between them? I presume so.
1548. Do you have floods in this district every year? No; before 1887, there was an interval of eleven years, and before 1876, there was an interval of thirteen years.
1549. Have you not had several floods lately? Only small freshes. We have had no flood since the flood of 1890.
1550. Has business recovered in the district? It is recovering itself. Rents have not decreased since 1887.
1551. Do you attribute all the depreciation to the floods? Not at all; it is owing partly to the floods and owing partly to the district being drained of its resources by taxation, and nothing coming back in the shape of public works. While other parts of the Colony are put in communication with the railway system, we are left behind.
1552. Are you not pretty fairly treated as regards public works, and the expenditure of public money? I think not in proportion to the large revenue which the Government receives from us.
1553. *Mr. Neild.*] Are you acquainted with the land between here and the Don Dorrigo? Yes; between here and Woolgoolga; towards the coast it is suitable for sugar-cane, in the neighbourhood of Woolgoolga.
1554. If the coastal line would not be used except for articles wanted in a hurry, or perishable articles, in what would you expect a trade to be developed with Newcastle? Newcastle has already some trade with this place by sea, and I presume that the stuff that is shipped there goes to Sydney first before it comes here. There is a large wine and spirit house and brewery in Newcastle which has been supplying Grafton. Those goods would come by train instead of by sea.
1555. Is it not a fact that many years ago the Clarence boats used to coal at Newcastle? Yes.
1556. If there was a possibility of establishing commercial relations between the two ports, do you not think it would be easy for the Clarence boats to call in at Newcastle? I do not understand the shipping business, but we frequently have to import lucerne hay, which grows better on the Hunter river soil than it does here. If we had communication by rail, the hay would be conveyed in that way.

Mr. William Alexander Manning, solicitor, Grafton, sworn, and further examined:—

Mr. W. A. Manning. 23 July, 1892.

1557. *Mr. Davies.*] Have you any further information that you wish to give the Committee? If the proposed line is ever extended south of Grafton, a coastal line going from here to 30 miles to the south would be identical with a line to Guyra. From Grafton to Glenreagh one line would be common to both railways. From that point it diverges through the Don Dorrigo land, and the North Coast line would continue south through the Orara, and other valuable land, towards the Bellinger and Macleay Rivers. It is the land between the Clarence and the Bellinger Rivers which I particularly know. The country there is some of the very best on the whole of the north coast country. It is nearly all scrub land, agricultural land, capable of producing crops of all kinds. I would refer particularly to the land lying at the head of the Orara River, that land is admitted by all persons possessing any knowledge on the subject to be among the best land in the Colony. English grasses grow in extreme profusion; rye grass, prairie grass, cocksfoot, and couch. Maize crops grow very prolifically. The first crops are too heavy. After some years the lands become the richest grass and arable country that can be found, and quite equal, in the opinion of most people, to the Clarence River lands. It is well watered country. The land there has been sold from 30s. to £3 an acre for residence, and up to £6 an acre for non-residence. The land is covered with magnificent timber.
1558. *Mr. Neild.*] Is there a good deal of that land reserved? There is one reserve of 25,000 acres for forest, and there is a gold-field reserve.
1559. With the exception of reserves, has settlement been in active operation on that land? Yes.
1560. Is the settlement of an agricultural or pastoral character? Agricultural.
1561. Where do the settlers find an outlet for their produce? That is what kills them. They are prohibited from using the land up to its full capabilities.
1562. What do they produce? Maize, and they raise a considerable number of cattle.
1563. Are there any engineering difficulties in the way of making a railway there? Not the slightest; the land is not subject to dangerous flood.
1564. Has it anything of the character of the Big Scrub in the Richmond District? It is generally considered superior, because it is an alluvial deposit with volcanic subsoil, parts of it are heavily timbered. It would cost from 30s. to £5 or £6 an acre for clearing that heavily timbered land.
1565. Is half the timber marketable? Yes; it has been a cedar scrub, but all the cedar has been taken out. There is plenty of beech, tallow-wood, mahogany, and blue gum, but no stringy-bark. There are a few ironbark trees on the hills.
1566. You do not regard stringy-bark as good country? No; I have always understood that stringy-bark and grass land go together.

Mr. William Henry Waterhouse, Grafton, sworn, and further examined:—

Mr. W. H. Waterhouse. 23 July, 1892.

1567. *Mr. Davies.*] Do you want to supply any further information with regard to the timber industry? Yes; a contract has been let on the Richmond River for a class of timber which does not grow on this side, but it shows the necessity for railway communication in order to bring that timber here. It would have greatly facilitated the arrangements of the contractor, and would have enabled the producer to obtain a better price. I refer to teak for the flooring of the new gaol at Grafton. It has to be sent from the Richmond River to Sydney and from Sydney here, because it will not bear the cost of overland carriage.
1568. If the railway were constructed, would the timber come by rail? Yes.
1569. *Mr. Neild.*] Why did they not send that timber direct by water from the Richmond River to Grafton? Because it was not sufficient of itself to form a cargo.
1570. Does not this incident show a lack of enterprise rather than a lack of communication? Scarcely. If a small vessel had been loaded with that timber she would have to cross two bar harbours; the difficulty of getting out of the Richmond would make it worse.
1571. Is it easier to bring timber up a river to a saw-mill, or place of shipment, than to take it down the river? It might be easier in the case of light floating timber, but in the case of hardwood there would not be much difference. You cannot float hardwood. There would be an enormous demand in the winter for these timbers.

MONDAY, 25 JULY, 1892.

[*The Sectional Committee met at "Greenstreet's Hotel," Myrtle Creek, at 7·30 a.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.
Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. William Duff, farmer Myrtle Creek, sworn, and examined:—

Mr. W. Duff. 25 July, 1892.

1572. *Chairman.*] Have you taken up a selection in this neighbourhood? Yes; about 4 miles from here, close to the railway line. I selected three years ago, and took up 776 acres.
1573. Are there many other selectors in the neighbourhood? Yes; they are cultivating the land, which is heavily timbered; they grow corn, hay, wheat, all kinds of fruit and vegetables, also oats and barley; wheat has not been grown to any extent. The back of my selection is along the proposed line of railway. I think nearly all the land near this hotel has been taken up by selectors.
1574. Would many of the selectors be likely to patronise the railway if it were constructed? Yes; every one of them.
1575. Do you send timber away from here? No, the carriage is too far. They are cutting timber here for the Lismore and Tweed railway line.
1576. What are the timbers about here? Ironbark, spotted gum, and bloodwood. I have seen tallow-wood in the district.
1577. If a line were constructed, would there be a timber trade between here and Grafton? Yes.
1578. Would it pay the selectors to devote themselves to timber-cutting, at first? I think so.
1579. After they cleared away the timber, do you think they would cultivate? Yes. My land is heavily timbered, and I have to clear it in order to cultivate.
1580. Where is your market? Casino.
1581. Would you get all your stores from there if the line were constructed? Yes.
1582. *Mr. Davies.*] Is Casino nearer to you than Grafton? Yes.
1583. If the railway were made, would you send your produce to Casino? I would send it to the best market.
1584. What proportion of your selection is under cultivation? About 7 or 8 acres are fit for ploughing. I have put in a little corn, but the market is too far for cartage.
1585. Did you live in this district before you took up your selection? No; I was born at Shoalhaven, and I was on the Lachlan for twelve years.
1586. Were you then engaged in agricultural pursuits? Yes; I thoroughly understand farming.
1587. Have you taken up your selection to make a home? Yes.
1588. Do you think you will be able to make a success if you have means of communication? I do not think there is any doubt about it.
1589. If the railway were constructed, would it induce other people to take up land in this district? Yes; if the reserves were thrown open they would be taken up at once.
1590. If there was more land available would you be inclined to take up more land? Yes.
1591. You are not disappointed with the character of the country? No.
1592. *Mr. Collins.*] Do you run cattle on your selection? Yes.
1593. Do they get on pretty well? Yes.
1594. What proportion of your selection is fit for cultivation? The whole of it.
1595. What does it cost for clearing? I have done the clearing myself; it would cost between £4 and £5 an acre to make it fit for the plough.
1596. Have you taken up a conditional purchase and lease? Yes.
1597. What do you pay for your lease? Fourpence an acre.
1598. Would it pay to run stock on the land after paying £5 an acre for clearing? I suppose it would in the course of time.
1599. What would you do with the stock? Sell them as fat stock.
1600. In the present condition of land, how much land would it take to keep a beast? Twelve acres.
1601. When cleared, how many acres would it take? Five or 6 acres.
1602. Would it not pay you better to have the land as it is now, at 4d. per acre per annum, rather than pay £5 an acre to clear it and keep stock? Yes; but we would not clear it for stock; we would clear it for cultivation.

Mr. W. Duff. 25 July, 1892.

1603. Is sugar-cane grown close to you? Yes; some stalks are growing within 6 miles of my place.
1604. Are not the frosts severe? Yes; it nips the cane. The cane-stalks now in this room were grown about 6 miles from my place, on the Grafton side.
1605. Do you think the land you have selected is as good as the alluvial flats on the Shoalhaven? No.

Mr. Walter Wells, farmer and grazier, Myrtle Creek, sworn, and examined:—

Mr. W. Wells. 25 July, 1892.

1606. *Mr. Davies.*] Have you selected land in this district? Yes, 400 acres. I have had it for four years.
1607. What are you doing with your land? Cultivating some of it, and grazing some of the rest. I have cleared about 150 acres. I have had 15 acres under crop—maize principally; grapes, bananas, apples, and potatoes grow well here.
1608. Was the sugar-cane which is exhibited in this room grown by you? No; it was grown on my brother's selection; this is the third time it has been cut, and what you see now is one year's growth.
1609. Was the arrowroot which is now produced grown on your brother's selection? Yes; it grows very well there. One of the best crops of oats that I have seen was grown there also.
1610. Is the land which you and your brother have selected, and the surrounding country, good land? Yes, some of it is first class. It is well suited for maize, arrowroot, grapes, and any kind of fruit trees. It will grow hay.
1611. Have you grown any wheat on your selection? Yes; in small quantities, and it has grown well.
1612. How many head of cattle have you? About twenty-five head.
1613. Is there any dairy factory or farm near you? No, there is a butter factory 20 miles away.
1614. If you had railway communication could you send your milk to that factory? Yes; it would be a great benefit.
1615. If a railway were constructed, do you think there would be much traffic for it in this district? It would be a great success in conveying produce to market.
1616. Where would you send your produce to? To Casino and Grafton.
1617. Is most of the land in the district of the same character as yours? Yes.
1618. Is there any land available for selection in your neighbourhood? Yes, but I do not know how much.
1619. How many selectors are there on a line between the Travellers' Rest and this point? I think there must be eight or ten.
1620. Are there more selectors on the line from here to Casino? Not on the road, but back from the road it is all selected.
1621. *Mr. Collins.*] On what station did you select? On Bungawalbin; it is owned by C. and T. Yabsley. They run cattle on it, and I have heard of them sending 500 head a month towards Tenterfield lately.
1622. What sort of road is it from your selection to Casino? It is very bad, there is no formed road.
1623. How many selectors are there between your place and Casino, within 10 miles of the railway? More than twenty.
1624. Where were you living before you came here? At Kerang, 80 miles from Sandhurst, Victoria; it was a good agricultural district. My father owned a farm there.
1625. What was farming land worth there? About £3 an acre. The land I have now is about equal to my father's land.
1626. If your land were cleared, would every bit of it be fit for cultivation? Yes.
1627. Could sugar-cane be made a success if you had a market? Yes; if all the selectors grew it, and got a small mill among them.
1628. If there was a railway to Grafton, could you send sugar-cane there and grow it profitably? Anywhere near the line we could.
1629. Does not the frost affect the cane here? Very little, it has not done any damage to our cane. We have been growing it for three years. We only feed the horses with it.
1630. Have you grown hay? Yes; oats and wheat both grow alike, and one is as profitable as the other.
1631. How many tons per acre do you grow? Two tons; that would pay well. I do not know anyone who has grown much wheat about the district.
1632. Was the wheat affected by rust? No; what we grew was rust proof; we got the seed from America.
1633. How is it that the land open for selection has not been taken up? I do not know. It is as good land as I have got; some of it adjoins mine.
1634. Is it because there is not easy access to market? I believe that is the principal reason.
1635. How do the settlers in this district get their produce to the Sydney market? To Casino, Coraki, or the Clarence, in drays and waggons.
1636. Why have not the selectors cultivated very much? It is too far to market.
1637. How do you make your holdings pay? By grazing and timber-getting.
1638. Are you doing that simply while you are waiting to get access to market? Principally that. We intend to do more cultivation in the course of time.
1639. Would it pay you better to cultivate the land than to graze cattle and cut timber if you had a railway from Grafton to Casino? Yes.
1640. *Mr. Davies.*] Have you grown maize on your land? Yes; it gave a yield of 25 bushels to the acre.
1641. Is that not a poor yield? Yes.

Mr. James Woolnough, farmer, Myrtle Creek, sworn, and examined:—

Mr. J. Woolnough. 25 July, 1892.

1642. *Mr. Neild.*] How long have you been in this district? Fourteen years. For about ten years I was on a station. During the last five years I have been engaged in pastoral pursuits and carrying on agriculture. I was on a station 12 or 15 miles from here—Camira Station. At that time it consisted of 300,000 acres, and there were 12,000 head of cattle on it.
1643. Were they depastured on the station all the year round? Yes.
1644. Were the cattle ever taken to other parts? They were sent to the Liverpool Plains for fattening.
1645. Could you not fatten them on the run? Yes; there were fattening paddocks.
1646. Would the 12,000 head of cattle on the books include the cattle sent to Liverpool Plains? Yes; from spring up to the beginning of winter there is good grass growing all the time. It is very well watered country.

Mr. J. Woolnough. 25 July, 1892.

1647. What portions of the run carried the best grass? In some cases the ridges, and in other cases the flats.
1648. Is not there a good deal of sour country about here? Yes; you will find that in most parts. The run was ringbarked in parts, and made it 100 per cent. better. I think the whole of the country could be made first-class by ringbarking. Some parts of the country could not be improved, but the greater part of it could be made at least 50 per cent. better by ringbarking.
1649. With ringbarking, could the country carry a beast to 12 acres? More than that. The Camira run extended to the coast, and thousands of acres on the coast are good for nothing at all.
1650. What is the carrying capacity of the land between Grafton and Casino, unimproved? When it is improved it will carry a beast to 6 or 7 acres. Some of it is first-class land for grazing.
1651. What area of land have you? One thousand two hundred and eighty acres; that is conditional purchase and conditional lease.
1652. How much is under crop? Just enough for our own consumption. It is no use growing agricultural produce to sell, because there is no market.
1653. How far away are you from the Clarence River? About 25 miles.
1654. How far would it pay you to carry agricultural products for shipment? I do not know. It would not pay to carry maize at all at present prices. Maize has been sold as low as 1s. 6d. per bushel lately. That is a very low price. I should say that if we could get 3s. 1d. per bushel, it would pay to take the maize 10 or 12 miles for shipment. If we could only get 2s. a bushel, 3 or 5 miles would be quite far enough to take it.
1655. Would you regard the railway as of comparatively small value to a farmer unless it came within 5 or 6 miles of you? We would not have to depend on maize only. We could raise pigs, cut timber, and so on.
1656. How far do you think the sphere of the railway's usefulness would extend to a farming population on either side of the railway line, apart from the cutting of timber? Eight or 10 miles.
1657. What proportion of your holding is suitable for agriculture? About two-thirds of it. It would grow all kinds of produce.
1658. Yet, even if the whole of it were cleared, you think it would carry only one beast to 5 or 6 acres? Yes.*
1659. Is any of the land on your property, or on your neighbour's property, suitable for sugar-cane? I have seen cane growing 2 or 3 miles from my place.
1660. Is there any attempt to grow sufficient cane to keep a mill going? It is no good trying till we get communication.
1661. What other products can you grow? Potatoes, and all kinds of vegetables.
1662. Would it pay you to take potatoes as far as it would pay you to take maize? We do not know how the price of potatoes may improve.
1663. Within 10 miles of each side of the proposed railway line is there much land suitable for sugar-cane? It would grow well enough in a good many places.
1664. Is there a sufficient breadth of land in given localities to produce enough cane to keep a mill going? It would grow; but whether the frost would allow it to mature is another thing.
1665. Do you think there is sufficient land within 10 miles of the railway to produce cane profitably? No.
1666. Is there sufficient to produce other things? There are a few thousand acres between here and Grafton which are fit to produce maize. The average crop of maize in this district, on the general run of farms, is 40 bushels. Potatoes will grow, and oaten hay has been grown here.
1667. Where do you find an outlet for fat stock? In the local markets.
1668. Do you look forward to a market at the Tenterfield chilling works? I think all the fat cattle on the selections could be got rid of locally. They give very good weight, but not so good as the Liverpool Plains' cattle. The cattle grow better there.
1669. Do you think that the opening up of the country between here and Grafton, and between here and Lismore, would lead to any large growth of agricultural settlement, or would the country be useful only for grazing purposes? Chiefly for grazing purposes; but a great quantity of it would be put under cultivation.
1670. What is the size of the settlers' holdings about here? The average would be between 640 and 1,200 acres, partly conditional purchase and partly conditional lease.
1671. Do you think that the construction of the proposed railway would lead to the further taking up of Crown lands? Yes; what are held now are nothing to what would be taken up if the railway were constructed.
1672. How will the quality of the land on the selections already taken up compare with the Crown lands still open for selection? If the railway were constructed, smaller holdings would be taken up. The quality would be better in proportion. Now the principal holdings are for grazing, and they are consequently big areas. If there was a railway, there would be smaller areas and better land. The selectors, later on, may add the inferior land to their selections for cattle.
1673. Have not the eyes of the country been already picked? The river country—the best of it—has, I suppose, been selected; but there is a lot of good country yet within 10 miles of the railway.
1674. What area do you imagine is open for selection between Casino and Grafton, within 10 miles on each side of the railway? Eight thousand or 10,000 acres.
1675. Have many of the selections not been fenced? They are surveyed.
1676. What is the proportion of selected and leasehold on your holding? Six hundred and forty acres conditional purchase and 640 acres conditional lease.
1677. What is the rental of the conditional lease? £8 a year.
1678. If the railway were constructed, would it raise the rent of your leasehold? They cannot raise it for fifteen years.
1679. Do you think a railway from Grafton to Lismore would be a material advantage to this district? Certainly.
1680. Which would be of most advantage to you and other occupiers of the soil—a line connecting Casino and Grafton, or a line connecting Casino or Grafton with the tableland? I should think a line connecting Grafton and Casino would be the greatest advantage.

Mr.

*NOTE (*on revision*):—My reply to this question in the affirmative was because I understood the question to be "if the whole of the land were ringbarked;" if cleared, a beast to 4 acres.

Mr. George Olive, farmer, Myrtle Creek, sworn, and examined:—

1681. *Mr. Collins.*] How long have you been in the district? I came here when the Richmond was first opened, fifty years ago. Mr. G. Olive. 25 July, 1892.

1682. Can you give the Committee any evidence to warrant them recommending a railway from Lismore to Grafton? The land where I live is very good; I have over 200 acres; there is no get-away at present for produce. Many people take up land, but there is no market for their produce unless they cart it themselves. From Yulgilbar Station to the sea coast there are hundreds of thousands of acres of land fit for cultivation, but no one will take it up on account of the long land carriage.

1683. What could that land produce? Corn, good wheat, oats, and barley. I have seen very good oats and other crops grown at Camira, 40 miles from Grafton. It is about 20 miles to Lawrence.

1684. If they can grow such good crops 20 miles away from water carriage, why should they not take up the land and carry the produce to market? Many are not in a position to take it.

1685. Is 20 miles too great a distance to send produce to market? Yes; in wet seasons you would find that 5 miles was too far to take it. Some of the land is 50 miles away from the river.

1686. Do you see the samples of corn, vegetables, and so on, in this room? Yes.

1687. Have you produced anything like that? I have grown much larger corn, and the yield was about 50 bushels to the acre. I used it myself.

1688. Is there plenty of land around your place where corn could be grown? Yes; any amount of it. My place is 20 miles from Lawrence.

1689. Is that land not taken up? A good deal of it.

1690. Why? The people do not see their way to do so.

1691. What is the average price of corn? 2s. 9d., 3s., and sometimes 5s. per bushel. In 1890 I paid 5s. 6d. per bushel, and 1s. per bushel for carriage.

1692. Would it not pay to take corn to Lawrence at those prices? We require the corn for our own consumption. I could not take it to market in wet weather.

1693. What other produce do you grow? Vegetables; the crops of potatoes are very heavy. I also grow arrowroot. At one time we had from 400 to 500 teams travelling on this road, and the district was thriving; but since the railway was taken into New England all the trade has been taken away from us, and we have been left poverty-stricken. I think we are entitled to have a railway, to encourage the people to take up land.

1694. Did you take up land with the idea that you would be assisted by the Government? Yes.

Mr. Francis Henderson, grazier, Myrtle Creek, sworn, and examined:—

1695. *Chairman.*] Do you corroborate the evidence given by Mr. Woolnough? Yes.

1696. Do you wish to make any further statement to the Committee? I have grown vegetables, apples, pumpkins, potatoes, peas, beans, and tomatoes, and they all grow well. Mr. F. Henderson. 25 July, 1892.

1697. Have the vegetables which are on this table been grown in this district? Yes; they consist of yams, potatoes, onions, eschalots, cabbages, cauliflowers, and there are tomatoes and cape gooseberries.

1698. Will the land here generally produce these vegetables? Yes.

1699. Do any of the selectors grow fruit? Yes; oranges, peaches, grape vines, and other kinds.

1700. Have you had long experience in grazing in this district? Only three years. I have had experience in other parts of the Colony.

1701. How does the district between here and Grafton, and between here and Casino, compare with other grazing districts? With a little improvement it would compare favourably. I used to live in the Goulburn country.

1702. Do you think that with improvement the country here could carry about the same number of beasts to a given area as the Goulburn district does? Yes; with ringbarking it would carry a beast to 6 or 7 acres.

1703. That would be including the very best land? Yes.

1704. Suppose the creek frontages were used for agricultural purposes, what do you think the rest of the country would carry? With ringbarking it would carry a beast to 10 acres.

1705. Is the timber industry carried on to any great extent? Yes; on the water frontage. They are cutting a good deal for the railway between Lismore and the Tweed.

1706. How far back from the river are they getting this timber? Fully 10 miles.

MONDAY, 25 *JULY*, 1892.

[*The Sectional Committee met at the Court-house, Casino, at* 2·30 *p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.

Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Frederick George Crouch, storekeeper, Casino, sworn, and examined:—

1707. *Chairman.*] How long have you been in business in Casino? Seventeen years. I resided ten years previously on the Clarence. Mr. F. G. Crouch. 25 July, 1892.

1708. What is the commercial condition of this place? Sound.

1709. In which direction do you do business? I send goods as far as Myrtle Creek and about half way towards Lismore. I also do business with the Upper Richmond and towards Tenterfield.

1710. Do the other storekeepers in the town do business in the same direction? Yes.

1711. Do they do business or obtain any goods from the Clarence? No. On rare occasions I have had goods *via* Lawrence. That was on one occasion when the bar was bad at the Richmond, but that has never happened since. We get our goods by steamer to Coraki, thence by steam droghers to Irvington, and

Mr. F. G. Crouch. 25 July, 1892.

and then by dray 1¾ mile. We pay 5s. per ton additional to get the goods to Irvington from Sydney, and we pay 5s. by dray from Irvington here. If the railway is made from Lismore here, we should be able to get the goods at railway rates, which is 3d. per ton per mile. Under the railway classification, we should be able to get our goods at 4s. 6d. per ton, as against 10s. per ton which we pay now extra, as compared with the people of Lismore.

1712. Do the other storekeepers in Casino obtain their stores in the same way? Yes.

1713. Is the Richmond River entrance always reliable? We have had no very serious detention, except the one I have mentioned, when I had to get flour *via* Lawrence. Although steamers have been detained for a few days, they have always managed to get in, and we have got our supplies. The bar has been improving lately, and I am assured by the engineer that the worst is over, and that we shall not suffer again as we have in the past through detention of ocean boats. We have not suffered any inconvenience within the last three months. When Sir John Coode's scheme is completed, I believe that his expectation of getting from 12 to 18 feet of water on the bar will be realised.

1714. Are 12 feet of water sufficient for the boats which come in? Yes; I do not think that any of them draw more than 7 feet 6 inches or 8 feet.

1715. How far distant is the point from which you obtain your goods by water? Coraki is distant by land 20 miles, and by water about 35 miles. The steamship companies charge 5s. per ton extra for that river carriage, and then we have to pay 5s. a ton extra for the cartage. If the railway were completed it would carry all our goods from Lismore, and we would be able to send our goods to the Upper Richmond and to Drake and Tenterfield much more advantageously than we do at present. We send large quantities of goods to Tenterfield. Lismore would be our port if a better port were not made at Byron Bay.

1716. If a port were made at Byron Bay, would that overcome the inconvenience you are now subjected to? If a port were made at Byron Bay vessels of larger tonnage would trade there, and there is a great probability that Byron Bay would become the port for the Upper Richmond, because freight by large vessels would be very much lower, and we should then be able to trade with the whole world. The Upper Richmond is famed for its cattle, and by the freezing process we could carry on a large trade with the outside world.

1717. Pending the adoption of a harbour scheme at Byron Bay, would it be to the interest of this district to be connected with the Clarence River by way of Grafton? There can be no reason why we should not be connected with the Clarence, in view of its importance, but, in the opinion of most people here, we should first be connected with the table-land at Tenterfield. That is the only practicable route. It is 1,000 feet lower than the connection proposed at Glen Innes, and the complete surveys show that a practicable line could be found to Tenterfield. In going to Tenterfield the railway would traverse good country for at least 35 miles, and a large area of good country would be within easy access to the railway. Travelling on to Drake and Fairfield we enter upon what is destined to be, according to the Government Geologist, a very rich mineral country. I am sure there is a large quantity of silver ore in that country, as well as other minerals, which would pay to send by railway, but not by dray.

1718. Would you prefer a railway from Lismore to Casino to be continued to Tenterfield rather than Grafton? We think that should be the first step. If the Government can construct both lines, I see no objection to our being connected with such an important river as the Clarence, but the products of this coast district, which is destined to be the most important in New South Wales, owing to its large area of rich agricultural land, could be best disposed of by an interchange with the table-land, and that would be best facilitated if we were connected with Tenterfield. Federation will, no doubt, come about in time, and that will give the farmers of this district an opportunity of using not only the Sydney, but also the Brisbane market.

1719. You would prefer the line being taken on to Tenterfield; but if the Government can afford to construct both lines, would you like to see the railway go from here to Grafton, so that pending the construction of harbour works at Byron Bay you would be able to take advantage of the good harbour at the Clarence? I cannot say that the Clarence would ever be our port. Assuming that the Richmond was never better than at present, steamers would be employed in doing the trade of that port, and we would get our goods in that way. We have five ocean-going steamers trading to the Richmond at present, and during seventeen years the detention has only been trivial.

1720. Are the residents of the Upper Richmond likely to use a railway from Lismore to Grafton, and thus utilise the Clarence as a port? There would be a passenger traffic. At present the steamers trading to the Clarence have superior accommodation, and a great number of people go to Sydney by way of the Clarence. The cargo traffic, however, is wholly carried on by the Richmond. It is cheaper to send goods by that way. There is less detention at the Clarence than there is at the Richmond. Our boats have to negotiate the bar at high water, whereas the Clarence boats are able to go in on any tide.

1721. In the event of the bar at the Richmond River entrance being made better, would the passenger traffic go that way? Most certainly, because we would then have a better class of vessels.

1722. If a railway were constructed from here to Grafton, do you think the passenger traffic would go by way of Richmond River? I think a small proportion of the passenger traffic would still go by the Clarence.

1723. What are the products of the country about Casino? Maize. Sugar-cane has been grown within 5 miles of Casino. We grow pineapples, oranges, bananas, date plums, and various other fruits. On the banks of the river we have vineyards.

1724. Do you produce much cattle? Yes; the Upper Richmond is essentially a pastoral country. It was settled many years ago by the squatters, who were enabled by the Land Act to take up large quantities of excellent land. Since the division of the runs there has been some selection, and the population has increased. We have now more than 8,000 electors on the roll, and are entitled to four members of Parliament. When I came here, seventeen years ago, we had only one member, who resided on the Clarence, and represented the Clarence, the Richmond, the Brunswick, and the Tweed. The Clarence now has two members, and we have three.

1725. Where are the cattle sent to now? There are chilling works at Tenterfield, and a number of stock are driven there, and are sent down by the new refrigerating cars to Sydney. We also supply the Ramornie meat works largely. We had a buyer from Melbourne here the other day. We supply the Lower Richmond almost entirely, and the Clarence is also supplied to a large extent from the Richmond.

1726. Is there any likelihood of an interchange of products with the Clarence if a railway were made?

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I do not see what exchange there could be, seeing that we grow almost identically the same products. There are now two or three cheese factories within easy access of Casino, and we have a number of butter factories on the Lower Richmond, which are sending away large quantities of butter to Sydney. The Richmond electorate sends more butter to Sydney than any other district.

1727. Is it safe for those interested in the industry to rely on the Richmond River? A few ship at Byron Bay; there is no dairy produce sent from this district to the Clarence, nor is there likely to be.

1728. Pending the construction of a harbour at Byron Bay, would it be to the advantage of the dairying industry to have their products sent to Sydney by way of Grafton, by railway? Only in the event of our river being closed, which is not likely.

1729. Is there a great deal of timber to the south of Casino? Yes; up to about Myrtle Creek there are large quantities of hardwood for piles, girders, and railway sleepers, sent to Lawrence for shipment to the Sydney market, and a good deal of it has been sent, *via* the Clarence, to the Richmond, for the railway works. There are large quantities of timber between Myrtle Creek and Casino, which are sent here and taken by steamer to Lismore, for use on the railway works.

1730. If a railway were constructed from Lismore to Grafton, would the timber come this way, or go to Grafton for Sydney? It would go both ways for a certain distance.

1731. Would it not be cheaper to take the timber *via* Grafton for Sydney? Up to a certain point it would not be cheaper than sending the timber *via* the Richmond. It would be nearer to send from Myrtle Creek to Grafton, than from Myrtle Creek to Lismore.

1732. If a railway were made from Lismore to Grafton, would it develop a timber trade? Yes; if there was reasonable access to the railway.

1733. What is the character of the country to the south of Casino, as far as Myrtle Creek? It may be called good by comparison; that is, if you compare it with the land where railways have already been constructed, but we call it very indifferent land compared with the land on the Richmond River and its tributaries. A large amount of settlement has taken place at Myrtle, Myall, and Sandy Creeks, since the passing of the 1884 Act, and there probably will be a good deal more.

1734. What are likely to be the products of the land? It will become a dairying district, and will produce maize. I do not think it will grow sugar-cane, because the land is not rich enough, except in patches on the banks of the creeks.

1735. Can it be compared with other portions of this district for the production of vegetables and cereals? Certainly not. If a railway were constructed, there would be an inducement to grow maize and dairy produce, which might find an outlet at Casino.

1736. Do you think it would be advantageous to the Richmond River district, and the national interest, to construct a line from Lismore to Grafton, and thence, *via* the Don Dorrigo Scrub, to Guyra? No; taking a broad national view, it would be to the interest of the State to make a connection with Tenterfield. We are now within 85 miles of Tenterfield, at Casino, and a line carried there would be constructed with easy grades, and there would be no engineering difficulties, whereas by Don Dorrigo and Guyra a much longer line would have to be constructed at an enormous extra expenditure.

1737. *Mr. Davies.*] Do you think that we should construct this railway when you say that there will be no produce? A railway would develop the timber industry, which now lies dormant.

1738. What other products would be carried by the proposed railway from Grafton to Lismore? If the line from Lismore to Grafton is considered to be part and parcel of a great North Coast line, it may be justifiable as a means to an end, but I say the country is not justified in going to that expenditure in view of the absolute necessity of connecting the present line from Lismore to Murwillumbah with the Great Northern Trunk Line.

1739. Do you advocate a connection with Tenterfield and that only? Yes. A line from Casino to Lismore would be 18 miles in length, that might be well constructed now and the rest determined hereafter, because whether the line goes down to Grafton or on to Tenterfield it must necessarily come through Casino.

1740. Then you do not favour the extension of the line to Grafton? Not in the first instance. No doubt it is desirable, in view of the very great importance of the Clarence River, that it should be connected with the railway system. I fail to see why, after the line has been made to the table-land, it should not be made to Grafton.

1741. Are you an old resident of the Clarence? Yes; I left there sixteen years ago.

1742. Have you parted with all your interest in the Clarence district? I have some interest there, but the major portion of my interest is on the Richmond. I have confined myself to commercial pursuits.

1743. Has the population of this district doubled itself within the last five years? Yes.

1744. Has all that great prosperity set in without any railways? Yes; but that only shows what it might have been with railway communication. I am referring to the land on the Upper Richmond.

1745. Is not that land occupied now? It is occupied for grazing, but it might be occupied for agriculture. It is at present profitably held by large graziers, but a very large part of it might be held in small farms if a railway supplied them with a market. There is still a large quantity of Crown land unalienated.

1746. Do you know that there is no possible competition between water and railway carriage? That is the case, but in Casino we are only 18 miles from the present railway terminus by land, whereas by the river we are nearly 40 miles away. We have to contend against vexatious delays on the south arm of the river, which is practically shut up. The Government dredge has been at work there for many years, and has practically done no good; £1200 a year is now being spent, and the dredge is at work night and day. The steamer Tomki entered the Richmond River Heads yesterday, and the people at Lismore got their goods at once. We have no chance whatever of getting our goods by that steamer till to-morrow at the earliest, and it may not be until Wednesday or Thursday. We are, therefore, two or three days behind Lismore in getting our goods, and we have to pay 10s. a ton extra; whereas if we had a railway we could get them for 4s. 6d. a ton extra. If the railway is made, we should undoubtedly regard Lismore as our port.

1747. What is the tonnage of goods delivered here by the river? At present we get about 60 tons per week of merchandise, that may be increased to 100 tons to allow for the produce. There are times when the produce of the South Arm finds its market in Brisbane. We would be able to take advantage of the Brisbane market if we had a railway and federation.

1748. What is the cost of sending a bag of maize from here to Sydney? Fifteen pence. One ship-owner carries it at 1s. The freight from the Clarence and the Richmond is about the same.

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1749. If a railway were made from Tenterfield to Casino, do you think that any products from this district would find their way over the table-land to Sydney? I think we would supply the New England people with sugar, as we do now to a very large extent. We could also supply them with fruit of a tropical character, and they would supply us with breadstuffs.
1750. Do you think that any possible trade that you could bring into existence would pay the interest on the cost of construction and the working expenses of a railway? I say that our products which would find their way to New England would furnish a large amount of traffic to the railway. There is also such a prospect of development of population and resources that there would be a very great probability of a railway being made a payable concern.
1751. Do you think that the land through which the Grafton to Lismore railway would pass is of such a character that there is likely to be a large increase of population there? Comparatively speaking, I say that the land there is good, and a railway has been made from Nyngan to Cobar which would not pay of itself.
1752. Is not the cost of that railway £3,000 per mile, whereas this railway is estimated to cost £8,000 per mile? But there is a very great difference in the character of the land.
1753. What would be the yield per acre of maize on the land between here and Grafton? From 40 to 50 bushels per acre on the land on the banks of the creek. On the other land I do not think the average would be more than 30 to 40 bushels.
1754. Are there not great belts of country on that line composed of dry hungry sand? I admit that there is what we call inferior land.
1755. Is there not a large portion which would be fit for grazing purposes, and nothing else? Yes; and dairying purposes.
1756. In the event of the Committee recommending the construction of the railway from Grafton to Lismore, and if it stops at Grafton, will it be a very material advantage to this district, or to the Richmond district generally? Only in a minor degree.
1757. Would you only favour the construction of the railway from here to Grafton with the hope that it would be extended to the table-land? Yes.
1758. *Mr. Collins.*] How long does it take to get your supplies from Sydney? From three to four days, if we can get them quickly from Coraki. The difference in the steaming from the Clarence Heads and Sydney, and the Richmond Heads and Sydney is only five hours, and the rate of freight is almost the same.
1759. What is the cost of carriage from Sydney to Casino? About £1 per ton dead weight, and 25s. measurement. The average is 22s. 6d.
1760. Do you not think that gives very good access to market? Yes; we do not object to that, but there is no reason why we should not have better facilities.
1761. If a railway were constructed from Lismore to Grafton, or from here to Tenterfield, would you get your supplies by railway or by sea? We would not use the railway; we would use Lismore or Byron Bay.
1762. Then the only traffic would be passengers? Yes; and interchange of products.
1763. Where do you get the sugar which you sell? At the mills here, with the exception of a very small quantity. We get a small proportion of crystals from Sydney.
1764. Is there any coal in this district? Yes; we have what promises to develop into a very good seam of coal below Coraki. I am one of the directors of the company. I believe we shall be able to supply the railway with coal. A bag of coal has been dredged in the river where the dredge is at work. It has evidently been washed down the river from the Upper Richmond.
1765. If the Richmond River were made as good as you expect it to be, would it not be better to send all your produce by water to Newcastle and Sydney, rather than send it by train? Not if our products have to be sent up the line again by railway. Of course, I am assuming that a line will be made from the table-land to here.
1766. *Mr. Neild.*] Assuming that Tenterfield is to be the connecting point of a railway from here to the northern line, do you think, from a national standpoint, that Tenterfield is sufficiently far south to enable the people of this district to trade with New England and the northern portions of the Colony? I think so, because Tenterfield is only distant 60 miles by the present railway from Glen Innes, which is reckoned to be the centre of New England.
1767. If Sir John Coode's scheme is carried out, and you get from 12 to 15 feet of water on the Richmond River bar, will not that be from 3 to 6 feet less water than they have on the Clarence bar at present? Yes.
1768. Are you not aware that it is the tendency now to conduct shipping operations in large bottoms rather than small ones? Yes; that is why I advocate the construction of harbour works at Byron Bay.
1769. If there was a good harbour at Byron Bay, do you think that it would afford shipping facilities for New England as well as for the Richmond? Yes.
1770. Then, after all, you do not believe much in the carrying out of Sir John Coode's plan for improving the Richmond River? I do. In view of the number of people living on the Richmond River, I hold that they have a right to get communication.
1771. Do you hold that Byron Bay would not serve the Lower Richmond so well as the Richmond River will, provided that it can be improved? Yes.
1772. Do you not really want a rather large order—that is, you want the expenditure of a few hundred thousands on the Richmond bar for the benefit of the Lower Richmond, then you want a harbour constructed at Byron Bay at a cost of a few hundred thousand pounds, and then you want a railway to cost a few hundred thousands more, in order to capture a possible trade with New England? In view of the growing importance of the district, I do not think it is too much.
1773. Do you say that for 35 miles the land between here and Tenterfield is very good? Yes; it is very much superior to the land between here and Myrtle Creek.
1774. What would the land between here and Tabulam produce? It will grow anything. It would not grow sugar all the distance. If the line were constructed, there would be a larger area put under cane than there is at present. The land between here and Tabulam would also grow maize luxuriantly.
1775. Do you think that the Richmond is better suited for butter and cheese factories than New England is? Yes; because the herbage is better.
1776. Do you look to an eventual connection with a railway from Tenterfield to Inverell? Yes.

1777.

Mr. F. C. Crouch. 25 July, 1892.

1777. Would it do your district much good if the railway were not extended beyond Tenterfield? Yes; there would be an interchange of products. They grow wheat largely in and around Tenterfield, and they would be able to supply the Richmond with breadstuffs within easy access of the railway.
1778. Are you aware that the whole of New England does not grow enough breadstuffs to meet the requirements of the Richmond River districts? They would if they had a railway. I know there is a predjudice against the flour manufactured in New England, owing to their not adopting the system of roller-mills.
1779. Then you are not aware that a roller-mill has been established at Glen Innes? I think it must have been only recently imported.

Mr. Octavius Lloyd, railway surveyor, sworn, and further examined:—

Mr. O. Lloyd. 25 July, 1892.

1780. *Chairman.*] Since you gave your evidence at Grafton have you had an opportunity of inspecting the proposed line between Lismore and Grafton? Yes.
1781. At Grafton you stated that the line could be constructed for £6,000 per mile;—are you still of that opinion? Yes.
1782. What is the character of the country which the line will go through? It is fairly good for pasturage. From an engineering point of view, it is extremely easy country. A question was asked previously as to the radius of the curves. I said that 20 was the sharpest curve; but I see there is one curve of 16, and one of 12. That is on the deviation, which has not been permanently staked out. That, of course, is capable of improvement.
1783. Does 20 miles of the first portion of the proposed route go through undulating country? Yes.
1784. Are there a few engineering difficulties about the Travellers' Rest? Yes, a few.
1785. Are there long stretches of very level country? Yes; nearly absolutely level.
1786. What kind of bridge do you think would be required to cross the Richmond River? There is no doubt that that would be a very expensive bridge. Probably there would be 20 chains to be spanned.
1787. Do you think that a low-level bridge would serve the purpose? I think so; but it has never been tried, as far as I know.
1788. Is there plenty of good timber for railway purposes along the route? Yes.
1789. Is there sufficient ballast? In a few places the ballast would be 2 or 3 miles away.
1790. Do you know the reason for the deviation at the 50-mile peg? It is with a view to a connection with the proposed Tenterfield line.
1791. In the event of the line going through to Grafton, would it be necessary to adhere to the deviation? I think so—it is somewhat longer. I said before that it was shorter, because at that time I was under that impression. It is a little longer, but it is very much higher and better ground.
1792. From an engineering standpoint, is it a better country to go through? Yes, and that is the only reason for this deviation.
1793. *Mr. Neild.*] What is the steepest grade on the proposed line to Tenterfield? One in 50—10 chains radius is the determinate curve. It was originally 12 chains radius and we altered it to 10 afterwards.
1794. Has the cost of that line been estimated? No. The quantities have not been taken out, but I understand that Mr. Firth thinks that a fair estimate would be £10,000 or £12,000 a mile. I do not know that officially.
1795. Would the proposed deviation from the originally proposed line add to the cost of the line from Lismore to Grafton? No, it would lessen the cost.
1796. Would it increase the engineering difficulties? No.
1797. In your opinion, how does the land on the line from here to Grafton compare with the land on the proposed line hence to Tenterfield? The deviation is about 8 or 10 miles out from here. For 10 miles further the land is of a somewhat similar character. Then there are a few miles of fairly good land. There is a very large reserve at the Mongoggery Range. There is a considerable area of rich basaltic soil there—it might be 1,200 or 1,500 acres. That is considerably on this side of Tabulam.
1798. Is there good land at Tabulam? It is beautiful land on the river banks. After you leave Tabulam it is fairly good land for a few miles, but you then come into very indifferent land. It is, however, very rich mineral land. It is teeming with minerals, even to wolfram. I understand that nearly every mineral known to scientists can be found there.

Mr. John Charles Irving, grazier, Casino, sworn, and examined:—

Mr. J. C. Irving. 25 July, 1892.

1799. *Mr. Collins.*] Where do you reside? At Tomki Station, 5½ miles from here. I have resided in this district twenty-five years.
1800. Can you give the Committee any reason why a railway line should be constructed from Lismore to Grafton? I have heard what Mr. Crouch said, and I agree in the main with what he has stated.
1801. Do you consider that a line constructed from Lismore to Grafton would be suitable for this district? Not to any very great degree.
1802. From a pastoral point of view, would it be suitable? No. We do send stock over here, but not in large numbers. They are sent to the Ramornie meat works, but they would scarcely be sent to the Clarence for shipment.
1803. Have you a large holding? About 15,000 acres freehold. It was obtained almost entirely by purchase direct from the Crown? A small quantity was bought as conditional purchases from selectors.
1804. Why did the selectors sell out? As the land was off the river they found they could not make it pay, as they only had small holdings. If selectors can farm a little, and graze cattle as well, they can make it pay, but small holdings for cattle do not pay. The holdings we purchased were—three 320 acres, 300 acres, 250 acres, and two 640 acres.
1805. Does any of your land go on to the river? Yes; we got that first. We graze cattle.
1806. Where do you find a market? Locally, and I have sold cattle to ship to Sydney by steamer, and by Tenterfield. They have gone up the road to Tenterfield, and they have been taken from there by rail.
1807. Will there be any development of the meat-chilling industry in this district? It has been talked about, and I think it will be established in time. If there was a chilled meat depôt here we would send some cattle to it. It would be cheaper than sending cattle by rail.

Mr. J. C. Irving. 25 July, 1892.

1808. On any of the runs in this vicinity is there any abandoned land? I think on almost all the holdings up the river there is land which has been abandoned. It has been abandoned on account of the high rent put upon it. I think 3d. an acre was charged.
1809. Is not the land good enough for a grazier to pay 3d. an acre to fatten stock? Not on the whole, because up the river there are pieces of scrub land, which, although rich, are of no use for cattle. Here and there some of that land has been taken up. It would be all taken up if there was easy access to it.
1810. How far is this land away from the proposed line? There is good land around Casino, and 10 miles from Casino there is 10 miles of good agricultural land still open. At present there are no roads there, and it does not pay to cart produce. There are no sheep in this district now.
1811. What is the value of grazing land in this district fit for fattening stock? It ranges from £1 to £2 per acre. I have known as high as £3 per acre given for grazing land.
1812. What is the value of land suitable for agriculture? From £8 up to £26 per acre. That land has been cleared.
1813. Is the land open for selection, within 10 miles of Casino, good agricultural land? Yes; if it were cleared, I think it would be worth £10 an acre.
1814. Still, people will not take it up at £1 an acre? No. If a railway were made, I think there would be a large increase of population in the district as well as of traffic, especially passenger traffic.
1815. Is there any produce grown on your property? Yes; there are about thirty-three tenant farmers on my land, which I lease to them.
1816. What average rent do you get? About 15s. an acre per year. The holdings are from about 22 acres up to about 50 acres.
1817. Are they in a prosperous condition? Those who are under engagement to the Sugar Company are prosperous—those away from the river, who have been maize-growing, are not particularly prosperous, owing to the last season having been bad, on account of the floods. Before that they certainly were prosperous. This year some of the farmers were entirely swamped out by the river. The tenants on the river are growing cane and maize.
1818. Are the people who grow cane prosperous? Yes; they sell all their cane under a contract to the Sugar Company. They get about 12s. a ton for it, and they get 40 tons to the acre. The yield has been known to be double that. We have a cheese factory on the station which works up to about 200 cows per year.
1819. How far would your land be away from the proposed railway? No part would be nearer than it is to Casino. The line branches away from my land, about 10 miles on an average.
1820. *Mr. Davies.*] Are you conducting the cheese and butter factory? Yes.
1821. What is the annual output of cheese and butter? Last year, somewhere about 35,000 lb. to 40,000 lb. It was mostly cheese. About one quarter was butter.
1822. How many cows do you milk? Up to 200, sometimes only about twenty twice a day.
1823. Is it a profitable venture? Yes.
1824. Would it pay other farmers if they went into that industry? Yes, and it would be likely to increase the amount of produce. The farmers near us have applied to have their milk purchased, but we have not done so yet. I daresay we shall do so in the future.
1825. What do you pay for sending fat stock by steamer to Sydney? About 30s. per head. It would not pay at present.
1826. Where does the larger proportion of your stock go to now? There is a large amount used for local consumption.
1827. Where does the surplus stock go to? This year up to Tenterfield, to the chilling works.
1828. Do you think that if a railway were constructed from Grafton to Lismore, and from Grafton to Glen Innes, or some point on the table-land, any stock would be sent by rail? Some might be, but it is rather problematical. There was a buyer round here from Melbourne the other day for 1,000 head of cattle, and he would have bought some if he could take them away at once, but he found that the distance he would have to drive them from here to Tenterfield was too much. If there was railway communication the whole way he would have taken them.
1829. Do you think that very little stock would go by rail? Yes.
1830. Is there any wool shipped from this district? No.
1831. Then the only traffic by the railway would be interchange of products? Yes.
1832. Do you think it would be very much? Trade would certainly increase largely as the population increased, and the country was taken up.
1833. Taking a railway from the Tweed to Glen Innes, do you think it would be possible to get a revenue of £260,000 a year to pay the interest on cost of construction and the cost of traffic management? It is very hard to speak about the future. If you consider what the district was twenty years ago and what it is now, you might very well hope for a very large return twenty years hence.
1834. Has not that trade been all developed by water carriage? In a way it has been; but, of course, there is a very large trade now between here and Fairfield, and beyond that, even with the extreme expense of horses and bullocks.
1835. *Mr. Neild.*] How many acres are required to feed a beast on the ordinary pastoral land of the Upper Richmond? About 6 acres. That is ordinary open forest land.
1836. If it were ringbarked would the carrying capacity be largely increased? Yes, 4 acres would then keep a beast.
1837. Do you think that the whole of the agricultural land within 10 miles from water carriage on the Richmond River is developed at present? No.
1838. Is it all selected? No; there is a very large area available.
1839. Is there a very large quantity within 10 miles of water carriage available? No.
1840. Is there a prospect of the dairying industry being largely extended in this locality? Yes.
1841. Is it likely to prove a more profitable occupation to persons engaged in pastoral pursuits than merely fattening stock? Yes.
1842. Will it cause a larger population to settle on the land? Yes.

Mr. Robert Page, Mayor of Casino, sworn, and examined :—

Mr. R. Page. 25 July, 1892.

1843. *Mr. Neild.*] Are you Mayor of Casino? Yes. I have been a member of the Council for seven or eight years, and have resided in the district about eleven years.
1844. During the time of your residence has there been a substantial increase in the population, commerce, and production of the district? Most decidedly.
1845. Assuming that produce can be profitably drawn 20 miles to water or to a railway, is there much available land suitable for agricultural purposes within 20 miles of the present navigable waterway of the Richmond River? There is a large area—it is occupied by farmers, dairymen, and others. I am speaking of the lower portion of the district that lies to the east of Casino. To the west of Casino we have the country used at present for grazing principally, but suitable for agriculture.
1846. Do you think that on the Lower Richmond the country would carry a larger population? There is no doubt about it.
1847. Why is it not fully populated? In a large measure it is due to persistent neglect of the Government, up to a certain period. Before the works at the bar were undertaken there was very little public expenditure. Lately, I admit, the Richmond River has received some attention.
1848. Would expenditure on public works increase settlement on the soil of the Lower Richmond? A larger expenditure on roads would have enabled them to get their produce to water carriage. The roads are now being improved every year, and population and production are increasing.
1849. Would it pay to draw maize 20 miles to water carriage? Certainly not. At the ruling prices I do not think it would pay to draw it much more than 10 miles.
1850. What has been the average price during the last ten years? From 2s. 6d. to 2s. 9d. in Sydney.
1851. Why is a much better price obtained by the maize-growers of the Clarence than by the maize-growers of the Richmond? I was not aware that such was the case.
1852. We have sworn evidence that for the last ten years the average price obtained by the farmers in the Clarence district has been 3s. 1d. per bushel for maize? That may be the case; but I estimate the average at 2s. 6d. to 2s. 9d. I have not worked out the figures very carefully.
1853. If it will not pay to draw maize more than ten miles to water carriage, would it pay to draw it more than ten miles to a railway? It all depends upon where it is going to. It would be impossible to expect to send maize from this district to Sydney by the Great Northern line; but there are periods of the year when it would pay better to send maize to the table-land than to Sydney.
1854. Is not maize grown at Inverell very profitably in large quantities? It is grown there; but very often when we have a large maize export at 2s. 6d. or 3s. per bushel, it is quoted at Inverell at 4s. and 4s. 6d. per bushel.
1855. Do you confirm Mr. Crouch's statements with reference to the rates of freight? Yes, with regard to the rates of freight from Sydney to the district by steamer.
1856. Is there a prospect of a trade growing up in maize between here and Queensland by the railway in course of construction? I think so, not only in maize, but in many other products.
1857. What is the average size of holdings in this district? On the lower portion of the river the average would be about 50 or 60 acres; in the upper part they are larger, because they are almost exclusively used for grazing, and they range from 400 to 1,280 acres, conditional purchase and conditional lease. There is no access to market here.
1858. Do you think that the land lying between here and Tenterfield is good land? Decidedly, as far as Tabulam, and at Tabulam the land is equally as good as anything you have seen on the banks of the Clarence.
1859. What is the nature of the climate? The frosts are no severer than they are here.
1860. Do you grow sugar-cane here? It has been worked profitably within 8 or 9 miles of this place. At present a proposal has been submitted to the Sugar Company to grow sugar-cane 6 miles above the town.
1861. How would that cane be taken to a mill? It would have to be carted to the South Arm. The Company might possibly put down a tramway, as they have done in other parts of the colony.
1862. If it would pay to cart sugar-cane, would it not pay to cart maize? No; the return from cane per acre is better.
1863. Do the majority of the passengers coming here from the south, arrive by way of Chatsworth and Woodburn? No; the majority for years past have travelled by the Richmond in the steamers. A certain number do travel by the Clarence, but nothing like so many as in former years.
1864. Do you recognise that the shallowness of water on the Richmond River prevents large steamers from being used, and that, consequently, passengers cannot get such good accommodation as they would in larger steamers? Certainly that has some influence in sending passengers by way of the Clarence. Within the last three years the passenger trade by way of Tenterfield has been steadily growing, and if there were better facilities for travelling a great many more would go by rail.
1865. Is it a fact that navigation by the South Arm is becoming increasingly difficult? Yes; it is infinitely worse than when I came to the district.
1866. Are droghers prevented from coming up as high as they formerly did? Yes; very often they cannot come beyond two miles below the wharf, and cargo has to be taken in ordinary ships' boats to Irvington.
1867. Is not the charge of 5s. per ton, by dray, from Irvington to Casino, a distance of a mile and a-half, very high? It must be understood that the carriers have to be down there all hours, day and night; they have to take the cargo off the steamers, and if there is a fresh in the river, they have to shift it twice. They earn their money.
1868. What views do you hold in reference to the desirability of constructing a railway from Grafton to Lismore? The line from Casino to Grafton would be justifiable on one ground only—that is, that it will junction with the proposed line to Tenterfield, and thus connect two important districts with the present railway system of the Colony.
1869. Supposing the result of taking the line hence to Grafton were to bring about a connection with the table-land of New England from Grafton, would you favour the proposal? I do not think there is the slightest chance of anything of the kind coming about. I am informed on very excellent authority, that the cost of making a railway from Grafton to Glen Innes would be £20,000 per mile; from Grafton to Guyra, £18,000 per mile; and from Casino to Tenterfield, only £10,000 to £11,000 per mile.
1870. Do you recognise the fact that in national undertakings directness of route and prime cost are not always the only considerations? Certainly.

Mr. R. Page. 25 July, 1892.

1871. Do you think that a line taken to Grafton from Lismore would lead to the opening of any traffic of importance upon that line? No; we produce exactly the same articles.
1872. Supposing the works at the Richmond bar do not have the effect desired, do you think that the proposed railway would be utilised for the despatch of cargo to the Richmond River *via* the Clarence? No, because at the present time, without any expenditure at Byron Bay, six steamers are trading there and discharging cargo without mishap. Even if the Richmond River bar cannot be improved, when the railway is completed from Byron Bay to Casino, our trade will come in that direction.
1873. Then Byron Bay affords shipping facilities at present equal to those at the Richmond Heads? Yes, but it serves a different purpose.
1874. Do you look upon the Richmond River as being more a port for the Lower Richmond than for the entire district, and do you anticipate that the trade of the upper district will gravitate to Byron Bay? Certainly, even supposing nothing is done to improve Byron Bay.
1875. Do you hold out no prospect of any trade hence to Grafton, or to the Clarence River, along the proposed line of railway? No, except what would come from a point as far down as Myrtle Creek.
1876. What is your opinion of the land between Myrtle Creek and Grafton? It is fairly good land for farming on the frontages to the creeks, and nearly the whole of the land is suitable for dairying or grazing purposes. It is heavily timbered with the very best class of timber.
1877. Will it grow cane? I would not like to say so; but it will grow maize, hay, potatoes, or anything of that kind.
1878. You have stated that the haulage of maize is not profitable for a longer distance than 10 miles;—Do you, therefore, think that this railway would really serve a very small population? Certainly, at the present time.
1879. If the land is only suitable for grazing purposes, could any close settlement take place on such land? I think that the population would be materially increased if increased facilities were given for getting to market.
1880. Can grazing land carry a large population? Certainly not.
1881. Consequently this land could not contribute a large volume of traffic to a railway? There is land there suitable for other than grazing purposes, and it is used for other purposes.
1882. In view of the fact that a large proportion of that land could only be used for grazing purposes, would such occupation produce any considerable volume of traffic for a railway? Certainly not.
1883. Is there any likelihood of settlement within 10 miles of the railway which would make the line profitable? No.
1884. What traffic would such a line be likely to get? If such a line were connected with the parent railway system of the Colony there is no doubt there would be a large trade between the table-land and the coast.
1885. That is dependent upon the construction of the Tenterfield line? Yes.
1886. Or, on the other hand, the construction of a line from Grafton to the table-land? That will not answer what I take to be a national purpose. We have already a line sanctioned from the Tweed to Lismore. When that line is continued on to Tenterfield the whole of the Brisbane passenger and mail traffic, which runs down from Brisbane to Tenterfield, could be conveyed over the line from the Tweed to Tenterfield, thus giving increased traffic over 168 miles of railway which we do not get at present, and it would shorten the time of conveyance from Brisbane to Sydney by no less than six hours.
1887. Would not that require the assent of the Queensland authorities? The Brisbane line will be junctioned at the Tweed long before the line to Tenterfield is made.
1888. Would there not be, on the other hand, a great prospect of the trade of this district, which now goes over the New South Wales line, being diverted to the Queensland line, so that what New South Wales would gain in one way she would lose in another? That would be counterbalanced by the fact that if the line is taken to the coast at the nearest point, a large proportion of trade will come into this Colony from Southern Queensland, because they can get here at less distance and cost than by going to Brisbane. I refer to the people near the border.
1889. Do you not think it would pay them better to deal with their own Colony instead of coming to make their purchases of a retail character, which will necessitate the payment of Customs duties on the border? I am anticipating that the much-talked-of federation will come about, and that there will be no border duties.
1890. Then the success of your railway projects are dependent upon the success of the federation movement? Yes, to a certain extent.
1891. What is the average rent for land for growing cane or maize in this district? From 15s. to 25s. per acre as cane land.
1892. Can you give any reason why the rent for land on the Richmond River is only about one-half of that obtainable on the Clarence River? On this river, as a rule, the cane farms are worked by the owners. It is a very rare thing to find an owner of land leasing a cane farm.
1893. Confining ourselves to the question of maize land, why should double the rent be paid on the Clarence for maize land that is paid here? First, because we have more good land than they have on the Clarence. There is a wider range of it and more to select from. On the Clarence the good country is confined to a mile or a mile and a half along the river banks, so that with increased competition for land they cut each others throats in tendering for a farm.
1894. Do you not think that the difficulties attending the navigation of the Richmond bar have something to do with it? There is no question about that. We have had greater difficulties to contend with in getting produce away to market.
1895. If the same price is obtainable per bushel on the rivers, I suppose you would not admit that the Richmond River grows less per acre than the Clarence? Not per acre; but there is not much maize grown on the Richmond.
1896. The price would be the price in Sydney, consequently the farmer on the Richmond, getting land for 20s. and 25s. per acre, would be making a larger profit than a farmer on the Clarence who is paying double that rent? No; until recently the freight was much higher from the Richmond than from the Clarence. That was due to the state of the bar.
1897. Then no railway can ever be constructed which will affect the people on the lower river very much; and, therefore, the occupants of the land on the Lower Richmond are comparatively very little interested in railway construction? Yes; those residing immediately on the river banks.

1898. Are you in favour of the immediate construction of the line from Lismore to Casino? Yes, to the proposed junction with the Tenterfield line, about 12 miles from Casino. Mr. R. Page. 25 July, 1892.
1899. Do you advocate the construction of a line to stop 12 miles from Casino? Certainly not. In the meantime, it would only be constructed to Casino until a decision is arrived at as to the table-land connection.
1900. After that, would you prefer the construction of a line to Tenterfield rather than the line to Grafton? Certainly.
1901. But the line being built to Tenterfield, you would be content with a line constructed hence to Grafton? Yes; so as to connect a large and populous district with the rest of the Colony. I think they have claims which ought to be respected.
1902. *Mr. Davies.*] What is the distance between Casino and Tenterfield? Ninety-eight miles.
1903. What is the distance from the Richmond Heads to Sydney by steamer? About 400 miles.
1904. Are you aware that the distance from Casino to Sydney by way of Tenterfield would be 574·60 miles? Yes.
1905. Do you think that passengers would prefer to go the longer distance by train rather than go a shorter distance by steamer? Very many do so at the present time. They go to Tenterfield by coach, thence to Sydney by train.
1906. What has been the increase of population on the Richmond from 1881 to 1892? Fully 200 per cent.
1907. What has been the increase in the productions of the district during the same period? They have been fully doubled. The dairying industry is now being developed.
1908. *Mr. Collins.*] Do you know the quantity of sugar which is produced in the Richmond River district? I am not quite sure, but I think it is 30,000 or 35,000 tons.

TUESDAY, 26 JULY, 1892.

[*The Sectional Committee met at the Court-house, Casino, at 9 a.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).
The Hon. John Davies, C.M.G. | John Cash Neild, Esq.
Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Edward Youngman Harrison, engineer, Casino, sworn, and examined:—

1909. *Chairman.*] Have you charge of the Government dredge on the South Arm of the Richmond River? Yes. Mr. E. Y. Harrison. 26 July, 1892.
1910. Why are you stationed on the South Arm? Because it is blocked by sand and coal coming down the river.
1911. Have you much trouble in keeping the channel clear? Yes; there has been more than the dredge could do during the last twelve months, owing to the repeated floods. We have had nine floods since last March. I have to keep the channel clear 5 miles from Tomki Station. A large dredge could keep the channel open up to Tomki Station for vessels of 300 tons. Above that place the banks are high and the river very narrow, and the banks are continually slipping.
1912. Are droghers able to come above Tomki? Yes; vessels drawing 5 feet of water can go to the Irvington wharf sometimes.
1913. Do you dredge above Irvington? No; the river is too narrow.
1914. Is there a good deal of coal in the material which you take up from the bed of the river? Yes; the sand which I dredge is mixed with 1½ to 2 per cent. of coal, which is brought down from the coal measures by the floods.
1915. Is that a serious obstacle in the river? The sand is, but the coal is not.
1916. *Mr. Neild.*] Are there any snags in the river? Yes; they are very bad. The banks have been heavily timbered, and slip in.
1917. How long have you been at this work? About seven years.
1918. Is the water shoaling in the arm? It seems to shoal. The bed of the river from the Tomki Station upwards passes through a rock bottom. One rocky bar has been removed to allow steamers to come up to the present point of navigation.
1919. Do boats come up as far as they used to come before? Shallower draft boats used to come up three-quarters of a mile further.
1920. Do you see any prospect of improving the river channel, so as to make it serviceable and navigable? Not past Tomki.
1921. *Mr. Collins.*] How long has the Government been dredging the river? Seven years.
1922. What is the cost per annum? About £700.
1923. Do the Government get any river dues? Not from this place.
1924. If a railway is constructed from Lismore to Grafton, will it be necessary to continue this work? I do not think so. The bulk of the cargo would then come from Byron Bay to Casino.
1925. Would it then be necessary to continue the work to the Richmond River Heads? Yes; because there is a great portion of the district which would require the river. Byron Bay would not suit them.
1926. *Mr. Neild.*] Have you done any work on other portions of the river? Yes; near Ballina.
1927. Have you had any experience of the Richmond River bar? Yes; sixteen years. Before I came to the South Arm I was engaged in the shipping trade with all the creeks. I have frequently crossed the bar. Ten years ago the ships could only get in as far as the pilot station, and they had to drogher the stuff over the inner crossing. That was not owing to the shallowness of the water on the bar, but the inner crossing was bad.
1928. Is there any inner crossing now? No.
1929. Do you think the works now being carried out at the bar will be efficacious in improving the bar, the inner crossing, and the entrance to North Creek? Yes.
1930. What depth of water is required on the bar, over and above the draught of the steamer? If there is what is called 8 feet of water on the bar, a vessel drawing 8 feet usually just touches the bar. Sailing vessels are generally towed in.

Mr. Donald Campbell, grazier, Bruton, near Casino, sworn, and examined:—

D. Campbell, Esq. 15 July, 1892.

1931. *Mr. Collins.*] Where do you reside? At Bruton, about 5 miles from Casino.
1932. How long have you resided there? About six years. I have been in the district thirty-nine years and seven months.
1933. Have you always followed grazing pursuits? Yes; my holding at present consists of about 5,000 acres.
1934. How many cattle are grazing on it? About 2,000.
1935. Has the land been improved? No. Some of it was brush land originally. My cattle are not all on that land.
1936. Where are they running? Some of them are on the common below the town.
1937. How many are running on your own ground? About 1,200.
1938. Is your land freehold? Partly; and some is conditional purchase, and some conditional lease.
1939. What do you pay per acre for your leased land? From 3d. up to 8d. I fatten cattle on my land, which will carry about one beast to 3 acres.
1940. Is there any land open for selection as good as yours? There is no quantity of it. A great deal of the land has been locked up, and a great deal of it has been taken up within the last two years.
1941. Do you know the country between Casino and Grafton? Yes.
1942. Is your land much better than that? Yes; there is no comparison between them. I do not think there is any land on the line equal to mine until you get within 9 miles of Grafton.
1943. What is the carrying capacity of the land between here and Grafton? It would take about 9 acres to carry a beast.
1944. Do you know anything on the proposed railway line from Lismore to Grafton which would warrant the Committee in recommending a railway? There is a great deal of good timber, and there is good land along the creeks, and even the land which may now seem to be poor would be good country for growing wheat and oaten hay. The whole of that country is lying waste at present.
1945. Would that country be utilised if there was a railway? Unquestionably it would.
1946. In the interests of the Richmond and Clarence River districts and of the Colony generally, do you think it will be advisable to make a railway from Lismore to Grafton? I think it would be more beneficial to the country at large to connect the line from Lismore with Tenterfield. I believe that a line from Lismore to Grafton would be to the interests of the country and of this district, but I believe it will leave a good deal of good country behind. There is a lot of fine timber between here and Grafton.
1947. Would it pay to make a railway for the sake of the timber? Not for the timber alone.
1948. *Mr. Neild.*] How many beasts to an acre will your land feed? Three acres will feed one beast in the summer months, and about 4 acres to one beast all the year round.
1949. Is your property highly improved? It is only ringbarked. It is fenced into small paddocks.
1950. Is there much land about here which will carry the same number of stock? Yes; up the river there is land equally good, and the land on many of the creeks coming into the river is quite as good as the land on the river.
1951. In coming along the road between Grafton and Casino, can you see any of the good land you speak of along the banks of the creeks? Very little. If you left the road for a mile or 2 miles, you would see very different country indeed.
1952. What is artificial grass laid down for in the Richmond district? For grazing purposes, such as dairying.
1953. Does the grass in this district get burnt in the summer? If it is very dry in summer it does, but the first shower revives it, and it is as fresh as ever. Perennial rye and clover are usually sown—the clover grows wonderfully well.
1954. *Chairman.*] Do you carry on any dairying? No; but there is a great deal carried on in the district. Produce is sent to Sydney by way of the river. A great deal is shipped at Lismore.
1955. Is fruit grown in the district? Yes.
1956. What is done with the fruit and other articles when the Richmond bar is so bad that it cannot be exported? It is a dead failure, and it goes bad on our hands.
1957. If a railway were constructed from Lismore to Grafton, would that prevent such an accident from happening? I think the cost of transit would be too great.
1958. Pending the construction of a harbour at Byron Bay, and the formation of a reliable channel at the Richmond Heads, would it be to the advantage of this portion of the north coast district to be connected with the Clarence River by means of a railway? Certainly.
1959. This district is noted for the excellence of its cattle and horses—where do you sell them? We have to take them on to Tenterfield, and send the cattle to the Ramornie meat works.
1960. Would a railway from here to Grafton assist those interests? No; we would not be likely to use the railway for sending cattle.
1961. Do you ship any cattle from this district to the Sydney market? Yes; we ship them from Lawrence, and send them by train from Tenterfield. We occasionally ship at the Richmond River, but very rarely at Coraki.
1962. Is the cattle trade ever inconvenienced by the uncertainty of the channel at the Heads? Yes.
1963. Would a railway from Lismore to Grafton, with a branch line to Lawrence from the Flying Horse, be utilised for cattle? No; only for dead meat. If chilled meat works were established, they should be established at Lawrence or somewhere else on the Clarence, or at Coraki.
1964. Can you give us the names of the large squatting stations in the Casino district, or in the Upper Richmond district? Yes; Woolwoolgen (Griffiths and Fanning), Dyorabba (Barnes), Runnymede (Barnes, Edwards, and Brooks), Kyogle (H. Smith), Wyangaraie (W. C. Bunder), Rosebery (Edwards), Unumga (Hill), Bungawalbin (Messrs. Yabsley), Camira (Vickery).
1965. Are all those stations in a prosperous condition? Yes.
1966. If a railway were constructed right on from Lismore to the Northern line about Maitland, thus forming a North Coast line, do you think that those cattle breeders would have their meat chilled here, and transport it to Sydney by that line? I am certain of it, because we want some market, and that is what is keeping the district back.
1967. *Mr. Neild.*] Supposing a line were constructed from here to Tenterfield, would cattle breeders be likely

likely to use that line for sending live stock to the table-land? I am certain they would send live stock and dead meat on that line to the Sydney market. Mr. D. Campbell.
1968. Would they send cattle to the chilling works at Tenterfield? I believe they would. 26 July, 1892.
1969. Would it not be better to establish chilling works in the district? It would pay better—it takes eight days to get cattle from here to Tenterfield.

Mr. Sebastian Garran, grazier and farmer, Booare, near Casino, sworn, and examined:—

1970. *Chairman.*] What acreage do you hold? One thousand seven hundred acres. Mr. S. Garran.
1971. Where do you send your cattle? To the local butchers.
1972. Would a line from here to Grafton benefit you? No. 26 July, 1892.
1973. Where would you prefer to see the railway taken? I would connect it with the Northern line at Tenterfield, so that we should have quick transit to the Sydney market for fat cattle. A small holder could then always get a market.
1974. Would you and other small holders be likely to send live stock by such a line to Sydney? Yes; unless we had better communication by sea.
1975. Do you carry on dairying? Yes; I dispose of my produce in the local market.
1976. Is that an ample market for you? No; if I had a larger market I would sell produce on a larger scale.
1977. Would you be likely to send your dairy produce to Sydney for sale by rail, *via* Tenterfield? Yes; when the harbour is not in good order.
1978. What is the character of the land between here and Lismore? Black alluvial soil. Maize and oaten hay are cultivated—the maize is shipped at Lismore, and the hay is disposed of locally. Sugar-cane grows all the way down the river. The cane is sold to the Colonial Sugar Refining Company at Broadwater.
1979. Is the land between here and Lismore occupied with farms? No; it is mostly taken up with grazing. There is no outlet for farm produce. If a railway were constructed, cultivation would be encouraged.
1980. *Mr. Neild.*] What is the distance between the two towns of Lismore and Casino? Nineteen miles.
1981. Is that distance prohibitory for the transit of produce by road? You can get produce into Lismore by road. When the bar is bad it is difficult to get perishable goods away.
1982. Has not the entrance materially improved of late years? It has improved, but only a few months ago there was a great deal of delay.
1983. If the bar were to remain in its present condition, would you be able to get your produce away? Yes.
1984. Would it pay to send your produce by the proposed line to Grafton for shipment by the Clarence River? No.
1985. *Mr. Collins.*] Supposing the Lismore to Grafton line were constructed, would there be any interchange of products between here and the Clarence? Not the slightest.
1986. If the line were carried on from Lismore to Maitland and Newcastle, would that be a benefit? Yes; because there would be an interchange of products.
1987. Would the railway be needed if the Richmond River harbour were improved? No.
1988. If chilling works were erected near the harbour, would you send your dead meat to market? Yes; it would be far better, and it would be cheaper to send it by water than by rail.

Mr. Frederick Burgess Gulley, storekeeper, Casino, sworn, and examined:—

1989. *Mr. Neild.*] How long have you resided in the district? Twenty years. I was the first mayor of Casino, and have been mayor four times since. Mr. F. B. Gulley.
1990. Have you been engaged in business? Yes. We principally do business with Sydney, and I have done a considerable amount of business by indenting from London. The goods from London have come through Sydney. There has been little direct trade with any other place except Sydney. There used to be intercolonial trade in timber and produce, but that has fallen off recently on account of the duties imposed in the other colonies. 26 July, 1892.
1991. Are the rates of freight now charged to and from Sydney by steamer the same as they were ten years ago? No; they are very much lower. That has stimulated local production and agriculture.
1992. Has the reduction of steamer fares compensated for the extra cost of transit at the Casino end? Yes; to some extent. The company now charge the storekeepers one freight right through from Sydney to Casino. Years ago they landed Casino goods at Coraki, and we then had to pay the extra freight from Coraki to Casino, but that is done away with.
1993. Does that include the cartage? No.
1994. If it has been said in evidence that 5s. extra is charged by steamer from Coraki to Irvington, what would you say to that? That is the case, but it is included in the one freight from Sydney to Irvington. Formerly we had to pay 10s. a ton from Coraki to Casino. Now we have only to pay 5s. to Irvington, and 5s. by dray from there to Casino. Formerly that charge would amount to 15s.
1995. Would it be an advantage to this district to be connected by railway with Lismore? Yes.
1996. For what purpose? Presuming that Byron Bay were made a port for ships from all parts of the world, a railway would be a great advantage to us. We would then have an over-sea port, and we should not be dependent upon the metropolis.
1997. Would a railway line from Lismore to Grafton be of advantage to this locality and the Richmond district generally? No. If the railway is to be known hereafter as part of the Great North Coast Railway, I say emphatically, "yes"; but the railway should be taken from here to Tenterfield, as we have nothing whatever to do with the Clarence. There would be no interchange of produce between the two rivers. There would be a passenger traffic. Many of the inhabitants of the Upper Richmond, including Casino, travel to Sydney *via* the Clarence, because it is more reliable. There is a proper time-table on the Clarence, which does not exist on the Richmond.
1998. Do many passengers go from here to Tenterfield, and catch the train there? Yes.
1999. Has there been a material improvement in the bar of the Richmond River of late years? Yes. I was at Ballina many years ago, and I saw thirty-seven sailing vessels and two auxiliary screw steamers bar-bound there. The "Susannah Cuthbert," which was the only steamer trading to the district, was bar-bound six weeks.

Mr. F. B. Gulley. 26 July, 1892.

2000. Is the falling-off in the intercolonial trade due to the badness of the bar? No; it is due principally to the duty on maize, and the low price of cedar and pine, in consequence of the enormous quantities of timber imported from America.
2001. You gave evidence before a former Sectional Committee with reference to the establishment of dairying industries? Yes.
2002. At that time how many factories were in the Casino district? Only two or three. It has since developed to a great extent. I admit my expectation as to the increase of the dairying enterprise has not been fully realised, but since then several very large dairies have been opened. There is the Wooroowoolgen factory, established by Griffiths, Fanning, & Co.—they employ about twenty hands. Mr. Irving has a factory. There is a factory about 2 miles out of town, on the Lismore Road, at Woodside; about six hands are employed there.
2003. The dairying production is not of a character sufficiently large to afford any appreciable income to a railway? I believe a railway would give a great impetus to dairying; it would open up a market. In the winter time dairy products are very scarce in the New England district. I am prepared now, if I had the means of communication, to send a large quantity of butter to New England.
2004. If you supplied all the people of New England with butter, do you think the railway freight would be sufficient to pay the annual wages of a porter at each end? It would do more than that; and that is only one particular industry.
2005. Do you anticipate that cheese would be sent to New England? Yes; and there are a lot of other things besides butter and cheese.
2006. If a railway were built from Lismore to Grafton, would that give any impetus to the dairying business? None whatever.
2007. Do you consider the country here better for dairying purposes than the Clarence country? No.
2008. Would the construction of the proposed railway open up any country suitable for wheat growing? I think so. On the various creeks between here and Grafton I have no doubt wheat could be grown.
2009. If a line were made to Tenterfield would that open up good country? I have no doubt it would.
2010. If you were able to draw your wheat supplies by railway instead of by water, would that be of any advantage to this district? Yes; seeing that we have to import all our breadstuffs.
2011. In the country where you would purchase your breadstuffs, would you look for a market for sugar and maize? Yes.
2012. Can you grow potatoes in this district? Not successfully; it is too hot.
2013. Can they be grown in the Clarence district? Yes; potatoes which we get from Tenterfield will keep here for three months; but we cannot keep our own potatoes for as many weeks.
2014. If the railway were taken from Grafton, and thence to the table-land by way of Glen Innes or Don Dorrigo, would that be of any use to this district? Not the slightest.
2015. Is your preference with regard to railway construction for a line from Lismore to Casino and thence to Tenterfield? Most certainly.
2016. *Chairman.*] Do you produce a letter from the Under Secretary for Lands, showing the area of alienated and unalienated land in this neighbourhood? Yes; it is as follows:—

Sir, Department of Lands, Sydney, 8 June, 1892.

In reply to your letter of the 25th ultimo, I have the honor to inform you that the area of land alienated and unalienated within 20 miles radius of Casino is, approximately, as follows, viz.:—

Alienated, including permanent reserves	481,450 acres.
Unalienated, including temporary reserves	282,650 ,,
Total	764,100 acres.

I have, &c.,
W. HOUSTON,
Under Secretary.

2017. What reason do you assign for there being so much unalienated land in the district? Because we have no market. If the land were all taken up to-morrow, we have no market for our produce and cattle.
2018. Does the unalienated land include the hills and ridges? Yes; and it includes an immense quantity of valuable timber. The Sandilands Range, 22 miles from Casino, on the road to Tenterfield, contains an immense forest of pine on Government land. If a railway were constructed, that timber could be all brought into Casino and shipped to Sydney.
2019. Is the country in that part fit for settlement? Yes.
2020. With what districts do you trade to the north and north-west from Casino? We trade with Tabulam, Fairfield, Drake, Pretty Gully, Tooloom, and Tenterfield. Last year I sent a considerable quantity of produce from the Richmond, by drays, to these various places. It was principally sugar.
2021. What places do you trade with to the south-west? There are no places there of any great importance. There are various creeks—Deep Creek, Sandy Creek, Myrtle Creek, and Myall Creek. They all come within the commercial sphere of Casino. They are districts to which stores would be sent by railway, if constructed.
2022. *Mr. Collins.*] Do you transact a good deal of business with the small farmers and selectors? Yes.
2023. In what financial position are they generally? The majority of them are not well off.
2024. To what do you attribute that? It is partly owing to want of capital when they take up land, and because they take up too large an area; also lack of means of communication with markets.
2025. Do many of the settlers sell out to the squatters? A few of them do.
2026. Are the settlers about here generally in the hands of the banks or business people? A good many of them are; but there are also a great many who are independent.
2027. Can you give us any reason why a railway should be made between Lismore and Grafton? I cannot. As far as the line from Casino to Grafton is concerned, I cannot speak in favour of it.

Mr. John Evans, sergeant of police, Casino, sworn, and examined :—

Mr. J. Evans. 26 July, 1892.

2028. *Chairman.*] Do you act as Crown Lands bailiff? Yes; I travel through the country a good deal.
2029. Do you know the country well between here and Lismore, and between here and Grafton? Yes.
2030. Is the settlement between here and Lismore of a permanent character? Yes; I believe they are *bona fide* settlers. Between here and Lismore the Armstrong Brothers own the greater portion of the land.
2031. Do they carry on grazing only? Yes; only a small portion of their land is cultivated.
2032. Do you collect the electoral roll? Yes.
2033. Have you any return showing the increase or decrease of the electors during the last few years? Yes; it is as follows: Casino portion of the Richmond: 1888 and 1889, 945 voters; 1890 and 1891, 1,220 voters; 1891 and 1892, 1,334 voters; 1892 and 1893, 1,344 voters; increase since 1889 list is 404. The Electorate:—1890 and 1891, 6,717 voters; 1892 and 1893, 8,032; 1,315 increase. Population of the Casino police district is 4,666 Europeans, Chinese 13, aborigines and half-castes, 287; total, 4,966. Population in Casino portion, year 1889, 3,780.
2034. *Mr. Neild.*] Has that increase taken place through minors growing up to adult age, or has it taken place through new adults coming into the district? It has taken place from both causes. New arrivals have settled on the land.
2035. You are not referring to the floating population who come looking for work? No; there has been no floating population.
2036. Have any portions of the stations about here been abandoned? Not that I am aware of.
2037. It is in evidence that in some districts the squatters have taken up certain selections and leases and have abandoned the rest of their holdings, while they run cattle upon the abandoned portions without paying any rent. Has anything of that kind taken place in your district? There was something like that, but I believe that all the land is now taken up under annual leases.
2038. If the whole of the unalienated land were occupied by small holders for grazing, dairying, or agricultural purposes, would the country carry a much larger population? Ten times as large as at present.
2039. If a railway were made from Lismore to Grafton, would it be of material advantage to this locality? I fail to see that it would do any good from Casino to Grafton. Whatever produce is raised here would go to the river, and the same would be the case at the Grafton end. The country between here and Grafton is the worst we have in the district.
2040. What is the character of the land fronting the creeks? It is a sandy loam, not very good. It would not do for cane, but it would do for maize. I have seen a great deal of this land on creek frontages, and I have been all over it. The creek frontages are very small between here and Grafton.
2041. Would 1 acre in 20 of the whole of the land be fit to be put under the plough? Not 1 acre in 50.
2042. *Mr. Collins.*] What district did you come from before you came here? Inverell.
2043. Will the country about here compare favourably with the Inverell land? Yes; it is very good land up the river.
2044. When you were in the Inverell district were many persons there wanting land? Yes.
2045. Were they within a greater distance from a market than the people of Casino? Yes.
2046. Why did not those people come into the Casino district where there is so much land unoccupied? When I was at Inverell a great many of those people took up land there, and they are still there.

Mr. Cecil Pennefather, licensed surveyor, Casino, sworn, and examined :—

Mr. C. Pennefather. 26 July, 1892.

2047. *Chairman.*] How long have you been in this district? Between six and seven years. I have surveyed both in the Casino and Grafton districts.
2048. What is the character of the land in what is termed the Upper Richmond district? Generally, decomposed trap. The river flats, as a rule, are composed of heavy black soil.
2049. Is it well suited for agricultural purposes? Yes; it is occupied at present for grazing.
2050. Is there much land open for selection? Not much that is any good; just the tops of the hills and the scrub land.
2051. How far does the good land extend towards the west and north? As far as the Richmond Range—that is, the boundary between the trap country and the sandstone country. It is 20 miles due west.
2052. How does the country between Casino and Grafton compare with the country you have just described? It is the poorest class of country I have ever met with.
2053. Is the country between Casino and Lismore of a superior character? It is much superior. It is all decomposed trap, as a rule. It is all in private hands, with the exception of a few reserves. There is not much population there.
2054. Is there much scope there for future settlement? Yes.
2055. Would that settlement be agricultural? Yes.
2056. Would it be better to work that land for agriculture than for grazing? Yes; if there was a market there.
2057. *Mr. Neild.*] Have you a personal knowledge of the views of the settlers with reference to railway communication? Yes. They wish to see a railway running from here to Lismore and the table-land. They wish to have a line to Tenterfield. If they had such a line, probably a line to Grafton would be acceptable to them also; but it would be regarded more as an ornament than anything else.
2058. Is the country between here and Grafton easy for railway construction? Yes; it is fairly easy.
2059. Is it as easy between here and Tenterfield? Certainly not.
2060. Is the quality of the soil on the road to Tenterfield better? Yes; until you get into the auriferous country.
2061. What is the distance between here and Tenterfield? About 90 miles.
2062. Is the country beyond 20 miles from here useful for grazing? Yes; but it would not carry much stock. I think it would be as good as the average of the country between here and Grafton.
2063. Is the quantity of land suitable for agriculture between here and Grafton infinitesimal as compared with the portion which is suitable for grazing? I do not think the country there is even suitable for grazing. It is not fit for fattening; it is what is known as sour country.

WEDNESDAY,

WEDNESDAY, 27 JULY, 1892.

[*The Sectional Committee met at Runnymede Station, Richmond River, at 2·30 p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (CHAIRMAN).

JOHN CASH NEILD, Esq. | CHARLES COLLINS, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Charles Edwards, grazier, Runnymede Station, sworn, and examined:—

Mr. C. Edwards. 27 July, 1892.

2064. *Chairman.*] How long have you been established here? Since 1867.
2065. Do you know the Upper Richmond district fairly well? Yes.
2066. What is the character of the country about here? Very similar to my holding, only more mountainous. The soil improves in quality as you go further northwards.
2067. What is this country best suited for at present? It is devoted to the grazing of cattle at present, but it would carry an immense population. The soil is well suited for growing wheat, potatoes, oats, barley, lucerne, and maize.
2068. Would the whole of the country within a radius of 10 miles of this homestead be suitable for agriculture? Yes.
2069. Are there many selectors in this neighbourhood? Within a radius of 10 miles there are fully thirty. Most of them are cultivating. They grow hay, maize, and potatoes.
2070. Do you graze cattle exclusively? Yes; except a little land which we cultivate for our own consumption.
2071. How many acres would it require to carry a beast on country like this in its natural state? About 30 acres to a beast. In its improved state it would carry one beast to 7 acres.
2072. Where do the timber teams which pass your homestead come from? From as far as Umnumgar and Taloon.
2073. Is there much cedar and pine up there? Any amount of pine, but the cedar is nearly all gone. The timber is generally taken to Casino, and rafted down the river to Coraki, and there shipped to Sydney and Melbourne.
2074. *Mr. Collins.*] What is the position of the selectors in this district? I know two or three who are doing very well. Most of them who have taken up land lately cannot live upon it. If they did grow anything they have no means of getting it to a market.
2075. What do you think they will do with the land eventually? My own impression is that you could buy them out as quickly as you liked.
2076. Are the lessees of the runs likely to purchase the land? I do not think they will, but they could.
2077. At about what price per acre? At what it has cost to select it.
2078. Seeing that the selectors have only paid 4s. an acre on the land at the end of their residential period, do you think that the land could be purchased back from them at the end of five years for 10s. an acre? No; for 15s. an acre.
2079. If the selectors had a railway from Casino to Grafton, and good roads from here to Casino, do you think they would be desirous of selling out? Not so many of them would be desirous of selling out. Some of them would remain, because they would have a prospect of doing something.
2080. Is timber-getting profitable at present prices? No; the men say they do not earn wages. I do not think the proposed railway would improve the condition of the timber-getters.
2081. What do you pay for your leasehold land? The run is all freehold now. I have thrown up the leasehold. The Department say that the leasehold is about 19,000 acres, but I do not think so.
2082. How much rent did they want for that leasehold? £59 a year.
2083. Did you consider that too high? Yes; it is mostly dense scrub, and it is worth nothing.
2084. Where do you generally dispose of your stock? Locally—at Lismore, Bexhill, Coraki, and Ballina.
2085. Do you send any stock to Tenterfield? No.
2086. If chilling works were established at Ballina or Byron Bay, would you send stock there for export? Yes; if the chilling works were found to be a success. At present the chilling works do not pay. The local market is better as the railway rates are too high.
2087. If a railway were constructed from Lismore to Grafton, would it improve the condition of the cattle market? It would equalise and improve it.
2088. Would you send cattle by train to Grafton? No; the country is open, and I would send them by road.

Mr. Robert Walters, road contractor and selector, Wyangerie, sworn, and examined:—

R. Walters. 27 July, 1892.

2089. *Mr. Collins.*] How far is your place from Casino? My selection is 27 miles from there. I have 700 acres conditional purchase and 320 acres conditional lease. I have had it about twelve months. I have improved it and cultivated about 20 acres; I have fenced in about 700 acres, and I have got about fifty head of stock—horses and cattle.
2090. How much stock would your holding carry in an average season? From 100 to 150 head.
2091. Can you give us any reason why a railway should be constructed from Lismore to Grafton? I cannot, from a local point of view.
2092. Are there many selectors in this vicinity? Yes; within 20 miles from here there are from 100 to 150.
2093. What do these people generally do? Some of them graze cattle; others carry on dairying, and others get timber. Those who combine dairying and farming are the most prosperous. They send their dairy produce to Sydney. They send cheese and butter to Sydney, by way of Lismore. We are having a cheese factory started within a few miles of my selection.
2094. Would a railway from Lismore to Grafton assist the people in this neighbourhood? I do not think it would.

Mr. R. Walters. 27 July, 1892.

2095. If the line were continued on to Maitland, would it be of any use to the people in this district? If the harbours were good the people would send their produce by water, otherwise dairy produce and fat stock would go by railway.
2096. What rent do the people pay here for their leasehold land? An average of 4d. and 5d. per acre.
2097. Do the people find that they can make dairying pay at that price? They do not all carry on dairying; some of them raise cattle.
2098. What is the financial position of the selectors in this district? I think they are all in a good position. Most of them have been living on the river for years. They have bullock teams and cattle.
2099. Do you think that the people who have taken up land here will keep the land when the term of residence is completed? In many instances they will keep the land. Their financial condition will compel some to sell, but I am acquainted with all the selectors, and I know it is their opinion that if they lose their present selections they will not be able to get others in this district. There is good land further back, but it cannot be taken up without means of communication. A railway from Lismore to Grafton would not assist people there. There is a large amount of country between here and Lismore, which is composed of splendid soil, and which could be farmed if there was communication, but the produce would go by Ballina or Lismore. Forty miles up the river to the head there is not a hill 100 feet high, and the flats are all fine alluvial land.
2100. Have the lessees of the runs obtained most of the best land? They have obtained a large proportion, but I was informed the other day that if there was any chance of settlement on the adjoining station of Kyogle they would be only too glad to cut up the station and sell or lease it.
2101. *Chairman.*] Is this portion of the Upper Richmond suitable for agriculture? Yes; the soil is fit to grow maize, potatoes, tobacco, and arrowroot.
2102. Would a line from Byron Bay to Tenterfield be of considerable service to this district? Yes; it would be of much more benefit than a line to Grafton.

THURSDAY, 28 *JULY*, 1892.

[*The Sectional Committee met at the Court-house, Lismore, at noon.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

John Cash Neild, Esq. | Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Dr. Jeremiah Joseph Doyle, Roman Catholic Bishop of Grafton, sworn, and examined:—

Dr. J. J. Doyle. 28 July, 1892.

2103. *Chairman.*] How many years have you resided in this district? Fourteen years.
2104. Would you kindly state to the Committee what progress has been made in the district since you gave evidence before the previous Sectional Committee which visited this district? During the greater part of the time I have been in Europe, but I think very steady progress has been made in the district. I cannot precisely say to what extent. I know the district is advancing rapidly.
2105. Has there been a considerable accession to the population? Yes.
2106. Have you an opportunity of noting the progress made by the people as you travel through your diocese? Yes.
2107. Has that progress been marked during the last three years? It has been very marked in the Richmond district during the last ten years.
2108. Are you able to state what is the financial condition of the residents between here and Casino, or along the line of the proposed railway? No; the land is good between here and Casino.
2109. Why are there so few settlers in that part of the district? Because it is principally in the hands of one proprietor.
2110. Do you think that the State would be justified in constructing a line of a railway from Lismore to Grafton, in view of the sparseness of the population between here and Casino, and on to Grafton? I think there can be no doubt about it so far as from here to Grafton is concerned, but only as a section of the North Coast Railway.
2111. Have you any preference as to the route by which this district should be connected with the table-land? Considering the amount of settlement in this district, I think the connection should be made at Tenterfield.
2112. Do you think that the Clarence River is likely to be required as a harbour for the Richmond district? No.
2113. Do you consider that the improvements now being made at the Richmond River Heads will provide a good harbour? Certainly, with Byron Bay.
2114. Do you consider that the interests of the people generally would be best served by connecting this district with the table-land, *via* Tenterfield? Yes; the majority of the people would be better served that way, because this district is vastly superior to the Grafton district, on account of the quality of the land, and the population is larger at present.
2115. Do you think that the settlement in this district is likely to be permanent? Most certainly—it is the best agricultural district in the Colony.
2116. Do you think that any present depression which exists in the district will pass away, and that settlement will become prosperous and permanent? Yes; I am so assured of the progress of the district, that I have made it my head-quarters.
2117. Does your diocese embrace the whole of the north coast district? Yes; from Port Macquarie to the Tweed.
2118. *Mr. Neild.*] What is the quality of the land south of Grafton down to the Macleay? The quality is very fair right down to the Manning, and on the whole it would be suitable for occupation by agriculturalists. There would be no engineering difficulty, because the land is very level on the whole of the coast right down to Maitland. Of course the rivers would be a considerable difficulty, but I should say the railway would be carried along the heads of the rivers.

Dr. J. J. Doyle. 28 July, 1892.

2119. What is the quality of the land between Casino and Tenterfield? It is very good as far as Tabulam. Twenty miles from there it is not so good. Near Tenterfield it is pretty fair land. There is valuable mineral land at Fairfield.
2120. Would you be disposed to favour the construction of a line from Lismore to Casino, and thence to Tenterfield, rather than the construction of a line from Casino to Grafton? Yes; except on the condition I have already mentioned.
2121. That is that it should, within a reasonable time, be carried southwards? A railway all the way to the south would suit me very well, but I should say the same simply as a matter of business.
2122. If the railway were made to Grafton, and stopped there for some time, would it be used by the people of the Richmond River district in order to travel to Sydney by the Clarence River steamers? I am afraid not; it would be too much of a round. There would be some passenger traffic, of course.
2123. Do you think a railway to Grafton would be used much for goods traffic? No.
2124. Assuming that Parliament deemed it desirable to construct only one line of railway from Lismore, would you prefer that that railway should be constructed by way of Casino to Tenterfield? Yes; if I were in Parliament I would be of opinion that that is the proper course to pursue in the general interests.
2125. Would such a line shorten the trip between Brisbane and Sydney? Yes; and a coast line, which I hope will be constructed in time to Maitland, would shorten it still more.
2126. Would not the broader gauge of the New South Wales railways enable the train to travel faster than it does on the Queensland lines? Yes; and the New South Wales people would travel farther in their own territory.
2127. Would that provide a satisfactory use for the Tweed railway? Yes.
2128. Have you often been detained at the Richmond River Heads when travelling? Now and again, but not more than one day. I have heard of longer detentions. Steamers have been detained as long as a week, or perhaps longer.
2129. If the proposed line were carried on to the Macleay, and the Hastings and Manning, would there be a probability of an interchange of products between the different places? Not very much—they are all maize-growing districts. The Richmond grows some things that the Macleay cannot—such as sugar.
2130. Do you think that a railway extended to Maitland or Newcastle would be used for bringing goods from Sydney in competition with the steamers? No; but it would be used largely by passengers, and it would shorten the distance between Sydney and Brisbane by considerably over 100 miles.
2131. How long have you been a resident of this district? Fourteen years.
2132. *Mr. Collins.*] What has caused the increase of settlement in this district? I think the district is capable of enormous expansion, because of the character of the land.
2133. Do you think that it is because of the railway which has already been constructed? No; if we never had a railway the district would advance.
2134. Are the holdings small or large? None are large in the sense in which you would understand them in the west.
2135. How has the land been taken up? By conditional purchase chiefly.
2136. What kind of produce is grown here? Maize and sugar-cane. Dairying is a new industry to a great extent.
2137. Is there much stock fattened for market? Yes; in the Casino district, particularly.
2138. Do the residents here get their fat stock from Casino? Yes. It would be scarcely worth while to carry the cattle by rail from Casino.
2139. Is there much land now open for settlement in this district? Yes; there are a great many large reserves.
2140. If the reserves were thrown open would the land be taken up? Yes; rapidly.
2141. What is the value of freehold land in this district? It is not so valuable now as it was a few years ago, on account of the depression.
2142. What has caused the decrease in value, seeing that there are railway and harbour works in progress? The general depression in the Colony and over speculation. Some individuals have taken up too much land.
2143. What is the size of the holdings, as a rule? From 40 acres up to 1,000 acres—in some instances a little more.
2144. On the large holdings do they carry on dairying and the raising of agricultural produce? Yes.
2145. Is much hay grown in this district? Not a great deal. They do not require any hay, because the grass is so good. If wanted, it could be grown very well.
2146. *Chairman.*] During the last three years has the progress of settlement been somewhat abnormal, owing to the throwing open of the leasehold areas? I would not be prepared to say that, because I do not think they have thrown open very much in this district.
2147. Do you think that the rate of progress which has obtained during the last three years is likely to be maintained? Yes.
2148. Do you think there will be sufficient population in the district in five years to allow of the proposed railway from here to Grafton paying working expenses and interest? I do not think that that will be the case from here to Grafton, unless the railway forms a portion of the North Coast Railway. Considering the progress which this district has made in a few years, I think the population will be almost doubled in ten years.

Mr. Francis Arundel Ridley, Government Land Agent, Lismore, sworn, and examined:—

Mr. F. A. Ridley. 12 July, 1892.

2149. *Mr. Neild.*] How long have you been resident in the district? I came first ten years ago, was absent from the district for seven years, and came back last October.
2150. In what capacity were you here previously? Surveyor's assistant. During my absence from this district I was almost wholly in Sydney.
2151. Are you acquainted with other country districts? I am acquainted with the districts from Sydney to the Shoalhaven River.
2152. Are you thoroughly acquainted with the Richmond River district? Yes. The greater part of the land in the vicinity of the river is under cultivation, mostly for sugar-cane and maize. It is under cane in the lower part, and maize in the upper.
2153. What is the land used for which is under artificial grass? Dairying and fattening cattle.

Mr. F. A. Ridley. 28 July, 1892.

2154. What is the value of the land which is used for artificial grass? The holders themselves put it down as worth £6 an acre. It costs about that much to put down the grass.
2155. How many acres are required to feed a beast? I have heard that three beasts can be fed to an acre, but I think it is more likely to be one beast to three acres.
2156. What will the unimproved open forest land carry? From 5 acres to 15 acres are required for a beast.
2157. Do you know the land between Casino and Grafton? Yes.
2158. Is the land there equal in quality to the land in the Richmond district? Certainly not. It is not equal to the land on the Runnymede and Kyogle runs.
2159. What would the Runnymede country carry? It ought to carry one beast to 5 acres. The greater part of the country between Casino and Grafton would only carry one beast to 10 acres or 20 acres.
2160. Is there much agricultural land between Casino and Grafton? No; except from about 8 miles to 10 miles from Casino.
2161. What is the quality of the land between Lismore and Casino? It is very superior grazing land. One-third of it within 10 miles on each side of the railway would be suitable for agriculture.
2162. If it were cut up into farms for agriculture would it carry a much larger population than at present? Yes; the land there would grow maize, lucerne, oats, and fruit.
2163. If a railway were constructed from Lismore to Casino, what would become of the produce that would be raised? The railway would probably carry all the lighter produce to Byron Bay. I have been at Byron Bay twice, and I landed once. I could not land the first time.
2164. Why? The sea was too heavy. That was before the jetty was constructed.
2165. Do you think that the construction of that jetty has obviated the difficulty of landing? Very nearly so. It prevents the necessity of boats going through the surf to get to the beach. The anchorage is all right. Steamers of from 500 to 600 tons can now lie alongside the jetty.
2166. If a line were continued beyond Casino, what would become of the produce raised at Myrtle Creek? Everything on this side of Myrtle Creek would go to Byron Bay. Beyond that point probably Grafton would be more convenient.
2167. Which is the best entrance—the Clarence River or the Richmond? The Clarence undoubtedly at present.
2168. Do the people of the Lower Richmond believe, with confidence, that the harbour works at Ballina will create a channel suitable for the traffic of steamers carrying produce? Opinions are slightly divided. A great number of people in the district have a wish to promote Byron Bay, and that indicates that they have not very sanguine hopes of Ballina being made a good port.
2169. Are you quite sure there is not a strong local feeling which induces people to prefer Byron Bay to the Richmond River Heads? A good many people are of opinion that Ballina will be made a good entrance.
2170. In that case, what will become of the trade of the Lower Richmond? It is expected that small steamers will be able to manage that sufficiently.
2171. Do you think that the construction of a line from here to Grafton would be availed of for the transit of goods from the Richmond to the Clarence for shipment? No.
2172. If the Clarence River were made available for oversea traffic to Europe, do you think the people of the Richmond River would then avail themselves of a railway to Grafton? I think they would first try very hard to get oversea traffic from Byron Bay.
2173. Is the feeling which exists between the inhabitants of the Clarence and Richmond River districts of the nature of pull devil, pull baker? There is a greater difficulty than that—that is, the long haulage of goods between here and Grafton, whereas it is comparatively short to Byron Bay.
2174. Would a railway from Lismore to Tenterfield, rather than from Lismore to Grafton, help Byron Bay? It would probably bring a great deal of traffic to Byron Bay, which will provide an outlet for the Tenterfield produce.
2175. What produce do you think would be sent from Tenterfield? I believe cereals are produced there.
2176. Do you think there would be much wheat shipped at Byron Bay, seeing that New England does not produce one-third of the wheat required for its own consumption? A considerable number of sheep are brought down from Tenterfield to this district for killing.
2177. How far do you think it pays farmers to draw their produce to steam communication by land or water? They draw cedar 30 miles and make it pay. It ought to pay as well to carry maize as to carry cedar.
2178. How far is the local produce drawn to get it to the steam droghers? Twelve or 15 miles.
2179. Is all the land available for agricultural settlement in the Richmond Valley occupied for a distance of 12 or 15 miles back from water carriage? Not the whole of it; 371,300 acres are alienated in the district.
2180. Do you mean the boundaries of the Richmond River electorate? No; I mean the land district. The boundary starts at Byron Bay, and includes the bay. It then goes westerly about 25 or 30 miles; southerly to about 6 miles beyond Lismore, and it includes about one-third of the country between here and Casino; then it goes south-easterly to almost the junction of the river at Coraki; then southerly down to Bungawalbin Creek, about a distance of 12 miles, where it joins the boundary of the Grafton district; and then it goes easterly to the coast. I estimate that the total area of the district is 553,000 acres, and the alienated land, including conditionally-purchased land, amounts to 371,300 acres. The reserved land amounts to 100,000 acres, and the vacant land to 81,700 acres.
2181. What is the character of the vacant land? About 40,000 acres of it consists of special area land open for sale at from 30s. to 50s. an acre. It is scrub land. Ten thousand and fifty-six acres of that land have been taken up at prices ranging from £1 10s. to £15 an acre. That country—the £15 an acre—was taken up for cane-growing.
2182. In reserves and unalienated land there appear to be 181,000 acres? Yes.
2183. Is that largely scrub land? About half. A good deal of the open land is swampy, but the greater portion of it could be drained.
2184. In view of the fact that lucerne land on the Hunter sells at £100 an acre, would it pay to drain the swamps in this country for lucerne? Yes; if the land is suitable for lucerne; but I do not think it is.
2185. What becomes of the young people of this district—do they take up land for settlement? A large number of them remain here. They very often work on their fathers' selections.

Mr. F. A. Ridley. 28 July, 1892.

2186. Do they do so when they get married? Yes. I have known farmers holding 400 acres give 40 or 50 acres to their sons when they got married.
2187. In that way is the district becoming more thickly populated? Yes.
2188. What is the nature of the timber on the forest reserves? There is a considerable amount of cedar still left.
2189. Can anyone obtain a license to cut timber on those reserves? Most of them are available for licenses. I think 10s. a month is paid for a license, and there is a royalty charged on each 100 feet of timber.
2190. Are you acquainted with the country north of Byron Bay? Yes. The timber there is of good quality. There is cedar and pine, but the cedar is getting very scarce.
2191. Would the railway at present in course of construction afford shipment for that timber at Byron Bay? Yes.
2192. What is the value of cane land on the river, which has been already ploughed? Good cane land can be got for £10 an acre. Maize land can be got for £6 an acre.
2193. Can you give any reason why the land at the Clarence brings a much higher rent than land in the Richmond River district? A great number of people are willing to sell out on the Richmond.
2194. Why? Because they are hard up—they have mortgaged their holdings.
2195. What is the yield of cane per acre? About 30 tons.
2196. What is the yield per acre of maize? Between fifty and sixty bushels.
2197. What price is obtainable for cane? From 10s. 6d. to 12s. per ton—that pays very well.
2198. How is it that the people get into difficulties when they obtain some of the largest crops in the world? It is a difficult question, which I have never been able to solve, but it is a fact that those who own the rich land are in difficulties.
2199. If people wish to sell out, what do they intend to do? Some leave the district and try elsewhere.
2200. Is the country as good here for agriculture as it is in the south coast district? It ought to be better, but more failures are made here because experiments are tried in cane and maize.
2201. Have experiments in cane and maize failed? Crops were put in in places where they did not prove to be suitable. I think that one of the great reasons is that we get too much rain.
2202. Do you think that crops fail on account of the over-supply of rain? Yes; in many instances.
2203. Do crops fail on the Tweed? I understand they do for the same reason; and partly because of ignorance of farming. That is one great cause of failure. Many of the people here have known nothing of farming of any description—many of them have been labourers on the roads and mechanics of different descriptions.
2204. Where farming has been carried on rationally have there been failures? I do not think so.
2205. With an experienced class of men would the output of produce be largely increased? Yes.
2206. Where are such men to be got? Some of the best farmers have come from the south coast district; they had a little knowledge before they came here.
2207. If the railway were extended to Maitland would it enable a better class of farmers to come along here? It would help, but the great difficulty would be that nearly all the good land is held by people who wish to make large profit by selling it, so that any stranger would be handicapped.
2208. Are we to understand that there has been a good deal of settlement in the Lismore district for the purpose of speculation rather than of agriculture? That is so; that has been the case all over the Lismore district, particularly between here and Byron Bay. That was always looked upon as the route of the railway line.
2209. Has the form of colonial industry known as land grabbing been extensively practised? Yes; it has been very profitable to some, but ruinous to others.
2210. If the railway were carried to Tenterfield, instead of to Grafton and Casino, would that open up a greater area of good land than the extension of the line to Grafton? It would if the line stopped at Grafton. I understand that on the other side of Grafton there is better land than between here and Tenterfield, but that up to Grafton there is not.
2211. Is there much dairying carried on in this district? A great deal.
2212. Is it a growing industry? It went ahead very rapidly for a time; it is growing steadily now.
2213. Is it carried on as a joint stock concern or by private individuals? By both; there are two or three dairying companies. They send most of their produce to Sydney.
2214. What is done with the fruit that is grown here? There is very little grown here. It is the worst district in the Colony to get fruit. It grows well, but is terribly affected by blight—it is nearly all diseased in some way. Citron fruits grow well. From this side of Casino it seems to be too hot for stone fruit, but between Casino and Grafton stone fruits seem to grow better.
2215. Have grapes been grown in this district? Yes; mostly by Italians.
2216. Has any attempt been made to produce wine? Yes; at the New Italy settlement.
2217. How is that settlement doing? It is supporting itself very well.
2218. Are the people there anxious to clear out? No.
2219. Are the Italian settlers experts in the growth of fruits and vines? They seem very successful with grapes. I do not know whether they do much with other fruits. There were some experts amongst them.
2220. Are there any root crops grown in this district? Very few.
2221. Do potatoes keep after they are dug? Yes; but so very few are grown that they are consumed rapidly, and there is no chance of keeping them. Supplies are got from Sydney; vegetables are very scarce. We have to depend upon the Chinese gardens principally.
2222. If there was a regular line of steamers at Byron Bay, would passenger traffic go to Byron Bay as well as to the Clarence? Yes; but there is one drawback at Byron Bay—that is, the means of getting on board. They sometimes have to take advantage of a sudden roll of the steamer to spring on board, and in the same way they have to spring off. There is a heavy swell going into the bay, and one requires to be something of an acrobat to get on and off.
2223. Under these circumstances there does not promise to be a great development of the shipping trade at Byron Bay? Those conditions only prevail during easterly gales. When the wind is from the west and south it is comparatively smooth, and quite good enough for anybody to step on board.
2224. Are we to understand that the people of this district are indifferent with reference to the construction of a railway from here to Grafton? Certainly; it would do very little good to the people on this side of the district.

Mr. F. A. Ridley. 28 July, 1892.

2225. Would most people be in favour of an extension of the line to Casino? Undoubtedly; with a view to bringing the Casino trade to Byron Bay.
2226. Is not the most expensive part of the proposed line between here and Casino? Yes.
2227. *Chairman.*] What is the average size of the conditional purchases in this district? They vary from 40 acres up to 3,000 acres.
2228. How do they amount to 3,000 acres? By buying out other selectors.
2229. What is the proportion of cultivation? Probably not more than 15 per cent.
2230. Why is there so little cultivation? The greater part of the land is held for speculation, or where the selector has not been able to clear it.
2231. Is that one of the causes of depression—that men have over-reached themselves in endeavouring to secure too much land? Undoubtedly all their capital has gone in trying to buy the land instead of developing some portion of it.
2232. Are many of those holders mortgaged to banks and storekeepers? Yes; a great many of them.
2233. Are they likely to pull themselves out of their difficulties if a railway is constructed so as to give them access to a market? I think that would help all the industrious farmers out of their difficulties. There are some men who would never get out of their difficulties.
2234. Would the owners of conditional purchases be likely to be helped by a law which would allow them to sell a portion of their selections in order to redeem the remainder? I think so.
2235. With such a law and with a railway, do you think that the people would be able to retrieve themselves? Yes.
2236. Then the depression will not be very serious in the end? No; the district is quite good enough to recover itself.
2237. *Mr Collins.*] How would a railway suit those people? It would enable them to go in for other products. There are many things, such as fruit, which they could grow but which they cannot get to market at present.
2238. Is not water carriage much cheaper than railway carriage? At present if they sent fruit and other goods to Sydney they might be stuck up at the bar at Ballina.
2239. If the harbour is improved would it not be cheaper to send goods by water than by rail? Yes.
2240. *Chairman.*] Pending the making of a certain channel at the Richmond River Heads, and the construction of a harbour at Byron Bay, do you think that a railway from Lismore to Grafton would be an advantage to the people of this district in opening up a sure port at the Clarence for them? It would in very rough weather, but at present Byron Bay is good for three weeks out of a month.
2241. Do you consider that it is only when Byron Bay is inaccessible, and when vessels are unable to get out of the Richmond River Heads, that people would utilise the railway for shipping produce at the Clarence? Yes.
2242. How much a year is paid in this district for conditional leases? From 2d. up to 1s. per acre.
2243. What sort of land is got at 2d. an acre? Grazing land.
2244. Was £15 an acre paid for Crown land? Yes. It was conditionally purchased. It was special area land.
2245. Are persons who have conditionally purchased land paying their instalments regularly? I believe they have applied for an extension of time. They think they have paid rather too much for the land.

THURSDAY, 28 JULY, 1892.

[*The Sectional Committee met at the "Palace Hotel," Coraki, at 8 p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

John Cash Neild, Esq. | Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. William Yabsley, saw-mill proprietor and grazier, sworn, and examined:—

Mr. W. Yabsley. 28 July, 1892.

2246. *Chairman.*] Where do you carry on business? My saw-mill is at Coraki, and my cattle run is in the parish of Coraki. My holding runs in a westerly direction, between the Richmond and the Clarence Rivers.
2247. What are your views with regard to the construction of a railway from Lismore to Grafton? I submit to the Committee the plan of a route which I contend would be better than the route now proposed. It would go through better country, and would serve the district better in every way with regard to population, trade, and commerce.
2248. From what point would your proposed route start? From Lismore; and it would go down the west side of the North Arm. It would continue on to Gundurimba. It would then go on a straight line to Codrington on the South Arm of the Richmond River, or the Casino branch. It would cross from the north to the South Arm at those two points. It would cross the river at Codrington by bridge, and then go down to Coraki. From Coraki I would go in a direct line to Maclean, until we came to the Coraki coal mine at Moonebar. That would be all through settled country. From Moonebar I would go direct to Maclean, on the Clarence River. That would connect the Richmond and the Clarence Rivers by rail, instead of going on to Casino, and from thence to Grafton. Then I would propose to construct another line from Codrington to Casino, by way of Tomki and Irvington. I would then connect Casino with Tenterfield. That would be the most useful and economical line of railway to construct. It would utilise the railway in course of construction, and when the line is constructed to Maclean it could be continued along the coast to Newcastle.
2249. Would it be possible to build a bridge to Maclean? That would be a question to be decided by engineers. At Maclean there are good banks on each side of the river. At Grafton there is a bad bank on the north side of the river.

Mr. W. Yabsley. 28 July, 1892.

2250. What kind of country would the proposed line run through on the west bank of the North Arm of the Richmond? Very good country. It is rich alluvial soil skirted on one side by a spur of the range, and on the other side by the bank of the river. It would come down in sight of the river almost all the way, through rich farming country. At some places it would be half a mile from the river, and in other places it would be closer.
2250½. Would not that line have to compete with the cheaper water carriage on the North Arm of the Richmond River? We would require to bring the line nearer the river to avoid expense in going over high difficult country. The competition will then exist over 3 miles.
2251. Why do you want to go to Codrington? Because it is a better route for constructing a cheap line. The river could there be crossed easily. It is free from flood, and it is on high land.
2252. Would you not have to make a detour round the south bank of the South Arm to Coraki? Yes; Codrington is 3½ miles away.
2253. Then you would have a bend in the line to serve Coraki? It is comparatively straight. We touch Codrington in going to Lismore by road. We would cut off a peninsula on the river.
2254. What population would you serve after you leave Coraki, and go to Maclean? All the population from here to Moonebar, a distance of 10 miles. There is a good deal of population along there—a farming population. There is a family every half-mile on both sides of the river.
2255. Is there any population at Moonebar? Yes; there are Italian settlers there at a place called New Italy.
2256. Is Moonebar upon one of the branches of the Richmond? Although it is marked the South Arm on the maps, it is known locally as Bungawalbin Creek. It is navigable for 25 miles from the mouth.
2257. There again would you not be in competition with water carriage? For a short distance we would, until we left the water to cross to Maclean.
2258. From New Italy to the Clarence, opposite Maclean, is there much settlement? No; it is not very good country. It is open hardwood country, with ironbark and spotted-gum growing on it.
2259. Would it be possible to work large steam punts in order to carry the railway across the river at Maclean, instead of building a bridge there. I think it would be very suitable for such a purpose.
2260. Having taken the railway to Maclean, where would you propose to go then? Either to South Grafton or to Coff's Harbour.
2260½. Why would you like to see this line constructed to Maclean? As a part of the North Coast line, in preference to a line from Lismore to Grafton, because it would serve the bulk of the people on the Richmond and Clarence Rivers. A railway from Casino to Grafton would not serve the bulk of the population.
2261. Would the construction of the line which you propose be of advantage to this district by insuring your communication with the good harbour at the Clarence River in all weather? No; we would seldom avail ourselves of the advantage of travelling to the Clarence, because the distance and the expense would be greater than by using our own river. We have weekly communication with Sydney now, and the freight is from 10s. to 15s. a ton. It would cost 10s. per ton from Coraki to Maclean.
2262. Is communication with Sydney always sure by way of the Richmond River Heads? Not always; but it serves the purpose of a good many, just as well as the other route would. We still have the option of going across to the Clarence River by the coach, with passenger traffic. We would never send goods by railway.
2262½. Would you recommend this route only as a portion of the North Coast Railway, in preference to the route proposed, *via* Casino and Grafton? Yes.
2263. Would not the branch line from Codrington to Casino make a very awkward means of communication between the people of Lismore and Casino? It would not be 4 miles longer than the present proposed route.
2264. Would it be fair to handicap the people of Casino for all time with an additional distance of 4 miles? Yes. In the first instance, the line will be more cheaply constructed, and there will be little settlement along the present proposed route between Lismore and Casino. There are a few large holdings along that line.
2265. If the North Coast Railway were constructed to Maitland, would the people of Coraki and this district be likely to obtain their supplies from Sydney by rail instead of by water? No.
2265½. Then what would be the good of the North Coast Railway? We do not ask for it; but it would be of service to all the coast rivers. The land on the coast rivers is the richest part of New South Wales.
2266. Would passengers use the railway in preference to water in going to Sydney? I think so; but the greatest traffic would be by water.
2267. When the bar at the Richmond Heads is in bad condition, would there be any goods traffic along the North Coast Railway? Not very much. Bad weather here does not last more than a week or two.
2268. *Mr. Neild.*] Would your proposed line of railway pass through good land all the way? No; with the exception of the land between New Italy and Maclean there is fair land, but not good land.
2269. Between Coraki, Lismore, and Casino, would it pass through good land? Yes; the whole of the way. It would go through 22 miles of good land.
2270. Is that land in private hands? Yes; it is worth £5 an acre on an average. It is not all cane land; it is maize land. Some of the land is worth £20 an acre.
2271. Would the owners of the land be willing to accept £5 an acre as compensation for the land taken for the railway? I think so.
2272. Are you aware that land on the Clarence River lets for £2 per acre per annum for growing maize? We let land here for £1 per acre per annum for maize. These are choice places.
2273. What do you think the State would derive from an expenditure of £750,000 on the construction of a line which would not be used by the people of the district for the carriage of goods, and which would only be used by passengers who are afraid of getting sea-sick? The line would be used at once between here and Casino, because the navigation of the river is often obstructed by floods and landslips. I do not say that my proposed line will be of great advantage to the State, but it will be more advantageous than the Lismore to Grafton railway.
2274. Is the Richmond River bar worse than it used to be? No; it is better.
2274½. *Mr. Collins.*] Is some of your run abandoned? Yes.
2275. For what reason? Because the rent was too high. The rent fixed was 5⅝d. per acre.
2276. Would the railway which you suggest run through any of this land? Yes; for about a quarter of a mile. The abandoned land would be within 2 miles of the railway. About 4,000 acres have been abandoned.
2277. How far would the 4,000 be from Coraki? Four miles.

2277½. If the railway ran through that land, would it increase its value? It would increase its value like other land, but I would not then give 5s. per acre for it. Mr. W. Yabsley.
2278. Who uses the 4,000 acres of abandoned land now? It is not used at all; it is open for selection. 28 July, 1892.
2279. Does some of your stock go on the land? Yes.
2280. Do you use it without paying for it? Yes. I wish to correct my evidence by stating that the abandoned land, being on the other side of the river at Bungerubba, would not be increased in value by the construction of the railway. I wish to point out, in addition to what I have already stated, that Coraki is the nearest deep water to the existing Northern Railway. I desire to hand in the following statement:—

Steamers—
Trading on the waters of Richmond River, exclusive of ocean steamers.

	No. of Steamers.	Tonnage (about).
C.S.R. Company	9	314
Government	2	47
T. Fenwick	8	317
Allen & Co.	4	41
W. T. Yeager	2	60
N.C.S. Company	3	80
W. Yabsley	1	14
G. A. Jefferies	1	8
G. Cotte	1	40
Kearle and Kearle	2	9
Walton	1	10
Bond	1	6
Brown & Co.	1	4
Allen	1	3
Leigh	1	10
Meston and King	1	10
Ford	1	2
Totals	39	827

Punts—
Trading on waters of Richmond River.

	No. of Punts.	Tonnage (about).
C.S.R. Company	69	4,140
Government	13	640
Fenwick	1	60
Bagot	1	20
Yeager	2	200
Denning	1	30
Yabsley	3	170
Gollan	1	40
Martin	1	20
Kearle and Kearle	2	80
M'Pherson	3	90
Bond	2	80
Crosby and Marquard	1	40
Leigh	4	120
Meston and King	5	150
Leeson	4	120
Totals	113	5,990

Mr. Christopher John M'Rae, storekeeper, Coraki, sworn, and examined:—
2281. *Mr. Collins.*] How long have you resided at Coraki? Six years, and seven years on the Richmond altogether. Mr. C. J. M'Rae. 28 July, 1892.
2282. Can you give the Committee any information with regard to the proposed railway from Lismore to Grafton? It would not benefit the Lower Richmond at all. If a north coast scheme of railway was contemplated the suggested line from Coraki to Maclean would be the best route. Between the two rivers 30 miles would be served. A connection between the Clarence and the Richmond would be of very little, if any, benefit, but as part of the north coast scheme the proposed new route would be the best. It would go through fairly good country, and it would present few engineering difficulties. There is not likely to be any interchange of products between the two rivers, but everything is to be gained by a connection with the table-land, because there would be an interchange of products. An advantage of the Lismore-Coraki-Maclean route would be that it would tap coal-bearing country at Mooncbar. There are mines now being prospected there within a mile of the place where the line would traverse.
2283. In the interests of the country, do you think it would be advisable to construct either a line from Lismore to Maclean or from Lismore to Grafton? No. It is out of the question to think that the Clarence will ever be a port for the Richmond district, because the freight and continued handling of goods would be too expensive. I have prepared the following figures in order to show the regularity of communication between the Richmond and Sydney, and the chief items of export.

List of General Exports from Richmond River from 1st April to 1st July, per regular steam traders, thirty-four trips.

		Estimated percentage manifested from Coraki.
Logs	717	40 per cent.
Bags sugar	3,082	.....
Bags maize	17,768	50 per cent.
Cases eggs	431	30 ,,
Kegs butter	2,434	.....
Hides	2,808	45 per cent.
Pigs	2,556	30 ,,
Coops fowls	135	30 ,,
Feet sawn timber	600,000	75 ,,
Sundries—Cheese, honey, &c.	1,482	30 ,,
Estimated average percentage manifested from Coraki		33 per cent.

From 26th April to 26th July, entrances to the river—58 steamers, 14 schooners.
Largest steamer trading, "Tomki," 590 tons, gross tonnage, made twenty-seven trips for past half-year.

It may be as well to point out that those three months are generally considered to be the slow business season, and they followed one of the most disastrous floods we have had, yet communication was kept up during the worst three months of the year along the coast.
2284. Do you think that with the improved condition of the river, railway communication is not necessary between here and Grafton? Certainly.
2285. What do you think of the financial position of the holders of property about here? I think that the Richmond River in the first place was pioneered by men of no capital, and they have had to contend with a great many difficulties. Any depression now on the river is due to the fact that people at first rushed the land too freely; they secured more land than they were well able to hold, and the land-owners have got all they can do to pay the interest on that land. Eventually, I think that this will be a very rich district, with fair seasons.
2286. What do they produce in the district? Sugar, maize, butter, dairy produce generally, and a good deal of cheese.
2287. Do you get any produce from Sydney? Yes; all my potatoes, chaff, bran, and pollard. I buy cheese locally. Hay is grown in the district, but the land seems to be too rich for oaten hay.

Mr. C. J. M'Rae. 28 July, 1892

2288. If you had a good road from Coraki to Casino, would not that enable the Casino people to use the river just as well as the people of Coraki use it? They would have 20 miles of land carriage.
2289. If the road were made from Tatham to Casino, would that enable the Casino people to use the Richmond River, and send their produce to market? Yes.
2290. Is there any communication between Coraki and Byron Bay? Not at present.
2291. Would you use Byron Bay if the Richmond River were not accessible? I cannot conceive that the Richmond River will ever be worse than it is at present. When Sir John Coode's plan is carried into effect, I think the Richmond River entrance will be one of the safest on the north coast.
2292. What is the average time that goods have been delayed? Under ordinary circumstances I should get goods from Sydney in about forty-two hours.
2293. *Chairman.*] Are not potatoes grown very largely in the Clarence district? I believe they are.
2294. If a railway were constructed from Lismore to Grafton, would you not be able to get potatoes from the Clarence? Yes; if the freight was not too much.
2295. Would not the route which has been submitted to-night to the Committee, compete for a great distance with water-carriage on the various arms of the river? Yes; so far as it follows the river.
2296. Would it be wise for the State to construct such a line? No; only so far as it would be the best means of connecting two given points.
2297. Do you think that such a railway would only be justifiable as portion of a great national line to serve the entire north coast? Yes.
2298. *Mr. Neild.*] Do you think that at the present time there is no necessity for the construction of a great national line? Yes.

Mr. James Stocks, grazier, Canniba, near Lismore, sworn, and examined:—

Mr. J. Stocks. 28 July, 1892.

2299. *Mr. Neild.*] How long have you been a resident of this district? Thirty-two years. I have been a storekeeper and grazier.
2300. Do you think that the goods and passenger traffic upon the proposed line between Lismore and Grafton would be likely to pay interest on cost of construction, and working expenses? Certainly not; it would not pay, even approximately, in the near future. In my opinion the line would not be largely used.
2301. Would you advocate its construction in the public interests? No. The construction of such a line would not be justifiable from a commercial aspect, but the North Coast line has been proposed by the Government for national defence purposes. On that aspect of the question I do not entertain any opinion at all, and I do not wish to say anything, because if the Government have arrived at such a conclusion they ought to be prepared to give sufficient reasons for their proposal. If they do not see that there is sufficient justification for the railway from that point of view, I have nothing to say. I have no hostility to the line simply on the ground of its being a connecting line.*
2302. Would the proposed railway line from Lismore to Grafton be largely availed of by passengers? I do not think it is probable. Persons on the lower part of the river would travel by sea, and persons travelling to Sydney and back, from the upper portion of the district, if they did not go by sea *via* Ballina, would travel *via* Tenterfield. I do not consider that the line from Lismore to Grafton or the proposed line from Lismore, *via* Coraki to Maclean, is justifiable from a commercial aspect. I would leave the responsibility with the Government.
2303. Would you favour a connection with the north line on the table-land? Yes; there are good commercial reasons for that. A line from Tenterfield to Lismore *via* Casino would be direct, and would ensure the easiest and most convenient mode of shipping from the interior of the country; then the interchange of commodities between the two districts would be permanent. Then, with respect to cheapness, let us take the distance from Casino to the coast in a direct line, as compared with the proposed line from Lismore to Grafton. From Casino to Ballina by water is a distance of from 70 to 75 miles—by land, 40 miles; it is 70 miles from Casino to Grafton. From Casino to Coraki, where all produce can be shipped, the distance is 20 miles, and Casino to Lismore is 20 miles; so that, practically speaking, if the line for traffic was from Casino to Grafton, there would be a distance of 50 miles by rail lost, presuming that communication be made between Casino or Lismore and Coraki by railway. Produce could be shipped with perfect safety, and with as much regularity at Coraki or Lismore as at Grafton. In the event of wool being sent down from the tableland, if it could not be shipped at Ballina to go by oversea steamers, there is nothing to prevent its being shipped at Byron Bay, distant from Lismore not more than 30 miles, and under 50 miles from Casino. Byron Bay at present is in a primitive state, but, as the surveys made by the Imperial Government, and subsequently by Captain Howard, show, a breakwater could be taken out to the Juan or Julia islands, which would be a perfect protection in all weathers. If that were deemed too expensive it would be possible to make a breakwater on the reefs within the bay, as shown by Captain Howard, which would provide for all the shipping in that part of the country for hundreds of years. Ocean-going vessels could trade there as well as at Port Jackson.
2304. *Chairman.*] Granting that a line from Grafton to Lismore were constructed, would Coraki be served if a line were run straight from Coraki to Casino, joining the line to Grafton? That would give an outlet to the upper portion of the river, and there is a large area of superior land there.
2305. Would it be any advantage to be connected with Grafton by rail? It would not, commercially.
2306. Is it a fact that the storekeepers here were short of flour and bread on one occasion, and had to obtain it from the Clarence? Yes, for a few days. I have had practical experience on that subject for thirty years. I have had vessels bar bound at Ballina for three months at a stretch, but they were all sailing vessels; there were twenty-five to thirty all trading here; but that was from fifteen to twenty years ago. Owing to the changing of the channel it was found very uncertain, and the vessels could only get out with a westerly wind. When the improvements designed by Sir John Coode are carried out at the Richmond River entrance, there is not the smallest probability of any trouble on that score.

FRIDAY,

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* NOTE (*on revision*):—So far as that portion of it, Grafton to Casino, is concerned, I never did favour its construction, nor do I know anyone else living in the district of Richmond River who ever did so, under the belief or representation that it would pay for a very long time to come; but the Government having designed and proposed it as forming part of the North Coast railway, for defence purposes, I presume they had good and sufficient reasons for its proposal; and on that aspect of the question I have nothing to say, unless it be that I have no hostility to the line, simply as a connecting portion of the North Coast railway.

FRIDAY, 29 *JULY*, 1892.

[*The Sectional Committee met at Woodburn, at* 10 *a.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).
John Cash Neild, Esq. | Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. William Gollan, farmer and sugar manufacturer, Woodburn, sworn, and examined:—

Mr. W. Gollan. 29 July, 1892.

2307. *Chairman.*] Where is your farm situated? On the north side of the river.
2308. How long have you resided here? Twenty-six years.
2309. Has the rise of this place been rapid? Yes; within the last seven or eight years. Ten years ago there was not a house on this side of the river, but this place was measured as a Government township, and the people took up the land. The traffic to and from the Clarence is the main cause of its progress. People come by steamer from Lismore and Ballina, and take coach here for Chatsworth and the Clarence.
2310. Why do they go to Sydney *via* the Clarence? The entrance to the Richmond River is so uncertain that passengers are afraid of being detained.
2311. Are there larger and better steamers on the Clarence? The steamers here are quite good and large enough. When the weather is good the people would prefer to go from this river, but when they are pressed for time they prefer to go by the Clarence.
2312. Is the road in a very bad state between here and Chatsworth? Yes.
2313. Have you any interest in the construction of the proposed railway from Lismore to Grafton? Not the slightest. I would prefer to see a good road or a light tramway made from here to the Clarence. It would be absurd to make a railway from Casino to Grafton. It would not connect the principal parts of the two rivers, because it would be too high up. We would never send produce by Lismore to be shipped at the Clarence.
2314. Supposing it formed part of a national line of railway going on to Maitland, would you approve of it? No; I would not approve of its going to Grafton. It would suit the interests of the people better if it were taken from Woodburn to Coraki and on to Maclean. Then Casino should be connected with Tenterfield. The distance from here to Chatsworth is 26 miles.
2315. How far is it from Chatsworth to Maclean? Nine miles.
2316. Would it be wise to obstruct the navigation of the Richmond and Clarence Rivers by expensive bridges? You would not require to do so. The railway would go from here to Coraki, and it would cross one of the arms of the river there, in going to Lismore.
2317. Would you run the railway along the water? Yes; going to Coraki. It would make a bend, but it would be level country all the way.
2318. *Mr. Neild.*] If a line were made from Lismore to Grafton via Casino would passengers from the Richmond River to Sydney travel by that railway in preference to using the line of coaches between here and the Lower Clarence? Nobody would ever go from here to Lismore to travel by the railway. We would go across to the Clarence from here, in half the time.
2319. If a railway or tramway were constructed from here to the Lower Clarence, would goods be sent that way? I believe they would on certain occasions.
2320. In the public interest do you think a railway from Lismore to Grafton should be undertaken at present? It should not be undertaken as far as the lower part of the Richmond River is concerned. I would not say anything against the upper part of the river.
2321. Do you think the railway would be used by passengers to such an extent as to enable it to pay interest on the cost of construction, and working expenses? No.

Mr. James Betteridge, coach proprietor, Woodburn, sworn, and examined:—

Mr. J. Betteridge. 29 July, 1892.

2322. *Mr Collins.*] How long have you resided here? Twenty-seven years.
2323. Would the Lismore to Grafton railway be of any service to this district? No. I do not think that such a railway would ever pay expenses.
2324. Where do you think such a line should start from? I do not think it will pay to connect the rivers at any point.
2325. Do you run coaches between Woodburn and Chatsworth? There are two coaches to Harwood and two to Chatsworth, and they both run on the same road.
2326. Do many passengers travel? About eighteen per week; that is altogether.
2327. We have had evidence that there are about 120 passengers? That is a mistake.
2328. Why do those passengers travel from here to the Clarence? The Sydney passengers travel, on account of the Clarence bar being much better than the Richmond bar.
2329. If the Richmond bar were improved according to Sir John Coode's plans, would those passengers still go by the Clarence, or would they go by the Richmond? A great number of the passengers would still go to the Clarence. There is a daily trade between here and the Clarence. If the Richmond River were improved the Sydney passengers would go by the Richmond River.
2330. *Chairman.*] How many passengers do your coaches carry? Eight.
2331. How often do you run them? Twice a day from each end.
2332. Then on some days there must be no passengers at all? Yes. There are two lines of mails—one is called the daily mail for the river, and the other is called the Sydney mail.
2333. Are all the coaches owned by you? Yes.
2334. Although you have accommodation for nearly fifty passengers a week, do you say that you are only patronised by an average of eighteen? Yes. There is not much alteration in the trade.
2335. Are the passengers generally residents of the Clarence and Richmond districts? They consist of tourists, commercial travellers, and a number of residents.
2336. Do you know any cases where passengers come from Ballina to take the steamer from the Clarence River to Sydney? Yes; nearly every trip.
2337. Have you ever heard of the people on the Richmond River running short of bread and flour, and having to get supplies from the Clarence? Yes, to my knowledge that has happened several times. That was caused by the Richmond River bar being closed.

FRIDAY,

FRIDAY, 29 *JULY*, 1892.

[*The Sectional Committee met at the Court-house, Ballina, at 4·30 p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).
John Cash Neild, Esq. | Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Thomas William Keele, M. Inst. C.E., Supervising Engineer, Railway Construction Branch, Department of Public Works, sworn, and examined:—

Mr. T. W. Keele, M. Inst., C.E. 29 July, 1892.

2338. *Mr. Neild.*] Are you the supervising engineer for the north coast district? Yes. The limits of my district are from here to the Queensland boundary, but they do not include the Clarence at present. I have occupied this position for three years, and my experience of the entrance to the Richmond River has been limited to that time.

2339. During that period has there been much alteration in the depth of water on the bar, or in the facilities for entering and leaving the port? Yes; the channel has shifted bodily south, owing to the works.

2340. Do you attribute whatever change has taken place, to the works which have been carried out, and not to the floods? The floods have certainly had a good deal to do with it.

2341. Would the floods, apart from the works, have made the change? Certainly not.

2342. What are the works which have been carried out? A northern training-wall for a length of 1,420 feet, and a southern training-wall for a length of 2,050 feet. Those are the whole of the walls that have been carried out. We have constructed two wharfs, and we have started a bridge in connection with the work. About £55,000 has been already expended. Mr. Darley's total estimated cost of the work is £356,350. We have taken three years on the works up to the present, and the length of time which the execution of the works will occupy, will depend in a great measure upon the manner in which we are supplied with plant. If the plant which has now been ordered were placed on the ground within a reasonable time, say six months, I see no reason why the first section of the works should not be completed in three years from the present time.

2343. What will constitute the first section? In reality there is no limit, except the extreme end, as shown on the plan, to the carrying out of this work. Sir John Coode limited it at first to 2,500 feet of breakwater on the north side, and 4,500 feet of a training-bank, and 2,000 feet for a breakwater on the south side. That was the first section of the work according to Sir John Coode. But the whole work now authorised extends to 2,000 feet of breakwater on each side, beyond that quantity.

2344. What would you consider to be the time which will probably be occupied in the execution of the entire work? It would be very hard to say. The 2,000 feet extension of both breakwaters might take four or five years additional. It is very hard to say how long it will take to construct that portion.

2345. The execution of the work in full may occupy from seven to eight years? Yes.

2346. Does that estimate include an allowance for the inevitable accidents which appertain to the carrying out of works of this description? Yes. Sir John Coode anticipated that we should get at least 12 feet of water at low water by the time we reached the limits of the first section. When the entire work is completed Sir John Coode expected to get 17 feet of water at low water.

2347. Do you consider that the works already carried out have improved the entrance? There is no doubt about it. The works which have been carried out up to the present time have done what it was anticipated they would do. They have forced the channel out in a straighter direction than was the case originally.

2348. Consequently, have you reasonable grounds for expecting that a further prosecution of the work will make the entrance suitable for vessels of a draught of about 17 feet or more at high water? Yes.

2349. Will that make the river suitable for oversea shipping? Yes.

2350. Will you be able to afford facilities for steamers of 3,000 tons? Yes.

2351. Have you been hampered in the carrying out of the works by insufficiency of plant? Yes; we might have gone ahead very much faster.

2352. What kind of plant are you short of? We are short of punts now; that is the principal trouble. We could use six additional punts. At present we have only four. With ten punts we could keep our tug profitably employed.

2353. As you extend your work further towards rough water will it not be necessary to proceed with the work rapidly? Yes. We are providing for a crane on each side. A 24-ton crane is to be erected on each wharf, and the punts from the quarry at Riley's Hill will discharge the large stone at those wharfs.

2354. Is it proposed to carry out the whole work by day labour or by contract? As far as I know at present it is to be carried out by day labour, with contributions of stone from contractors. The Government will carry out the work as at present with the addition of new plant, and they are willing to take as much stone as other people are prepared to give them, at a fixed rate.

2355. Owing to the want of punts at present, are you not only delayed in carrying out your work, but the cost also is increased by the tug not being fully occupied? Yes.

2356. When the cranes are erected, and if you are short of punts, will it not add to the expense in the same manner, if the cranes are not fully occupied? Yes; I understand arrangements have been made to provide these punts, but we have not got them yet.

2357. Is the shipping delayed at Richmond River Heads at present? Not to the same extent as formerly.

2358. Have there been any wrecks here? Yes; there have been several since I have been in charge.

2359. Can you briefly describe the suitability or unsuitability of Byron Bay for shipping? At the present time it is certainly unsuitable for shipping in bad weather from the east and south-east. South-east weather affects it to a certain extent, but not so much as an easterly gale would. We do not very often have heavy gales from the north-east, but if there were, vessels could not lie in there. They are not so serious as the easterly gales, from which there is no shelter whatever in Byron Bay.

2360. Has a wharf been erected there? Yes. The vessels lie alongside of it.

2361. In heavy weather? No; when there is a heavy range on they do not come near the jetty.

Mr. T. W. Keele, M. Inst. C.E. 29 July, 1892.

2362. *Chairman.*] Is the entrance to the Richmond River Heads now comparatively safe for vessels of light draught? Yes; compared with what it used to be. One can hardly call it a safe entrance—there is always a certain amount of risk in coming here.
2363. Have any number of vessels been recently bar-bound here? Yes; that was through the heavy weather outside causing the bar to silt up, and they had to wait until the freshets cleared out a channel.
2364. What is the width of the channel for vessels at present? I should not think it is more than 250 feet, if so much—it is a very narrow channel.
2365. To what draught will it admit vessels? Eight feet to 9 feet, and occasionally there is 12 feet of water on the bar. The "Tomki" sometimes comes in drawing 9 feet. Vessels of the draught of the "Tomki" can almost always make this port, except after heavy freshes, when they have to lie outside. Vessels inside have to wait also.
2366. Would it be more proper to speak of the vessels recently detained being weather-bound rather than bar-bound? On one or two occasions they have been bar-bound here for some days, and in one or two instances for a week or two. There was not sufficient water on the bar for them to get out.
2367. Is there a possibility of that occurring after the works are finished? Certainly not. I do not anticipate there will be the least trouble or difficulty in navigation after the works are completed, excepting that after a very heavy fresh there will be a strong current between the breakwaters, and vessels may have to wait a day or two outside, unless they have sufficient power to steam against the current.
2368. Do you think that the walls will make such a scour that the entrance will be safe for vessels drawing 17 feet? No; for vessels of 15 feet.
2369. What is the size of the launch in which we visited the works this afternoon? About 30 or 40 tons.
2370. How is it that she bumped? There are two channels. The present direction of the channel over the bar is a little south of east. There is another channel which goes round the end of the northern breakwater, and follows out in about the same direction. Between those two channels there is what we call a crossing—a shoal.
2371. Were we actually on the crossing when we bumped to-day? Yes; you were beyond the main channel.
2372. Though we bumped there, the main channel is comparatively free? Yes; there are 8 or 9 feet of water in the main channel.
2373. Are you of opinion that in five or six years' time, or in seven or eight years' time at the outside, there will be perfect security for vessels drawing 15 feet in the channel of the Richmond River? Yes.
2374. As a public officer, do you think that with that prospect in front of this river the State will be justified in constructing a line of railway from Lismore to Grafton, in order to make the Clarence River a harbour for the Richmond River district? I do not think so.
2375. Are you fully confident that the predictions you make with regard to the work will be verified? Yes; fully.
2376. *Mr. Collins.*] From the success which has attended the small portion of the work which you have constructed, are you confirmed in your belief? Yes.
2377. You have had something to do with the Newcastle harbour works? Yes.
2378. Do you think that when the works are completed at the Richmond River they will make this harbour as good as Newcastle? Scarcely as good, because there will not be the same depth. At Newcastle the works deepened the bar from 15 to 24 feet. We do not hope to get 24 feet here, but we shall have good water for the depth I have stated.
2379. Do you know the average time that a vessel has been bar-bound during twelve months on this river? I can only speak from what I have heard. I understand that some years ago vessels were bar-bound here for eight or nine months. During the time I have been here I do not think we have ever had a vessel bar-bound for more than one month.
2380. How did the people obtain their goods from Sydney during that time? They simply had to wait until the bar deepened sufficiently for vessels to bring in supplies. A small quantity of stores may have come from the Clarence, but only a very small quantity.
2381. Do passengers go from Ballina to the Clarence? Yes; *via* Woodburn to Chatsworth.
2382. For what reason? Occasionally, when vessels are detained here through stress of weather, it is necessary for passengers to take that route to get more quickly to the metropolis. Moreover, there is a better class of steamers running to the Clarence at present.
2383. Do most of the passengers go by the Clarence? I cannot say that most of them do—a great number of them do. We have a large passenger traffic this way.
2384. If a railway is constructed from Lismore to Grafton, and the Richmond bar is improved as you say it will be, do you think that passengers will go to Grafton by railway? Certainly not; they will take the steamers here.
2385. How long do you think it will be before the risk will be lessened with regard to steamers of 1,000 tons entering this port? In three years our works will give water sufficient for vessels drawing from 12 to 15 feet. The water will gradually deepen. In three years I believe there will be a certainty of 12 feet of water constantly on the bar at low water, excepting during freshes.
2386. *Mr. Neild.*] Will vessels of a larger tonnage be able to come in at high tide? Yes.

Mr. Robert Adye Frazer, pilot at Richmond River entrance, sworn, and examined:—

Mr. R. A. Frazer. 29 July, 1892.

2387. *Chairman.*] How long have you been here? Two years and five months.
2388. Do you consider that there has been any improvement in the entrance to the Richmond since you came here? Yes; the channel is in a better position to navigate. The depth is about the same. We had more water when I came here, but not in such a good position. That is owing to a flood.
2389. Although the channel has straightened, the depth has lessened? Yes; but it is much easier to navigate.
2390. Is there sufficient depth for the steamers which ordinarily come into the port? Yes.
2391. What do vessels like the "Coraki," "Tomki," and "Oakland" draw? Eight feet six inches. The "Oakland" draws 9 feet when she is deep laden.
2392. Can she get out at all times? Not lately. She is trimmed according to the depth of water on the bar. If there is not much water she does not take a full cargo.

Mr. R. A. Frazer. 29 July, 1892.

2393. Is that the case with the other steamers? I suppose it is at present.
2394. Do you remember that a short time ago a number of vessels were bar or weather bound inside the heads? They were not very long bar-bound.
2395. What was the cause of that? We had a bad crossing at the time inside the bar. That was before they started the south break-water.
2396. I am alluding to a few weeks ago? That was owing to bad weather. I was referring to a time when the vessels were bar-bound.
2397. What was the depth of the water in the channel then? Six, 7, and 8 feet.
2398. Then vessels like the "Tomki" and "Oakland" could not attempt to go out? No; they would have to wait two or three days for a channel.
2399. Do you take soundings on the bar? Yes; nearly every day.
2400. Does the depth vary? Yes; but not lately.
2401. What has been the average depth on the bar for the last six months? Eight feet 6 inches.
2402. Even that would not allow the "Oakland" or the "Tomki" to cross with a full cargo? No; but they trim the ships according to the depth of water.
2403. Then, during the last six months those ships have not been able to load up to their proper capacity? No.
2404. Have you noticed much improvement since the construction of the harbour works? Yes.
2405. Have you noticed that during the last three or four months since the training-wall was built, or was it previous to that? Yes; the channel is in a better position. It is a straighter channel.
2406. Formerly, was the channel a very sinuous one, and did it go around the North Head? Yes; near the rocks—it was dangerous.
2407. When did the channel shift from there? Nine months ago.
2408. To what do you attribute that? The northern breakwater.
2409. But was not the northern breakwater constructed long before that? It was not out the same length.
2410. Do you think that 100 or 200 feet additional would make all that alteration? Yes; it brought us away from the rocks.
2411. Do you think any of the floods affected the flow? Yes.
2412. Do you anticipate a still further improvement when the south training-wall is carried out? Yes. It has brought our inside channel further north, and into a better position.
2413. Have you had considerable experience of the bar harbours on this coast? Yes.
2414. Do you think that the proposed improvements at the Richmond River entrance will effect such an improvement as will allow of vessels entering, drawing 15 or 16 feet? There is no doubt about it, in the course of time.
2415. When the breakwaters are completed, and you have proper beacons and lights, will the harbour be safe at night time? Most decidedly. There is only a distance of one mile and a half.
2416. Will the harbour be accessible in moderate weather? Yes; but in rough weather it will be like other places troubled with bars.
2417. In rough weather it will not be judicious for any captain to attempt it? Yes; just like Newcastle, which is supposed to be safe.
2418. In fine weather do you think it will be as safe as Newcastle for vessels for the draught you have mentioned? Yes. Last night we had a vessel which came in at 7 o'clock. We had lights.
2419. Did you pilot her in? No.
2420. Are many of the captains trading here exempt? Yes; nearly all.
2421. Have you control of the subsidised tug? No; except that she is at my disposal when I require her for sounding the bar. Captain Fenwick has control of her.
2422. Is there a private tug here also? Yes, at present.
2423. *Mr. Neild.*] Was it a steamboat which came in last night? Yes; the "Cairo."
2424. *Mr. Collins.*] When those ships were weather-bound in the Richmond River were any ships weather-bound at the same time in the Clarence River? I do not know.
2425. Are ships often weather-bound at the Clarence River? Yes. In heavy weather they are very often weather-bound, and I have also been bar-bound there.
2426. *Mr. Neild.*] How often is the subsidised tug engaged in towing? There are sometimes four or five vessels in a week, and sometimes none.
2427. Is there a vessel, on an average, once a day for towing? Not all the year round. The average is about three times a week.
2428. Is she used for any other purpose? No; except for sounding the bar when I require her. I often require her for that purpose.
2429. Does she keep up steam all day? Yes; at high water. I sound the bar at high water.
2430. Have you been at the Clarence? Yes.
2431. When did they sound the bar there? I never did sound the bar there.
2432. Was there so much water there that it was unnecessary? No. The pilot used to sound it in his own boat at high water, of course.
2433. *Chairman.*] When you speak of the depth on the bar you mean between the waves, and not upon the top of the waves? Certainly; that is the ordinary way of taking soundings.

Mr. Thomas Fenwick, owner of a tug-boat, Ballina, sworn, and examined:—

Mr. T. Fenwick. 29 July, 1892.

2434. *Mr. Neild.*] Are you the owner of the subsidised tug-boat? Yes.
2435. How long have you been engaged on the Richmond River? Over nineteen years.
2436. Have you heard the evidence given by Mr. Keele and the pilot, with reference to the changes which have occurred on the Richmond River bar; and do you agree with that evidence? Yes.
2437. Does it occur to you to make any further statement or explanation with reference to it? No. I think when the south training-wall is carried out a little further we shall be able to get better results. So far as it has gone it has made a great improvement.
2438. Are you hopeful, from what has already taken place, that the works will materially improve the port? Yes; it is improving every day.
2439. Were there a great many sailing vessels trading to this port at one time? Yes; as many as forty.

There

Mr. T. Fenwick. 29 July, 1892.

There are now about eight on an average in the sugar season. Most of the work is now done by steamers. There are five permanent steamers and one occasional.
2440. Have any vessels been lost lately while being towed in or out? Yes; about three months ago, in the absence of the tug-boat, when she was undergoing repairs.
2441. Have you lost any while towing? No. A sailing vessel attempted to cross the bar while the tug-boat was in Sydney, and she was lost. She was coming in.
2442. Is it more dangerous to come in than to pass out? Yes.
2443. Have steamers running here to take partial loads? Yes; for the simple reason that there is no cargo for them either way.
2444. Then it is not so much the fault of the bar that they have to take light loads? No; there is nothing for them to take. They have to go out empty sometimes. Very often I have to give the steamers a few logs to ballast them.
2445. Then do you think it is necessary to construct an expensive railroad in order that the farmers of the Richmond River district may be able to get their produce away? No; there is nothing to send away most of the time. I think that one steamer could satisfy all their requirements for years to come, but we have five running.
2446. One steamer of what tonnage? Four hundred or 500 tons.
2447. Would she be able to take all the sugar? Sailing vessels do the most of that trade in the season.
2448. Are the sailing vessels chartered by the Sugar Company? Yes.
2449. Does the bulk of the sugar come to the Sugar Company's mill? Fully three-fourths of it. Very little maize is grown at present. The farmers have all gone into the sugar industry, which is more profitable. They do not even grow maize for their own horses, and they get it from Sydney. I have brought it for them from Brisbane myself on several occasions.
2450. Is all the land suitable for maize and cane taken up? No.
2451. Then it would be possible for the district to produce more sugar and maize if the land were opened up and ploughed? Yes.
2452. Is the timber industry flourishing? No; owing to the foreign timber coming into the market.
2453. Is most of the cedar cut? No; we have plenty on the Brunswick and in this neighbourhood, but there is no market for it. Mr. Kethel must have 600 logs at Pyrmont wharf. He has 1,000,000 feet at the Brunswick now.
2454. Is there any large export of hardwood from here? No; occasionally a cargo of piles and sleepers is sent to Melbourne. There is a vessel about once in three months.
2455. You do not give a flourishing account of the commerce of the port? I am sorry I cannot do so conscientiously.
2456. Has there been a falling off in the exports owing to the state of the bar? No; it is simply because there is nothing here to export.
2457. Then it will be very expensive work to spend £300,000 or £400,000 upon the improvement of this port, in view of the trade which is done? Yes.
2458. If there is so little to be sent away by sea is there any necessity for an expensive railroad to carry away the produce from the other end of the district? I do not think so. I had a vessel of my own here, but I had to send her to Queensland because I could not find freight for her here.
2459. Did she obtain employment there? Yes.
2460. *Chairman.*] If what you say is true as to the limited amount of produce sent from this port, how do you account for the fact that there are five steamers running continuously? The competition is very great.
2461. Are they running at a loss to their owners? Yes.
2462. Do business men run vessels continuously at a loss? It is not nice, but it is compulsory for them to run their boats. I am quite satisfied they are not making money.
2463. Is that because sailing vessels are doing a large amount of the trade formerly done by steamers? No; it is the other way about.
2464. Do not sailing vessels mostly take away the sugar? Sugar is all they have to take.
2465. Were you engaged largely in the trade of this port at one time? Yes; in the timber trade.
2466. Has that trade slackened off on account of the importation of foreign timber? Yes.
2467. Has not a duty been put upon some foreign timber? Yes; 1s. 6d.; but foreign timber is imported here for ordinary building purposes.
2468. Is not this district celebrated for its pine? Yes.
2469. Is one reason for trade falling off the fact that farmers are now cultivating sugar instead of maize? Yes.
2470. And the vessels formerly occupied in taking maize to other colonies, where it is now heavily taxed, are not engaged in the sugar trade, and therefore they have left this port altogether? Yes.
2471. Would a railway from Grafton to Lismore affect the shipping trade at all? I do not think so.
2472. It is not that which makes you take such a pessimistic view of things? No; it is no benefit to me, whether there is a railway or not.
2473. What are you paid for the subsidised tug? £1,800 a year.
2474. Have you to compete with a private tug? Yes; it belongs to the North Coast Company.
2475. Can they make a private tug pay in competition with a subsidised tug? She is not paying, but it reduces my income.
2476. Does it bring down the rate for vessels coming in? You could not possibly bring down the rate, which is only 4d. a ton. The minimum tonnage is about 90 tons.
2477. What charge do you make in addition to your subsidy? Four-pence a ton. I suppose the North Coast Company charges the same.
2478. Are they able to compete with you, although you have the large subsidy of £1,800 a year? They merely sent this boat as a substitute while my boat was in Sydney undergoing repairs. They have kept her here since. Of course they cannot compete with me. She was simply sent down to trade with their own ocean-going boats, and to take soundings on the bar.
2479. While she is here she does compete with you? Yes.
2480. If the subsidy were withdrawn, would you take away your tug? Yes. If this competition is continued for any length of time, I shall have to discontinue running, for it will not pay.

2481.

Mr. T. Fenwick. 29 July, 1892.

2481. Speaking from your long experience, do you think that the harbour works will be a success? I do, conscientiously.
2482. Therefore, in a few years the Richmond River entrance will be comparatively safe for ocean-going vessels? Yes.
2483. *Mr. Collins.*] What was the reason for farmers giving up the growing of maize? It is compulsory in one sense, because the sugar company has been tied down for a number of years to grow cane at a standard rate.
2484. Does cane pay better than maize? I am so informed by the farmers.

Mr. George Rich Easton, master mariner, Ballina, sworn, and examined:—

Mr. G. R. Easton. 29 July, 1892.

2485. *Mr. Collins.*] Were you pilot at the Richmond River Heads at one time? Yes; for thirty-three years.
2486. Have you heard the evidence given by Captain Frazer and Captain Fenwick? Yes.
2487. Do you agree with what they have said? Yes; I agree with everything they have said.
2488. Have you anything further to add? No. I gave my evidence before Sir John Coode, and it is in print.
2489. *Mr. Neild.*] Did the evidence which you gave to Sir John Coode assist him largely in making his recommendations? Yes.
2490. Do you agree with what has been said by Captain Fenwick with reference to the reduced trade here? I was not aware myself that the trade was falling off. No doubt the timber trade has fallen off.
2491. Is that partly because the easily accessible timber has been cut down? Yes. The timber has now to be felled in the dry creeks, and the timber getters have to wait until a fresh takes the logs down.
2492. Does the timber trade depend greatly upon the demand in the Sydney market? Yes.
2493. Has there been much building done here lately? Yes; during the last two or three years.
2494. Has that helped the local mills? Yes. The people here generally use the local timber, but there is a good deal of American timber imported.
2495. Does it last longer and resist the ravages of the ants? Yes.
2496. *Chairman.*] During your long experience, had you ample opportunity of becoming acquainted with the course of the channel and the state of the bar? Yes.
2497. Have you ever known the bar to vary as it has recently? For a very short time I have seen it take the very same course as it is now taking, and I have seen it go away close to the North Head, in dangerous proximity to the rocks.
2498. Does the channel now go out comparatively straight? Yes.
2499. Have you known times before the harbour works were commenced, when the channel was as straight as it is now? It was always temporarily straight—it always worked north. It would break out to the south, and work north gradually.
2500. How long did it remain straight? Perhaps for a month.
2501. Do you consider that that was due to the action of the floods? Yes.
2502. Do you consider that the present straight course of the channel is due to the floods? I cannot say.
2503. Does it at all resemble the course which it took before? No; because the south spit is all washed away. We used to have a high south spit.
2504. In your opinion, the straightness of the channel now existing is due to the action of the floods, or is due to the construction of the south training-wall and the northern breakwater? Decidedly, it is due to the works going on now. When the southern breakwater is taken out further the bar will improve wonderfully.
2505. What leads you to believe that the training-walls and breakwater have produced those results? It is reasonable to suppose that they confine the water.
2506. Is it not reasonable from your statement to suppose that as the channel often went straight in olden times before a training-wall and breakwater were erected, it is only running straight now temporarily? No. Before the heavy floods caused the channel to run straight temporarily. We have had no floods lately like we had in former years.
2507. There was a time when the water went clear over the south spit? Yes.
2508. Is that likely to occur again? Not when the training-walls are erected.
2509. Were there many wrecks while you were pilot? We used to have a good many, but I do not think that we used to have as many as they had on the other rivers. It might have averaged one a year while I was pilot.
2510. Were those wrecks caused by bad weather, carelessness, or the shifting of the channel? They were mostly caused by bad weather, and we had no steam-tugs.
2511. Have you had any loss of life on account of wrecks? No. I once got capsized myself, and I lost one man. Myself and the rest of the crew were picked up and taken on to Sydney.
2512. Is it a good place to scramble ashore if there is a wreck? Yes.
2513. *Mr. Neild.*] Have the vessels which have been lost here been lost, not so much through the shallowness of the water on the bar, as by attempting to cross the bar when the weather was dangerous? Yes.

Mr. Edmund Ross, shipping and insurance agent, Ballina, sworn, and examined:—

Mr. E. Ross. 29 July, 1892

2514. *Chairman.*] How long have you been resident here? Thirty-six years.
2515. Are you prepared to make any statement with regard to the trade of this port? Yes; at present I am agent for W. T. Yeager's line. He is the owner of the "Oakland," and "Wyoming," which trade to this port. The "Oakland" when loaded has a full draught of 10 feet, but owing to the shallowness of the bar, the captain is generally only able to load her down to 8 feet and 8 ft. 6 in. When she draws 8 ft. 6 in., she carries 85,000 feet of sawn timber, 25,000 feet of round logs, 100 pigs on deck, and sixty bags of maize. The "Wyoming" takes 75,000 feet of sawn stuff, twenty six cedar logs, thirty-six kegs of butter, 400 bags of maize, hides, and sundries. Five years ago, we had only two steamers trading here, and about twelve sailing vessels regularly. About eight sailing vessels trade here now, and five or six steamers weekly.
2516. Do you agree with the statement of Captain Fenwick that one steamer could now do the whole of the trade of this district? No. That which used to be sent away in two steamers is divided amongst

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Mr. E. Ross. 29 July, 1892.

five or six steamers, consequently they cannot have the same quantity each as the two used to have, but the produce which goes away now is quite equal and more than equal to what used to be sent away five years ago, because we now have large shipments of butter, and the maize is superseded by sugar. The timber trade is not so heavy as it was, because the timber trees are now further back. Even now the supply of timber is in excess of demand, because of the quantity of imported timber in the Sydney market.
2517. Is it a fact that steamers now going out of this port are only partially loaded, owing to the slackness of trade? Not that I am aware of. It would be impossible to load each of the steamers, because six steamers a week would take away the production of an immense population, but taking the year all through, I know that our steamers have always a sufficiency.
2518. Are your steamers usually loaded up to their full capacity? No; this is a slack season, because the bulk of the maize has gone to Sydney, and what is now sent to market is spread over five or six steamers.
2519. Do they usually take light cargoes according to the condition of the bar? Yes; they take a cargo suitable to the bar.
2520. Do you consider that the trade of this port has increased of late? It must have done so, owing to the increase of population.
2521. Has the population of Ballina increased during the last few years? Yes; and the Government works going on consume a large quantity of rations and other materials.
2522. That is an abnormal increase, which you cannot wholly put down to the producing power of the district? Yes.
2523. Has the ordinary population of the town and surrounding district increased? Yes; largely.
2524. To what do you attribute that? The land has been taken up and put under cultivation, and large blocks have lately been subdivided.
2525. Has there been a natural increase of the trade of the port in proportion to the increase of population? Yes; but a great deal of material has been landed at Byron Bay.
2526. Then Byron Bay competes with the Richmond River? Yes. A quantity of land has been taken up at Newrybar, and the settlers are forced to go to Byron Bay owing to the good roads there and the bad roads at Ballina.
2527. Will that diversion of trade to Byron Bay account for a portion of the slackness referred to by Captain Fenwick? It might; because a lot of butter which used to come here has not come here of late.
2528. Do you consider that with fair facilities for shipment of produce, the trade of Ballina would still further increase without regard to the port? A great deal depends upon the bar. As the bar improves the trade will improve.
2529. Has not all the trade gone to Byron Bay owing to the condition of the bar? I think the principal inducement to go to Byron Bay has been the good roads.
2530. Can vessels discharge at Byron Bay in the same weather that vessels can enter the Richmond River? When it is blowing hard from the north-east, Byron Bay is completed exposed, and when it is blowing hard from the east they cannot make use of the jetty to discharge cargo. When it blows from the south-east or south Byron Bay is workable for receiving and discharging cargo.
2531. Do the manifests which you have read out fairly reflect the character of the trade from this port? Yes; the vessels take timber, maize, and live stock. Our future depends upon the improvement of the bar. If there had been material to go on with the improvements we should have been much further advanced now in trade, than we are at present.

Mr. William Jones, master of the dredges, Ballina, sworn, and examined:—

Mr W. Jones. 29 July, 18

2532. *Mr. Neild.*] How long have you been in your present employment? Sixteen years. I have been six years on this river; I was at Newcastle, and I was at the Clarence for four years, and I was at Shoalhaven.
2533. What are you doing now? We are dredging at the entrance, removing indurated sand. One dredge is at Broadwater, and the other is at the South Arm opening the channel.
2534. Do you find when you remove the sandbanks near the entrance that they make again? Yes; if it is sand, and they are caused by the influence of the floods and the cross currents. The floods bring down sand, silt, and mud. The storms, especially from the south-east, tend to carry large portions of the spit into the river mouth, and that has interfered much with the navigation during the last few years.
2535. How long have the harbour works on the north side been constructed? They were commenced about three years ago.
2536. Since that work has been partially carried out have there been injurious influences exerted upon the sand on the south spit? Yes; but I account for that by bad weather.
2537. Do you think the harbour works have anything to do with it? Not to a great extent.
2538. From the knowledge you have obtained of other rivers and of the Richmond River, do you think that the construction of the southern wall and its construction in the form of a breakwater will obviate the collection of these sandbanks? Yes; I believe that in another four months, if the south training-wall is carried out at the same rate as it has been during the last four months, the bar will improve, and when the other retaining-walls are run out and additional machinery is obtained we should be able to deposit sand behind the retaining-walls so as to make them solid works. In six or seven years I believe that this port will be second only to Newcastle.
2539. Will it be as good as the Clarence? Yes.
2540. It was not anticipated by Sir John Coode that the same depth of water would be obtained here as would be obtained at the Clarence; do you think he was wrong? I think this port will be second only to Newcastle.
2541. Do you expect that they will get as great a depth of water here as at the Clarence? They have bored here, but I do not think they have done so at the Clarence. Here they got no rock to a depth of 20 feet.
2542. Do you think that when the breakwater is carried out and the flood waters confined within strict limits the scour will be so complete as to give a greater depth of water than Sir John Coode anticipated? I believe a depth will be obtained from 16 to 18 feet.
2543. Have they not obtained more than that already at the Clarence? Not when I was stationed there. I think we shall obtain as much water at the Richmond River as Sir John Coode anticipated.
2544. Will that be sufficient for the trade of the port, even if it is largely increased? Yes.
2545. Do you think that with the increased facilities at the mouth the class of steamers engaged will improve with respect to size and accommodation for passengers, and that passengers will go direct to and from

Mr. W. Jones. 29 July, 1892.

from the Richmond instead of going over to the Clarence River? Yes; I should prefer to go straight from here, and I believe that would be the case with the majority of people.

2546. Consequently, if a railway were made between the Richmond and the Clarence, many travellers would not use it for the purpose of getting to the Clarence as a port of shipment? No.

2547. Do you anticipate that the entrance to the Richmond will be equal to the entrance of the Clarence, and that therefore there will be nothing gained by constructing a railway for the purpose of carrying passengers and products from this river to the Clarence for shipment, and that the railway will have nothing to do? Yes.

Mr. Thomas Temperley, newspaper proprietor, Ballina, sworn, and examined :—

Mr. T. Temperley. 29 July, 1892.

2548. *Chairman.*] Were you formerly Inspector of Fisheries in this district? Yes. I have been resident here ten years.

2549. Has the trade of Ballina shown an increasing tendency? The amount of produce has increased very much, and the internal trade has increased as well as the outgoing trade. The timber trade, however, has fallen off. The timber trade is the best commercial barometer, as it fluctuates with the times. Depressed times have had a great deal to do with the falling off which has occurred in the timber trade. The timber is also getting scarce in the district.

2550. Are the farmers and planters in the vicinity of Ballina on a stable footing? Yes; at the same time they have had great difficulties to contend with, and that is the case even now.

2551. If it were implied in evidence given at Lismore, that many of the producers in this district are in straitened circumstances, and some of them heavily mortgaged, would that statement have any application to this portion of the Richmond district? Yes; that arises from the fact that the people have had to clear their land as well as to farm it. When nature has completed her work in the way of rotting the tree stumps in the brush land of this district there will be a much larger amount of land placed under agriculture.

2552. Why has there been such a decrease in the production of maize? Because on the lower part of the river it is found more profitable to cultivate cane.

2553. Does the Colonial Sugar Company afford a sure market for cane? Yes; it is the best industry a farmer can take up in the Colony.

2554. Are the planters likely to recover themselves? Yes; those who have not spent too much money in attempting to establish small mills. That was a very great cause of depression, not only in this district, but in the lower Clarence a few years ago.

2555. Is dairying carried on to any great extent in this district? Yes; in the Big Scrub country. Within a radius of 10 miles there are seven dairy factory companies in the Big Scrub, and they are flourishing. There is one farmer in Newrybar who has 150 acres of land; he farms it on halves, his landlord supplying him with cattle. For the last year he has divided £680 with his landlord as the net result of farming 150 acres; that is only an average block of land. We have tens of thousands of acres equal to that in every respect.

2556. Did you hear the evidence of Captain Fenwick, in regard to the depression of trade in this port? No. I think Captain Fenwick was led to look at the timber trade as chiefly affecting the shipping. That is, there used to be more bottoms and less freight, now there are fewer bottoms coming to the river, and there is more freight. There is merely a falling off in the timber trade, which is essentially a question of carriage.

2557. Has the diversion of trade to Byron Bay any material bearing on that aspect of the question? I do not think so, beyond the carriage of small quantities of butter.

2558. What has been the effect of the harbour works on the entrance to the Richmond River? I think that the northern retaining-wall when it was pushed out alone drew the channel away from the North Head, and sent it all over the place, and when it was being pushed out by itself it was responsible for the condition of things we had here some months ago, when the entrance was apparently blocked. Since then the southern retaining wall has been pushed out very rapidly during the last four months, and it has brought the channel back again to its normal condition. It has materially improved the condition of the entrance, and put it into a permanently good position.

Mr. Robert Bevan Jones, clerk to Captain Fenwick, Ballina, sworn, and examined :—

Mr. R. B. Jones. 29 July, 1892

2559. *Mr. Neild.*] How long have you been in this district? Seven to eight years. I have been two years in my present position. I was formerly editor of a newspaper at Ballina.

2560. Has there been a diminution in the number of sailing vessels trading here? Yes.

2561. Are the sailing vessels that come here larger than they used to be? No. They are of the same size, but there has been an increase in the number of steamers.

2562. What about the volume of trade? I think the exports are 300 per cent. larger in many respects than they were when I came here seven years ago.

2563. What has been the chief increase? Dairying—butter, pigs, and fowls. Seven years ago we imported our butter, but now we export butter. Factories are growing up all over the bush.

2564. Are the factories co-operative concerns? Yes; they are doing fairly well.

2565. Is there not an advertisement in the daily papers to-day with reference to the winding up of a dairy company, I think at Woodburn? That is in the sugar country. Dairying is more successfully carried on upon the higher lands. There have been so many insolvencies amongst the owners of small mills who purchase cane that growers have no confidence in anybody except the Colonial Sugar Refining Company, and the Company will only buy cane grown near navigable water, where their punts can load, consequently the high lands are laid down with grass.

2566. What about the timber trade? The export of timber would be as good as ever if there was any demand for timber in Sydney. Last February we were getting 8s. per 100 feet; now we are getting barely 6s. a hundred. We used to pay 4s. 6d. and 5s. per 100; now I would not offer more than 3s. a hundred; that is for log timber.

2567. Is it more expensive to get the timber to shipment? No; the freight has fallen.

2568. Is not the timber farther away from the river now than it used to be? We could get plenty if there was any sale for it.

2569. What about maize? It has been a very bad season, but the quantity of maize is increasing. I cannot speak with confidence about sugar.

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2570. Do the Colonial Sugar Company export their own sugar? Yes. In the sugar season we have as many ships as ever taking away sugar. There is more tonnage than before. The company have increased the size of their mill, and there will be a great deal more sugar produced.
2571. Is the district fairly prosperous? Yes; except for the general depression. We are suffering along with other parts of the Colony. It is improving, and the improvement during the past seven years has been wonderful.
2572. Are there any other facts that you wish to lay before the Committee? I wish to state a few facts with regard to the passenger traffic, in order to show that the statements made elsewhere as to the difficulties respecting the Richmond bar are not correct. One vessel, the "Grace Dent," during the last seven years, has made an average of eleven trips a year. A sailing vessel, the "Amphitrite," made thirty-five trips for the three years previous to her wreck; that was between Sydney and here. During the sugar season the Company charter sailing vessels to bring coal here and load them back with sugar. From October to February last the "Eliza Allen" made seven trips in five months; the "Daphne" made eight trips from October to June; the "Enterprise" seven trips from October to May; the "Tomki," in nine weeks—and she had to take a tug, because the bar was shallow—made nine round trips from the Richmond River to Sydney and back; that was between the 5th October and 9th December. She paid us for eighteen towages during that period. On an average we run a steamer three times a month from Broadwater to the Clarence and back again, taking molasses and bringing back the empty casks. During the last seven years there has been very little trade between the two rivers. There is no local trade between any of the rivers. It all goes to Sydney as the head-quarters. With regard to passengers, it must be remembered that there has not been a new passenger boat placed on the Richmond River for the last seven years, consequently the "Tomki" is the only really good passenger boat we have; but on an average the passenger traffic in and out, combined in all the steamers, would be from eighty to 100 per week. The "Macleay" has fair passenger accommodation, but she is slow. The only other good passenger-boat was the "Electra," and she has been taken off.
2573. Do the passengers constantly make their way to the Clarence River, owing to the superior accommodation afforded by the steamers there? I daresay they do from the upper part of the river.
2574. Do not a good many passengers go from Woodburn to Chatsworth? Only when a vessel is bar-bound.
2575. If railway communication were extended between Lismore and Grafton, would any amount of freight be sent that way? I cannot see how it could be. If there was any trade between the Richmond and the Clarence it must go to the Lower Clarence. It is ridiculous to think that the trade would go to the head of the navigation on the Clarence.
2576. Do you think such a line would be used for goods or passengers? Certainly not for goods, and I do not think there would be many passengers. The passengers would come here, or they would go to Woodburn or Byron Bay. This district is intersected with navigable waters in all directions, consequently there is hardly any part of the district, which is more than a few miles from navigable water if the creeks were improved. The whole tendency of trade is to come down the valleys to the river. They can ship everywhere up and down the river.
2577. How do you get the timber to water? It is drawn from the bush to the water-side, and then it is rafted down.
2578. Would railway communication be any assistance to the timber trade? No; it would not pay for the handling.
2579. Therefore you do not approve of the construction of the proposed railway? No.
2580. *Mr. Collins.*] Has there been any recent removal of settlers to the Richmond from the Clarence? A few occasionally come here.
2581. Why do they leave the Clarence? I think they are mostly tenant farmers, and they fancy they can do better on the South Arm of the Richmond, but others go back there.
2582. Can they rent farms here? Yes.
2583. What is the value of cane farms in this district? Yesterday £8 an acre was offered for some land 10 miles from here, but I was offered a 60-acre farm by the mortgagee, at £2 an acre, about 10 miles from Ballina. I was offered a transfer of the mortgage, and I could have paid it in instalments.
2584. Are there many farms mortgaged? Yes; they are in the hands of the banks and storekeepers, that is the great drawback to the district. There was a boom here a few years ago, and they have never recovered.
2585. Are there many large estates here? Yes; on the railway line particularly, and that is a great drawback to the district. The people who own the land have not the capital to develop it. It costs £7 or £8 an acre to clear the land.
2586. Are the owners residing on this unimproved land? Some are, but a large area is in the hands of Sydney residents.
2587. *Chairman.*] Do you think that the settlers of the district who are now in straitened circumstances are likely to recover themselves if better facilities for access to market are given? I think the best way would be to clear them out, and put men with capital in their places. A good many of them knew nothing about farming. I think some of them are so far involved that there is little hope for them, but men who came here with dairying experience and capital are now making the place a paradise.
2588. If the land were in the hands of capable men with a little capital, would the farms be profitable? Yes; there is no other land equal to it for dairying, for sugar-cane, and semi-tropical products.

Mr. Thomas William Keele, M. Inst. C.E., Supervising Engineer, Railway Construction Branch, Department of Public Works, sworn, and further examined:—

Mr. T. W. Keele, M. Inst. C.E. 29 July, 1892.

2589. *Mr. Neild.*] What works have been carried out at Byron Bay? None, except the construction of the jetty. It is 1,320 feet long, and it goes into 19 feet of water.
2590. Is there any material length with that depth of water? Yes, about a ship's length; that is a vessel of 187 or 200 feet.
2591. Is that available in all weather? In heavy weather only when the wind is from south.
2592. What works have been designed to make that a safe harbour? A number of designs have been propounded, and Mr. Darley's No. 2 scheme was accepted by the Committee. We have completed the survey. When evidence was taken on the subject before we had not quite finished the survey.

Mr. T. W. Keele, M. Inst. C.E. 29 July, 1892.

2593. Have you been able to arrive at an estimate of the cost? The estimate which Mr. Darley gave at that time will not be altered.
2594. Since the evidence was previously submitted about Byron Bay the Department has had three years further experience, during which time a considerable amount of traffic has been carried on there; has anything occurred to cause any change in the expectations previously entertained with reference to the possibility of making Byron Bay a useful shipping port? None whatever.
2595. Then Parliament may rely on the evidence previously given, and the professional opinions previously stated, notwithstanding the further experience which has been obtained? I think the Committee may rely on the estimate being within the mark, and also that the work will be the success which Mr. Darley and other professional men have stated that it would be.
2596. For what amount can those works be carried out? £242,000.
2597. Would that give an oversea shipping port safe in all weather? Yes.
2598. What depth of water wouth there be? From 19 to 26 feet.
2599. Would that afford accommodation for vessels up to something like 5,000 tons? Yes; there is an area of 500 acres.
2600. Would that be useful as a port of refuge as well as a shipping port? Yes.

Mr. Robert Adye Frazer, pilot at Richmond River entrance, sworn, and further examined:—

Mr. R. A. Frazer. 29 July, 1892.

2601. *Chairman.*] Do you produce a record of the soundings on the bar at the Richmond River heads? Yes.
2602. What has been the depth for the last twelve months? Twelve feet was the greatest depth; that was in March, 1891. The least depth was 7 ft. 6 in., on 27th June, 1891.
2603. What is the average depth in ordinary times? Eight feet 6 inches.
2604. Are these depths always taken at high water? Yes; that is since our channel shifted from the North Head.
2605. Have you compiled this record, and taken the soundings yourself? Yes.

SATURDAY, 30 JULY, 1892.

[The Sectional Committee met at Alstonville, at 11 a.m.]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (CHAIRMAN.)

JOHN CASH NEILD, Esq. | CHARLES COLLINS, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. Charles H. Staff, farmer, Rous, sworn, and examined:—

Mr. C. H. Staff. 30 July, 1892.

2606. *Chairman.*] How many acres do you hold? Two hundred acres, including leasehold; I have been here fourteen years.
2607. Is there much agricultural settlement in your neighbourhood? Yes. Rous is the centre of a great cane-growing district. The whole of the country there is taken up, and there is no Government land, except a few acres, and reserves here and there. Land is not cultivated to a great extent.
2608. What proportion of land is cultivated? Within a radius of several miles, two-thirds of the land is cleared and cultivated for cane or grass. At Rous Mr. Alfred Bennett has a mill. There are 2,000 acres there, and at Alstonville.
2609. Is it a fact that many of the holders at Rous are heavily mortgaged? Not heavily mortgaged; perhaps half of them have borrowed money on their land.
2610. Are they hampered for want of funds? Not more than usual. There is a depression all over the Colony; but they are in a fairly prosperous condition.
2611. Do they make their holdings pay? Yes; with dairying and cane-growing combined. There is a dairy factory.
2612. Notwithstanding the fact that they are mortgaged, are they likely to retrieve themselves? Decidedly; as far as I can see, they are improving their farms every year.
2613. Are they men who went on the land with a small capital at the outset? Yes; I do not suppose 5 per cent. of them started with any amount of money.
2614. What size were the holdings they took up? About 100 or 200 acres.
2615. Are the men who took up 640 acres, among those who have been compelled to mortgage? No; there are three around us, close together, in a good position. They are letting their land on ten years' clearing leases. They charge rent after the first five or seven years; that is the usual way in the Big Scrub.
2616. Is it a fact that a number of these farmers have over-reached themselves by taking up too much land? Not in our district; the men who have taken up 640 acres are in the best position.
2617. Do you grow any other crop besides cane? Not to any extent. We grow maize for the local market, and also potatoes; we also grow fruit.
2618. Do you say that the statements as to the selectors being heavily mortgaged, are exaggerated? If it is said that they have over-reached themselves so far that they cannot recover themselves, it is exaggerated. They are recovering themselves every year, and doing well. I look upon myself as being a sample of others, and I am certainly recovering. I am mortgaged to the extent of £2 an acre; but I have been offered £15 an acre for my land. I took up 120 acres, and leased 80 acres with the option of buying it.
2619. Are you a fair type of the settlers in this neighbourhood? Yes.
2620. Did you begin with a small capital? £33. I started fourteen years ago, and I have raised a family as well. I am in very fair circumstances now, and I could pay my debts over and over again if necessary.
2621. Is the sugar-mill at Rous in full working order? It will start work again on Monday for the season. They expect to make 1,400 tons of sugar this year, and next year about 2,000 tons. They are connected with Alstonville by tram. It is a private tram line. They buy the cane in the field. We have signed to supply the mill for eleven years, so that the farmers growing cane are sure of a market for that period.

Mr. C. H. Staff. 30 July, 1892.

2622. *Mr. Neild.*] Does the proposed railway from Lismore to Grafton interest this district at all? Not the lower end of the district. It would be of no earthly use to us.
2623. How far are you from the railway from Lismore to Byron Bay? Ten miles. There is a road through, but it is not fit for heavy traffic. Lismore would be our best way for getting to the railway. It is 10 miles to Lismore.
2624. Where do you look for your eventual port of shipment? At present it is Wardell, about 10 miles distant. The road to Lismore will be infinitely better. The shortest road to Lismore is not yet fit for heavy loads.
2625. Does the railway between Lismore and Byron Bay interest you? Not particularly. We consider that Ballina is our best way for sending our produce out, and for getting in our stores.
2626. Therefore, railway communication has no possible interest for you? No. Given a good port down here, we do not want any railway. The railway to the Tweed would be useful to those near the line, and it might be useful for us, perhaps, to go to Byron Bay to send produce either to Brisbane or Sydney.
2627. Then it would be an unnecessary luxury? It is unnecessary if we can get out straight from Ballina at any time. The bar is of the greatest interest to us.
2628. Is there much dairying carried on here? Yes; there are a few factories within 4 miles of us. They are registered companies.
2629. What is the yield of cane per acre on the high lands? Thirty to 50, and up to 70 tons for eighteen months' cane. One year's ratoons yield 4 or 5 tons less.
2630. Then, on an average, you would be getting 2½ tons of sugar per acre? Yes; I think so.
2631. How do you do your threshing? By white labour. I have seen very little coloured labour about here. White labour is satisfactory, and there is no difficulty in getting men to do threshing.
2632. *Mr. Collins*] Do you say that the general depression throughout the Colony affects this district? Yes.
2633. How is that the case when you get a regular price for cane? The cane-growers are well enough off, but if we go to the banks we find that it is not as it always has been. When there is a depression in business we are bound to feel it.
2634. Do you not grow the same quantity of cane? There are other things to be considered. If we combine dairying with cane-growing it may not be so easy to get money in order to make improvements. If the banks lend money freely we can get on with many improvements.
2635. What are the general wages for cane-getting? It is paid for by the ton. With rations it costs from 2s. 6d. to 2s. 11d. per ton. A man cuts about 4 tons a day, but he works at least ten hours a day, and possibly twelve.
2636. How have the large holdings been obtained? By selecting the land.
2637. Are the persons who selected the land now residing on their farms? Yes; the people who have bought 640 acres are residing on the land and some of them are sub-letting. They are *bona-fide* holders.
2638. Is there much dummying? Not that I know of in my own district.
2639. Are the farmers mostly mortgaged to the banks, or private individuals? To the banks.
2640. What is the average value of the land? Improved cane-land is worth £40 an acre. One man at Rous would not sell at £50 an acre.
2641. Then must not land about Rous be of more value than land at Ballina, seeing that we have been informed that sugar land can be obtained there at £3 per acre? Everything depends on the situation and the amount of clearing required.
2642. Is land better for cane here than on the flats? The cane is very good on the river, but cultivation and clearing can be done for less here, than on the river. Cultivation is no trouble here. The weather, wet or dry, makes no difference.
2643. Is it not nearer to shipment on the banks of the river? Yes; but it all depends on the cost of cultivation. Those who have tried it on the river tell me that it will pay us better to grow cane at 8s. a ton than it will pay them to grow it for 12s. per ton. I heard of no disease among the cane.
2644. Is there much maize grown here? Not a great deal for shipment elsewhere. We grow it for ourselves, and sell it to our neighbours. We grow our own supplies of potatoes.
2645. Are potatoes a payable crop? Yes; they keep very well, and are grown with ordinary care.
2646. Do you grow any wheat about here? No; I saw a small patch a few years ago, and there was no rust on it at that time. No person has grown it for the market.
2647. What district were you in before you came here? Just out of Parramatta.
2648. Is the land about here as good as Parramatta for oranges? Yes; we grow crops of oranges here, but they do not hang as long on the trees as about Parramatta.
2649. If the proposed railway were constructed from Lismore to Grafton would that give you a market for your produce? I do not think there is much of a market at Grafton for fruit.

Mr. Robert Gibson, dairy-farmer, Alstonville, sworn, and examined:—

Mr. R. Gibson. 30 July, 1892.

2650. *Chairman.*] How many acres do you hold? Three hundred. I selected the land in 1871, and fulfilled the conditions of residence. I did not reside on it afterwards until about fourteen years ago.
2651. Did you first cultivate your land? No; I first had the scrub felled and had a running fire put in, and then I sowed rye grass. It is only within the last five or six years that I have gone in for dairy-farming.
2652. What crops did you put in at first? Sugar-cane, corn, potatoes, and we tried two crops of wheat and two of oats. The oats succeeded in producing an enormous amount of straw, but not much oats.
2653. Why did you give up cultivation? Later on I grew sugar-cane for the Alstonville Sugar Company, but they decided to cease operations, and consequently I had no way of disposing of my cane; therefore I gave up growing sugar-cane. I grow maize now for home use, but not for sale.
2654. Did you then decide to turn dairy-farmer? Yes. I had very little previous experience. We had some grass sown all along.
2655. Where did you get your cattle? Some from my neighbours, and at sales in the district.
2656. Do you make dairy-farming pay? Yes; my returns for June were £53; that was from milk, pigs, and other things. I sell my milk to the Springhill factory.
2657. Are there many other dairy-farmers of your stamp in the neighbourhood? Yes; some have small separators of their own, and they make their own butter. They do not make cheese for sale at the factories, but they have made a few for exhibition at the Springhill factory.

Mr. R. Gibson. 30 July, 1892.

2658. Is it a fact that many of the settlers in this district are so heavily mortgaged that there is a danger of their not recovering themselves? I do not think there are four farmers about Alstonville mortgaged in any way.
2659. Did you begin with much capital? I had no capital, but my father helped me to start. He gave me cash when I wanted it.
2660. How much did you start upon with the assistance of your father? Perhaps £500; that was when we started to cultivate.
2661. Since you started as a dairy farmer have you been able to get on by your own exertions? I have for a number of years before I started dairy farming.
2662. Are you a fair specimen of the other dairy farmers in the district? I am a small dairy farmer compared with others. I have heard of other dairymen making as much as £70 per month—that is, for a good month. Their holdings must be larger than mine. My holding is 300 acres, but not more than half of it is cleared. Some have all their farms cleared, but others are not a quarter cleared.
2663. *Mr. Neild.*] Do you agree with the statement of the last witness with regard to railway communication? If there is to be a North Coast Railway, I would be in favour of the line from Lismore to Grafton, but not otherwise. Tenterfield is our natural connection with the table-land.
2664. Therefore, you do not approve of the connection with the table-land in the vicinity of Grafton? No.
2665. Do you expect to use the line already in course of construction for the purpose of shipping at Byron Bay? I think so.
2666. If a coast line were constructed would the residents in this part of the Richmond River district be likely to use it? Perhaps not a great deal.
2667. What would they be likely to use it for? I think most of the goods would go by water, but the passengers would go by railway.
2668. What is the rate of passage money from Ballina to Sydney? Thirty shillings, in the saloon.
2669. Do you think that the fare from here to Sydney by railway would be anything like so cheap as that? People who suffer from sea-sickness would prefer to pay twice as much to go by railway.
2670. *Mr. Collins.*] What district were you living in before you came here? The Manning.
2671. Is the Manning as good an agricultural district as this is? It is quite as good in some respects, but I think this district will compare favourably with any of the northern rivers. I know the Clarence, the Macleay, the Bellinger, and the Hastings.
2672. What do people generally pay for leasehold improved land? About £1 per acre. There is not a great deal of land in the Big Scrub let in that way.
2673. Can persons make a good living after paying £1 an acre? They can make more than a living by dairying if they have sufficient land.

MONDAY, 1 *AUGUST*, 1892.

[*The Sectional Committee met at the Court-house, Lismore, at* 9·30 *a.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (Chairman).

John Cash Neild, Esq. | Charles Collins, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Mr. George Wolfe West, Inspector of Conditional Purchases, sworn, and examined:—

Mr. G. W. West. 1 Aug., 1892.

2674. *Chairman.*] How long have you been in this district? Over seven years. I traverse the district from Casino to Grafton, the boundaries are the other side of Camira Station, between Casino and Grafton. I go 40 miles from Casino; the northern boundary goes up to Queensland.
2675. Are you in a position to state what is the condition of the men on the soil between Lismore and Camira? Some are farmers and some graziers. On the Casino side they are principally graziers, and on this side farmers.
2676. What is the average size of the holdings on the Casino side? Most of them have their full compliment. Most of the recent selectors have 1,280 acres, or as near as they can get to it.
2677. Do they cultivate much? Next to nothing.
2678. Why not? I do not know. Very few have tried it.
2679. Are they *bona fide* settlers? Yes; most of them. Of course, there are dummies there as in every other district.
2680. Are these men *bona fide* selectors, or have they merely gone out to hold on to the land for speculative purposes? I think most of them have gone on their own account.
2681. Do the selectors around Casino who carry on grazing make a fair living? No; most of them took up the land in the big rush two years ago, and all stock have fallen in value since then.
2682. How do they maintain themselves? A great many of them work where they can get it—on the roads or anywhere else.
2683. Do any work on the railway? Very few; some of them get timber for the railway.
2684. If a railway were constructed from Lismore to Grafton, would it benefit them and make their settlements successful? I suppose it would increase the value of their land.
2685. Would it induce them to put their land to better use than at present? I do not think they could put it to any other use than grazing; it is not fit for anything else.
2686. Is there a likelihood of any further settlement there? There has been no land taken up between Casino and Camira recently.
2687. Is there room for further settlement? Yes.
2688. Is there plenty of fairly good land? Not plenty; but there is a good deal reserved. Some land is open for selection, but not a great deal.
2689. Is it only grazing land? Yes.
2690. Is there much cultivation between here and Casino, within 5 miles on each side of the proposed railway? On the creeks there is some cultivation. There is some at Leycester Creek. They all cultivate a little maize and green stuff. I think they send some corn to market.

Mr. G. W. West. 1 Aug., 1892.

2691. There does not seem to be very much settlement between Casino and Lismore to the south of the railway line? Armstrong Brothers hold very large areas along the main road. The land there has all been taken up.
2692. Then there is not likely to be much settlement on this line for some time to come? No; unless land were cut up after the railway was made.
2693. Would it pay the holders better to cut up the land into small farms if a railway were made? Yes.
2694. Have you heard any of them talk about cutting up their land? Yes; I have heard Mr. Garrard say that he would cut up his land. I never heard the Armstrongs speak about cutting up their land; they are large graziers.
2695. Is the settlement in this district on the whole of a stable character? Yes.
2696. Do you know if any of the settlers are mortgaged to the banks and financial institutions? Yes. I know some have their selections mortgaged to the banks.
2697. Do you consider that they are so heavily mortgaged that they will be unable to retrieve themselves with fair seasons? I think the greater number of them will get round if they have fair seasons. There is a general depression here now, just the same as everywhere else. We have had two or three floods, which have done a great deal of damage for the time being.
2698. Has any of the depression been caused by the settlers taking up too much land? No doubt some of them took up a larger area than they are able to look after. They have to pay heavy interest, while a lot of the land is laying idle.
2699. *Mr. Neild.*] Will the land between Casino and Grafton compare favourably with land for grazing purposes in the Richmond River district? No.
2700. How many acres would be required in that part of the district in its natural state to feed a beast? About 18 acres. In some parts of the Richmond district land in its natural state would require 6 or 7 acres to feed a beast. That is extra good. The average would be about 9 or 10 acres to a beast.
2701. Do you think that the evidence which has been given, that there is a great deal of land in the Richmond district which will feed a beast to 3 acres, is reliable? Yes; the scrub land with artificial grass, but I do not think there is any land in the Upper Richmond that will do that.
2702. Will the scrub land feed two beasts to the acre? Plenty of it will carry one beast to the acre. I have seen two beasts to the acre, but I think one beast to the acre is a very fair average for the best land.
2703. If the Committee have received evidence to the effect that almost any of the land between Casino and Grafton will support a beast on 3 acres, is that evidence unreliable? Yes; it is not correct.
2704. Is that land suitable for agricultural settlement? I do not think so.
2705. Is that country likely to afford any material traffic to a railway? No.
2706. Supposing that the Clarence district is fully occupied for agricultural purposes, can people from that district come here and obtain land suitable for agriculture? Most of the best land has been taken up, but a great deal of land which is suitable for agriculture is reserved.
2707. Is it absolutely necessary to make a railway between Grafton and Casino in order to enable the surplus population of the Clarence to obtain homes? No.
2708. *Mr. Collins.*] Is there much land abandoned by lessees of runs in this district? Odd selections have been abandoned here and there.
2709. Is there not a lot of land on the stations south of Casino and on this side of Casino which have been abandoned by the owners of runs? They have thrown up some of that country, but they have taken it up on annual leases. They get it cheaper that way.
2710. Is there not a lot of land not paid for at all? I cannot say.
2711. What is paid for leaseholds here in connection with conditional purchases? From 2½d. up to 7d. per acre—that is, for land used for grazing.
2712. What do they pay for leases for agricultural purposes? Very few have been taken up for agricultural purposes. A few scrub leases have been taken up in this district, and they have had 10d. and 1s. an acre placed upon them.
2713. Are the Government reserves good land? Yes; undoubtedly.
2714. If a railway were constructed from Lismore to Grafton, would there be much interchange of products between the districts? I do not think there would be any.
2715. What is the character of the country between Casino and Tabulam? Very good.
2716. Is that land taken up? It is mostly in the hands of large holders. There is a small settlement about 8 miles from Tabulam, between Casino and Tabulam. The holdings are grazing and agricultural. Maize grows very well there. It is forest land. The settlers used to supply Fairfield with corn.
2717. As the land along the proposed railway between Casino and Lismore is in the hands of private owners, the Government would not derive any advantage if a railway were made from the sale of land? Not on the line of railway, but they would further back.
2718. But the back country is not such good land? All the country up there is fairly good.
2719. What has the depression among the selectors been caused by? Bad prices for stock, and losses by flood.
2720. Did they lose sugar-cane? No.
2721. Have not many of them gone largely into dairying? Yes; but butter was very low in price in the summer.
2722. Where do they send their butter? It nearly all goes to Sydney. A great many of the dairymen send their milk to the co-operative factories in the district.
2723. How do you think they will recover their position? With fair seasons they will recover themselves.
2724. Even if more people come into the district in competition with them? The more that come the better; they will be able to cut up some of their land and sell or lease it.
2725. Supposing the Government throw open the reserves, and bring a number of people into competition with the settlers, do you think that would assist them? I think the larger the population the better, the people will then get better roads.
2726. Are not the roads in the district very good? They are fairly good now.
2727. Cannot they get their produce to market pretty well now? Yes.
2728. Will a railway from Lismore to Grafton assist them in any way? No.

Mr. James Barrie, Mayor of Lismore, sworn, and examined :—

Mr. J. Barrie. 1 Aug., 1892.

2729. *Mr. Neild.*] Are you Mayor of Lismore? Yes; I was in the first Council established here in 1879, and with a break of four years I have been in the Council continuously. The population of the town in 1879 was barely 500. It is now 3,700 within the limits of the municipality. I have been engaged in business here during the whole of my fifteen years' residence. There has been a similar increase in the population of the district. In the year 1880, which was about the commencement of what we call the rush to the district, the electors in the Richmond electorate were 2,632; for the year 1892 there were 8,032. There has been a steady increase during the whole of those periods. We estimate the whole population of the electorate to be 30,000. The increase in the number of electors is largely due to people coming from other parts of the Colony, principally farmers from the south coast and other places. They came here to take up farms. There has been very little mining carried on.
2730. Therefore the population settled here has been a stable population? Yes.
2731. Have the Government works which have been carried on in the district up to date been sufficiently extensive to bring a floating population into the district? Not until the last year.
2732. The increase you have referred to may be taken as a *bona-fide* permanent settlement of the people on the soil? Yes.
2733. Are you acquainted with other parts of New South Wales? Yes; the southern district as far as Sutton Forest, and the western districts as far as Dubbo and Mudgee.
2734. Compared with the southern and western districts, are you of opinion that this district is suited to carry a heavier population to the square mile than the districts you have named? I have no doubt that this district is capable of carrying double the population of any one of the places I have mentioned.
2735. Have the settlers in this district taken up large areas? Unfortunately they have taken up too much land for the capital they had to develop it, and the majority have only utilised small portions of their holdings.
2736. What area of land is sufficient for the support of a family of five or six persons? In the sugar part of the district 40 acres are ample for any family to live on.
2737. Have some of the cane-growers 640 acres? I am not aware of any of the cane-growers having that area, because most of the cane-growing land was taken up before the passage of the 640-acre extension clause.
2738. What is the average area held of land suitable for cane-growing? From 40 to 200 acres, averaging about 100 acres apiece.
2739. Then only two-fifths of the average holding is developed for cane-growing purposes? It is necessary to explain that that would not apply to the river banks, but it would apply to the cane land further back. The lands on the river banks have been much more largely developed, but merely patches of the cane land on the higher ground have been brought under cultivation.
2740. Then your estimate is that about two-fifths of the land suitable for agricultural settlement, and selected for that purpose, is used for cane-growing? It might be less.
2741. Is there much land suitable for cane-growing open for selection? We consider that most of the reserves are suitable for cane-growing.
2742. Is there land at present available? Not a great deal of it suitable for cane-growing except the reserves.
2743. What distance is it from water carriage? A considerable distance.
2744. Would it be too far to pay for hauling cane to a mill? I think so.
2745. Do you think that the holders of the land which is not used for cane-growing are holding it because they have not the means of developing it, or do they hold it with a view of settling their children upon it? Both reasons apply. Many hold it for their children, others are holding it because they have no mode of transferring a portion of their selection. The law does not allow them to do so.
2746. If the law did permit, do you think they would relieve themselves of the incubus of unimproved land by selling it? I am certain that large numbers of them would do so.
2747. Would such a process tend to the rapid development of the district? Nothing in the way of legislation would help the development of this district better than that.
2748. Do the children, as they grow up and become of age, remain in the district, and till the soil, or do they want to go to other parts of the country? In my colonial experience of nearly forty years I never knew a district where the people remained so steadily in it as they do in this district.
2749. Do you look forward to the future with a great deal of confidence as to the permanent occupation of this rich district? Yes; if means of communication are given by railway and harbour works.
2750. What railway? The railway which, I believe, will tend most to develop the district is a railway from Lismore to Tenterfield.
2751. What about the railway from Lismore to Grafton, by way of Casino? I cannot see that any benefit to this district will accrue from a railway beyond Casino.
2752. Do you approve of the construction of a railway as far as Casino? Yes; as part of a railway which would put us in communication with the table-land.
2753. What advantage do you think the district would derive from a railway to Tenterfield? Our district would be brought within a reasonable distance of a place where we could get our bread supplies—that is, from Glen Innes, Tenterfield, and Inverell.
2754. Do you want the line carried on to Inverell? Most certainly. We want the railway to Inverell.
2755. From Tenterfield? We would not expect anything at present, further than utilising the northern line as far as Tenterfield.
2756. But is not Inverell too far away from Tenterfield to haul wheat with teams? We anticipate that there will be a railway from Tenterfield to Inverell.
2757. Do you think that New England produces enough breadstuffs for her own requirements? She has no other market to grow for at present.
2758. Are you aware that New England does not produce more than one-third of the breadstuffs required for her local consumption? I can hardly imagine such a state of things when I see by the Statistical Register that the yield of wheat in New England is the largest in the Colony—I refer to the wheat lands of Inverell, Glen Innes, and Tenterfield.
2759. Are you aware whether New England produces all the wheat required for her own consumption? I have never looked at that question.

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2760. Do you know that the rate per ton for breadstuffs from Glen Innes to Sydney is only 16s. 4d. per ton during nine months of the year? I know that it is very cheap.
2761. Is that a much higher freight by rail for breadstuffs than would be charged from the Richmond to Sydney by steamer? It is very little higher.
2762. If New England, with the advantage of such low rates, does not grow anything like enough breadstuffs for local consumption, do you see any prospect of being able to draw your bread supplies from a locality that already under-produces? It is an anomaly which I cannot comprehend, unless the people of New England have industries which pay them better than the growing of wheat. I can imagine nothing more natural than that we should supply them with sugar, and that they should supply us with wheat.
2763. Supposing the people of New England, instead of undertaking the laborious work of agriculture, preferred to grow sheep and cattle, and to take the world easy, can you readily understand why they do not produce much breadstuffs? Yes; but in a Colony where we are suffering from so much depression, with too much surplus labour, surely there ought to be means found for settling population on the land, in the richest wheat-growing districts.
2764. Do you not know that, notwithstanding how much depression there may be in the labour market, the rule is for depression not to affect the price of labour? I know it is different in my own experience with regard to the supply of goods. I still think we may get our wheat supplies from the table-land. I am aware that wheat production there is small, but I have always attributed it to the want of means to get to a market.
2765. From what I have stated is it not evident that New England is not so reliable a source of wheat supply as you thought it was? At present we could not get it there.
2766. Therefore, the profitableness of a railroad such as you advocate is a problem of the future? The question of a wheat supply is evidently problematical.
2767. Do you think that if a railway were built the wheat would be grown and you could exchange products? Yes.
2768. Would any other advantages accrue to the community as a whole by the construction of the proposed railway? We could send them all the semi-tropical products which they cannot grow. I look upon the railway which I propose as part of the railway system by which Sydney should be connected with Brisbane, by way of the Tweed and Southport. It would be 20 miles shorter than the present route, and it would run over the broad gauge to our border. It would afford quicker communication, and the railway from here to Tenterfield could be built almost for the amount estimated for a railway from Lismore to Grafton, and we would be sure that the line would be payable.
2769. You contend that the New South Wales railways would be used for a greater length than at present, to the advantage of this Colony, rather than that the narrow gauge of Queensland should be used without yielding any revenue to New South Wales? Yes.
2770. Would not that have to be a question of arrangement between the Railway Commissioners of the two colonies? I am aware that the Queensland railway is within a very short distance of our border towns, and their railway will connect with ours. There are only 18 or 20 miles to be built by Queensland. One of the strong reasons for advocating the Tenterfield route is the fact that Tenterfield is the lowest part of the New England territory. It is 600 feet lower than any other part of the New England ranges.
2771. Would not the railway still have to climb over the highest part of the line at Ben Lomond? Not to Tenterfield; but I am only speaking in connection with its relation to the coast at Byron Bay.
2772. Supposing the connection were made at Guyra, would it not then be unnecessary to climb over the highest portion of the line at Ben Lomond? Yes.
2773. Supposing it were determined to construct the proposed line from Lismore to Casino and on to Grafton, and to make the connection with the table-land by the Don Dorrigo and Guyra route, would that connection be a valuable one for the Richmond River district? No doubt it would.
2774. Do you consider that it would not be as valuable as the direct connection by way of Tenterfield? A strong argument against the proposal you have mentioned is that it is too far to look forward to such an expenditure of money. Having regard to the resources of the Colony in the way of borrowing for railways the proposed expenditure would not be justified, and it would be ten years before the scheme could be carried out. The connection by way of Tenterfield could be carried out in two years. Looking at the question from a broad point of view in the interests of the country, it would be a waste of public money to carry out the larger scheme while the smaller scheme was waiting to be done.
2775. Would you approve of the construction of the line from Lismore to Grafton with a view to its ultimate extension to the Hunter River? I would if there were means available for building a North Coast line, but I think the North Coast line could very well wait until other connections are made in the Colony. Taking the most rapid progress we have made in railways the proposed coast railway would not be available for ten or fifteen years.
2776. Would it not open up a large area of good land on the coast? The parts that would be opened up have fair means of communication already by water, and it would be more just to those districts to mend their present highways than to build them new ones.
2777. Do you think it would be better, in the public interest, to improve the river navigation than to build railways for those districts? Beyond a doubt.
2778. Do you not think that those people want communication with the table-land in order to get breadstuffs, as well as the people here? Certainly. I think it would be far preferable to give them railways to the table-land—for instance, from the Macleay, the Manning, and Port Macquarie. That would be much better than making a railway along the coast.
2779. Has any effort been made here to promote direct traffic with the old country? I have done a little importing, and some of the other storekeepers have done the same by way of Sydney, but there has been no direct trade with Europe.
2780. Do you look forward to such a direct traffic with the outer world? Yes; when the Byron Bay breakwater if constructed.
2781. Would it be an advantage to have more markets to deal with, rather than to be tied to the metropolitan market? I think we ought to be in a position to ship our dairy produce from our own district direct to Great Britain, and that the wool of the New England district should also be shipped from here.

2782.

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2782. Do you anticipate that the improvements now being carried on at the Richmond River Heads will afford facilities for an over-sea trade? I am very favourable to those works, but I do not think that the port will for many years to come be fit for over-sea traffic.
2783. You are aware that the tendency of over-sea traffic now is to have it conducted in steamers of not less than 3,000 tons burden, and some a great deal larger, drawing fully 18 feet of water when loaded? Yes.
2784. Do you anticipate that the improvements now going on at Ballina will make provision for such a steam service? I am very doubtful about it.
2785. Do you anticipate that the development of Byron Bay as a shipping port will lead to its use by the producers and merchants of this district for trade across the sea? Yes.
2786. Would your producers and consumers, therefore, be saved the extra cost of freight between here and Sydney, and be able to make better profits and purchase their goods cheaper to that extent? Yes.
2787. Would that amount to about 15s. per ton as compared with present prices? Yes; the freight to Great Britain is just about the same as it is from Lismore to Sydney.
2788. What is your principal article of produce? Sugar at present; next to that the dairying.
2789. Can you give us any details as to the sugar industry? The area under cane is 13,439 acres; those are the figures for the year ending April, 1892. I should think the area under maize, approximately speaking, would be somewhere about 20,000 acres. The total area under agriculture and permanent grass is 82,000 acres. The land under cultivation in the whole district is 28,350 acres for agriculture, and under permanent grass, 53,680 acres. Our dairy industry has risen from nothing, in 1880, to 1,133,995 lb. for the year ending March and April, 1892. At 9d. a pound that would give a value of £42,500. The yield of cheese was 125,721 lb., and bacon and hams, 49,472 lb.
2790. What is the average output of cane to the acre? It is generally put down here at 30 tons to the acre, but there are yields that have come under my own notice of 60, 70, and 80 tons to the acre. Thirty tons to the acre is an average for canes and ratoons.
2791. How many tons of cane are required to make a ton of sugar? We generally say 10 tons.
2792. What is the yield of maize? Thirty-four bushels per acre on the average.
2793. What is the price obtained for maize? It varies between 2s. and 3s. this year. I have seen it 5s. per bushel.
2793½. What is the average for a term of years? About 3s. since I have been in the district, or 2s. 6d. to 3s. That is the local price—the net yield to the grower.
2794. Do you ship much maize here now, or is it consumed locally? I think the amount shipped this year is very small. The reason is the low price obtained last year, and the local demand for the railway works.
2795. What do you propose to export in over-sea ships? Our dairy produce, as far as this district is concerned, part of our timbers, and the trade that would naturally come from the New England districts.
2796. As you would not export sugar or maize, do you think the wool from New England, the dairy produce from here, and the chance of shipping timber would constitute an over-sea traffic? Yes.
2797. How many 3,000-ton vessels could you fill in a year? I am speaking relatively as to what our district would carry in the shape of population. At present we have not trade to justify large vessels coming here.
2798. Do you think that the prospect of the over-sea trade is sufficiently good to warrant the expenditure of something like £500,000 on Byron Bay in order to establish an international shipping port? The estimate is that about £250,000 would be sufficient for the purpose. I think such an expenditure would be justified. I am satisfied that the electorate of the Richmond would carry a population, without any great strain upon its resources, of over 1,000,000 people.
2799. You have already intimated that the financial position of the Colony is not sufficiently good to warrant an expenditure far in advance of our requirements with regard to railways;—would you esteem it to be an expenditure too far in advance of the requirements of the district to spend £250,000 in making an international port at Byron Bay? I do not think so. Considering the rate of increase in the population here, it is not unreasonable to suppose that before the completion of the works we shall have a population of 100,000.
2800. If it is not possible to carry out more than one of three projects which will be useful to the district, viz., making Byron Bay a shipping port at an expense of £250,000, building a railroad to Tenterfield at a cost of about £300,000, or building a railway to Grafton at a cost of £500,000, which project would be most valuable to the district? A railway to Tenterfield would be most valuable to the district, for the reason that it would force the other alternative—that is, the Byron Bay scheme.
2801. But my alternative was only one? Well, I will take the Tenterfield railway. When I came to this district there was no dairying: now there are over 4,000 people engaged in that industry, and there are some twenty-six factories, some of them on the co-operative principle, in the electorate.
2802. Are there not advertisements in the local papers with regard to the winding up of two or three of these factories? I never heard of it.
2803. Is that not the case on the lower river, somewhere about Woodburn? I know there has been a great deal of friction about working the Woodburn dairy, but I did not know that it had come to that. I think the butter factories are in a fairly flourishing condition, but if they could ensure a more regular get-away for their produce, they would do better than at present. When the roads and the bar are bad together, they cannot get their produce away.
2804. What would help them? Better roads. Within 5 miles of Lismore, they are shipping their butter at Byron Bay in preference to Ballina.
2805. Do they cart or carry their butter 30 miles to Byron Bay for shipment? Yes; we have brought witnesses here to prove the fact.
2806. Are we to understand that 30 miles over roads, of which we hear remarkable accounts, is a better method of transit than making use of steam communication on your very fine river? Yes; simply because of the blocking of the mouth of the river.
2807. Do any steamers go to Byron Bay owing to stress of weather? Our river steamers often go there for shelter when they cannot get into the river.
2808. When the river is so bad that they cannot cross the bar at Ballina, is Byron Bay sufficiently placid to be used as a place of shipment? Certainly, at times. I remember one case when for three days our steamers

steamers had to go to Byron Bay for shelter, because they could not enter the river, and during the whole of that period they were able to discharge at Byron Bay. Mr. J. Barrie. 1 Aug., 1892.

2809. Did Byron Bay come to be largely utilised in the first instance for the landing of railway material? There were steamers trading there before, but that was the first great traffic it had.

2810. And that development has tended to establish Byron Bay as a shipping port for the produce of the district? Yes; around here.

2811. When the carriage of railway material is at an end do you think that the steam traffic to the bay will be maintained, and that there will be sufficient local production to maintain it? There will not be the same number of steamers running as there is now.

2812. Is not the frequency at which steamers leave very important in the dairying industry? Yes.

2813. Would the same thing apply to your using Byron Bay eventually as a port of shipment for dairy produce to the other end of the world? Yes; but I am perfectly satisfied that even with the facilities there are now of shipping, that once the train goes that way the people round about Newrybar, Clunes, and Eureka will send their produce to Byron Bay to be shipped as being more regular.

2814. Will that induce steamers to come? Yes.

2815. Is not the climate here rather hot for dairying? No; I am assured by all the south coast farmers that they can make butter here as well as in the Illawarra districts.

2816. We have been told in evidence that vessels have sometimes been bar-bound at Ballina for nine months. Has anything of that kind happened in your experience? No.

2817. Do you think the witnesses meant nine days or nine weeks? Nine weeks possibly. I have been told that in the old days vessels have been bar-bound nine weeks.

2818. What is the limit of interference with steam traffic by reason of the badness of the bar? On one occasion there was a week when no vessel came in or out. The weather was violent outside, and they did not know which way the channel lay.

2819. Even if the bar had not been dangerous would the steamers care to leave the port in the face of the storm outside? During a portion of the time they would not have cared to go out.

2820. So you do not consider the bar itself was responsible for any very serious detention of the steamers? There were two occasions on which the bar shoaled up, when we were in a great fright about supplies. It went down to 6 feet of water.

2821. What did you do then? We waited for Providence to open the bar.

2822. Did you not get supplies from Harwood? I never heard of it.

2823. Was not flour sent from Chatsworth to Woodburn? Perhaps to Woodburn, but not Lismore. Our supplies were very low. We had to get half a ton of flour from Broadwater, at the mill. It was thankfully received. That was due to the silting up of the bar, which occurred some time during this year.

2824. Are we to understand that Lismore is in such a precarious condition with regard to supplies that the silting up of the bar by a couple of feet rendered you absolutely uncertain of sustenance? Yes; we were really in straits on that occasion.

2825. Then it is a matter of the gravest consequence to you to have the harbour works pushed on? It is of vital importance to this district.

2826. Would it be more satisfactory to have them pushed on at greater speed than at present? We have tried every possible means to induce the Government to push them on. I went to Sydney in March this year specially for the purpose of trying to induce them to expedite the work.

2827. Will the completion of the railway from here to Byron Bay render you a little less dependent on Providence to open the bar? Yes.

2828. As regards the proposed line from Lismore to Grafton as a local line, do you give it your approval? I cannot.

2829. As a line to be continued hereafter along the north coast, do you consider it premature? Yes.

2830. As a line to be continued hereafter through Don Dorrigo and to New England, do you think it is also premature, and that the connection with the table-land is too far south? Yes.

2831. In preference to the construction of any such line, would you desire a line to be constructed to connect this district with Tenterfield; and also that the harbour works at Ballina should be pushed on with the greatest celerity; and do you favour strongly the early construction of harbour improvements at Byron Bay? Yes.

2832. *Chairman.*] In view of the precarious entrance to the Richmond River Heads, and perhaps the remote probability that the works will prove a failure, and pending the construction of a harbour at Byron Bay, do you think the Government would be justified in making the railway from Lismore to Grafton in order to make the Clarence a temporary port for the Richmond River district? I am satisfied that it would not be used by this district, even under such circumstances as you suggest.

2833. Why? Simply from our experience. We would not ship our produce at the Clarence. Maize would not stand the cost of transit to the Clarence, in the first instance. Our sugar would not need to be shipped. At the worst it has only to wait three weeks; that is the longest time our port has been blocked up.

2834. So that as an emergency line it would be of very little use to this district? It would be a waste of public money to build it on those terms.

2835. In view of the straits which you say that even this year the district has been subjected to owing to the silting up of the channel, would the proposed railway be useful for bringing up stores from Sydney *via* the Clarence? No doubt if we had had it on the occasion I have spoken of we would have got four or five tons of flour brought over from Grafton.

2836. You think that such a traffic would be so intermittent that it would not justify the construction of the railway? Yes.

2837. *Mr. Collins.*] What is your usual port now for obtaining goods? Ballina.

2838. If the railway is completed to Byron Bay, where will you get your goods from? It is more than likely that we should use Byron Bay.

2839. From how far south do people get their goods from Byron Bay? I doubt whether the Coraki people would get goods from there. The Casino people would use Byron Bay.

2840. When the railway is completed and Byron Bay is ready for large shipments, the only people who would use Ballina would be the people between Coraki and Ballina? Yes.

2841. Then the money spent on the Richmond River Heads would only be for that district? Yes; it would divide the trade, but, as a rule, I am speaking of what I believe to be the trend of trade. 2842.

Mr. J. Barrie. Aug., 1892.

2842. As a business man, would you obtain any goods from Sydney *via* the table-land if a railway were constructed from Lismore to Tenterfield? Very little.
2843. Then the only use that would be made of a line from Lismore to the table-land would be for an interchange of products? Yes; and no doubt the class of goods which would bear the freight and those goods for which we might be in a hurry would be obtained by rail from Sydney.
2844. You believe that they grow products on the table-land which you cannot produce, and that you grow crops that they cannot produce, so that there would be an interchange of products, and there would be passenger traffic? Yes; I think there would be a large passenger traffic.
2845. Do you think that people would go to Sydney by Tenterfield rather than by rail to Byron Bay, and thence to Sydney? I have no doubt that if the railway were constructed a great number of people would go by Tenterfield. A great deal of the passenger traffic from here would go that way.
2846. If a railway were constructed from Lismore to Grafton, do you think that people would prefer to go by way of Grafton, and take a passage to Sydney by water there, rather than go to Byron Bay and take a passage from there by water to Sydney? No; they would not dream of such a thing. They would go to Byron Bay.
2847. How is it that most of the residents who travel from here to Sydney go to the Clarence now? Because the communication is more regular. If I want to be in Sydney on a certain day, my time as a business man is a consideration, and I would go to the Clarence when the bar here is closed up. The regularity of the Clarence traffic is undeniable.
2848. Would you recommend the construction of a line from Lismore to Tenterfield under the present financial circumstances of the country, or would you recommend a line from Lismore to Grafton and Grafton to Guyra? I have no hesitation in saying that I would go for the one to Tenterfield. It will answer all the purposes of the other at one fourth of the cost.
2849. Seeing that you will have good communication within twelve months with Byron Bay, and also have better communication at Ballina, would you still recommend the construction of a line at present between Lismore and the table-land? I would. I am satisfied that our present railway connecting with the table-land will be a success from the day it is opened.

Mr. William Gibbon Walker, Government Surveyor, Lismore, sworn, and examined:—

Mr. W. G. Walker. 1 Aug., 1892.

2850. *Mr. Neild.*] How long have you been in this district? Six years.
2851. Have you a good knowledge of the district? I am constantly travelling about it.
2852. Have many selections been taken up in this district lately? Not just lately.
2853. How long is it since the majority of the selections have been taken up? Land is still being taken up gradually, but I understand that the great rush for land took place about ten years ago, when I was not in the district
2854. Do you frequently visit the different portions of this district? Yes; I am constantly on the move, reporting on roads and reserves.
2855. Are there many reserves in this district? Yes. Mr. Donaldson at Grafton gave the area of the reserves in this district as well as in the Grafton district.
2856. Do the Government intend to open any of these reserves shortly? Some of them are already open as special areas.
2857. At what price? The lowest price is 30s. an acre, I suppose they average about £2, £2 10s., or £2 15s. per acre. There are tit-bits which have been thrown open at a much higher price. These special areas are being gradually taken up.
2858. What is the size of the special area holdings? Very seldom over 100 acres.
2859. Are there many now open? Yes; a good few are still open, they consist of scrub land.
2860. How far is that land from the present railway between Lismore and Byron Bay, on each side? There is a good bit within easy access of the railway still open.
2861. Why has not that land been selected? It is gradually being alienated, and no doubt in course of time it will all go.
2862. Is that land thickly timbered? Yes; most of it is dense brush.
2863. What would be the cost of making it clear? About £5 to £6 an acre to get it under artificial grass.
2864. Must it be put under artificial grass to be of any use for dairying? Yes.
2865. Is this land suitable for sugar-growing? Yes; but it must be cleared before the selector can get any return at all.
2866. Would the people who take up this land have easy access to the railway and water communication? They would hit the railway line first. They would go from the railway line to water communication either at Byron Bay or Lismore.
2867. Seeing that they only obtain an average of 12s. a ton for sugar-cane, would it pay them to take up this land under the special area clause, clear it, and send their sugar by rail to the ports? I am hardly prepared to say.
2868. Are the selectors in the district in a flourishing condition? A good many of them are handicapped by being in debt to the banks; that is the universal opinion in the district; the people take up too much land in the first instance and cripple themselves.
2869. Is there much settlement on the land between Lismore and Casino? Yes; generally dairying; there are two good sized holdings, besides all the smaller ones.
2870. Is there any land vacant on those holdings for settlement? Not much; there are a few odd reserves adjoining.
2871. What would that land be good for? It would grow good maize and be good for dairying purposes.
2872. Do you know the land from Casino to Tenterfield? Yes; especially up to Tabulam and Fairfield; there is some very good land there.
2873. Is there good land all the way up to Tenterfield? Yes; except the Richmond Range; and as you rise up the table-land at Tenterfield—of course the land there is not good.
2874. Has any portion of the runs between Casino and Tenterfield been abandoned by the lessees? Yes; some of the leasehold areas.

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2875. Why? Owing to the way they have secured their purchased land they can make use of the abandoned area without paying rent. Some of them still have the land under occupation license and annual lease.
2876. Is there still a lot of land for which they do not pay rent? Yes; a good bit, I think.
2877. Are there any selectors carrying on dairying between Casino and Tenterfield? I do not think there are many. There are a few between Casino and the Richmond Range.
2878. Where does their produce go to? On this side of Tabulam it goes to Casino.
2879. If they got better prices for it on the table-land would they send it there? Yes; decidedly.
2880. Have you seen any produce go from there to the table-land? Now and then I have seen teams going along the road.
2881. Do you know the country between Casino and Grafton? Yes; as far as the boundary of Camira Station, 35 miles south of Casino.
2882. What class of country is that? It is rather poor, except along the valleys of one or two of the creeks. On the hills it is poor country. There is not much settlement there, and there is not much settlement likely to come about, even if a railway were made.
2883. I see that in the former evidence which you gave to the Sectional Committee which inquired into the construction of a railway into this district, you gave a great deal of evidence with reference to the character of the land in reserves, and you recommended that it should be kept in special areas on account of its superior character? Yes.
2884. Have any of these reserves been thrown open? A few, since I gave evidence.
2885. Have your expectations as to the price that would be realised been fulfilled? Fairly well.
2886. Have the reserves thrown open been taken up? Not all of them. Land has been gradually alienated.
2887. What has been the average price obtained? About £2 or £2 10s. an acre.
2888. Do you think the residue is likely to fetch the same price? Yes; some of the reserves are fetching higher prices.
2889. Is the good price obtained due quite as much to the improved prospects of railway accommodation as to the qualities of the soil? Yes; both combined.
2890. Is there any prospect within the next ten years of the construction of the proposed line from Lismore to Grafton being the means of inducing the sale of Crown lands to any appreciable extent? Not in this part of the district.
2891. Where would it affect the sale of Crown land? Perhaps between Casino and Grafton.
2892. Your evidence is that that land is very poor? Yes; taken as a whole.
2893. Do the scrub lands of the Richmond extend beyond Casino? No; except in patches.
2894. If the soil is of a poor character what effect would the railway have upon the sale of the land? Settlement generally follows railways.
2895. Are there not many lines of railways constructed for years where the country still remains a wilderness? I do not know for certain.
2896. Could you not find many places in New South Wales where railways run for 40 miles without the smallest sign of settlement? Yes.
2897. Might not that disastrous experience be repeated? It might.
2898. In view of the fact that the people of the Colony are now being taxed over £1 a year for every man, woman, and child, in order to pay the interest on the public debt would you advocate the construction of future railways with a great deal of care? Yes.
2899. Did you hear the evidence of Mr. Barrie as to the advantages that would accrue to this district if settlers who are burdened with land when they do not possess the means to utilise were enabled to sell that land? Yes.
2900. Do you agree with his views on that subject? Yes; such a provision would be an immense boon to this district.
2901. Would it be as good as a railway? Yes; pretty well.
2902. If such legislation were adopted, which would enable settlers to sell the unutilised portions of their holdings, do you think that such legislation would injuriously affect the sale of Crown lands? I do not think so.
2903. Do you think there are buyers enough for both? There would be by degrees, but not all at once.
2904. Would not the private lands that would go into the market be nearer communication than the Crown lands? Yes.
2905. Therefore, would not legislation of that character tend to delay the sale of Crown land? Yes; but it would increase the population here and, consequently, increase the value of, and demand for, Crown land.
2906. Do you think that if the settlers were enabled to sell those portions of their land which they make such little use of, that that would be an inducement to a considerable number of people to come and settle here? Yes.
2907. Would they come from other parts of New South Wales or from other colonies? They would come from both sources, as this district became better known.
2908. The population here has increased rapidly of late years, and it has been stated in evidence that a great deal of that population has come from other parts of New South Wales; therefore while the Richmond River district has been the gainer may not the Colony as a whole have gained nothing? That may be so.
2909. May not the people who were living in the neighbourhood of other railways in the Colony have come here and thus reduced the earnings of the public railways? Yes.
2910. So that rapid increase of population here may not mean an increase in the general prosperity of the Colony, although it may be excellent evidence as to the value of the soil in this district? Yes.
2911. Have you in any part of the country you have visited seen a district more richly endowed by nature for agricultural pursuits than the Richmond River district? Never.
2912. *Chairman.*] You have stated in your evidence that many of the selectors in this district are in the hands of the banks? Yes.
2913. Do you think that it is possible for them to recover from that position? Undoubtedly.
2914. Do you think they are merely suffering a temporary embarrassment? That is all.
2915. Are any of the selectors applying for an extension of time for the payment of instalments? I understand from Mr. Riddel that they have done so in one or two instances, but not in many.

Mr. William John M'Caughey, farmer, Tuckurimba, sworn, and examined:—

Mr. W. J. M'Caughey. 1 Aug., 1892.

2916. *Chairman.*] How many acres of land do you hold? I am working for my father; I have been twenty-four years in the district.
2917. Why have you not yet started for yourself on a selection? Because the family already have sufficient.
2918. What is the size of your father's holding? Two thousand acres.
2919. Does it all consist of the splendid chocolate soil of this district? Yes.
2920. How was it acquired? It was selected from time to time by my father and his family.
2921. Did you select for your father? I did originally hold a portion, and my brother also.
2922. Does your father hold the land which you selected for him? Yes; it is a family holding.
2923. What do you cultivate? Cane and maize. About 100 acres of cane, and 30 or 40 acres of maize. We sell the maize in Sydney and locally. This year we have sold it mostly in the district. We have a ready sale for the cane.
2924. What do you do with the balance of your holding? We use it for grazing. We do not carry on dairying.
2925. Are you mortgaged in any way to the banks or financial institutions? No.
2926. What is the financial state of the selectors around you? It is very good as a rule.
2927. Are there large holdings in your neighbourhood? There are some of 100 acres, 200 acres, and 50 or 60 acres.
2928. Are any of your neighbours selling out? No; almost the same people are in our neighbourhood as when we first went there.
2929. How long have the majority of them been there? Twenty and thirty years.
2930. Are their sons taking up land? Yes; some in the vicinity of their parents, and some have gone about Casino.
2931. Is there much land about Tuckerimba to take up? No.
2932. *Mr. Neild.*] How do you get your produce to market? We send it by steamer to Sydney. Our land fronts the river.
2933. Do you load into steamers or droghers? Formerly we loaded into steamers, but lately we load into droghers, and it goes on board the steamer at Coraki.
2934. Have you a sugar-mill? No; we sell to the Colonial Sugar Refining Company at Broadwater. We load maize at Coraki, and the cane on the bank of the river.
2935. Have you had any applications to sell any portion of this large holding to intending settlers? No; because I think it is generally known that it is not for sale.
2936. Do you think that in devoting so large an area of agricultural land to grazing purposes, you are making the best use of it? No.
2937. Do you intend to put more land into cultivation? It would not pay to cultivate too much, because we should have to pay for a lot of labour.
2938. Recognising that you do not get the best return from the land in feeding cattle, is it your intention to continue to put the land to that unsatisfactory use? My father is not compelled to sell the land, and he can keep it.
2939. Are there any persons whose agricultural area is as small compared with their general holding as it is in your case? No; in most cases they cultivate the whole or very nearly the whole of their holdings. Those who have 200 acres, generally cultivate 30, 40, or 50 acres, that is, taking the river bank with the upland.
2940. Is your land mostly scrub land? The portion on the river bank was scrub land, and the rest is forest.
2941. Where scrub lands are lying idle in private hands, can they be used for grazing? No; they have to be cleared.
2942. Is there a vast area of land lying in its natural state, which is not put to any use? Yes; in the Lismore district.
2943. What proportion of the holdings is left untouched and uncleared? The selectors can only clear the land according to their means, and they are doing so. When they accumulate a little ready money they clear more land.
2944. Did you hear Mr. Walker say that he thought it would be a great advantage to the selectors if they were able to sell some of their unimproved land, and do you agree with that view? Yes.
2945. Would it promote the best interests of the district? Yes; because, as a rule, when you have to pay for labour, the smaller the holding is the better it will pay.
2946. *Mr. Collins.*] How long has your father had his selection? He has had the original portion for twenty-seven years,
2947. Is all the land cleared? One hundred and fifty-six acres are cleared. The rest is forest and open plains; part of the forest has been ringbarked.
2948. Is it all fit for sugar-growing? No; only the portion on the bank of the river.
2949. Is the other portion fit for maize? Yes.
2950. Was it all taken up as conditional purchase or conditional purchase and conditional lease? The original portion was taken up as purchased land? The rest of it was taken up as conditional purchase.
2951. Has any application been made to lease your land? An application was made for some grass land, and I think my father gives the applicant the right to run so many head of cattle.
2952. How much does he pay? £1 a week for about 320 acres.
2953. Is that land fenced off? The whole of it is enclosed.
2954. Is not that a very reasonable rent? Yes.
2955. Is you father prepared to lease any portion of his land at this price? No; he has got stock enough for his land.

Mr. William Moses, auctioneer, Clunes, sworn, and examined:—

Mr. W. Moses. 1 Aug., 1892

2956. *Chairman.*] Are you a resident of this district? Yes; for two and a half years, and I visited the district before.
2957. Have you any information to give to the Committee? The area of the country between Byron Bay and Lismore, known as the Big Scrub, contains an approximate area of 250,000 acres. It is held by free selectors.

2958.

Mr. W. Moses. 1 Aug., 1892.

2958. What is the size of their holdings? They vary from 50 to 640 acres. They are working, as far as they are able to do so, at dairy-farming principally. Sugar is grown at Rous, and at Alstonville, in addition to the dairy farming industry.
2959. Is the whole of the land close enough to a market to make sugar-growing payable, seeing that they only obtain 12s. a ton for the cane? The railway running through the district will develop the sugar industry as well as the dairying. The whole of the land from Byron Bay to Lismore is suitable for dairy-farming; and I believe a portion of it is very suitable for cane-growing.
2960. How many acres do they want for dairy-farming? One hundred or 150 acres.
2961. In good seasons, what would be the amount received from a dairy-farm of 100 acres? Properly farmed as a dairy-farm, 100 acres would return, under existing circumstances, about £4 10s. per acre per annum, and perhaps a little more under more favourable circumstances.
2962. What would it cost to work such a farm? I have not had actual experience; but I think it costs £5 per acre, and perhaps more, to place it in a profitable state. The land costs originally £1 an acre. I have included the cost of fencing, so that 100 acres would cost £600.
2963. What is the financial position of the selectors generally in the district? In places where they are close to a factory, their financial position is very good. That does not include the majority.
2964. What is the position of the majority? My dealings have been principally with dairy-farmers, and I find that on the whole they are in a fairly good position. The majority are able to meet their accounts when due.
2965. Would they want £800 to go on a farm of 100 acres? Where the farm is cleared, and it is close to a factory, you could not get it at £10 an acre.
2966. What do the majority of the selectors do with the balance when they have 640 acres, most of which is not cultivated? They have to let it lie there.
2967. What is the average price of land in your part of the district when it is cleared and improved? It is difficult to get at the value, but I have sold cleared land at £20 an acre, 1½ mile from the railway.
2968. Would it be an advantage to the people in your district to have a railway from Lismore to Grafton? It would be no advantage whatever.
2969. *Mr. Neild.*] Was the land which was sold at £20 an acre purchased for dairy purposes? Possibly not. I think it was principally for cultivation, and possibly for growing vegetables. The area was about 10 acres.
2970. What crop except cane would be profitable on land at £20 an acre? Dairy-farming would be profitable.
2971. What is the average return from dairying land? £4 10s. an acre, under existing circumstances.
2972. Is not that a small return, considering the amount of labour expended? There is, perhaps, less labour in dairying than in any other industry.
2973. Does dairy-farming mean the establishment of a dense population? Not dense as it is in a manufacturing country, but it is dense as far as agriculture is concerned.
2974. Would dairy-farming settle more people than maize-growing? Not if the land were suitable for maize-growing, but the scrub land is better for dairying than maize. The high land is admirably situated for cane-growing.
2975. Taking one part of the Big Scrub with the other, is not most of it suitable for agricultural purposes? Yes.
2976. Do you think it is more suitable for dairying than anything else? That is the most profitable under existing circumstances.
2977. Is it profitable because it requires less labour? Yes; and the return is greater.
2978. Is the return of £4 10s. an acre better than the return from cane? The return from cane is £10 an acre, but the people there have not been in a position to grow cane. They may possibly develop the cane industry with the help of a railway, but at present they have no mill.
2979. Supposing facilities for crushing cane were provided, would dairying be more profitable? Possibly not.
2980. How many acres would sustain a family in dairy-farming? One hundred.
2981. Have you heard the evidence that 40 acres of cane-growing land is sufficient for a family? I believe that. The whole of the scrub land is suitable for dairying, but only half is suitable for cane-growing.

Mr. Andrew Johnston, dairy farmer, Eureka, sworn, and examined:—

Mr. A. Johnston. 1 Aug., 1892.

2982. *Mr. Neild.*] How long have you been engaged in dairy-farming? About ten years at Eureka, which is nearly half-way between Lismore and Byron Bay. I came here from Wingecarribee, Kangaloon, Sutton Forest district.
2983. Where do you find an outlet for your produce? I have been shipping butter for the last ten years to Sydney. Until about three months ago we shipped all our produce from Lismore, but since then we have shipped from Byron Bay. There was a block on the bar in April last. I belong to a dairy-farming association or company. It is a co-operative company, registered under the Act.
2984. Has that company been in existence for ten years? No; I was dairying by myself until about two years ago. The nominal capital of the company is £2,000. Six hundred and seventy shares have been taken up; they are not fully paid up. We obtained an overdraft at the bank for £1,500, and we are paying that off.
2985. What was your paid-up capital? 3s. 6d. a share.
2986. Have you paid any dividends? No; we do not pay dividends except to non-suppliers. We have very few of them.
2987. What advantage do you obtain from the company? A guaranteed price for our butter, because we are members of the Dairy-farmers Association of Sydney.
2988. What advantage is it to the shareholders? We get a price for our milk. The expenses are deducted from the receipts for the month, and the balance is divided amongst the suppliers.
2989. Do you get a return from your chief export, deduct the expenses, and distribute the proceeds at per gallon? Yes; I am chairman of the company.
2990. Do you make a ratable contribution to each supplier? Yes.
2991. Do they all give milk of the same quality? No.

Mr. A. Johnston. 1 Aug., 1892.

2992. Then the man with the worst cows comes out on top? Yes; we cannot help that in co-operation.
2993. Is your factory a fair sample of the way in which other factories are managed in this district? Yes.
2994. What is your output in pounds weight? The milk supplied during the month of May was 25,419 gallons. The total amount of butter made, I cannot exactly give, because part of the butter made in April was sold in May, owing to a detention at the bar, and it was sold at a very low figure, but the total quantity of butter sold during May was 16,885 lb. We paid 6d. per gallon for the milk, and carried £27 to the credit of our account.
2995. Then your company is doing a flourishing business? Yes.
2996. What is the quantity of milk which you received during the month of June, and the exact quantity of butter made from it? We received 27,502 gallons of milk, and we made 12,100 lb. of butter. We paid 5¼d. per gallon, and carried a little over £30 to the credit of our account for the month.
2997. What price did you get for the butter? Various prices; the highest has been 1s. 8d., and the lowest for the three months has been, I think, 1s. 4d.
2998. How many farmers are contributing milk to your company? Thirty-two.
2999. What number of persons would there be on each farm? About four adults. The young people milk.
3000. Is your factory fitted up with separators, and all the latest appliances? Yes.
3001. What is the nature of the soil on which your cattle are fed? Red volcanic soil; brush country.
3002. Is it suitable for agriculture? Yes.
3003. Would it be suitable for cane-growing? A considerable quantity of the land in my district is suitable for cane-growing, but we do not grow cane because we are too far away from carriage.
3004. Will the railway, which is now being built, help you? Yes.
3005. Were you in Court when Mr. Moses gave evidence that the yield per acre from dairy-farming was £4 10s. per annum? Yes; that is a very fair estimate.
3006. Is that considered a fair return for the investment in the land, expense of clearing, maintenance of the farm, and so on? Not at present. It should give more, considering the quality of the soil and everything else.
3007. How do you expect it to be increased? By better facilities for shipping produce, and by getting to market by means of speedy carriage.
3008. Does the butter get into bad condition? It used to, when shipped by river.
3009. Are you looking forward to shipping butter to England? Yes.
3010. How would it reach Sydney? It is re-manipulated in Sydney. It is classified, repacked, and sent to England. When we ship it will be through the South Coast Company. It would have to be chilled here to be sent to England.
3011. Have you had serious delays in shipping butter at Ballina? Yes; there was a detention of three weeks, in the month of April last.
3012. We have been told in evidence that the detention was for nine days? I know the detention was three weeks from the time we shipped the butter until we got an account of it. The steamer was nine days or more behind the bar.
3013. Do you look for improved facilities for getting your butter to market by an improvement being made at the entrance to the river? Yes; and at Byron Bay. We ship nearly the whole of the butter at Byron Bay now. A boat has just recently been put upon the line; she comes alongside the jetty at Byron Bay.
3014. Has she ever been driven out of the bay by stress of weather? No; the weather has never interfered with our shipment at Byron Bay.
3015. How do you get your butter to Byron Bay? By road; we send twenty-five kegs a trip, twice a week.
3016. Is it a fact, as we have been informed, that dairy-farmers get their butter to market by having a keg slung across a horse's back, with a stone slung on the other side to balance it? Yes; that is the case in the back country. They take it in that way 3 or 6 miles until they can get a waggon or cart to carry it. They do not make two kegs of butter at a time.
3017. Why do they not keep more cows? They have not got money enough to clear the land.
3018. What prospect is there of those unfortunate people being able to clear the land? Very little; but there is a gradual process of improvement going on.
3019. Do a great many of the settlers hold more land than they utilise? Yes.
3020. On farms of 100 acres and more, is only a portion of the farm used? Yes; there might be 50 per cent. of the acreage cultivated. It is partially cleared, and under grass.
3021. Do you consider that the position of the settlers is an improving one? Yes; the dairy-farmers are not going back.
3022. As the youngsters grow up, what is done? When the settlers have large holdings they subdivide their land.
3023. Is there a satisfactory growth in the dairying industry and its results? Yes.
3024. Do you look forward to Byron Bay being a permanent shipping port, and are you therefore anxious to see the harbour there improved? Yes.
3025. Will the extension of the railway to Grafton be any good to you? No. If at any time the table-land is connected with Grafton, the whole of the trade will come down the line from the table-land to Grafton, and the whole of the Richmond trade will go by Byron Bay. Therefore the line between Lismore and Grafton will be useless. There may be a few passengers who will travel by the railway to Sydney, but there will not be many.

Mr. Andrew Carson Alcorn, dairy farmer, Newrybar, sworn, and examined:—

Mr. A. C. Alcorn. 1 Aug., 1892.

3026. *Chairman.*] How many acres do you hold? Six hundred and forty. I have about 150 under grass. The remainder is in scrub. I have felled the trees on 50 acres this year. I came into the district two years ago, and paid £3,000 for my land. Nothing was done to it. What was cleared was covered with timber which had grown up again.
3027. What improvements did you make on the land? Felled the trees, put grass on it, put up houses, and other buildings.
3028. What is the value of your improvements? About £600 or £700.
3029. Have you made dairy-farming a success? Yes.

3030.

Mr. A. C. Alcorn. 1 Aug., 1892.

3030. Have you heard the evidence given by Mr. Johnston? Yes.
3031. Is your dairy company worked on the same lines? Yes.
3032. How many cows do you milk? Forty-three at present. I started to milk on the 17th June last year. I then had about 8 gallons, but am now sending over 80 gallons a day. Since the stoppage on the bar we have shipped at Byron Bay.
3033. What is the average price you get for your milk? About 4d. a gallon all the year round.
3034. Do you find that dairy-farming is the best business for your land? Yes; at present.
3035. Would it pay to cultivate sugar-cane if there was a mill near you? I have not had any experience; but my neighbours, who are nearer the water than I am, say that it will pay them to cultivate cane.
3036. Have you anything to add? There is a farm of 150 acres opposite me let upon halves. The owner supplies the cattle and everything. My boy made up the accounts for him for twelve months, and £680 2s. 2d. was divided for one year between the owner and tenant.
3037. What labour do you have to employ? None at all. I have sons and daughters and they all assist.
3038. Where will they find homes for themselves? I intend to divide the land amongst the boys; that is what I have got it for.
3039. Have you any interest in the proposed railway line from Lismore to Grafton, or to Casino? No; my interest lies all the other way. We could not ship at any other place than Byron Bay. It would cost more to take the butter to the Clarence than Sydney.
3040. *Mr. Neild.*] Do you employ any workmen? Yes; I nearly always keep two or three men by the week, and I get all my felling and chopping done by contract. I have generally given the men I employ £1 or £1 5s. a week with full board.
3041. Have you a difficulty in getting men? There are a great many men going past my place wanting work, but when I offer it to them they will not take it. I think there is more work to be done than there are men willing to do it.

Mr. Henry Strong, farmer, Rous, sworn, and examined:—

Mr. H. Strong. 1 Aug., 1892.

3042. *Mr. Collins.*] How long have you been living here? Thirteen years. My holding is 300 acres; it was conditionally purchased.
3043. What are you growing? Cane. I have 120 acres, and I am increasing the area of the crop every year.
3044. How many tons of cane do you produce? About 35 tons to the acre, from two-year old cane. I sell it to the mill at Rous, and get 8s. a ton for the cane.
3045. Does that pay you well? Yes; I am very well satisfied. I have bettered my position since I have been here.
3046. What district did you come from? The Hunter River. I was growing lucerne there.
3047. Do you find that sugar-growing on the Richmond River is better than lucerne-growing? No; my farm there was sold, and it went beyond my means. If I could have got land for the same price on the Hunter as I could here, I should have preferred to remain there.
3048. What is the condition of the sugar-planters? Generally they are improving themselves, but of course there have been failures.
3049. What has been the cause of failure? A great many people go farming who know nothing about it. I do not know one practical man who has failed.
3050. Do you think it is a good industry to follow? Yes.
3051. Is it a fact that continuous cropping with cane exhausts the land? Not much, I think. I had some in for eight years, and we planted it, and I got as good results as at first.
3052. Owing to the position in which you are placed, having a market alongside of you for your cane, would railway communication of any kind be a benefit to you? No.
3053. *Mr. Neild.*] What average yield do you get from ratoons? Twenty two to 27 tons per acre. I had one piece which gave 31 tons per acre.
3054. Do you cut your ratoons every year? They are cut three times in five years.

Mr. John Ball, farmer, Gunderimba, sworn, and examined:—

Mr. J. Ball. 1 Aug., 1892.

3055. *Mr. Neild.*] Have you been in the district for a long time? Yes; fourteen years. I was on the Clarence River about the same number of years. I grow cane, and a few acres of maize.
3056. How were you engaged on the Clarence River? Growing corn, chiefly.
3057. Does the land on the Richmond produce as many bushels of corn to the acre as the land on the Clarence does? It does in favourable spots. The land varies in quality on the Richmond River. I have grown larger crops here than on the Clarence, but that is not a general thing.
3058. Do you find that maize and cane-growing on the Richmond River are more profitable than maize-growing on the Clarence River? Certainly.
3059. Do you find a ready market for your cane? Yes; with the Colonial Sugar Company.
3060. Have you only a portion of your land under cane? Yes; about two-thirds of it.
3061. What do you do with the other third? I let it on lease to tenants, who grow cane and maize. I have about 70 acres.
3062. Do you find that 70 acres affords a living for yourself and several others as well? Decidedly.
3063. What is the area required to support a family of four or five persons? Twenty acres.
3064. The result of that statement would be that the Richmond River would carry a population enormously larger than it carries at present? Yes.
3065. What is your port of shipment? When I ship anything to Sydney I send it by way of Ballina.
3066. Would the construction of a railway from Lismore to Grafton be of use to yourself or your neighbours? It would be of no use whatever to the Richmond River people. I cannot speak with regard to passenger traffic.
3067. Would you prefer to see the Richmond River made a good seaport, and Byron Bay developed, than to see a railway constructed between here and the Clarence? Decidedly.
3068. If there was a failure to make the Richmond a good port, would the Richmond people use the railway to Grafton to ship their produce to Sydney? I hardly think they would care to play second fiddle to Grafton. It would be cheaper to send produce to Byron Bay than to Grafton.

Mr J. Ball. 1 Aug., 1892.

3069. Do you think that the people here are well-to-do—that they are improving their positions, and that the position of the district is quite assured? That is the experience of myself and my neighbours.
3070. Would you object to a railway to the table-land? Decidedly not.
3071. Do you know the land between Casino and Grafton? Yes; I was on it searching for a conditional purchase, but I could not find any worth taking. There is nothing there on which you could get a living. From Casino to Deep Creek, the land for about 6 miles would be bad second class. From there to the "Junction Hotel" I consider that no settlement could ever take place. It is very bad grazing land. It is sour; and after the timber is taken off, the land will be useless. If the land were given to me I would not take it.

Mr. Dennis Carroll, Sub-Inspector of Police, Lismore, sworn, and examined:—

Mr. Dennis Carroll. 1 Aug., 1892.

3072. *Chairman.*] How long have you been stationed in this district? Three years and three months.
3073. Have you collected the returns for several years past for the electoral roll? I have not collected them myself, but I can produce copies, of the truth of which I can vouch. They are the returns of the population, male and female, taken by the Police when compiling the electoral roll. The figures give the population of the Lismore District, which consists of 7 miles in the direction of Casino, 8 miles to Wyralla, 10 miles in the direction of Alstonville, 16 miles to Eureka, 16 miles to Dunoon, 20 miles to Nymbia, and 25 miles up to Hanging Rock. The figures are as follows:—Year 1887, total population, 5,449; 1888, 5,811; 1889, 6,044; 1890, 6,219; 1891, 6,522; 1892, 7,825. A large increase in population took place in 1892 on account of the railway works. The increase from that cause would be about 800. At least 200 have left by this time, because the heavier portion of the railway works are nearly completed on the first section between here and Byron Bay. The total population of the electorate is 26,659 white population; 75 Chinese; and 592 Aborigines. Kanakas are not employed here, but they are at the Tweed.
3074. As a rule, on the Richmond is the work done by white men? Yes; but I believe some coloured men are employed in threshing the cane.
3075. Do you travel about the district a great deal? Yes; all over it.
3076. What is the nature of the country north-west of Casino? Right up to Unumgar and up the South Arm, above Rosebery Station, it is all good land; also opposite Runnymede, Kyogle and Rosebery. When you go up towards Unumgar the strip of good land gets narrow towards the mountains. From Maclean's Crossing, on the Clarence, there is very fine country as far as Taloon.

Mr. Robert Campbell, farmer, Byron Bay, sworn, and examined:—

Mr. R. Campbell. 1 Aug., 1892.

3077. *Chairman.*] How long have you been settled in the Byron Bay district? Nearly eleven years.
3078. What is the size of your holding? Six hundred and forty acres.
3079. Do you cultivate it? A portion of it. I do more in the way of dairying, and I send my own produce to Sydney by Byron Bay.
3080. What steamers call there? Four steamers call there weekly. They call regularly. There would not be fourteen days in the whole year on which they could not come alongside the jetty.
3081. Do you get your dairy produce away to your satisfaction? Yes.
3082. Are the steamers often compelled to stand off the Bay? No; not more than fourteen days in the whole year. The Richmond River boats have to come in there for shelter, when the steamers can load quite easily at Byron Bay. It is the best port on the coast except Port Stephens, although no money has been spent upon it.
3083. Has the railway plant been landed there? Yes; Mr. Danaher landed the whole of his plant there without injuring it. He got his horses and everything else ashore.
3084. Is it the practice to land stores there? Yes; goods are shipped with safety and certainty. It is only in bad weather that vessels cannot land there. When the sea is very heavy there they run off to Brisbane. There is no shelter in Byron Bay in an easterly gale. When the weather is from the south, the west, and almost south-east, there is shelter in Byron Bay. I was a member of the lifeboat crew at Newcastle, and I know all the rivers along the coast.
3085. Do many vessels take shelter in Byron Bay when they have no cargo for the bay? The Richmond River boats run in there in a gale, and also the Brunswick and Tweed steamers.
3086. Do any of the intercolonial traders take shelter there? No; I have not heard of any doing so.
3087. Do you consider that in its natural state Byron Bay is the best harbour north of Port Stephens? Yes.
3088. With the proposed improvements, do you think it would become not only a harbour of refuge, but the shipping port for this part of New South Wales? Yes.
3089. *Mr. Neild.*] How long were you a member of the lifeboat crew at Newcastle? For a few months. I am a native of the Hunter River District. I had a vessel which traded in the river.
3090. Do you know the entrance of the Clarence River? Yes; for eight or nine years.
3091. Did you go in and out as a landsman or a seaman? As a passenger.
3092. Is Byron Bay suitable for shipping purposes for the present requirements of the district, without the construction of a breakwater? Yes; for what has to come in and out now.
3093. Do you know the Richmond bar? Yes; I have been in and out there.
3094. Do you consider that Byron Bay, in its present condition, is as capable of accommodating shipping as the Richmond River is? It is superior to the Richmond River at the present time. It is a better port. A vessel can come into Byron Bay without ever waiting for the tide. At the Richmond they have to wait for the tide, and they cannot come in at night, at the Richmond or Clarence, but they can at Byron Bay.
3095. But once they are inside the Clarence or Richmond bar, are not the vessels in absolute safety, whereas in Byron Bay they are not? Yes.
3096. Have there not been occasions when it was dangerous for vessels to lie in Byron Bay, in consequence of northerly winds, when they could enter the Richmond? When a boat cannot lie in Byron Bay she cannot enter the Richmond.

Mr. R. Campbell. 1 Aug., 1892.

3097. Are the steamers trading to Byron Bay all engaged in the local commerce of Byron Bay, or are they trading there in connection with the railway works? The four steamers were running previous to the railway contract. There is a lot of timber, butter, pigs, maize, and sugar shipped at Byron Bay. There is a sugar mill within 3 miles of Byron Bay. It is 1 mile from the railway line. It is a small mill.

3098. Generally, do you consider that Byron Bay is improving rapidly in its imports and exports? Yes. The population is not increasing very fast. There is not much land available for people to settle on, except a few special areas.

3099. Are people only holding the land already sold? Yes; they might part with some of it, but the Act will not allow them to do so.

3100. If a railway were made from Lismore to Grafton, would the people here send their produce to Grafton? No; they would ship at Byron Bay. The people here wish to see the line carried on to Tenterfield.

Dr. Ludwik Bernstein, Lismore, sworn, and examined:—

Dr. L. Bernstein. 1 Aug., 1892.

3101. *Mr. Collins.*] How long have you resided at Lismore? About fourteen years.

3102. Have you further information to give the Committee with regard to a railway from Lismore to Grafton? Such a line would not benefit either this district or the Clarence District, except that a certain amount of money would be spent while the line was being constructed. No traffic would be sent to this district.

3103. Seeing that there is a good harbour at Byron Bay, and that the entrance to the Richmond River will be considerably improved, is it desirable to have any railway at all? Certainly not, unless all the other places requiring railways obtain them, and there is money to spare in the Treasury.

3104. *Chairman.*] Would not a railway from here to Casino benefit the district? Yes.

3105. *Mr. Collins.*] Seeing that Casino has good water communication would the people there take advantage of a railway to this place? To a certain extent they would. If they had water communication they would use it.

3106. *Mr. Neild.*] Would the proposed railway between here and Grafton be useful for passengers? Anybody much pressed for time would use it, but I can start from Ballina in the morning now and be in Sydney the next afternoon. Anybody who wants to go by way of the Clarence has to start on Tuesday or Friday morning, travel all the afternoon, and it takes three days to get to Sydney. Even with regard to passenger communication, at the present we have better communication by Ballina.

3107. Do you think that the construction of the proposed line will benefit the district, or be an advantage to the Colony as a whole? I am certain it will not be a benefit; it will be a white elephant.

Mr. James Francis O'Flynn, engineer and foundry proprietor, Lismore, sworn, and examined:—

Mr. J. F. O'Flynn. 1 Aug., 1892.

3108. *Mr. Neild.*] Are you an old resident? I have been here for ten years. I was a member of the Municipal Council for four years, and Mayor for three years.

3109. Do you think that the proposed Lismore to Grafton railway would be of advantage to the people of the Richmond River? No; but I believe that an extension of the railway to Casino, with a view to extending it to Tenterfield, would be an advantage.

3110. Do you generally confirm the evidence given by Mr. Barrie? Yes; but I can speak with some authority on the subject of the sugar industry.

3111. What is the average yield per acre of plant cane? I was for thirteen years in the Clarence district before I came here. I was chief engineer for the Colonial Sugar Refining Company. I have seen as much as 100 tons of cane per acre obtained from 6 acres; that was two-year old plant cane. That has also been got on this river.

3112. What is a fair average yield for the Richmond River, on the alluvial, from two-year old plant cane? Between 30 to 40 tons to the acre, but a yield of 60, 70, and 80 tons is common.

3113. What is the yield per acre on the higher land, on the volcanic soil, from two-year old plant cane? It is somewhat less, but I do not know very much about that. I presume the average would be 30 tons to the acre.

3114. What is the yield per acre on the flats from twelve to eighteen months ratoons? I have seen 35 tons to the acre obtained. The average is slightly under 30.

3115. Do the ratoons give the same density of juice as the plant cane? No.

3116. What is the average of the plant cane? I have seen it as high as thirteen, and as low as seven and half, ten is the average.

3117. Are the persons growing cane profitably occupied? I am positive that they are the most independent farmers in the whole of Australia. They are infinitely better off than the maize-growers. I have seen maize at 10d. per bushel in the Clarence district in 1871.

3118. What is the average price paid for cane along the river? Twelve shillings is the highest price for twice-threshed cane. It is as low as 8s. for unthreshed cane. I know a number of farmers who are growing cane in the Big Scrub for 8s. per ton, and they say that it is a good paying crop at that price.

3119. What is to be the future port of shipment for the produce of the Richmond River? I have great faith in the works carried out at Ballina, and I believe the river will answer the requirements of the district for a long time. I look forward to Byron Bay being eventually a great port for oversea ships.

3120. Is more than about one-fifth of the land in this district which is suitable for cane-growing, occupied for that crop? I think nearly the whole of the suitable land on the river banks is occupied; but there is scarcely any cane in the Big Scrub.

3121. Would the bulk of the Big Scrub land be suitable for cane-growing? Probably one-third would be suitable for cane.

3122. Is there any amount of scope for the maize industry? Yes; judging by the past, the population in the near future will increase at an exceedingly rapid rate.

3123. Do you regret having come to the district? I have sometimes, perhaps; because I gave up a good appointment to start a new thing; but I do not regret it. I think the majority of the people are satisfied with the district.

Mr. J. F. O'Flynn. 1 Aug., 1892.

3124. Are the rates of wages too high for men to be freely engaged in clearing? I do not know that that is so; but many who came here had not sufficient means. They have over-reached themselves by taking up more land than they were able to clear.
3125. Has the district been settled in a permanent manner? The growth here for ten years has been steady and solid.
3126. *Mr. Collins.*] Have there been any failures in sugar-growing between here and Byron Bay, in the Big Scrub? Sugar-growing has not been carried on on that land yet.
3127. In what locality did the Messrs. Toohey Brothers plant cane? That was more towards Ballina; that proved a failure.
3128. Is the land about there not good for sugar-growing? The aspect was wrong. It is subject to frost. I know sugar-farms within a mile of that with a different aspect, where they have never known frost, and where cane has grown admirably.
3129. *Chairman.*] I have noticed patches of land about Lismore which are covered with lantana;—were those places cleared for cultivation originally? Yes; but they were never cultivated. I know a farm 2 miles down the river which was in that condition when taken up by a farmer on a lease, and he has realised £900 a year from it for three years.
3130. Is it probable that the land around the town, which is in that condition, could be successfully cleared in the same way? Before five years I am in hopes of its being all so cleared.

Mr. Kenneth M'Pherson, farmer, Wyrallah, sworn, and examined:—

Mr. K. M'Pherson. 1 Aug., 1892.

3131. *Chairman.*] Is there much cane planted in your neighbourhood? I have about 50 acres, and several others are planting.
3132. Can you make 50 acres pay? Yes; the average yield is 40 tons to the acre, and I have got as much as 70 tons to the acre. It is more profitable to cultivate cane than any other crop.
3133. Are your neighbours in a sound financial position? Yes; they appear to be so.

Mr. John M'Lennan, shipping agent, Lismore, sworn, and examined:—

Mr. J. M'Lennan. 1 Aug., 1892.

3134. *Mr. Neild.*] How long have you been engaged in business? Fourteen years.
3135. What has been the amount of shipping at Lismore for the last twelve months? Four or five steamers per week inwards and outwards from Lismore to Sydney. They were not always fully laden.
3136. Does that include the Colonial Sugar Company's boats? No.
3137. What have been the chief exports by the ordinary steamers? Sugar, maize, timber, hides, tallow, pigs, butter.
3138. Has the total export of goods increased or decreased year by year? There has been a material increase every year. There has been a rapid increase of population and a corresponding increase of produce. There is a decided increase of imports. Business people have opened up new businesses in the district, and branch stores have been established at Clunes and Eureka, not exclusively on account of the railway.
3139. Do vessels often leave Ballina less than half-loaded, because of the difficulty in crossing the bar? Yes.
3140. Then the number of vessels is not a fair criterion of the trade? The produce is often left behind.
3141. If there was a good port, would so many steamers be required for the business? No.
3142. Do you know the Clarence River? Yes.
3143. Do they have as many steamers per week on the Clarence as you have here? There may be four a week running there. They are larger boats, and the passenger accommodation is better.
3144. Is that the reason why the people go to the Clarence and take passage to Sydney? No; I think there is greater certainty by the Clarence boats sometimes.
3145. Is it considered in shipping circles that the improvements at Ballina would make this a useful port? Yes.
3146. Is there a prospect of produce being sent from this district *via* the Clarence if a railway was constructed from here to Grafton? Yes; if the Richmond River bar was in a bad state people would take advantage of the railway. Whether the railway went to Grafton or anywhere else, I think any mode of communication necessarily creates trade.
3147. If the Richmond River is made a good port, will people go 80 miles to Grafton and take a steamer down the river to Sydney? No.
3148. Is there a prospect of any other trade between the Richmond and the Clarence? There may be an exchange of products. We do not always grow sufficient maize for ourselves.
3149. Would maize be sent by rail or by steamer for half the cost? It would be brought by the cheapest route.
3150. Is there any other chance of the proposed railway being useful? It would open up the country. Some of the country is fairly good, while other parts are inferior. For a number of years the railway would not pay working expenses.
3151. Is the land between Casino and Grafton good for agriculture? Five per cent of it is good; but I would not swear to 10 per cent.

Mr. John Brown, hotelkeeper, Lismore, sworn, and examined:—

Mr. J. Brown. 1 Aug., 1892.

3152. *Chairman.*] How long have you resided in Lismore? Six years. I resided previously on the Clarence.
3153. Do you think the Government would be justified in making a railway from Lismore to Grafton? They would be justified in going as far as Casino. I do not think they would be justified at present in extending the line to Grafton as part of the North Coast Railway. I do not think there would be very much trade on a line between Casino and Grafton. I would recommend the extension of the line from Casino to Tenterfield.
3154. Is Lismore a progressive town? Yes; it is a little dull at present, like other towns.

3155.

3155. What would be the state of Lismore now, if the railway works were not in course of construction? I do not think that Lismore would be in a worse condition if the railway were not being constructed. Mr. J. Brown. 1 Aug., 1892.
3156. Do you think there would be so many hotels in Lismore if it were not for the railway? I do.
3157. Would it be more to the interests of the State if a railway were made to Tenterfield, instead of to Grafton? Yes.

Mr. Samuel Theophilus Northcott, auctioneer, Lismore, sworn, and examined:—

3158. *Mr. Neild.*] How long have you been in the district? Twenty years, off and on.
3159. Do you confirm the evidence that was given by the Mayor? Yes; to a large extent. Mr. S. T. Northcott. 1 Aug., 1892.
3160. What is the financial condition of the settlers in the district. They are in a safe position, and with industry and perseverance, they will overcome their difficulties, in 90 per cent. of the cases.
3161. Do most of them come to Lismore to do business? Yes; it is the central town.
3162. Do they export the greater portion of their produce from here? Yes.
3163. When the railway is constructed to Byron Bay, will it be used by the people? Yes; but to what extent is merely conjecture. I think the larger portion of the produce will go to Byron Bay, but the waterway of the Richmond River will always be maintained by all the towns and the country between Lismore and Ballina, and also between Tatham on the South Arm, and Ballina, and by all the intervening country to the south.
3164. Does most of the produce come into Lismore now? Yes; particularly dairy produce.
3165. Consequently, not much produce would go by Ballina? That is merely conjecture, but a considerable portion that now comes to Lismore will go to Byron Bay.
3166. Seeing that you will have two good ports for shipping produce and obtaining goods from the metropolis, do you think it is in the interests of the country to construct a railway from Lismore to Grafton? Not from a national or commercial standpoint.
3167. *Chairman.*] Are there many sheriff's auctions in this district? I think there have been in the past.
3168. Have they been abnormally numerous? Not that I have noticed.
3169. Do you suffer from the general depression? Yes; a portion of the population have gone beyond their means.
3169½. Would you recommend an extension of the railway to Grafton as portion of a North Coast line? Not at present, considering the finances of the country. We have a splendid soil and climate, and we only require protection. I believe it will then be the richest district in New South Wales. I would favour a railway connection with the table-land, particularly at Tenterfield. I know the country between here and there. A portion of it is excellent rich land. There is also mineral country, and there are vast areas of timber land, particularly pine and cedar.

TUESDAY, 2 AUGUST, 1892.

[*The Sectional Committee met at Lincoln Hall, Byron Bay, at 8 p.m.*]

Present:—

EDWARD WILLIAM O'SULLIVAN, Esq. (CHAIRMAN).

JOHN CASH NEILD, Esq. | CHARLES COLLINS, Esq.

The Sectional Committee further considered the proposed Railway from Grafton to Lismore.

Captain Henry French, master mariner, s.s. "Tweed," sworn, and examined:—

3170. *Chairman.*] How long have you been trading to Byron Bay? About two years.
3171. Is your steamer a regular trader to Byron Bay? Yes; I come once a week at present. Our trips are very regular. Captain H. French. 2 Aug., 1892.
3172. Do you find any difficulty in loading or unloading cargo at the jetty? No. I have been prevented from doing so once in fourteen months, when there was a strong north-east wind and a heavy sea.
3173. Is that the only wind that prevents you from loading? No; anything from south-east to north.
3174. Do you regard this as a safe port? Not exactly a safe port; it is an open roadstead.
3175. Is it comparatively safe when you have fair weather? Yes; by all means.
3176. With the present appliances do you think this port is capable of doing a much larger trade than at present? Yes.
3177. Do many vessels take refuge in Byron Bay? Yes, when southerly winds are blowing; that is the only wind from which they take refuge. There is very good holding ground here so long as the sea is not too heavy. The Richmond River steamers take refuge here when there are heavy seas, and there are south and south-east gales.
3178. Are the Juan and Julia rocks an impediment to the entrance to the bay? No.
3179. In view of the probable development of the resources of this district by the railway now being constructed, do you consider that Byron Bay, with its present jetty and appliances, is likely to become a port of any consequence? Yes.
3180. Have you had considerable experience on the coast? Yes; twenty-three years' experience of all the harbours.
3181. Do you consider that there is a future before Byron Bay as a harbour for the north coast district in the present condition of things? No.
3182. Granting the construction of a breakwater, do you think it is likely to become a harbour of importance? Yes.
3183. How many steamers besides your own come here? Three altogether.
3184. Do any sailing vessels call? Not to unload.
3185. Is there much timber shipped from this port? Yes; my cargo generally consists of pine, butter, hides, tallow, and other things; they are increasing in quantity.
3186. Have you a certain trade? Yes.

Captain H. French. 2 Aug., 1892.

3187. Are the farmers in the habit of bringing their produce to the port in expectation of your arrival? Yes; we load and unload here as quickly as in Sydney. I have put out 70 tons in four or five hours. It takes me a day to load in fine weather. I generally stay in the port two days.
3188. Is Byron Bay a comparatively good port in fine weather? Yes.
3189. *Mr. Neild.*] On occasions when you cannot lie safely alongside the jetty at Byron Bay, what do you do? I go out and anchor a little to the westward of the Juan and Julia rocks.
3190. Do they protect you? No.
3191. In a south-east gale, could you anchor there? Yes; there is no shelter, but it is good holding-ground. I have been there in a bad gale.
3192. Can you ride out any gale there? No; if it was very bad I would go to sea.
3193. Was it more than a full gale when you rode out there? About an ordinary gale, from the south-east and east-south-east.
3194. Would you be able to ride out a north-east gale? No; I would then go to sea.
3195. Do vessels which cannot hold out here make for Moreton Bay? No.
3196. Are the goods here shipped by the owners? By the agent.
3197. Do you get full cargoes? Not always.
3198. What is the tonnage of your steamer? One hundred and eighty-five nett; we carry that much deadweight. I do not get loaded every time at Byron Bay, and I go to the beaches to the south.
3199. What is the average quantity of cargo which you carry from here each trip? About half a cargo.
3200. Do you get that once a week? I have only been coming here once a week during the last three weeks. I have gone from Byron Bay each time with about 50 tons; that has largely consisted of pine logs. I take sixty or seventy kegs of butter a week, a couple of hundred hides, and three or four casks of tallow.
3201. Have your more frequent trips lately been due to an increased quantity of cargo here? Yes; the increase has been in timber and produce.
3202. All the produce would not induce you to come here? No; there is a great quantity of cargo coming from Sydney.
3203. When the water is too rough to enable you to remain at Byron Bay, would you be able to enter the Richmond River? I do not think so.
3204. Is Byron Bay as safe to trade to as the Richmond River? Yes.
3205. Is there a sufficient depth of water at Byron Bay, within reasonable distance of the shore, for steamers of 3,000 tons? Yes.
3206. If jetties and breakwaters were constructed, would vessels of 3,000 tons be able to load? Yes.
3207. Is the present jetty in the most suitable position? It would be better a little further north.
3208. Would it not then be more exposed to the south-east winds? Yes; but the sea does not seem to come in so heavy to the north.
3209. Has there been much increase in the exports of butter? Yes; we are getting twice as much as we used to. I used to get from ten to twenty kegs per trip three or four months ago, but now I get forty or fifty.
3210. *Mr. Collins.*] Do many passengers go from here? No.
3211. Why? I do not know. The passenger accommodation is, I suppose, better in the other boats. We get our share. There are about an average of three going down with me. I do not know how many go in the other boats. I get three or four from Sydney.

Mr. John Hocquard, wharfinger and Customs agent, Byron Bay, sworn, and examined:—

Mr. J. Hocquard, 2 Aug., 1892

3212. *Mr. Neild.*] How long have you occupied your position? Three years.
3213. When you came first, was there much traffic over the jetty? Very little; but it has increased tenfold since.
3214. Is a great deal of the increase due to the railway works? Yes.
3215. Is there a considerable increase in storekeepers' goods? Yes, particularly. There has been a large increase in the population.
3216. Has that consisted chiefly of men employed on the railway works? Yes.
3217. May we reasonably consider that the tenfold increase of exports and imports is chiefly due to the railway works? Yes.
3218. Have many of the men employed at the railway works been landed at the jetty? Yes.
3219. Where did they come from? Mostly from Sydney.
3220. Have not most of them come from Queensland? Those who landed on the jetty came from Sydney.
3221. Has there been a tenfold increase of exports? No; they are double as much as formerly. They are chiefly timber, one-tenth of it sawn. There is a mill in the locality, but the greater part is used locally. The cedar is getting scarce, and the logs shipped are principally pine. The cargo is principally carried by steamers. Only one small sailing vessel trades here. Sailing craft do not come since a number were wrecked here.
3222. Have any steamers been placed in jeopardy by stress of weather during the last three years? There have been instances when a south-east gale came on. They dropped anchor and rode out the gale in the bay. The gale was bad, with a heavy sea coming in. I think they kept up steam. About two months ago the Coraki was lying to her anchor during a south-east gale. She parted some of her moorings. She dropped her other anchor, and rode out the gale with full steam ahead to ease the cables. She picked up the other anchor the following morning.
3223. Has the weather caused any material delay in the shipment or landing of goods? Only on one or two occasions—from four to six hours. The steamer has gone to an anchorage, and come in next morning.
3224. Are the detentions at Byron Bay as serious as those that commonly occur at the bar harbours on the coast? No.
3225. Have there been the same detentions at Byron Bay as at the Richmond River? No; Byron Bay is far superior.
3226. Has there been any material increase in the export of farming produce during the last three years? Yes, particularly butter. For months there were not five kegs per week, but the weekly export is now sixty to 100.

3227. Does the butter come from one or two factories, or from a number of small producers? Principally from three local factories, and the remainder from private individuals. Mr. J. Hocquard.
3228. How far is the butter brought to market? Twelve or 14 miles.
3229. Are the producers of the butter satisfied with the results of the trade? Judging from the quantities they send away from Byron Bay, I think they are satisfied. 2 Aug., 1892.
3230. How many hides are shipped from the jetty? The greatest number in the week is ninety to 100. Two and three is the smallest number. The greatest number of casks of tallow is seven or eight, and the smallest one. There is no boiling-down establishments here. I believe a lot of the hides are brought in by settlers who slaughter cattle for their own use.
3231. Do you think that the opening of the railway will materially increase the imports and exports? Yes. I believe the produce will be brought a greater distance, and much more land will be put under cultivation. There is plenty of water at the jetty for larger-sized vessels than those which trade here now. There are 24 feet of water at half-tide. That depth can be obtained for 240 or 260 feet at the end of the jetty. A vessel of 1,000 tons could lie there in fine weather. There is plenty of water for a vessel of 500 or 600 tons at almost any time.
3232. *Mr. Collins.*] Do many passengers go by the steamers from here? Yes; they mostly go to Sydney. Sometimes twenty per week go. Thirty to forty sometimes come from Sydney.
3233. Would any of those passengers use the railway? Yes, about one-third; many of them land here for various parts of the Richmond River district.
3234. Would they use the railway to go from here to Grafton, and take a steamer there to go to Sydney? No.
3235. Are many of the imports that come from Sydney for places between here and Lismore? Yes, principally beyond Byron Bay.
3236. Does the present jetty give sufficient accommodation for all the vessels coming here? At times we have two or three vessels here, and they have to wait six or seven hours. It would be necessary to extend the jetty.
3237. Would that be sufficient for all the vessels? Yes, at present. Sometimes three vessels have been waiting for a berth, and only one has been able to lie alongside the jetty, except when the weather is very fine. Then they can load one on each side of the jetty. It would be necessary to take the jetty 200 yards further out to allow vessels to lie alongside.
3238. What would be the depth of the water? Three fathoms; the depth would be the same if the jetty was extended.
3239. *Chairman.*] How many vessels have come here this year? Since 1st January seventy-eight vessels have come here; one was a sailing vessel.
3240. How many of these were inconvenienced by the weather? Perhaps two, but only for a very short time. Those vessels brought about 3,744 tons of cargo, and about 284 passengers. The exports have not been nearly so great.
3241. Were those imports abnormal, owing to the railway works? They were for the bay generally. A lot came for the storekeepers and contractors, but also for the settlers.
3242. Owing to the presence of a large number of railway men, was the cargo a great deal heavier than it would have been otherwise? Yes.
3243. Does any of the produce shipped here come from the Tweed, or that direction? Very little at present. Some comes from the Brunswick, and some from 4 miles beyond the Brunswick.
3244. Do you think that this port is likely to prove more reliable for Lismore and the country inland than the Richmond River is? Not under present circumstances. In fine weather it is good enough, but it would be necessary to have some improvements made in order to make it safe.
3245. Do you think that Mr. Darley's proposal for a breakwater is likely to make the port safe? It is a very good idea, but a breakwater to the Juan and Julia rocks would be better.
3246. If Mr. Darley's scheme were carried out, do you believe that a fairly reliable port would be obtained? Yes.
3247. Given the construction of a harbour, do you think it would be more serviceable to the inland settlers of this district than the Richmond River entrance, even granting that the Richmond River entrance is improved? We do not exactly know what will be the result of improvements on the bar. There is no doubt that the construction of this breakwater would be a great benefit to the masters of ships trading here.
3248. *Mr. Neild.*] Were the vessels which had to wait for a berth ordinary traders, or were they bringing railway plant here? Ordinary traders.
3249. How many ordinary traders are there per week? We have had five running; at present there are three.
3250. Has the want of berths arisen from the irregularity of their arrival? Yes. If they did not run together there would be more convenience.
3251. At other times, is there no vessel lying alongside? Yes.
3252. Can you load on both sides of the jetty at once? Yes, in fine weather. On the north side I load, but not on the south side, because the crane was built for one side only. If the crane were in the centre we could load on both sides.
3253. Would it be difficult to alter the crane? No; I can load light material on the south side.
3254. Is there any necessity for the construction of a second jetty? No.

Mr. David Jarman, publican, Byron Bay, sworn, and examined:—

3255. *Mr. Collins.*] How long have you resided in the district? Eleven years. It has progressed very slowly during that time. Mr. D. Jarman.
3256. Why has it progressed slowly? It is sparsely populated, and until lately there were no roads. Lately there has been considerable improvement, and the settlers have been clearing their land and preparing for future operations. 2 Aug., 1892.
3257. Has the town improved very much during the last few years? Yes.
3258. What was the value of allotments when you first came here? There were none in the market. Six years ago when the first land sale took place in the township, half an acre was bought for £60. The value of that allotment now would be £500.
3259. Consequently the place has progressed considerably? Yes.

Mr. D. Jarman. 2 Aug., 1892

3260. Is that on account of the railway? Yes; and the hope of its future extension to Tenterfield.
3261. How would that benefit this district? Because the climate is semi-tropical, and not suitable for the growing of wheat, potatoes, and such things.
3262. Where do you get your flour from? Generally from Sydney. The carriage is something like 15s. per ton.
3263. Do you think that if the railway were made from Lismore to Tenterfield flour could be carried by railway as cheaply from there as from Sydney by water? Possibly not; but flour has to come from Goulburn to Sydney, and then is sent here, or it is sent first to Sydney from Adelaide, Melbourne, or New Zealand.
3264. Would you not buy the flour where it is cheapest? Yes; but there would be an interchange of products with the table-land.
3265. Are there many persons about here growing sugar? Very few. There is one mill in this district.
3266. If a better mill were erected, do you think more cane would be crushed and shipped from Byron Bay? Yes.
3267. Have many persons come to settle around here lately? The settlement in the town itself chiefly arises from the railway. There are very few permanent settlers.
3268. If a railway were constructed from Lismore to Grafton, would that be of any benefit to this district? No.
3269. Would passengers go by train to Grafton? No; they would take the steamers here.
3270. *Mr. Neild.*] Does the Byron Bay district produce articles different from those produced in the Richmond River district? No.
3271. Does Byron Bay require articles from the table-land different from those required by the Richmond River district? No.
3272. Would not the trade in tropical produce, such as sugar, lie much more in the hands of the Richmond River district, if a railway to the table-land were made, than in the hands of the Byron Bay district, which is farther away? No; because in the vicinity we have 200,000 acres of land, free from frost, which if efficiently cultivated under sugar cane would yield more than sufficient sugar to supply New South Wales.

Mr. David Edward McDonald, civil engineer, Byron Bay, sworn, and examined:—

Mr. D. E. McDonald. 2 Aug., 1892

3273. *Chairman.*] Are you engaged in this locality? Yes; by Mr. Danaher, railway contractor.
3274. Did he land all his plant and material here? Yes; it was brought from Sydney, and all landed safely. We brought twelve horses.
3275. Did you experience any inconvenience? Only on one occasion during the last eight months, in the case of the "Coraki." The inconvenience was caused by a very heavy south-east gale, when she had to go out and come back next day. She lost close upon twenty-four hours.
3276. Have you formed any opinion as to the probability of making this a safe harbour? Yes? I have given considerable attention to the subject, having had experience of marine works. I was for fourteen years engineer to the Auckland Harbour Board, New Zealand.
3277. Do you see Mr. Darley's proposal on the plan produced, marked red? Yes.
3278. Do you think that that would make a secure harbour for Byron Bay? Yes, for small vessels only; there is very little sea-room between the end of the jetty and the proposed breakwater.
3279. Are there not 500 acres of water under that scheme? Yes; but there is a great deal of very shallow water. That portion between the cape and the beach, in the S.E. corner of the bay, is too shallow to allow large vessels to use it.
3280. Are there not some rocks in the bay running out from the north side of the cape? I think the rocks are principally under the breakwater.
3281. Do you know the proposal of Captain Howard, and the proposal to carry a breakwater to the Juan and Julia rocks? Yes, and I would submit a sketch-plan to illustrate my proposed breakwater. My proposal is to extend the breakwater from Cape Byron to the Juan and Julia rocks.
3282. Would that breakwater give you any better security from south-east gales than is given by Mr. Darley's proposal? I think so, and it would give ample accommodation for the largest vessels, because there would be 50 or 60 feet of water inside the breakwater.
3283. What would be the probable cost of this breakwater? I have not gone into that question. I have only taken this trouble as a temporary resident of the place.
3284. Would it be possible to construct a breakwater such as you propose for less than £1,000,000? Yes, in carrying out the larger plans for a breakwater at half-tide, there must be a large amount of debris remaining unused; small stones that can be all deposited in the deep water. At a depth of 20 feet below the run of the sea the water is comparatively quiet, and the whole of the debris could be used there.
3285. I see you have allowed no opening for the current to run past the cape? No.
3286. Would it be safe to make such a breakwater? Yes. There is no travelling shingle on the beach, and the sand does not travel north and south.
3287. Would not the current undermine the breakwater? No, the greater part of the current is outside. I have watched the matter very closely. Although Mr. Darley has shown an opening in his proposed breakwater he says if it is not found necessary it could be closed up, so that he has some doubt about an opening being required.
3288. Putting that aside from your knowledge of harbour works, do you consider that there is a fairly reliable port at Byron Bay now for small vessels in moderate weather? Yes.
3289. Do you think it is a harbour that may be relied upon? Yes, if the jetty accommodation is increased and improved it might answer for years to come. The jetty should be widened and run out 250 or 300 feet.
3290. Is the jetty fit to run a railway upon it? No, it is not strong enough to carry a locomotive, and the trucks would have to be worked by horse-power.
3291. Are there harbours in New Zealand similar to this one? Yes, at Taranaki, Gisborne, Timaru, and Omaru. Timaru, Omaru, and New Plymouth were all open roadsteads, but breakwaters have been constructed and successfully used there for several years.
3292. Have the New Plymouth works succeeded? The breakwater has not been completed, owing to the Board not being able to borrow any more money.
3293. *Mr. Neild.*] Upon the Government plan submitted, either the jetty is shown in the wrong position or the Juan and Julia rocks are? Yes.

3294.

3294. Consequently in the plan which you submit, you place the Juan and Julia rocks in their relative position to the jetty as shown upon the plan? Yes. Mr. D. E. McDonald.
3295. Then we are to understand that while Captain Howard's scheme proposes a length of breakwater of 9,000 feet, and Mr. Darley's scheme, marked in red, proposes 6,675 feet, your proposal amounts to 5,400 feet of breakwater? Yes. 2 Aug., 1892.
3296. That is the portion from the reef outwards to the rocks? Yes.
3297. Will your plan give any kind of shelter from the north and north-east? It would shelter the jetty from all winds except very heavy north-east gales.
3298. Will it give any kind of shelter west of the Juan and Julia rocks? No.
3299. So that your plan leaves the harbour entirely open to the north? Yes. I have only seen two occasions in six months when a steamer could not lie at the jetty and discharge her cargo during the time the north-east wind was blowing.
3300. In view of your breakwater being materially shorter than the other two proposals, would the increased depth of your breakwater create an expense exceeding the expense attaching to the previous schemes? Yes, because it is very much deeper; that would increase the cost.
3301. Would the increase be more than compensated for by the improvement in the anchorage which your scheme would give? Yes, my impression is that if that breakwater were constructed, there would be a perfectly safe harbour of refuge for all time. It was only the other day that the "Aramac," from Brisbane to Sydney, encountered a very heavy gale that caused her a detention of 20 hours. If there had been a port of refuge here she would have taken advantage of it.
3302. Would the extension of the railway from Lismore to Grafton increase the trade of this port? I do not think so.

Mr. George M'Lean, storekeeper and grazier, Byron Bay, sworn, and examined:—

3303. *Chairman.*] How long have you been in this district? Three years. I was a resident of New England for many years. Mr. G. M'Lean.
3304. What is the progress of cultivation on the railway line between here and Lismore? When I came here dairying was being carried out, but much more butter is produced now than there was three years ago. During that time a great deal of land has been cleared. 2 Aug., 1892.
3305. Has there been a decrease in the growth of maize? I do not think so. Maize is planted when the land is first cleared, and after one crop the land is turned into pasture.
3306. From what you know of the New England district, and this district, is there ever likely to be an interchange of products between the Richmond River district and the table-land? Yes.
3307. Do you think that Byron Bay will serve as a good port? Yes; if Mr. McDonald's scheme is carried out.
3308. Do you know of your own knowledge if there is considerable cultivation of wheat at Inverell? Yes.
3309. From what you know of the trend of traffic, do you think that wheat from the table-land is likely to be brought here? Yes.
3310. And are the products of this district likely to be sent to the table-land? Yes.
3311. *Mr. Collins.*] Seeing that the Inverell district cannot produce enough flour to supply the western districts, such as Moree and Warialda, or that it does not produce enough flour for that purpose, how will the farmers be able to send wheat and flour here? The tin-mines at Tingha, Vegetable Creek and other places were their market in times gone by. They had no roads, and when they grew more articles than they could consume, they had no market for them.
3312. Do they not get Adelaide flour in the Inverell district? Owing to the uncertainty of the market they do not produce.
3313. Would not bread-stuffs be carried cheaper by water than by railway? Yes; but the growers of wheat have at present to pay railway carriage to Newcastle or Sydney.
3314. *Mr. Neild.*] Do you know that the millers in New England, as far as Glen Innes, sometimes draw their wheat from Cootamundra and Wagga Wagga? Yes; I have myself got flour from Sydney.
3315. Does not that itself show that there is no production of wheat in New England? The mills were very inferior, that was one of the drawbacks in the past.
3316. *Chairman.*] Given the construction of a line of railway straight from Byron Bay to Inverell, do you think that that would lead to the production of such a quantity of wheat at Inverell as would supply not only the New England district but also the Richmond district? If they had a reliable market they could produce a large quantity.
3317. *Mr. Collins.*] If a railway were constructed from Lismore to Grafton, would it be of any benefit to this district? I do not think so.

Mr. Joseph Bede Kelly, licensed surveyor and farmer, Byron Bay, sworn, and examined:—

3318. *Chairman.*] Are you the Chairman of the local Progress Committee? Yes.
3319. Will you make a statement as to the progress of settlement at Byron Bay during the last two years? Two years ago there were very few houses indeed, and the population of the town itself was not more than twenty, now substantial houses are going up in all directions. Mr. J. B. Kelly, 2 Aug., 1892.
3320. What is the present permanent population of the township? It would be difficult to say for years to come whether a part of the population will remain or not. Numbers of people have come here from Sydney or Brisbane, and they say they intend to settle here. There are certainly 100 who have come here recently, and who say they are going to settle here.
3321. What is the total population of the township now? About 500.
3322. How many are likely to be permanent settlers? About 200.
3323. How many hotels are in the town? Two. There is also the Lincoln public hall, a court-house, post and telegraph office, three principal stores, and a lot of little ones. There are wine and spirit merchants, and one school.
3324. On the whole is there indication of very great progress having been made at Byron Bay during the last two years? Yes.
3325. Is that progress likely to be sustained? I think the progress will continue at a wonderful rate of speed, compared with other towns. Lismore, as a town, is looked upon as phenomenal, but I think Byron Bay will be equally as phenomenal

Mr. J. B. Kelly. 2 Aug., 1892.

3326. When the railway is finished do you think there will be an accession of population here, owing to workshops being established? The site of the railway workshops has not yet been decided, but I think it is very likely they will be established here, and that the railway will increase the population.
3327. What progress has been made in the immediate vicinity during the last three years? In my own case I reside 5 miles from here, and I have 360 acres of land cleared and under grass. I have 12 to 15 acres of oats, and I intend to put that down this year under cane, in anticipation of the construction of the railway. We expect to have the railway opened in two years. I will send the cane either to Lismore or to Condong, on the Tweed. The Company will take 500 acres on either side, and the market will be limited at present; but we are in hopes that when we swamp out the two mills now existing, the Company will erect a mill at the Bay. They have promised to take 500 acres for each mill. There is a certain market for 1,000 acres in the Byron Bay district, or along the railway line. The people west of here, as far back as Mullumbimby, are enthusiastic cane-growers, and they are only waiting for the railway to be opened. It was stated in former evidence that the outward cargo here has not increased in the same ratio as the imports have; but I would point out that the local consumption is very much greater than it was. For instance, I have been producing since the railway works commenced, but I have sold it all locally. There are large numbers of people doing the same. The railway works have supplied the local market.
3328. What is the general character of settlement on the land at present; is it dairying or cultivation? In the Lismore direction they carry on dairying, in the other direction they go in for cultivating cane.
3329. If the Company should establish a mill here, will they be able to ship their sugar from Byron Bay? Yes, and that will add materially to the importance of the port.
3330. How is it there is so much land on the line between Byron Bay and Lismore which is cleared but not cultivated? To clear the land economically, you must take time over it. Unless you have a bank at your back, the only thing you can do is to cut down the timber, and wait until it is ready to burn off. Then, after a fire is put into it, a crop of grass or maize is sown. It takes fully four years before you can cultivate. A great many people here say that as soon as they put in a fire they will plant the cane, and that has been successful.
3331. Are the settlers here, apart from the dairy-farmers, financially sound? No; because they have had a fearful handicap. They had no roads until within the last year. Some have cleared out and gone to the Clarence while they are waiting for the erection of a sugar-mill. They were cane-growers, and they came over intending to start the cane industry. They went back to the Clarence, where they said they could find more profitable work until cane-growing was properly started here. We look forward to the railway to give a proper start to cane-growing.
3332. Is there a danger that before that comes about that those properties may fall into the hands of banks and financial institutions? So far as the district is concerned that does not matter. They will sell to other people with more capital.
3333. Is there no chance for those who are on the land? Some will succeed.
3334. Do you think that if a Bill were passed for the purpose of giving the selectors the right to sell a portion of their land in order to wipe out the mortgages it would have a beneficial effect? Yes.
3335. Do you think that such a law, in connection with the probable planting of cane, will give these men a chance of retrieving their affairs? Yes.
3336. Then we may consider that the depression is not of a serious and lasting character? It is serious to individuals, but it will not be to the district.
3337. Do you think you are ever likely to develop a trade between this portion of the Richmond River district and the table-land? Yes. I think they will send down their breadstuffs. The reason why they do not grow breadstuffs on the table-land is the want of a certain market, which we would give them. They can then afford to produce much more cheaply than people at Goulburn or Orange, where the settlers have first to send their produce to Sydney by rail, and thence by water to this place.
3338. Would it be more conducive to the welfare of this district to have a railway from Casino to Tenterfield, rather than a railway from Casino to Grafton? Yes. We would not oppose the construction of a North Coast line, if they show cause for it at the other end, but we cannot promise to send anything to them.

Mr. Thomas William Keele, M. Inst. C.E., Supervising Engineer, Railway Construction Branch, Department of Public Works, sworn, and further examined:—

Mr. T. W. Keele, M. Inst. C.E. 2 Aug., 1892

3339. *Mr. Neild.*] Since you gave evidence at Ballina, have you had an opportunity of looking at the local engineering works at Byron Bay? Yes.
3340. Have you made any examination of the jetty? Yes.
3341. Are the piles metal sheathed? No; they are of turpentine timber.
3342. Is the cobra making any attacks on the timber? Yes, slight attacks.
3343. Is that an indication of anything serious in future? No, I consider that the life of those piles should be fifteen years. I am speaking from my experience of turpentine piles in Sydney harbour, Newcastle harbour, Wollongong, and Kiama.
3344. Would not the temperature of the water here be totally different? Yes.
3345. Have you any personal knowledge, and has your Department any extended knowledge of the possibility of the cobra attacking piles, so far north as Byron Bay? No, this work is the farthest north of any.
3346. Would not another point of difference be that the waters of the rivers are more enclosed, and there might possibly be a difference in the vivacity of the cobra in an open port? We know it is more active here than in the rivers.
3347. Then do you still hold that the piles are reasonably safe against the cobra, or is it a question that time alone will solve? I think time will have to solve it. Turpentine piles were used because if we used ironbark sheathed, the sheathing would not have lasted any time.
3348. What would have worn them out? The sand in the sea. The constant wash of the sand-charged water wears the copper out and leaves the pile bare.
3349. If there were a breakwater, would there be sufficient movement of sand in the water to destroy the sheathing of the piles? No.
3350. With a breakwater, would the Bay be still largely open to north and north-east influences? Yes; but not nearly to the same extent as at present.
3351. Do you think that if Mr. Darley's plan were carried out it would give placid water within the limits of the breakwater? Yes.

3352. Would there be no heave? There would be always a slight range in a place like this. The range on a quiet day would be 3 feet. In rough weather it would be much greater. Mr. T. W. Keele, M. Inst. C.E.
3353. Are you cognisant of any intention to extend the existing jetty or to build a new one? We have not yet received any application from the residents for anything of the sort. 2 Aug., 1892.
3354. Have you received any instructions? Yes; quite lately I have received instructions to report on the widening and strengthening of the existing jetty. It also includes lengthening, but no length is mentioned.
3355. What would be the object of strengthening the jetty? To take a train and locomotive on to the pier.
3356. Is there any traffic likely to arise which would require railway communication? Not at present.
3357. Would it be safe, without the construction of a breakwater, for vessels over 500 tons to lie alongside the jetty? Yes, except during heavy weather.
3358. Could vessels of 1,000 tons lie safely at the jetty without a breakwater? Yes, if it were lengthened, and in calm weather.
3359. Has your attention been drawn to the fact that there is not sufficient accommodation for the vessels now trading here? It was not reported to us until quite lately that the accommodation is insufficient.
3360. From personal knowledge do you know that it is insufficient? At times the jetty accommodation is insufficient, and it would be desirable to have another set of buoys placed at the south side of the pier for the further accommodation of vessels. The crane could unload or load the craft lying on that side, but not so easily as on the north side; that is on account of the stays.
3361. Have you any knowledge of any prospective trade which would require railway communication? I have not sufficient knowledge of the district to enable me to say.
3362. Judging by the work at other ports, would it be necessary to have a railway here to load vessels of 1,000 tons? Railway piers are used in many places, but one is unnecessary here at the present time.

Mr. Charles Henry Caswell, licensed and railway surveyor, Byron Bay, sworn, and examined:—

3363. *Mr. Collins.*] Have you had much work to do in this district? Yes; for six years and a half, between Casino and the Tweed. Mr. C. H. Caswell. 2 Aug., 1892.
3364. Since you have been in the district has there been much settlement? No; because the greater part of the land was alienated and taken up about seven years previously.
3365. Is the land utilised in any way? Not to a great extent, because I suppose the roads were so bad that there were no means of communication.
3366. Do you think that when the railway is completed from Lismore to the Tweed, that that will be a benefit to the settlers? Undoubtedly it will.
3367. Would a railway from Lismore to Grafton be of any material benefit to the settlers in this part of the district? No.
3368. What work are you now doing? Surveying railway-feeders or tram-lines, in connection with the railway.
3369. Where are you running them? All along the line where the rich valleys branch off. The greater portion of them are within 12 miles radius. There are eight proposals; they average a distance of 3 miles each off the line.
3370. Do you consider it better to construct those tram-lines instead of roads? Yes, in the interest of the sugar industry.
3371. Would it be a material advantage to the railway and port? Yes; it would be in the interest of the railway to have the feeders extended if sugar-cane were grown.
3372. Will the tramways increase the trade of the different parts of Byron Bay? Undoubtedly; because it will increase the population to an enormous extent, if the sugar industry is a success.
3373. From your knowledge of the district do you think it will be a success? I think so; it all depends upon whether the company will buy the cane.
3374. How much does the Company give? I believe they have offered 16s. a ton to people living on the railway line. On the Tweed, I think, the people get 10s. 6d., with an additional 1s. for carrying the cane; that is not so good as it would be growing along the railway line, especially at certain points. The carriage is to Condong sugar-mills.
3375. What rate would be charged on the railway? The Commissioners, I believe, have given authority to publish a tariff which is stated to be as follows:—"For a distance of 10 miles in truck loads of 10 tons 1s. 6d., per ton, or 5-ton loads, 1s. 9d. per ton; 20 miles, 10-ton loads. 2s. per ton, 5-ton loads 2s. 7d. per ton; 50 miles, 10-ton loads 4s. 10d. per ton, 5-ton loads 5s. 5d. per ton."
3376. With these freights, and the price the Sugar Company is offering, will sugar-growing be a success? Up to 30 miles I think it will be.
3377. With these feeders to the harbour, and the Lismore to Tweed railway, would a railway from Grafton to Lismore be of any benefit to the residents? No.
3378. *Mr. Neild.*] In your opinion the railway now in course of construction will not succeed without the feeding lines you speak of? I think the feeders will materially increase the profits of the railway line. I do not say that the railway will not be a success without the feeders, but it will be much slower in paying working expenses and interest.
3379. The feeding lines will not pay unless the cane is grown? Yes.
3380. And it will not pay to grow the cane unless the Company purchase it? It will have to be a triangular arrangement between the Commissioners, the Company, and the settlers.
3381. Then the line is largely dependent for success upon what the Colonial Sugar Refining Company may do? Yes.
3382. *Chairman.*] What are the places to which you are making the surveys for these tramways? At about 133 miles on the main line to the Tweed I have run a line 4½ miles, that is to the Pocket. There is a branch on that line of about 2 miles to another branch of the Pocket. It is a double valley from Mullumbimby. There are three feeders up the different valleys, one is the main arm of the Brunswick, Mullumbimby Creek, Myockum, and Tyagarah. There are two behind Tyagarah, and one from Bullaringar to the coast at Cudgaree and Crab's Creek. That makes eight in all from the main line.
3383. *Mr. Neild.*] What is the total length of those proposed lines? About 3 or 4 miles each.
3384. Who gives instructions for the survey of these proposed lines? The Engineer-in-Chief for Railways.

[One plan.]

Sydney: Charles Potter, Government Printer.—1892.


GRAFTON TO LISMORE RAILWAY
PLAN
Scale
Note Line now submitted shewn thus
Line submitted to previous committee
Roads
TO GLEN INNES
TO TENTERFIELD
FROM CUYRA
GRAFTON
CLARENCE RIVER
SOUTHGATE
LAWRENCE
THE BROADWATER
SALTWATER CREEK
Richmond Range
MYALL CREEK
SANDY CREEK
RICHMOND RIVER (South Arm)
MYRTLE CREEK
TENTERFIELD
FROM DEEP
CASINO
CREEK
RICHMOND RIVER
CODRINGTON
GUNDURIMBA
BUNGABBEE CREEK
LEYCESTER CREEK
TERANIA CREEK
UNDER CONSTRUCTION
LISMORE

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLAN,

RELATING TO THE

PROPOSED RAILWAY

FROM

JERILDERIE TO DENILIQUIN.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

[5s.] 28—A 1892.

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PLAN.

N.S.W. Railways—Jerilderie to Deniliquin.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

RAILWAY FROM JERILDERIE TO DENILIQUIN.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing a line of railway from Jerilderie to Deniliquin," have, after due inquiry, resolved that it is not expedient the proposed railway should be constructed, as they are of opinion its construction should be postponed until it shall be determined by Parliament, that as a matter of public policy the private railway between Deniliquin and Moama should be purchased in terms of the Deniliquin to Moama Railway Act; and, in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Description of the proposed railway.

1. The proposed line of railway represents an extension commencing at Jerilderie, the present terminus of the line from Narrandera to Jerilderie, and ending at the Deniliquin terminus of the private railway from Deniliquin to Moama, the length being 44 miles 67 chains 89 links. The route, as surveyed, is, with the exception of a curve at each end, in a perfectly straight line; it is virtually level, the ruling grade being 1 in 200, and there are no engineering difficulties on the way. One river of importance—the Edwards—will have to be crossed close to Deniliquin, and this will be spanned by a timber viaduct. Otherwise the railway is very easy of construction.

Ministerial reasons for proposing the railway.

2. The principal reasons put before the Committee by the Minister for Public Works, through the Under Secretary of his Department, for the construction of this railway are the development of agriculture in the district likely to be served by the line, and the removal of a heavy loss which is incurred annually on the existing line from Narrandera to Jerilderie. The extension from Jerilderie to Deniliquin, the Under Secretary explains, would pass "through country almost at once fit for the plough, and capable of producing large crops of cereals, such as wheat and barley—the former especially—of excellent quality." But a prominent fact which the Minister has taken into consideration is "that the line from Narrandera to Jerilderie, unconnected as it is with the neighbouring Victorian system, constitutes a heavy drag on the railway system of this Colony." In 1890 the Narrandera to Jerilderie railway showed a loss for the year of about £17,000, and this, the Minister is of opinion, must continue until the railway is extended from Jerilderie further southwards. Taking everything into consideration, he thinks the requirements of the case will be best answered by an extension to Deniliquin. A considerable portion of the surrounding country is already served by the private line of railway between Deniliquin and Moama, but it is pointed out that if after the connection between Jerilderie and Deniliquin has been made this railway should be found to seriously interfere with the trade on the New South Wales lines, the difficulty might be met by the adoption of differential railway rates, or by the resumption of the private line, power to do which, under certain terms, exists in the Deniliquin to Moama Railway Company's Act.

Estimated cost.

3. The estimated total cost of the line is £148,000, or £3,300 per mile. This estimate of cost is somewhat less than it might be by reason of an intention to use on 17 miles of the line re-rolled 75-lb rails from the Eskbank Iron-works, taken over by the Railway Construction Branch of the Department of Public Works from the Railway Commissioners at a price of £5 per ton, with all chairs required for the rails supplied cost free. The remainder of the line would be laid with new 60-lb flat-bottomed steel rails, costing when delivered about £8 per ton. The estimated cost of a first-class metalled road in the district is stated at £3,000 per mile.

Reports and evidence from the Railway Commissioners.

4. The report, which under section 13 of the Public Works Act, the Railway Commissioners have made, is not favourable to the construction of the proposed railway, and the evidence given before the Committee by their Secretary, is to a similar effect. The report shows an estimated annual cost in connection with the line of £14,323, and gives no estimate of traffic. On this point it says:—"There is practically no traffic between Jerilderie and Deniliquin, and consequently any income must arise from the development of a trade which does not at present exist." The amount stated as the annual cost, if the railway should be constructed, comprises interest on cost of construction at 3½ per cent., £5,736; locomotive expenses, £1,800; permanent-way expenses, £5,625; and traffic expenses, £1,162. The amount set down for interest is calculated on a cost of construction at £3,640 per mile, or a total of £163,900, which was the original estimate of the Engineer-in-Chief for Railway Construction, and that submitted to the Railway Commissioners as a basis upon which to submit their report. This report is dated 12 August, 1889. On 7 March, 1892, in reply to a minute from the Under Secretary for Public Works, they supplied a supplementary report, in which they state that after carefully going into the matter with the Engineer-in-Chief for Railway Construction, with a view to having a reduction made in the estimated cost of the line, their views, as expressed in their previous report, are unaltered. They add that "the reduction in the cost of construction, rendering the burden of interest less heavy, should make the scheme more acceptable." According to the supplementary report, the interest annually payable on the cost of construction would be £5,180, instead of £5,736, and the estimated total annual cost £13,767, instead of £14,323. On the general question, the Commissioners, in their report, remark that "although there is no basis upon which an estimate of the probable revenue could be grounded, the proposed line is worthy of consideration, as forming a connection between Moama, Deniliquin, and the main line at Jerilderie, and there being a prospect of traffic developing which may prove remunerative." Mr. McLachlan, Secretary to the Railway Commissioners, who appeared before the Committee to express the views of the Commissioners respecting the railway, was more definitely against the construction of the line. There is no prospect, he states, of the line drawing traffic to any appreciable extent Sydneywards. Melbourne being so much closer than Sydney to Deniliquin, and the Deniliquin to Moama railway being in the hands of a private company, it is not likely that the Commissioners would be able to compete successfully for the trade at and around Deniliquin. No power exists "to prevent the company, in conjunction with the Victorian people, from imposing such differential rates as would practically cut us out from the traffic, unless we adopted rates which would not pay us." It is questionable whether the connection of Jerilderie with Deniliquin would be of any service to the existing line at Jerilderie. "It might, to some extent," Mr. McLachlan says, "but I think it is problematical. Melbourne has such a pull of us on that side that it is difficult to say what additional traffic we would get to the main line. In fact, the construction of this extension might have the other effect, and draw traffic from us on to the Melbourne side." On the whole of the south-western service there would probably be a heavier loss than there is at present. Even if the Deniliquin to Moama railway were purchased by the Government, or highly protective duties were established on the southern border of the Colony, there would still be the disposition to trade with Melbourne, and the trade to a large extent would go there. As for goods being sent to Deniliquin from Sydney by rail, he does not think the Sydney merchants would pay the railway charges. There might be a little more wool carried to Sydney from the immediate vicinity of Jerilderie, but, on the other hand, the connection with Deniliquin and Melbourne might draw in that direction some

of

of that which now comes to Sydney. Wheat is carried on the railways at little or no profit, and an increase in the quantity of wheat is not, from a commercial point of view, an important reason in favour of constructing the proposed line. The only ground upon which the construction of the railway can, in the view of the Commissioners, be recommended is one which is a matter for the consideration of the Government alone—that of national policy. Upon that the Commissioners express no opinion beyond what appears in the remark already quoted from their report, and, further, that it might, for State reasons, be desirable to make the railway, but they do not think it will be a financial success.

Committee's method of inquiry.

5. The inquiry made by the Committee has been carried out partly in Sydney, but principally by means of a Sectional Committee in the districts chiefly concerned in the construction of the railway. In Sydney the witnesses examined consisted of the officers of the Department of Public Works representing the Government in the matter, the Secretary to the Railway Commissioners, and the Director-General of Forests. In the country they were residents of all classes whose evidence with reference to the railway was likely to be of importance—farmers and graziers, pastoralists, stock and station agents, millers, inspectors of stock, inspectors of forests, saw-mill proprietors, tradesmen, mayors of municipalities, and the secretary and manager of the Deniliquin to Moama Railway Company. In all the Sectional Committee examined eighty witnesses, visiting for this purpose, and that of personally inspecting the country, Jerilderie, Hartwood, Conargo, Deniliquin, Mathoura, Moama, Tocumwal, and Berrigan.

The districts likely to be served by the railway.

6. The districts that would be served by the railway are in several respects of more than ordinary importance. They are well adapted for agricultural as they are for pastoral pursuits, and capable of carrying a large and thriving population; and they are the sources of a considerable amount of trade. The Sectional Committee, as will be seen by their report, "were most strongly impressed with the vast resources of the border country traversed by them in the course of their investigation," and regard it as likely to become in the near future one of the most valuable portions of New South Wales. They found that it contains a large area of land suitable for cultivation, and specially adapted for cereals, and extensive and valuable State forests exist along the course of the river Murray. Much of the land which has been alienated from the Crown is in the hands of a few private owners, and the development which the districts are capable of showing depends on the terms upon which those owners of large estates are prepared to dispose of their land. Especially is this the case along the route of the proposed line. But this difficulty is not insuperable. The evidence given before the Sectional Committee, and their personal observation, lead them to conclude that there is a large quantity of land, now used for grazing purposes, but better suited for agriculture, which the owners would sell.

The trade of the districts.

7. Most of the present trade of the districts goes to Victoria. It consists chiefly of wool and grain. The Deniliquin to Moama Railway and the available water carriage on the river Murray offer inducements which effectually prevent this trade from being to any important extent drawn to the railways of New South Wales, and interests associated with the southern colonies, which are very strong over a large area of the border districts, are also an important cause of this trade going southwards. At the present time the greater portion of the grain produced in the district around Jerilderie comes to such towns as Junee, Cootamundra, and Goulburn; but, with a market available outside the Colony, probably this grain would be sent south. A large quantity of stock—cattle and sheep—are carried on the Deniliquin to Moama Railway, and apparently there is a profitable business done by that Railway, which attracts the trade of the districts surrounding it within a very extensive radius.

Berrigan as the terminal point of the railway.

8. A minority of the Sectional Committee are of opinion that the public interest would be better served by extending the railway at Jerilderie to Berrigan than by taking it to Deniliquin, and have attached a memorandum to that effect to the Sectional Committee's report. Berrigan, which is situated about midway between Jerilderie and Tocumwal, is the centre of a farming community already important

important and promising to progress. It is a part of the district in which the owners of large pastoral estates have shown a disposition to sell land for the purposes of farming, and a railway to it might be constructed, it is thought, at a cost of £1,500 per mile. The result would be the connection of an important agricultural district with the existing railway system of the Colony, and, it is believed, an addition to the traffic of the railways which would justify the expenditure on the extension.

The proposed railway and the question of national policy.

9. From the foregoing portions of this Report it will be noticed that while there are strong reasons for affording railway facilities to the people of the border districts there are reasons of equal importance for moving in the matter with due caution. If the proposed railway from Jerilderie to Deniliquin would have the effect of reducing instead of adding to the general returns of the New South Wales railway system it would not be wise to construct it. It is necessary also that care should be taken to prevent one of the principal results of the proposed railway construction from being the enrichment of a few large land-holders through whose estates the railway would go. The question of constructing the railway, as it has been referred to the Committee, is surrounded by difficulties. With the Deniliquin to Moama railway in the possession of the Government, and the enforcement to an adequate extent of the betterment principle through the districts served by the proposed line, the chances of the southern border trade being profitable to our railway system and generally advantageous to the Colony would be much better than they can possibly be under present conditions. Without the necessary control of the private railway, and the course requisite to cause property owners to contribute to the State a fair return for the benefit conferred upon them by the proposed railway extension, the line from Jerilderie to Deniliquin would probably be unprofitable in itself and an injury to the general railway trade of the Colony. But the purchase or resumption of the Deniliquin to Moama Railway would mean the expenditure of a large sum of money, and this, added to the cost of the proposed connection of Jerilderie with Deniliquin, may be regarded by many as an excessive liability to incur for a few districts which, however important in themselves, are so associated with Victoria, geographically and commercially, that their trade, or much of it, will always move in that direction unless kept here by a system of arbitrary railway rates or border duties. Giving due consideration to the difficulties of the case, as well as to the claims of the districts to railway extension, the Committee are of opinion that the matter should be left for decision by Parliament as one of public policy. On no other basis are there sufficient reasons to recommend the construction of the railway, under present circumstances.

The Deniliquin and Moama railway.

10. The Deniliquin and Moama Railway Act contains a provision which gives the Government power to resume the line 21 years after 3rd March, 1874, or in 1895. The section of the Act referring to this is as follows:—

> It shall be lawful for the Governor at any time after the expiration of the term of twenty-one years from the passing of this Act to purchase the said railways and other works with all its hereditaments, stock, and appurtenances, upon giving to the Company three calendar months' notice in writing of such intention, and upon payment of a sum equal to twenty-five years' purchase of the annual divisible profits, estimated on the average of the seven then next preceding years: Provided that if the average rate of profits for the said seven years shall be less than at the rate of fifteen pounds in the hundred, it shall be lawful for the Company, if they shall be of opinion that the said rate of twenty-five years' purchase of the said average profits is an inadequate rate of purchase of such railways and other works and property, reference being had to the prospects thereof, to require that it shall be left to arbitration in case of difference to determine what (if any) additional amount of purchase-money shall be paid to the Company: Provided also that such option of purchase shall not be exercised except with the consent of the Company, while any such reduced scale of tolls, fares, and charges as aforesaid shall be in force."

Resolution of the Committee.

11. The resolution arrived at by the Committee is as follows:—

> "That the Committee do not consider it expedient to recommend the construction of the Railway from Jerilderie to Deniliquin, as referred to the Committee by the Legislative Assembly; but are of opinion that its consideration should be postponed until it shall be determined by Parliament that as a matter of public policy the private railway between Deniliquin and Moama should be purchased in terms of the Deniliquin to Moama Railway Act."

It is shown in the following extract from the Committee's Minutes of Proceedings, dated 16 August:—

> Mr. McCourt moved,—"That the Committee do not consider it expedient to recommend the construction of the Railway from Jerilderie to Deniliquin, as referred to the Committee by the Legislative Assembly, because the Committee are of opinion a line to the farming centre at Berrigan would better serve the public interest."
>
> Mr. Ewing seconded the motion.

Mr.

Mr. O'Sullivan moved,—"That the motion be amended by omitting all the words after the word 'Committee' in the first line, and inserting in their place the following words: 'Consider it expedient that the railway from Jerilderie to Deniliquin as referred to the Committee by the Legislative Assembly should be carried out, provided that the work can be constructed for £2,000 per mile, and the betterment principle be applied to all private lands served by the proposed railway.'"

The amendment was seconded by Mr. Dawson and negatived on the following division upon the question, "That the words proposed to be inserted be so inserted":—

Ayes, 5.	Noes, 8.
Mr. Suttor,	Mr. Garrard,
Mr. Wall,	Mr. Hoskins.
Mr. O'Sullivan,	Mr. Humphery,
Mr. Collins,	Dr. Garran,
Mr. Dawson.	Mr. Davies,
	Mr. Ewing,
	Mr. McCourt,
	Mr. Neild.

Mr. Davies moved,—"That the motion be amended by the omission of all the words after the word 'Assembly.'"

The amendment was passed.

Mr. Humphery moved,—"That the motion be further amended by the addition of the following words: 'but are of opinion that its consideration should be postponed until it shall be determined by Parliament that, as a matter of public policy, the private railway between Deniliquin and Moama should be purchased in terms of the Deniliquin to Moama Railway Act.'"

The amendment was passed on the following division upon the question "That the words proposed to be added be so added":—

Ayes, 9.	Noes. 4.
Mr. Garrard,	Mr. Hoskins,
Mr. Suttor,	Dr. Garran,
Mr. Humphery,	Mr. Davies,
Mr. Ewing,	Mr. McCourt.
Mr. Wall,	
Mr. Neild,	
Mr. O'Sullivan,	
Mr. Collins,	
Mr. Dawson.	

The resolution, as amended, was passed on the following division:—

Ayes, 10.	Noes, 3.
Mr. Garrard,	Mr. Hoskins,
Mr. Suttor,	Mr. Davies,
Mr. Humphery,	Mr. McCourt.
Dr. Garran,	
Mr. Ewing,	
Mr. Wall,	
Mr. Neild,	
Mr. O'Sullivan,	
Mr. Collins,	
Mr. Dawson.	

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 18 August, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

RAILWAY FROM JERILDERIE TO DENILIQUIN.

TUESDAY, 31 *MAY*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM McCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee proceeded to considered the proposed Railway from Jerilderie to Deniliquin.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined :—

J. Barling, Esq. 31 May. 1892.

1. *Chairman.*] Have you any statement to put before the Committee in connection with the proposed railway from Jerilderie to Deniliquin? The line I have to bring before the Committee to-day is one which presents, in its relation to the topographical features of the country, peculiarly favourable circumstances. It passes through country almost at once fit for the plough, and capable of producing large crops of cereals, such as wheat and barley—the former especially—of excellent quality. The contour of the country permits of easy grades, the whole combining to present a field for railway enterprise, such as has been seldom met with in the railway history of the Colony. Perhaps I may be allowed to quote a few statistics to show the great importance of opening up the wheat districts of our Colony. Turning to the last Statistical Register, I find that in 1891 there were 900,079 bushels of wheat imported into the Colony, with a total value of £194,909; there were 61,626 bushels of barley imported into the Colony, of a total value of £7,778; there were 63,991 tons of flour imported, of a total value of £703,297; of hay and chaff there were 57,816 tons imported into the Colony, showing a total value of £238,088. I may also draw attention to a fact brought under my notice by Mr. Barbour, one of the Members for the Murray, who is well acquainted with the whole of the country. This gentleman, in a memorandum on the subject of the proposed railway, states, "As an instance of the reputation the land holds among practical farmers, a party from Tasmania has leased at 4s. 6d. an acre, with the right of purchase at £1 10s. an acre, 15,000 acres which is to be divided amongst them, and it is to be all placed under the plough. Land is worth up to £10 an acre on the Victorian side of the Murray, because it can be cultivated, and land of equal quality, but it can only be grazed, is only about £3 an acre on the New South Wales side." On the Victorian side the influence of irrigation has been brought to bear, and the country is dotted with farms on the southern side of the Murray. The prominent fact, however, which the Minister took into consideration, was that the line from Narrandera to Jerilderie, unconnected as it is with the neighbouring Victorian system, constitutes a heavy drag on the railway system of this Colony. The working of this line represented in 1890, a loss of about £17,000, and this state of things he clearly saw must continue until a connection is made either with Deniliquin, Barooga, or Mulwala. The Minister thinks, taking everything into consideration, that the first-named route, viz., the Jerilderie-Deniliquin, will, on the whole, answer the requirements of the case best. It must not be lost sight of that a considerable portion of the country under notice is already served by the Moama-Deniliquin line, and Mr. Lyne is of opinion that the country as a whole will be better spaced by the proposed connection than by either of the other proposals. By a reference to the report of Mr. Alexander, it will be seen that that gentleman proposes a a diversion from the straight line between the two points to Conargo, entailing an additional length of 5 miles, with the view of an ultimate extension from the latter place to Balranald, *via* Booroorban: but Mr. Lyne does not favour that project. He wishes to point out that if it is considered desirable that the complete railway from Jerilderie to Moama should be in the hands of the Government, powers are given in the Deniliquin-Moama Company's Act to the Government to compulsorily resume the Company's line under certain terms which are laid down in that Act. With regard to the fear which has been often expressed as to the effect of constructing this connection with Deniliquin, viz., that it would

drain

J. Barling, Esq. 31 May, 1892.

drain the trade of that part of the Colony into Victoria, the Minister points out that, if thought desirable, this trade can always be secured by the adoption of differential railway rates. The official description of the line is as follows :—

Line from Jerilderie to Deniliquin—light line ; length 44 miles 67 chains 89 links.

The estimated cost of a light line, exclusive of the cost of land and compensation, is £148,000, or £3,300 per mile. Using in part the balance of the re-rolled 75-lb. rails which were taken from the Eskbank ironworks. These rails were taken over from the Railway Commissioners on the understanding that they were to be delivered where required at £5 per ton, and all chairs required supplied cost free. This will provide for nearly 17 miles of road. The remainder of the road will be laid with new 60-lb. flat-bottomed steel rails, which will cost about £8 per ton delivered. The survey has been taken on the direct route, and is a straight line, excepting a curve at each end. The extension commences at Jerilderie, about 412 miles 4 chains 7 links from Sydney, and ends at the terminus of the Moama and Deniliquin Railway, at 456 miles 71 chains from Sydney, being a distance of 44 miles 67 chains 89 links. The ruling grade is 1 in 200. The only river of importance crossed is the Edwards, close to Deniliquin, which will be spanned by a timber viaduct. (I may mention that the estimated cost of a first-class metalled road in this district is about 3,000 per mile.)

The Railway Commissioners' report reads as follows :—

Office of the Railway Commissioners of New South Wales, Sydney, 12 August, 1889.

Proposed Line of Railway from Jerilderie to Deniliquin—45 miles.

In accordance with section 13 of the "Public Works Act, 1888," we beg to report as under :—

Cost of construction—		
The Engineer-in-Chief estimates the cost of construction of a light line of railway (exclusive of land and compensation) at		£163,900
Annual cost—		
Interest on cost of construction, at 3½ per cent.		5,736
The cost of working the line is estimated as under :—		
Locomotive expenses	£1,800	
Permanent way expenses	5,625	
Traffic expenses	1,162	
		8,587
Total annual cost		£14,323

There is practically no traffic between Jerilderie and Deniliquin, and consequently any income must arise from the development of a trade which does not at present exist. The business people of Deniliquin urge the construction of the line upon the ground that they would then do business with Sydney instead of, as at present, with Melbourne ; and the same may be said of the business people of Moama, to a limited extent. The residents of the latter district drew special attention to the extent of rich agricultural land capable of being developed if the railway connection between Deniliquin and Jerilderie were made, as at present there is no profitable market open to producers.

Although there is no basis upon which an estimate of the probable revenue could be grounded, the proposed line is worthy of consideration, as forming a connection between Moama, Deniliquin, and the main line at Jerilderie, and there being a prospect of traffic developing which may prove remunerative.

The Seal of the Railway Commissioners of New South Wales was hereunto affixed this 12th day of August, in the year of our Lord, 1889, in the presence of,—
H. McLACHLAN.

E. M. G. EDDY, (L.S.) Chief Commissioner.
W. M. FEHON, (L.S.) Commissioner.
CHARLES OLIVER, (L.S.) Commissioner.

This report is dated 12th August, 1889 ; but subsequently, viz., on the 7th March last, I received from them the following letter :—

Jerilderie—Deniliquin.

Sir, Government Railways of New South Wales, Secretary's Office, Sydney, 7 March, 1892.

With reference to your minute asking for report from the Commissioners relative to the proposed railway from Jerilderie to Deniliquin, I am directed to inform you that the Commissioners have gone carefully into the matter with the Engineer-in-Chief for Construction, with a view of having a reduction made in the estimated cost of the line. Originally it was anticipated the line would cost £3,640 per mile, but it is now believed the expenditure need not exceed £3,300 per mile. The views of the Commissioners, as expressed in their report of 12th August, 1889, are unaltered, and the reduction in the cost of the construction, rendering the burden of interest less heavy, should make the scheme more acceptable.

I have, &c.,
H. McLACHLAN,
Secretary.

Under Secretary for Public Works.

This will alter the figures in their report in the following way :—The interest on the cost of construction will be £5,180, instead of £5,736, making the estimated total annual cost £13,767, instead of £14,323. I hand in a report by Mr. S. Alexander on this and other connected railway proposals ; also maps just supplied to me by the Lands Department, showing the quantity of unalienated land in the locality still in the hands of the Government, as well as the quantity of reserved land ; and I further ask permission to put in a memorandum, which has been handed to me by Mr. Barbour, one of the Members for the district, giving his view of the prospects of this extension. This will, perhaps, be useful to the Committee, as giving them a basis for their examination of that gentleman. Mr. Alexander, in his report dated the 30th March, 1891, gives these particulars :—The total area of the county of Cadell is 563,200 acres. The total area alienated is 293,824, and the area of the reserves is 119,761 acres. In another column Mr. Alexander has given the area of other unalienated land ; but no notice must be taken of that column because the figures largely represent land under conditional purchase. The other figures stand good at the present time, with very little alteration. The total area of the county of Townsend is 2,109,440 acres. The total area alienated is 1,371,053 acres, and the area of the reserves in that county is 425,024 acres.

2. The memorandum by Mr. Barbour was written since the proposal was referred to the Works Committee? Yes.

3. It did not influence the Minister in putting the work before the Committee? Certainly not. I only received it three or four days ago.

4. In the Railway Commissioners' report there is no estimate of the probable traffic on the proposed railway? The Commissioners say that at the present time they cannot give an estimate of the probable traffic.

5. There is no estimate of the probable traffic? No.

6. There is nothing to show what the railway will carry? No.

7. What grounds has the Minister for supposing that the trade now done in that district with Victoria will come this way if the proposed line is constructed? Because at the present time the farmers are completely cut off from Sydney, and they are also practically cut off from Melbourne, owing to the heavy duties imposed on their produce on the border.

J. Barling, Esq.

31 May, 1892.

8. The proposed railway is not to tap an existing centre of trade, but a trade that may be developed in the future? Yes; a trade that is almost certain to be developed.
9. But it is only problematical, after all? I think not. That there is no trade now is accounted for by the fact that at the present time there is a duty on wheat imported into Victoria of something like 1s. 9d. a bushel, and a duty on barley of 1s. 10d. a bushel.
10. As I understand it, the principal reason for submitting this proposal to the Committee is, that in the opinion of the Minister there is a large amount of wheat imported into the Colony, and this district being an exceptionally good wheat-growing country, railway communication will, to a large extent, do away with importation? No doubt of that. But there was another point to which I drew attention, namely, that at the present time the Narrandera to Jerilderie line is losing £17,000 a year, and this connection between Jerilderie and Deniliquin, the Minister thinks, will bring traffic on that line.
11. But if there is no traffic there, would not that only be adding loss to loss? I think not, because how can there be any traffic when there are no means of transit?
12. But Jerilderie is only 45 miles from Deniliquin? That means a land carriage of over 44 miles.
13. That is, supposing the traffic comes to Sydney. The Minister is of opinion that, owing to the duties on the Victorian side, interchange of products there is completely barred? Completely barred.
14. But do you not think that the line being at Jerilderie influences trade at least 20 miles south-west? The fact of the line being already at Jerilderie, I have no doubt influences trade to a certain extent.
15. Well, if the Jerilderie line, which has been in existence for some years, has not developed any traffic—what then? But you must take into account the nature of the country, which is of extraordinary fertility. The country is very fertile in the county of Cadell. It is a long distance from Jerilderie. There is Tuppal, and all the country about there.
16. Then are we to understand that the country around about the Deniliquin end of the line is superior to that at the Jerilderie end of the line? No, I did not say that. I simply say that the country is as good.
17. If the country is as good at Jerilderie and there has been no development of trade, how can such development be expected if this line is constructed? That is very true; but the Jerilderie line only taps a very small portion of the district. The district chiefly affected will be round about Deniliquin.
18. Do you know if the line from Moama to Deniliquin is paying? I believe it is paying very good interest.
19. If this line is constructed, do the Government intend to resume the Moama to Deniliquin line? The question of the resumption of the Moama to Deniliquin line has not been considered by the Government as a whole. Mr. Lyne is very much in favour of encouraging private enterprise in the construction of branch lines, but he desired me to say that if the resumption of the Moama to Deniliquin line were considered necessary in connection with the Jerilderie to Deniliquin extension, the question of the resumption of that line would be very seriously entertained.
20. If Ministers are in favour of giving private enterprise full scope in the construction of railways, would it not be better to help forward a private bill for a railway from Deniliquin to Jerilderie? That question has not been before the Minister.
21. Do you know, as a matter of fact, whether leave has been sought by the Moama to Deniliquin Railway Company to extend their line from Deniliquin to Jerilderie? I am not quite certain on that point. I know there has been a proposal to extend the line to Hay.
22. From Deniliquin to Hay? Yes.
23. If private capital is ready to construct a line from Deniliquin to Hay, does not that lead you to suppose that the traffic would naturally go to Victoria? I have no doubt it would be the idea of the promoters that it would do so. I may mention that there is what is called a rebate line, and the Victorian Government make a very considerable reduction in the railway freight on all produce north of that rebate line. Hay comes within the influence of the rebate line, but all south of that line do not get the privilege. I have no doubt that the promoters of an extension from Hay to Deniliquin thought that the country about Hay would receive the exceptional advantages offered by the Victorian Government in connection with the carriage of produce from that part of the country to the north of the rebate line.
24. Does not the rebate line come very close to Jerilderie? No; it is considerably to the north of Jerilderie. Looking at the map I should say it must be from 26 to 30 miles north.
25. What is the length of the proposed railway under consideration? 44 miles 67 chains and 89 links.
26. Do you know the rainfall in the Deniliquin-Jerilderie district? That is given in the report of Mr. Alexander.
27. Have the proposed irrigation canals had anything to do with the Minister putting this railway before the Committee? I have no doubt he took that matter into consideration. I do not know that the canal lines shown on the map can be said to be definitely fixed.
28. The blue lines in Mr. Alexander's report indicate the proposed canals? Yes, but I do not think, as I said before, that those lines can be looked upon as definitely fixed.
29. Still they show approximately where the canals would be, and the opinion of the Water Conservation Branch that it is possible to irrigate this part of the country in that way? Yes.
30. I want to know whether the Minister expects that these irrigation works will be carried out shortly, and thereby afford a likelihood of the railway paying? I have no doubt the Minister had that in view. The blue lines indicate the direction in which the canals, in the opinion of the Irrigation Department, will ultimately be taken. This country is eminently capable of being successfully irrigated. Similar country to the south of the Murray has already been irrigated, I believe, with the very best results, and in all probability the same thing will follow here, and I have no doubt the Minister had that in view.
31. I suppose you do not know whether the persons interested in the Moama to Deniliquin line have been agitating for the construction of this railway? I am not able to answer that question.
32. Have any deputations waited upon the Minister, or has there been anything of that kind? Deputations have waited upon the Minister with regard to the construction of the Deniliquin to Jerilderie line, but I do not know that the directors of the Moama to Deniliquin Railway Company have waited upon the Minister with regard to it.
33. Will you furnish the Committee with the date of the last deputation from Deniliquin or Jerilderie with reference to this line? Yes.
34. *Mr. Davies.*] What proportion of the lands required for the construction of this railway would have to be resumed? That question has not been thoroughly gone into. The Valuer has not been there to value that particular portion of the work. It is almost impossible to do it until we have actually agreed

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agreed to construct the line. It is a case in which the betterment principle very largely comes into operation.

35. That has not been taken into account in the cost? No; I have given you an estimate without the cost of the land, and that has been the practice in the case of all other lines before the Committee.

36. You say that at present there is a loss upon the line from Narrandera to Jerilderie of £17,000 a year? Yes.

37. And you anticipate that the cost of the proposed line, including interest and working expenses, will be £13,000 per annum? Yes.

38. Making something over £30,000 a year? Yes.

39. Are you of opinion that if the proposed extension is made, the sum of £30,000 a year, or any portion of it, will be made good? I do not suppose it would at first, but it very soon would. The construction of the line would give such an impetus to the development of the district that very soon what is now a heavy loss, if not absolutely wiped out, would be very much reduced.

40. You do not think the construction of the proposed extension would be the means of increasing the loss? Undoubtedly not.

41. What trade and traffic is likely to be created by the construction of this line? I should think there would be a large traffic in wheat, barley, and hay, and produce of that kind. I believe the country is not so good for oats, but it is one of the finest countries in the world for the growth of wheat. The land produces very heavy crops of wheat. It has this peculiarity, that there is very much less bran with the wheat than is the case with wheat grown in less favoured localities. The skin of the wheat is very much thinner; and where wheat grown on ground more subject to moisture would probably weigh from 58 to 60 lb. per bushel, some of the wheat in this part of the country goes as high as from 60 to 68 lb per bushel.

42. The carriage of wheat is something like the carriage of coal, and does not pay the Railway Department as well as some other kinds of goods? That is a question to be dealt with by the Railway Commissioners.

43. You have no basis at all as to what the probable income would be from the carrying out of this railway? No. The Railway Commissioners, in their report, point out that at the present time they cannot give that.

44. What is the gauge of the private line from Moama to Deniliquin? The same as the Victorian gauge —5 feet 3 inches. But in the Act under which the Company constructed the line, power was given to the Government to compel them to make the gauge the same as that of the New South Wales railways.

45. And the Government also have power to resume the line? Yes. They have power to resume twenty-one years after the date of the Act, and that period will expire on the 3rd March, 1895.

46. It would not be possible to resume the line before that date? No, unless by arrangement with the Company. If the line is undertaken it will be probably about that date before it is completed.

47. A large portion of the land through which the railway would pass is Crown land? No; there is not a very large proportion of Crown land.

48. I understood you to say there was an area of some 500,000 acres? Yes; but if you look at the map you will see that it is made up of lands dotted all over the country, consisting of forest reserves, water reserves, and so forth.

49. The major portion of the land is private land? Yes.

50. *Dr. Garran.*] I gather that the Railway Commissioners do not very strongly recommend the line? Well, I should not like to say that. I should not go beyond what I have read in their report.

51. The language of their report neither condemns nor approves? No; they simply point out that it is very likely that traffic may result.

52. It would fit in a missing link? Undoubtedly.

53. And so far, would be a convenience? Yes.

54. But at present there is no traffic to carry? There is not very much traffic at the present time.

55. And the traffic that would exist would probably be in wheat? Principally in wheat. There would, of course, be other agricultural produce.

56. It was given in evidence before the last Committee, that it was cheaper to send Corowa wheat in bond through Victoria, and ship it to Sydney, than to send it down by rail to Sydney? I believe some of our wheat is sent in bond through Victoria and comes round to Sydney.

57. If that is the case with Corowa, seeing that Jerilderie is 412 miles from Sydney, and very much nearer to Melbourne, is it not probable that if there was wheat it would go to Melbourne in bond? I should rather that you asked the information of Mr. Alexander, who has gone more carefully into the matter on those points than I have done. As a matter of fact, the Corowa line has been approved of.

58. I am looking at the probable traffic, and we have it in evidence that wheat grown on the Murray finds its Sydney market by going in bond to Melbourne? I believe that has been done.

59. I want to know whether the same thing would happen in the present instance? All I can point out is that the people of the locality, whose evidence the Department has before it, most strongly insist that their traffic would come to Sydney by this line.

60. Do you know any people in any district who have not been confident before the railway was made? That is so.

61. We have had it in evidence that our squatters to the north of Hay never send their wool down by railway to Sydney? It is not likely they would send their wool down—at any rate to any large extent—because wool is about the only one of our products against which Victoria has not raised a barrier. She invites our wool.

62. Then you do not think we would have any chance of getting Jerilderie wool, or even Deniliquin wool, brought down by the railway? Although I do not consider myself a very competent authority upon that point, I should be doubtful of it. The Railway Commissioners could answer that question better than I could.

63. If we cannot hope for wool, our hope must rest on wheat? On wheat, very largely. I would point this out: If the wheat comes to Sydney, in all probability farmers selling their produce in Sydney will get their supplies from there, so that the probability is, supplies would be more largely drawn from Sydney than is the case at present.

64. But we did not find that to be the case with Corowa. We found that the wheat came to Sydney, but that the supplies were bought in Melbourne? The people of this locality argue very strongly that such would not be the case there.

65. They do not pledge themselves to send to Sydney? I do not see how they could pledge themselves.

66.

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66. Is the land between Narrandera and Jerilderie as good wheat-growing land as that between Jerilderie and Deniliquin? I have no knowledge of that country.
67. Have you any knowledge whether an immense wheat-growing business has been developed by the opening up of the Narrandera to Jerilderie line? I think not.
68. And if we have made 42 miles of railway without any agricultural results, where is the reason for hoping that another extension of 44 miles would develop agriculture? The fact of the matter is, it would open up another route into Victoria, especially into the western part of Victoria, joining the Victorian main line at Seymour.
69. I simply want to know on what past experience this hope of wheat-growing is based? Of course, it is largely based on the returns made to us by the people there, and which would be tested when the Sectional Committee visited the district.
70. And yet the people between Narrandera and Jerilderie have not done anything? I am not able to say how much wheat they have grown, for I have not the statistics before me.
71. The line from Moama to Deniliquin concentrates a large wool traffic, does it not? I think it does.
72. That is what makes it pay? I should imagine that is very likely.
73. Especially a cattle trade? A large amount of stock passes into Victoria.
74. If it were not for the pastoral traffic that line would not pay? Very likely
75. And you say that you would have no pastoral traffic on this line? I should think we would have some stock traffic passing into Victoria, but I should imagine that there would not be any large quantities of wool passing along the line.
76. Some store stock might go to Victoria? Very likely.
77. Would not the new stock tax in Victoria rather check traffic in store stock? So far as it is a tax it would, of course, tend to decrease it.
78. But, notwithstanding the very large stock traffic, we cannot reason from the fact that the Moama line is a dividend-paying one that this will be also? There are, of course, special features with regard to the Moama line which do not exist with regard to this line. The same traffic that would go from Deniliquin to Moama would probably go from Jerilderie to Deniliquin passing, of course, into Victoria.
79. You say that the revised estimate has brought down the cost of the railway? Yes.
80. In what way was it brought down? That will be explained by the Engineer-in-Chief.
81. The line for the whole of the distance runs through private estates? To a very large extent it does.
82. Would the line add to the value of those estates? I should think it would, most decidedly.
83. Supposing the State could get the increment of value which the expenditure of £150,000 would create, would the line then pay? I have not gone into the question in that way, but certainly it would make it far more assured; but I would point out that the betterment principle would be applied to the private estates.
84. Only for the portion taken? Undoubtedly.
85. Do you think the land within 10 miles of the line would be increased in value by £150,000? That is a question more for the Valuer than for me to answer.
86. You would rather not express an opinion? At any rate, not without a little more time to consider it.
87. I understand you to say that we are losing £17,000 a year now, and that if we had a further loss of £13,767 a year we should get rid of the loss altogether? No. I think you are hardly putting it in the right way. You are putting the £13,000 as a loss. I did not say it was a loss. I merely said that £13,000 would be the annual cost of the line.
88. The loss would be £13,000, because there would be no traffic? But the contention is that there will be traffic; that the line will create a traffic.
89. Then you think that the traffic to be created would cover the new loss and cover the old loss, too? I should hope it would in time do so.
90. How long do you think? That I cannot say. Of course, you must give some little time for the development of the country.
91. How far is Deniliquin from Melbourne? One hundred and ninety miles.
92. *Mr. Wall.*] Would it not be possible, in submitting plans to the Committee, to show the private land within a radius of 10 miles of the proposed line? Yes, it could very easily be done. The plans I have given in pretty well show that.
93. The trade between Deniliquin and Moama must principally consist of supplies to the people residing between Jerilderie and Deniliquin—that is, considering that the duties on grain prohibit trade between Melbourne and that part of the country? Yes.
94. The traffic on this line would consist principally of supplies to our people between Deniliquin and Jerilderie? And also the wheat traffic; and as far as Melbourne is concerned, I have no doubt there would be a considerable wool traffic on the line.
95. Is it not a fact that the prohibitory duties adopted by the people of Victoria prevent the disposal of our wheat in the Melbourne market? Undoubtedly.
96. That being the case, and our wheat not being able to go along that line, the railway would principally be supported by the wool trade, and the return supplies from Victoria to our people in Jerilderie and Deniliquin? To a certain extent.
97. Have you any way of forming an estimate of the probable returns from the line? That is a matter which, by law, rests with the Railway Commissioners, and they have stated that they cannot give any returns.
98. But in authorising the construction of a private line, does not the Department reserve to itself the right to inquire into the traffic on that line;—is there no provision in the Act to enable the Department to ascertain what the traffic is? If I remember rightly the Company are obliged to publish their returns, and they would do so as a matter of course.
99. Are those returns with regard to the private line between Moama and Deniliquin available? I have no doubt they are.
100. You say that, taking into consideration the manner in which the Victorian people deal with our wool, this line is not likely to get the wool traffic? I should think we should not get any very heavy traffic in wool.
101. Do you know the cost of construction of the private line between Moama and Deniliquin? I think the cost was something like £160,000.
102. What is the provision in the Act with regard to the resumption of that line? The Act provides that the Government can resume the railway 21 years after the 3rd March, 1874. The section of the Act is as

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as follows: It shall be lawful for the Governor at any time after the expiration of the term of twenty-one years from the passing of this Act to purchase the said railways and other works with all its hereditaments, stock, and appurtenances, upon giving to the Company three calendar months' notice in writing of such intention, and upon payment of a sum equal to twenty-five years' purchase of the annual divisible profits, estimated on the average of the seven then next preceding years. Provided that if the average rate of profits for the said seven years shall be less than at the rate of fifteen pounds in the hundred, it shall be lawful for the Company, if they shall be of opinion that the said rate of twenty-five years' purchase of the said average profits is an inadequate rate of purchase of such railways and other works and property, reference being had to the prospects thereof, to require that it shall be left to arbitration in case of difference to determine what (if any) additional amount of purchase-money shall be paid to the Company. Provided also that such option of purchase shall not be exercised except with the consent of the Company, while any such reduced scale of tolls, fares, and charges as aforesaid shall be in force.

103. If the Government were to resume that line, have the Department considered what would be the total cost of the line between Jerilderie and Moama? No. I explained before that that has not been taken into consideration. But the Minister stated that if it were considered desirable to purchase the private line in connection with the proposed extension, the question would be taken into serious consideration.

104. In the event of the Government not purchasing that line the greater portion of the traffic would still go on the private line to Melbourne? I should think it very likely.

105. Have you any knowledge of the settlement in that part of the country? Particulars in regard to that are given in Mr. Alexander's report.

106. Do you know whether the greater amount of settlement lies between Deniliquin and Moama, or between Deniliquin and Jerilderie? I am under the impression that the larger amount of settlement exists between Deniliquin and Moama.

107. Then the greater portion of the trade would be carried on the private line unless the Government resumed it? That would be so, of course—unless very special facilities were given in the way of trade over the other portions of the line.

108. But the traffic would necessarily have to be carried on the private line? Undoubtedly.

109. *Mr. Neild.*] You compared the cost of the proposed railway with the cost of a metalled road? Yes.

110. Did you mean a road metalled to the full width—a chain? No; I think not. I asked the Roads Department what it would cost to have a metalled road, and they said £3,000 a mile; but I do not think that would be the full width.

111. You assume that it would be a road formed and a strip in the centre metalled? Yes.

112. About a third? Yes; probably a little more than that.

113. Do you know if there is a metalled road at present? No.

114. Has one ever been demanded? There is a stock route there 1 mile wide. There is practically no road worth speaking of, but simply bullock tracks.

115. The drays wander about all over the full width of the stock route? Yes.

116. Then there has never been sufficient traffic in this direction to warrant a demand to your Department for a metalled road? No; I do not think there has been.

117. You spoke just now with reference to the possibility of a stock traffic, there being, I think you said, already a stock traffic between Deniliquin and Victoria? There is a very large stock traffic from this part of the Colony, and also from Queensland; but not having the returns before me I cannot say exactly what amount of that stock traffic goes over the Deniliquin line.

118. You also gave evidence with reference to the section of the Deniliquin to Moama Railway Company's Act, by virtue of which the Government of the Colony can require an alteration of the existing gauge from 5 ft. 3 in. to the New South Wales gauge of 4 ft. 8½ in.? Yes.

119. Assuming that the gauge was altered to 4 ft. 8½ in., would not that of itself put a stop to the trucking of cattle at Deniliquin, necessitating, as it would, the transhipment of animals at Moama? I should think it would, to a certain extent, act as a barrier; but, as I have said, I have not the returns before me enabling me to say really what traffic there is in stock between Deniliquin and Moama at present.

120. To your knowledge, the change of gauge would have the effect indicated to a material extent? It would, of necessity.

121. Over a radius of how many miles from the line would, in your opinion, the influence of a railway extend for the purposes of traffic—agricultural traffic? That is a question I should prefer that you would ask the Railway Commissioners, because they have much more information with regard to traffic than I have.

122. In your official capacity, have you any knowledge of the distance which it is customary to cart or draw agricultural produce to a railway station? No; I have not. That does not come under my official cognisance. The Works Department is completely divided from the Railway Commissioners on all questions relating to traffic. We merely deal with questions of construction, taking the report of the Railway Commissioners as to traffic.

123. I think you stated you anticipated large traffic in breadstuffs from the district lying between Jerilderie and Deniliquin? Yes.

124. Is the country between Deniliquin and Jerilderie different to the country to the north of Jerilderie, or in the immediate vicinity of that place? In reply to Dr. Garran, I said I was unable to give information on that point; but Mr. Alexander, who has a personal knowledge of the country, would give evidence in regard to it.

125. But you spoke with a good deal of certainty as to the expectation, perhaps, of the Minister with reference to products? I did point out that the Minister anticipated that when this line was constructed it would develop the country very largely. I gave, as an instance, a case quoted by Mr. Barbour, showing the greater value of land on the Victorian side of the Murray, where it had been cultivated. I believe the land referred to by Mr. Barbour is in the neighbourhood of Tuppal.

126. I think you said the distance from Melbourne to Deniliquin was 190 miles? Yes.

127. And the distance from Deniliquin to Sydney is 458 miles? Yes.

128. Do you not think that the real effect of the construction of this line would be to take traffic from Riverina to Victoria, rather than to Sydney? The people there contend that it will not have that effect.

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Mr. Barbour, on this point, says:—"The people living in the district are all desirous of coming to Sydney, in place of to Melbourne—business as well as private people; first, because they like Sydney; second, because they think they can buy cheaper there; and third, because of the trouble and annoyances of crossing the border, and the duties to pay the Custom House."

129. On the authority of Mr. Barbour, then, you give the Committee information to the effect that the people about Deniliquin like Sydney and prefer to trade with Sydney? They prefer to trade with Sydney.

130. Was not Deniliquin one of the centres of the agitation for the separation of Riverina from New South Wales? I am unable to answer that question, but I can quite understand that if Deniliquin were included in Victoria it would get rid of the border duties at once.

131. *Mr. Dawson.*] Have you been to Deniliquin? No; I have not.

132. Do you know whether it is a fact that it is very difficult to get a Sydney paper there? I am unable to say.

133. In regard to the carrying of stock, this line would be of the same gauge as our present lines? Yes.

134. Then in taking stock to the private railway you would have to tranship? If they were carried by railway they would have to be transhipped at Moama, no doubt.

135. But at Deniliquin? We have power to compel them to bring their gauge to our gauge.

136. And do you intend to compel them, if this line is constructed? I am not able to answer that question.

137. *Mr. Ewing.*] You have stated that, in your opinion, the line from Moama to Deniliquin pays? I believe it pays 8 per cent.

138. In the continuation of the same railway through the same kind of country, it almost goes without saying that a line from Deniliquin to Jerilderie will pay? I should certainly think so, without doubt.

139. Then, again, it practically annexes the line from Deniliquin to Moama, and the line from Narrandera to Hay, and it would have an additional feeder, and would pay still more? I think it would.

140. You have no doubt that if the line from Deniliquin to Jerilderie were constructed the Melbourne trade would go from Hay to Narrandera, and half-way down to Junee along that line—I mean the traffic from Melbourne? I should think it would.

141. Deniliquin is the same distance from Melbourne as Albury is, and the line would annex all the Melbourne trade going up to Narrandera, and half-way to Junee? Yes.

142. Therefore it would make the Moama to Deniliquin line pay much better than it does to-day? I should think so.

143. Looking at the matter from that point of view, and bearing in mind the section of the Act giving the Government power to resume on the 3rd March, 1895, there can be no doubt in your mind that if this line were constructed, the price that would have to be paid for the Deniliquin to Moama line would be increased? If we were to construct this line, its paying qualities could hardly be brought into play until the time came for us to resume. If this line were authorised now, you could hardly begin its construction until about the middle of next year.

144. You think there can be no doubt that if this line were constructed the effect would be to make the Deniliquin to Moama line pay better? I should think it would.

145. Do you not think that it would have the same result in the course of construction? I should hardly think so to any great extent.

146. Would not the private line carry a great deal of stuff required by this line while in course of construction? The permanent way would not be sent that way.

147. In your opinion, would not the fact that this line was going to be constructed, bring a considerable amount of settlement? Yes; I daresay it would.

148. Then, speaking in general terms, there cannot be much doubt that it would increase the income of the Deniliquin to Moama line at once? I should think that would be the tendency.

149. But you cannot say to what extent? No; it would have that tendency, undoubtedly. Your idea is to point to the desirableness of purchasing the line as quickly as possible?

150. Do you not think the line must be purchased some day? I could hardly give my individual opinion. I give the Minister's statement.

151. You can say this, at least;—that if it is to be purchased it would be better to purchase it before this line was constructed than afterwards? If my individual opinion were asked—of course, I am not giving this as the Minister's opinion—I should say it would be most desirable to obtain that line as soon as possible.

152. Therefore, in your evidence, I take it there are three aspects of this case—first of all, the effect upon the district;—you have no doubt it will benefit the district? I think there can be no question about that.

153. You have no doubt either that the line will pay? I think the line will pay eventually.

154. The next question is, whether it is wise for New South Wales to construct a line to take stuff to Melbourne? It would take some stuff to Melbourne. But should we not rise above a mere consideration of that sort? What are these people to do? There is the Murray interposing an insuperable barrier to them by reason of the Customs duties, and they cannot get to our railways because of this gap. Is it for us to say to our own people "You shall not have access either one way or the other?"

155. You think it is better for the stuff to be carried to Melbourne than not to be carried at all? I almost think it would be. I think it would be simply fair to our own people.

156. *Mr. Hoskins.*] You said, in reply to Mr. Ewing, that you had no doubt that if the proposed railway were constructed it would largely increase the traffic in goods and stock taken over the line from Deniliquin to Moama? Yes; I certainly think it would in regard to stock.

157. Anything else besides stock? I daresay stock and wool.

158. Anything else? I think those would be the principal things. In regard to stock, they would have to consider whether it would be worth their while to incur the expense of trucking the stock, or whether it would be better to drive the stock that distance. This would depend very much upon the state of feed on the stock route, and so on.

159. You believe that the construction of this railway would largely increase the trade on the Deniliquin-Moama line? I should think it would.

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160. Then, if it would, is it not a fair presumption that it would take away freight which now gravitates to Sydney, because it would bring trade which did not exist before over the Deniliquin to Moama railway? I am limiting what I said to stock and wool. I have no doubt it would bring a larger amount of stock and wool, but I am not sure it would take other kinds of traffic to Melbourne.
161. Why not? Simply on account of the Customs duties which would prevent wheat and barley, and so on, being taken to Victoria except in bond.
162. Do you not know that wheat is taken from the Albury district, and from Corowa by rail to Melbourne, and sent round by steamer to Sydney? I believe it is.
163. Is it not a fair presumption then, seeing that Jerilderie is 182 miles nearer to Melbourne than to Sydney, that if a railway were constructed to Deniliquin the wheat grown there would be sent in bond over the Victorian railways, and be shipped to Sydney by sea? Yes; certainly. But I would suggest that you do not take into consideration the probable wheat traffic that may arise, as far as Sydney is concerned. There may be a large wheat traffic between the country in question and Wagga Wagga, Goulburn, or other parts of New South Wales.
164. Do you not know that a great deal of wheat is grown in the neighbourhood of Narrandera, Junee, and Cootamundra? No doubt that is the case.
165. Seeing, therefore, that those markets are supplied with locally grown wheat, does it not appear reasonable that if the construction of this railway were to cause a large increase in the growth of wheat in the neighbourhood of Jerilderie and Deniliquin, that wheat, to save expense, would not be taken over the New South Wales railways, but would be sent over the Victorian railways in bond, and round by sea to Sydney? That would be the case to a certain extent, I daresay.
166. Therefore, any increase of cultivation in the district would not act as a feeder to the railway now proposed? If your contention is correct, of course, it would be so; but as I have already pointed out, the people there contend that the wheat would come to Sydney.
167. Never mind the people, let us have your view. If, as you say, the people are desirous of dealing with Sydney, could they not deal with Sydney in the way I have described, by sending the wheat to Victoria, in bond, cheaper than by sending it over our railways? You will have to take the sea freight into consideration.
168. Do you know what they bring wheat from Melbourne to Sydney for? I could not say at the present moment.
169. You have been giving some evidence with regard to the Moama to Deniliquin railway, which you say is paying 8 per cent. Do you know the charges made on that railway and how it is worked, and can you give the reasons why it is paying so well? As I have already pointed out, the Railway Commissioners are the persons whose duty it is to say whether or not the proposed railway will pay, and they have been silent on the point.
170. In the first place, do you know that the Deniliquin to Moama Railway Company charge first-class passengers 3d. a mile, and second-class passengers 2d. a mile? I have not those figures before me.
171. Do you know also that they charge 50 per cent. in excess of our charges for the conveyance of merchandise and wool? I believe they do charge somewhat higher.
172. Do you know also that they dispense with railway porters, and make the plate-layers unload the trains? I believe they work the railways very cheaply. It is only natural to suppose they would do so.
173. If the Government acquired this private line under the Act, do you think it would be worked as cheaply as it is now, at a profit of 8 per cent., in the same way that the Government work their railways in New South Wales? From what I know, I should not think they would work it as cheaply as a private company would.
174. Do you know whether Mr. Whitton, the late Engineer-in-Chief for Railways, refused, even with the alternative of the loss of his office, to sign a certificate as to the efficiency of this private line to carry traffic safely? I believe he did. I do not think he ever signed such certificate.
175. Do you know how many trains a week are run between Narrandera and Jerilderie? I cannot say at the moment.
176. Do you know that they only run trains twice a week? I cannot say, without referring to the time-table.
177. And do you know that the trains are mixed trains, carrying passengers and goods, because there is not a sufficient number of passengers? I should think it would be so.
178. Do you know what is the population within 20 miles of Jerilderie? I cannot at the moment give you the population.
179. It is only reasonable to assume that the population must be very small, seeing that the trains only run twice a week? Certainly, the population would not be very large.
180. *Mr. Humphery.*] How long has the railway between Deniliquin and Moama been in existence? About eighteen years.
181. Have you heard of any accidents during the whole of that period by which life has been lost? I have not. I have not made inquiries with reference to that.
182. Have you heard if the railway has met all the requirements of the traffic? I cannot say.
183. *Mr. Neild.*] Has this proposed line gone beyond the stage of a trial survey? Yes; the Engineer-in-Chief will give information on that point.

Henry Deane, Esq., Engineer-in-Chief, Railway Construction Branch, Department of Public Works, sworn, and examined:—

H. Deane, Esq. 31 May, 1892.

184. *Chairman.*] Have you been over the line now under consideration? No.
185. You are, therefore, dependent upon the reports of your officers? Yes; to some extent. I have been at the Deniliquin end of the line.
186. Have you travelled over the country between Jerilderie and Deniliquin? No; the section of the line shows the country to be perfectly flat, with the exception of two small cuttings.
187. The line is practically a level line? Yes.
188. With very light cuttings? Yes; it will be nearly all forming, with the exception of two cuttings which are shown on the section.
189. And there are very few creeks to cross? The only bridge of importance is the bridge over the Edwards River, at Deniliquin.

H. Deane, Esq.

31 May, 1892.

190. Do you not cross a creek before reaching that? Yes; I believe so.
191. It is a single line, I suppose? Yes.
192. I understand the steepest grade is 1 in 200? Yes.
193. And the estimated cost is £3,300 per mile? Yes.
194. Is that cost likely to be reduced in actual construction? I think not. I shall be glad to give details of my estimates, so that there shall be no misunderstanding as to how the items are made up. The details are as follows:—Earthworks, £13,455, or, per mile, £300; earthworks, stations, &c., £2,000, or, per mile, £42; culverts and bridges, £11,000, or, per mile, £245; level crossings, £4,400, or, per mile, £98; fencing, £6,750, or, per mile, £150; platforms, £800, or, per mile, £18; permanent way, laying, ballast, and sleepers, £47,361, or, per mile, £1,056; permanent way, materials, £39,680, or, per mile, £885; water supply, £897, or, per mile, £20; signals and interlockings, £1,166, or, per mile, £26; station buildings, £5,000, or, per mile, £111; turn-table, £1,000, or, per mile, £21; engineering contingencies, £14,710, or, per mile, £328. The totals are respectively £148,219 and £3,300.
195. Where are the stations, and how many will there be along the road? That would be left for the Railway Commissioners to determine, but I have cut down the estimate to the lowest possible figure—£5,000.
196. But you must have formed some idea as to the number of stations or buildings to give even an approximate estimate. I suppose there would be buildings at the terminal points? There is the present station at Jerilderie, and the line would run into the present station at Deniliquin.
197. Do you think it possible something might be saved from this item of £5,000? No; I do not think so. Take, for instance, the cost of stations on the Culcairn to Corowa line.
198. Is that line somewhat similar from the nature of the country? Yes; although there is more grain produced there than is the case at present between Jerilderie and Deniliquin.
199. The cost of that line is more per mile, is it not? Yes; but the stations on the Culcairn to Corowa line cost about £13,000, as against £5,000 on this line.
200. The other is a short line? Yes.*
201. The line under consideration is about the cheapest line that has ever been proposed by the Department, is it not? It is not so cheap as the Nyngan to Cobar line.
202. Seeing that the country is as level, or more so, why is it dearer than the Nyngan to Cobar line? The item of fencing makes a difference of £150 per mile. There was no fencing on the Nyngan to Cobar line, except at the station yards.
203. Is not timber cheaper on the Jerilderie line than on the Nyngan to Cobar line? I do not think there would be much difference.
204. You intend to use ironbark sleepers in the construction of this line? Yes; if I could get good red gum sleepers, I should use them.
205. Red gum was used on the Moama to Deniliquin line? Yes; the timber used there for bridges and everything was nearly all red gum.
206. Has your attention been drawn to a report by the Inspector of Forests, with reference to red gum on the Murray flats? Yes; I saw that report. Unfortunately we have not yet tapped the good red gum country. I have made an effort to use red gum for sleepers and other purposes, but it has not been satisfactory hitherto. We have not been able to get the right class of timber.
207. Would that make much difference in the cost. I presume you have estimated for ironbark sleepers? Yes; I have assumed that the bulk of the sleepers, at any rate, will be ironbark.
208. If you found red gum was suitable, would that make much difference in the price? We might be able to get some from the other end, but then there would be the cartage.
209. The line, if constructed, would probably be commenced at both ends? Scarcely. The rails would be delivered at Jerilderie. The only really good red gum is on the Murray. There are some very good forests of red gum on the Murray.
210. We understand from Mr. Barling that you propose to use a lighter rail than is used on the other lines? It is a lighter rail than the rail used on the Narrandera to Jerilderie line, which was a 71½-lb. steel rail. On this line it is proposed partly to use some re-rolled rails, of which the Commissioners have a small stock, and which we want to make use of, but which are not suitable for main-line purposes. There will be about 2,000 tons of those, and the balance I propose to put in with 60-lb steel flat-bottomed rails.
211. Is there plenty of ballast to be found along the line? No, I think not. The surveyor, in his report, says, "Except river sand there is no ballast of any kind to be obtained in the district."
212. That is not very good ballast? No. Coarse sand might be fair ballast.
213. Do you propose to use that? I would not mind it if it were very coarse. I should not like to use ordinary sand.
214. River sand really means shingle, I suppose? Yes. We should probably have the finest particles screened out of it if it were used.
215. What other surveys have been made besides this one to Deniliquin? There was a survey made round by Conargo, but the plans were burnt in the Garden Palace fire.
216. Were there any difficulties in that country? I have no reports in regard to it. I should say, by the look of it, that it would be a little more troublesome, because there are more creeks and water-courses intersecting the country.
217. What stage has the survey of this line reached; has it got beyond the trial survey;—has it been permanently staked? No, it is a trial survey. It is a survey that can be picked up at any time. It is a straight line from end to end, with the exception of two curves.
218. The curves are near Jerilderie and Deniliquin? Yes, at each end.
219. What are they for, to escape some natural obstacles? Simply to get on to the right direction.
220. So far as earthworks are concerned, this line is as cheap a line as you have constructed or propose to construct? Yes.
221. The difference between its cost and that of the Nyngan and Cobar line is chiefly in connection with fencing? Yes.
222. Are the rails the same weight per yard? Yes, the bulk of them 60-lb. steel rails.
223. Who surveyed this proposed line? Mr. Stawell was the principal surveyor, and Mr. Marshall was also engaged on the survey.

224.

* Note (*on revision*):—The lengths are—Culcairn to Corowa, 47m. 40c.; Jerilderie to Deniliquin, 44m. 68c.

H. Deane, Esq. 31 May, 1892.

224. Of course, you and the officers of your Department look at this matter not as a question of serving the people, but merely as an engineering matter? Yes.
225. And as there are no natural difficulties between the terminal points, you have gone straight? Yes.
226. And you do not think the estimate of the cost is likely to be reduced? I do not see how it can be. The earthworks are put down as low as possible. Culverts and bridges, £11,000—are also an important item, and the level crossings come to a good deal. I do not see how we could get out of providing access for all the blocks of land. It is true that the land is nearly all in the hands of large owners, but still there are various blocks and paddocks to which access will have to be provided.
227. Are you having gates for these level crossings? Yes, for the private crossings.
228. Have you tried the gridiron construction on each side of crossings, such as they have in America and New Zealand? I cannot say that I have There is one which has been put down on the Illawarra line, which is waiting inspection. I have been trying for some time past to make an arrangement with Mr. Foxlee to go down and inspect it, and make an experiment.
229. Where is that? On the Mount Keira line, near Wollongong. But it has been impossible hitherto to find time to suit both me and Mr. Foxlee. We are very anxious to do it, because it is a very important matter. With regard to these grids, the designers and agents state that although they consider them first-class as cattle guards, they are of no use for sheep. I have been putting down cattle-pits on the Culcairn to Corowa line, and some pits also on the Nyngan to Cobar line. They are fairly satisfactory, but they are much more expensive than these other arrangements.
230. Have you travelled over the Moama to Deniliquin line? Yes.
231. Is it well constructed? Yes; it is a satisfactory line. It has been very much improved since it was first laid down.
232. Do you know what the cost per mile was? When I was down there the Secretary of the Company was kind enough to give me a lot of information about the line. The total cost of construction, as given to me by him, was £162,671.
233. Do I understand that was the cost for constructing the line in the first instance? I understand it was the first cost. It is called the "construction account."
234. The country along that line is similar to that which you propose to pass through from Jerilderie to Deniliquin, is it not? I suppose it is. There are more undulations along the Moama to Deniliquin line. There are some rises there. The ruling grade adopted first was 1 in 50, but it was cut down to 1 in 75. All improvements in the line have been paid for out of working expenses.
235. Do you know whether it is paying now? I believe so.
236. Would the proposed line be capable of taking the heaviest engines? No; I would not take the heaviest engines.
237. There would be no necessity, because it is virtually a level line? Yes.
238. What was the cost of the line from Narrandera to Jerilderie? The length was 65 miles, and the cost £409,601, or £6,301 per mile. The iron bridge cost £22,169; timber bridge, including approaches to iron bridge, £64,895; that is to say, the iron bridge, and the timber approaches and viaducts, cost £86,000. Another large item in the account of this line was the carriage of permanent way material by railway. When giving evidence on one of the other lines—I think the Nyngan to Cobar line—I mentioned that we were formerly charged 4d. a ton per mile for rails.
239. And now you are charged —? One penny, where we get return freight. The material for the Nyngan to Cobar line is being charged at 1d.
240. Is there return freight there? Yes.
241. Of what description? Wool.
242. Do you think you will get the same reduction in the case of this line? I think we might. The arrangement with the Commissioners was that if the rails could be carried at their convenience we should be charged 1d. per ton per mile.
243. Irrespective of whether there was any back freight or not? Assuming that there will be a back freight. They time it so as to get back freight.
244. Is that a general arrangement, or does it only apply to particular lines? It is an existing arrangement, and applies to all lines.
245. All lines where there is a reasonable prospect of back freight? Yes.
246. And the Railway Commissioners have a reasonable prospect of back freight here? There would be some, of course. They would take advantage of the wool or of any other produce coming in.
247. Are you aware that the wool from this district goes to Victoria? Yes.
248. You think we shall entice some of it by the construction of this line? I hope so.
249. *Mr. Sutton.*] Did Mr. Whitton ever examine the line from Moama to Deniliquin? Yes.
250. It was never passed by him? No; it was not passed by him.
251. Do you know the reason? I think he did not consider the permanent way satisfactory.
252. Is the line fenced? Yes.
253. He did not consider the permanent way satisfactory? I have the report, and I can furnish it; but whatever his report may have been then, the line has been very much improved since.*
254. It has not been officially examined since? No.
255. *Mr. O'Sullivan.*] You said the cost of fencing the proposed line would be £150 per mile? Yes.
256. That is the usual estimate of your Department, is it not? About that.
257. Why is the cost of fencing always estimated at £150 per mile? It comes to about 4s. 6d. a rod.
258. Are you aware that the Sectional Committee who went to Temora, received sworn evidence to the effect that railway fencing was done by the local sub-contractors for £50 per mile? That makes £100 for the two sides.
259. Is this estimate for a post and rail fence, or for fencing with wire? A wire fence
260. Your estimate for the Cobar line was £3,500 per mile, was it not? No; the amount that was passed was £2,560, but the cost will certainly be £3,000. £20,000 was added for improvements in grades. It was passed by the Cabinet, and approved by the House, and a vote taken last Session.
261. But the successful tender was very much below your estimate per mile? A few thousand pounds, I think.

262.

NOTE (*on revision*):—Copy of Mr. Whitton's Report now forwarded.—11/6/92.

262. Is it not likely that with a level country like this, the line being straight, with a ruling grade of 1 in 200, it will be done for less than £3,300 per mile? I should not like to promise it. H. Deane, Esq.
263. Is it not a fact that nearly all your contracts lately have been let below your estimate, and below even the estimates we placed upon them here? Yes; but there are a great many contingencies coming in to make up for that. 31 May, 1892
264. The contractors make their profit afterwards? No; I do not say that.
265. But, as a matter of fact, in the case of the Culcairn to Corowa, and the Nyngan to Cobar lines, they were below the Departmental estimate, and below the estimate fixed by this Committee? On the Culcairn to Corowa line they were below, and on the Nyngan to Cobar line they were above.
266. That is including your £20,000 extra? No, the £20,000 came afterwards.
267. *Mr. Humphery.*] Have you included the cost of the carriage of rails in your present estimate? Yes.
268. Will you furnish to the Committee a memorandum showing the difference in the various works between the estimate of cost of the proposed line from Jerilderie to Deniliquin, and the estimated cost at the reduced price of the Cobar line? Yes.*
269. *Mr. Davies.*] The railway from Moama to Deniliquin is a single line, and the proposed line is a single one? Yes.
270. What would it cost per mile, for sleepers and rails, to make a double line; would it double the cost? It would make a difference of about £2,200 per mile more.
271. *Mr. Neild.*] There have been other lines surveyed besides that from Jerilderie to Deniliquin, as proposed—for instance, there has been a trial survey from The Rock to Murray Hut? Yes, that survey is being carried out; it is not finished.
272. Would the grades be about the same; would the line pass through as easy country? Yes, I think so. You will not get grades of 1 in 200.
273. Has a line been surveyed from Jerilderie to Murray Hut, and then on to Tocumwal? No.
274. A line has been proposed that way, but not surveyed? Yes.
275. No survey of any kind has been made? I believe no survey has ever been made.

WEDNESDAY, 1 *JUNE*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
Thomas Thomson Ewing, Esq.	Charles Collins, Esq.

Henry Dawson, Esq.

The Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Charles James Saunders, Esq., Chief Draftsman, Department of Lands, sworn and examined:—

276. *Chairman.*] You furnished the Under Secretary for Public Works with plans showing the Crown lands within certain parishes immediately bordering upon the proposed railway? Yes. C. J. Saunders, Esq.
277. Have you taken out the area of Crown lands in those maps? No, I have not.
278. You produce a plan showing the Crown lands on either side of the proposed line for a distance of 20 miles? Yes. 1 June, 1892.
279. What is the total area of the Crown lands within those two lines? About 193,000 acres.
280. How is that area divided—into reserves and land available for selection? The area of vacant land—that is, land not reserved—is about 13,000 acres.
281. That is land available for free selection? It is not absolutely available for free selection, because some of it is locked up in leasehold areas. Probably there is very little of it available for selection at the present moment.
282. But the leasehold areas will be thrown open in a short time? They have about a couple of years to run, but there is a possibility of an extension being granted. That is a matter which has to be settled.
283. The principal portion of these 13,000 acres is locked up in Crown leases for at least two years? Yes.
284. And it depends upon the future policy as to whether this land will be available or whether it will still remain locked up? There might be a further extension of the leases for five years.
285. What are the reserves—do they make up the difference? Yes.
286. What is the area? About 180,000 acres, of which about 85,000 acres, I estimate, are permanent reserves—reserves that are not likely to be cancelled.
287. What do you include in the permanent reserves? Travelling stock routes, forest reserves, and camping reserves.
288. Then a great portion of these reserves are permanent and not likely to be available for settlement? About half of them, I think.
289. I suppose you have no knowledge of the nature of the land included in these reserves? No; I have no personal knowledge of it.
290. You have not been over that part of the country? No.
291. You simply take the information in the office from which you compiled this map? Yes. I know that we have dealt with some of these reserves at different times as special areas.
292. What price has the Department put upon the land, as special areas? The average has been about £2 10s. an acre.
293. What was the date of the last sale? We have sold very little lately. We have sold land at auction within the last couple of years. The upset price of land offered for sale within the last few years has been about £2 an acre for country land.
294. Within the area of the proposed railway? Within the Deniliquin and Urana districts generally.
295. But within that area it has realised about £2 10s. per acre? Within that area we have proclaimed special areas at £2 10s. per acre.

296.

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* Note (*on revision*):—Comparative statement herewith.—H.D., 11/6/92.

C. J. Saunders, Esq. 1 June, 1892.

296. And was the land taken up? Yes, most of the special areas have been taken up.
297. *Mr. Wall.*] In the event of a railway being constructed between these two places, would there be any necessity to retain the travelling stock reserves and the camping reserves? I think there would be, because they do not run parallel with the line. There is one leading from Jerilderie south to the Murray; but the other one might possibly be done away with.
298. Is the country over which the proposed railway would pass in the Western or Central Division? In the Central Division.
299. *Chairman.*] Has the land which has been sold in special areas been taken up in large or small quantities? The maximum area that can be taken up in that division, as a special area, is 640 acres.
300. Have you any idea whether any of these special areas have been taken up in the interests of the owners of the runs, or whether they have been occupied for *bona-fide* settlement? I could hardly say.
301. We would, I suppose, get that information from the local land officer? They have taken it up so recently that they are hardly transferable yet. The selector is bound to reside for a certain period, after which he is allowed to transfer.
302. *Mr. O'Sullivan.*] From your evidence, I gather that there are 95,000 acres of land in these reserves not likely to be permanent reserves? Yes.
303. What reserves are they? Principally water reserves.
304. Would not the proposed irrigation scheme do away with those? They were reserved for a water supply in connection with the old stations, before the surrounding land was sold, so as to preserve access to the water frontage from the back land.
305. But there being now no necessity to retain those reserves, the probability is that most of the 95,000 acres would be available for settlement? Yes. Of course, a portion of those is situated within leaseholds.
306. I suppose that, like most of the country round about there, this land is very good for agricultural purposes? I could not say.
307. *Mr. Ewing.*] Until the deed is issued for any portion of land, I suppose the books of the land agent will show what has become of the land? They will show if any transactions have taken place.
308. To whom the transfer is made, and the history of the land, until the deed is given? Yes. But, as I have said, with regard to the special areas, the selections are of comparatively recent date, and probably the selectors are not in a position to make a transfer yet, and will have to hold their land. The special areas were only proclaimed in 1889, 1890, and 1891.

Stanley Alexander, Esq., Examiner of Public Works, sworn, and examined:—

S. Alexander, Esq. 1 June, 1892.

309. *Chairman.*] You have for some time been acting as Examiner of Public Works? Yes.
310. You are an engineer in connection with the Railway Department? Yes.
311. You furnished a report to the Minister on the proposed intersection of Riverina by a railway, which report was dated 30th March, 1891, and was laid on the table of the House on the 25th May, 1891? Yes.
312. Is there anything in that report which you desire to correct in any way, apart from the corrections on the title page? No.
313. You have not read or heard of anything since which would in any way modify the opinions you have expressed in that report? Not at all.
314. You were engaged upon this inquiry for some time, were you not? About two and a half months.
315. Inquiring into the whole of the various proposals for connecting the Riverina district with the metropolis? Yes.
316. You did not take evidence upon oath, of course? No.
317. How did you obtain your information as to the probable productiveness of the district, its population, and so on? From voluntary evidence.
318. I suppose you adopted the usual course of procedure—that is to say, if a town which you visited was incorporated, you would interview the mayor as the representative of the citizens? Yes.
319. And get from him all the information you possibly could? Yes.
320. Do you know if the statements contained in your report have been challenged by any of the people of the district concerned? I have not heard so.
321. You have not heard of any refutation of your statements? No.
322. Will you tell the Committee the order in which you proceeded with your inquiry? We went to Jerilderie, and from there to Berrigan.
323. Who was with you? Mr. Gilliat.
324. He was acting in the same capacity as yourself? Yes.
325. Was he with you all the time of the inquiry? Yes.
326. He does not sign the report with you? No, I reported.
327. And did Mr. Gilliat concur with all you wrote in the report? He was transferred to other duties when I wrote the report. I did not write the report until the beginning of last year.
328. Did you seek an opportunity of conferring with Mr. Gilliat as to his conclusions on the matter? The conclusions arrived at in the report are mine.
329. Have you any reason to believe that Mr. Gilliat differed from you? No. I did not consult him at all in the preparation of the report.
330. Do you think he concurred generally in your conclusions? I recommended certain lines of railway in certain directions. I do not know whether those recommendations were in accord with his ideas or not, but I believe he would concur in the general opinion I have expressed as to the quality and value of the country.
331. And as to the reliableness of the evidence furnished to you both? Yes, I think so.
332. But as to your conclusions in regard to the line of railway which should be constructed, you do not know whether he would concur? No, I do not.
333. But you do not think he would challenge anything in your report as to the statements given in evidence or as to the nature of the country? I do not think he would.
334. Will you continue your explanation of the order in which you carried on the inquiry? We went from Jerilderie to Berrigan, which was the first place where we took evidence. We stayed there about three days and then went on to Mulwala.

335.

335. Did you give notice at the various centres you visited that you proposed to take evidence there? Yes, we gave as much notice as possible. S. Alexander, Esq.

336. Was every opportunity given to the people of the districts visited that those who were willing to do so could give any evidence they desired? Yes. From Mulwala we went to Tocumwal, along the Murray; thence to Deniliquin, and then down to Mathoura, on the Deniliquin line, half-way to Moama, then to Moama, and afterwards back to Deniliquin; then across from Deniliquin to Hay, and from there to Narrandera; then through Coonong to Urana. At that point we left the work for a week, it being Michaelmas, and came back through Wagga to Green's Gunyah and Daysdale, passing back through Yerong Creek to Wagga again. 1 June, 1892.

337. *Mr. Davies.*] What instructions did you receive from the Minister to inquire into the proposed railway? My instructions are given in the first paragraph of my report.

338. Is that a copy of the instructions? We had no written instructions. Mr. Barling gave us verbal instructions, as did also the then Minister, Mr. Bruce Smith.

339. You were to make inquiry into the various routes suggested? Yes.

340. And in your opinion the route from Jerilderie to Deniliquin, now before the Committee, is the best? In my opinion the line should go by Conargo, as some day it might connect with Balranald; but, of course, that is looking a long time forward.

341. What difference would that make in the length of the line? About 5 miles.

342. What is the distance to Conargo from the straight line extending from Jerilderie to Deniliquin? That is one of the points that induced me to favour the deviation to Conargo, as otherwise it would be impossible to get to Balranald, and that part of the country, in the future without going a long way out of the road.

343. How far would it be from Conargo to tap the proposed line? About 10 or 12 miles.

344. What special advantage is to be obtained by carrying the railway in a straight line as proposed? Shortness of route.

345. The difference being 5 miles? Yes.

346. Would that make much difference in the cost of the line over such level country? The estimated cost is £3,300 per mile, so that the difference would be £16,500.

347. Would not the advantage gained by the longer route more than counterbalance the additional expenditure of £16,000? I think it would. Another object in going round by Conargo would be that the line would pass through settlements.

348. The line as proposed does not pass through settlements? No.

349. It passes principally through private property? Yes, in fact altogether.

350. What trade is likely to be developed if the line is extended from Jerilderie to Deniliquin, as proposed? The only answer I could give to that question is to point out what trade could be done with the country south of Deniliquin, because the intercolonial trade must only be a matter of conjecture. There will be intercolonial trade, certainly.

351. That does not find its way to Jerilderie at present? No trade finds its way to Jerilderie now.

352. You are aware of the loss already entailed by the railway from Narrandera to Jerilderie? Yes, £17,000 a year.

353. Do you think it likely that that loss would be made good by the proposed extension of the line to Deniliquin? That is merely a matter of conjecture and opinion. I think it is likely, judging by the probable intercolonial trade.

354. If the line were extended, do you think the intercolonial trade and the other traffic would go in that direction? It would from the western part of Victoria.

355. Where would it go to? Into New South Wales.

356. That is to say, it would go some 400 miles as against some 200 miles, the distance being 200 miles nearer to the Victorian border? That western part of Victoria is not in communication with New South Wales at all at present.

357. Would it be if this line were constructed? Yes; it would have direct communication through Moama. There is a stock traffic which goes down into that country, and a certain amount of stock and other traffic which comes back again. I do not understand much about stock, but we were told in the district that a large number of breeding ewes were sent from Victoria into New South Wales, and that that traffic would be very much fostered.

358. Do you think there would be much wool carried if the line were extended? The returns with reference to that are given in my report, which shows the amount of wool delivered at Echuca, carried by the river, and the amount of wool carried over the Murray Bridge at Moama. Those two figures together will represent the whole of the wool which passes into Victoria from New South Wales at this point.

359. Would not the extension of the railway be the means of securing that trade to New South Wales? I do not suppose it would secure very much of the wool trade.

360. Do you think any wool would come in this direction? No wool would come into New South Wales. I am speaking of the traffic into Victoria.

361. The line would simply be taking the products of New South Wales into Victoria? As regards wool, yes.

362. That being the shorter route? Yes. It is going there now.

363. If this line is constructed it will still go there? Yes.

364. A still larger proportion will go? Not a larger proportion, because it all goes now.

365. What traffic are we to expect in the shape of freight and passengers to enable the proposed extension to pay? You will carry this wool that is carted now. That is one thing. It is carried now from Narrandera down to Wahgunyah and Corowa by teams.

366. And we should be likely to get that if we filled up the break in the railway? Yes.

367. What traffic would there be besides wool? I do not think there would be much more traffic besides wool and stock. There would be a great deal of stock going into Victoria.

368. The wool traffic would only last for three or four months in the year—that is, during the wool season? Yes.

369. Stock, of course, would be carried at all periods of the year? Yes.

370. Have you estimated the probable income from the carriage of wool and other products on the proposed railway? No; I have not attempted an estimate of revenue for this line. There are so many unknown quantities

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quantities in regard to it that an estimate cannot be arrived at. The local traffic, of course, would not support the line. It might enable it to pay working expenses, but certainly not to pay interest on the capital. It is the intercolonial traffic that would be relied on to make the line pay.

371. You are aware, I suppose, that the estimated annual cost of the proposed railway, in the shape of interest and working expenses, is over £13,000? As an evidence of what could be done by a railway, I might refer to the reports of the Deniliquin and Moama Railway Company, which show a net profit of £10,000 a year, over and above working expenses and interest on the debentures. Last year the Company only paid 7 per cent. per annum, which is rather below the usual dividend.

372. What is the capital of the Company? £125,000, in 25,000 shares, on which £4 per share has been paid up.

373. Do you know if their rates for passengers and freight are much higher than those on the Government railways? I believe they are. But high freights do not as a rule bring higher revenue. The Company have chosen to put on high freights, but it is quite open to argument and proof that if they were to lower the rates they would get more revenue.

374. Do you think they would get a larger revenue? I think it is very probable indeed.

375. They have absolute monopoly at the present time of the carriage of wool and other products? Yes.

376. And this enables them to make their own terms? Yes; but people do without a good many things when it costs a great deal to procure them, and when they can get things cheaply they get more.

377. But they must have a market for their produce;—they must take their wool away to a market? Yes; but the high rates affect the carriage of stuff into the country. Wool, of course, must be carried by train so long as the cost is a little lower than that of carting.

378. Do you know of your own knowledge if there is a large quantity of supplies going from Victoria into New South Wales? Yes; all the supplies as far as Deniliquin—all the supplies almost up to the Murrumbidgee.

379. There are hardly any supplies going from the south at the present time beyond Jerilderie? I do not suppose anything goes up from Victoria as far as Jerilderie. The goods go to the stations, but not to the railway.

380. Are you of opinion that if the proposed extension were constructed, at an annual cost of about £13,000 for interest and working expenses, it would pay in the near future? I believe it would.

381. You do not think it would add to the present heavy loss upon the line from Narrandera to Jerilderie? I do not think so.

382. It would not increase the annual loss? I think it would diminish that loss.

383. You do not think it will have the effect of developing that part of the country in the way of settlement, as far as New South Wales is concerned? It would develop the country south of Deniliquin, and in the neighbourhood of Deniliquin.

384. *Mr. Sutton.*] Would a railway from Jerilderie to Deniliquin pass through agricultural country? No. It is what they call plain land. There are two classes of country in that district, plain land and forest land, and the former can hardly be called agricultural country.

385. Do you know if there has been any attempt to grow crops on the country between Jerilderie and Deniliquin? No; I do not think there is any cultivation between those two places.

386. What is the country used for at present? For grazing sheep.

387. And you think there is not much hope of a larger traffic on the railway in agricultural produce? No.

388. *Mr. Ewing.*] You make some difference with regard to the classes of country. Is the country up near Conargo forest land? No, it is plain country.

389. Then with regard to the class of country through which the two routes go—this route and the one you suggest—it is the same? Yes.

390. You said, in reply to the Chairman, that there is nothing in this report that you would alter. I notice some reference with regard to stock. If Victoria adopts a stock tax, and we also have a stock tax, as seems probable, that will affect your report? I do not think so.

391. You think that no stock tax imposed on the border will have any effect? None at all. They must have stock in Victoria, and they will have to get it from here.

392. With regard to the duty upon stuff going from the producers of that district through Victoria, the only stuff, of course, that is subject to a duty is what is consumed in Victoria? Yes.

393. Therefore it would only be the products of the district sent for consumption into Victoria that would be affected by the protective duties? Yes.

394. Wool, and everything else, goes through to Victoria as easy as it does to New South Wales? Just so.

395. You express the opinion that the Deniliquin to Moama line must be purchased? Yes.

396. What effect will the connection between Jerilderie and Deniliquin have upon the value of the line from Deniliquin to Moama? It will have a very great effect, if my view of the traffic is at all correct.

397. It will make the Deniliquin to Moama line much more valuable than it is at present? Much more.

398. Do you think that increased value will commence with the construction of the line, or not until after the termination of its construction? It will commence immediately the construction of the line is determined upon.

399. Therefore, if, incidentally upon the construction of the line from Jerilderie to Deniliquin, the line from Moama to Deniliquin is to be purchased, would it not be better for us to deal with it at first? Certainly.

400. In your report you refer to a certain section of the Act which renders it impossible for us to touch it until the year 1895? Yes.

401. And by 1895, if this proposed line becomes part of the policy of the country, the line from Deniliquin to Moama will be much more valuable? Yes.

402. What do you think, therefore, ought to be done with regard to the matter. Could an arrangement be made by which the Colony should come into immediate possession of the Deniliquin to Moama line. Have you thought of that aspect of the case? Yes; I have. I have no doubt that the Company would part with the railway at any time, in spite of the section referred to, because they are protected by the Act, where it gives them power to have the matter referred to arbitration.

403. You think the construction of this proposed extension would increase the value of their property enormously? It certainly would.

404. And, therefore, that is an aspect of the case which ought to be fully considered? Certainly. I think it ought to be considered in connection with this inquiry.

405.

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405. You think that practically the construction of this line would enable the Deniliquin to Moama line to annex pretty well all the carrying traffic to Narrandera? Yes; but not to Hay, for the river competes from Hay.
406. At present our differential railway rates are designed, as far as possible, to bring the stuff from Jerilderie to Sydney? Yes.
407. And, therefore, we ought to go on to Deniliquin—we ought to put the border of the fight, as it were, with regard to traffic, a little closer to Melbourne? Yes.
408. *Mr. Dawson.*] You say there is no agricultural land along the proposed line from Jerilderie to Deniliquin? If you ask the people there they will tell you that the plains land is very good agricultural land; but the fact is, that no one will touch the plains land if they can get the forest land.
409. When I say along the line, I mean within a reasonable distance on each side? No, it is not agricultural land.
410. Have you been out about Tuppal? Yes.
411. They grow plenty of wheat there, do they not? Yes. The land gets better and better as you go towards Tuppal.
412. Do they not grow wheat about Coree? Yes. The land will all grow wheat.
413. How far is Coree from the proposed line? I think the line passes through the Coree Run.
414. The present surveyed line is about 5 miles from the Billabong Creek? Yes.
415. Is it not a fact that they can grow wheat all along the Billabong Creek? Yes; wheat has been grown there.
416. They have very fine yields there? Yes.
417. Can they grow wheat about Conargo? They are growing wheat there now.
418. If the line were constructed, would there be no wheat traffic from these places? There is not the same amount of certainty on the plains land of raising a crop, or anything like a payable crop, as there is on the forest land. It will grow wheat, certainly. Settlers take up land, and try to grow wheat anywhere and everywhere, but because a settler happens to try to grow wheat, it does not show that the land is good agricultural land.
419. Has not the whole of that country been improved since sheep have been running on it? It is improving every day.
420. *Mr. McCourt.*] Is any of the country through which the proposed line will run subject to floods? No; there is nothing serious of that kind.
421. You say the land is not suitable for agriculture? It is not.
422. In paragraph 52 of your report, you say:—"The conclusion at which I have arrived on the subject of connecting Jerilderie and Deniliquin by railway is, that not only the development, but the existence of the agricultural industry in this southern part of Riverina, is dependent upon this communication being made for it with the rest of this Colony." Where is the agriculture? From Deniliquin down south to Moama.
423. That is already served by a line? It is served by a line into Victoria.
424. But where would they send the wheat? Into New South Wales. They are barred on the other side by a border duty of 1s. 10d. a bushel.
425. Supposing the duty were removed, and we had intercolonial freetrade, would they not then send the wheat into Victoria? I am not at all sure they would, because it is not in Victoria that the wheat is wanted. We want the wheat in New South Wales; the wheat sent into Victoria is mostly for export, and not for consumption in that colony. The wheat is wanted in New South Wales.
426. But do you not think that, as time goes on, we shall grow sufficient wheat in New South Wales for our own consumption? In course of time we will; but the wheat now raised in that district is of a much better class than that grown, as a general rule, in New South Wales.
427. If this line were constructed, would it increase the down traffic from Narrandera to Jerilderie? Yes; an intercolonial traffic would arise there.
428. Is not wool carried by that part of the railway now? Not from Narrandera to Jerilderie.
429. Is it carried by teams? It is carried by teams from the stations. They actually cart the wool across the Jerilderie railway down to Wahgunyah.
430. And do not use the railway at all to Narrandera? No; except as regards such wool as is sent to Sydney. Some of the stations do send wool to Sydney. But information on this point can be obtained from the report of the Railway Commissioners.
431. Is not the country through which the proposed line will run held in very large estates? Yes.
432. Up to 40,000 acres? I think Coree is 300,000 acres in extent.
433. And does the proposed railway run through that freehold property? I do not know whether the whole of it is freehold, but a very large proportion is.
434. Who is the owner of Coree? Mr. Samuel McCaughey.
435. That property is used as a sheep run, and there is no agriculture carried on? No; there are no settlers upon it.
436. Is the land around Conargo held in small areas? There is a good deal of settlement at Conargo.
437. In selections? Yes. There is a little patch of rather better country between Conargo and Deniliquin.
438. Are there any Crown lands about Conargo that would be open for selection? Only the reserves.
439. Would the Jerilderie country be better served by a line connecting with Tocumwal? No, I do not think it would. One of the strong points in favour of the line from Jerilderie to Deniliquin is, that it will connect with the western part of Victoria. At present the traffic from the western part of Victoria has to go down to Seymour in order to get into New South Wales, by railway through Wodonga. Seymour is only about 60 miles from Melbourne, whereas, when railway connection is made with Echuca, the whole of the western part of Victoria will be in communication with New South Wales.
440. Are you of opinion that the proposed line would pay working expenses at once? I believe it would.
441. Where would the traffic come from? The traffic would be local and intercolonial. In the year to which my report refers, there were about 50,000 bushels of wheat of the last crop held in store by farmers at their barns. They could not send it away to Victoria on account of the duty. The price was only about 2s. 10d., and there was a duty of 1s. 10d., so they held the wheat in store, and at their barns.

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442. Would the construction of this line increase the traffic on the Victorian lines, and tend to decrease the traffic on our lines? I do not think it would. It must increase the traffic on the Victorian lines, but I do not see that it need be at the expense of ours.

443. It would not increase the traffic on our lines? An up traffic to Sydney would be created, which would benefit the lines from Jerilderie northwards into Sydney. For instance, the 50,000 bushels held in store would be carried.

444. Would the construction of this line enable Melbourne merchants to supply New South Wales to a greater extent, and with greater facility than they do at present? I think that would be the case, unless the extra duties put on were so heavy as to bar the traffic. There are very high rates from Albury to Wagga Wagga, in order to keep the traffic out.

445. Therefore, in your opinion the construction of this line would be a greater benefit to Victoria than to New South Wales? Well, suppose it does benefit Victoria, it will benefit Riverina. If the country is developed by this railway, as I expect it will be, Victoria must benefit by that development, because more traffic of all sorts will go into Victoria.

446. But at the outset the line will be of greater benefit to Victoria than to New South Wales? I cannot draw comparisons of that sort.

447. Where are the people whom it will benefit in New South Wales, if there is no settlement? Between Moama and Deniliquin.

448. But they are already served by a railway? But not into New South Wales.

449. They have a market in Victoria at present? No. A market of which they can avail themselves at the rate of 1s. 10d. per bushel is not a market at all.

450. You say they would send their wheat into other parts of New South Wales? Yes.

451. What would be the freight on wheat from Deniliquin to Sydney? They would not send it to Sydney.

452. Where would they send it to? To the mills at Jerilderie, Narrandera, Wagga, and Albury.

453. Would those places be able to consume all the wheat grown there? Certainly.

454. Do they not send the wheat in bond through Victoria now, and thence by sea to Sydney, and is not that cheaper than to send it by rail to Sydney? Yes, cheaper than to send it to Sydney.

455. Do they not do that now? Yes.

456. Therefore they have a market now, if they can send their wheat in bond through Victoria, have they not? Why was not the 50,000 bushels sent. Why was that retained in the country?

457. Is it not cheaper to send the wheat in bond to Victoria, and thence by sea to Sydney, than to send it by rail to Sydney? Certainly—to Sydney.

458. Or to a market? Well, I do not know whether it would, or not. It is as much as to say that it is better to cart wheat into New South Wales than to grow it in the country.

459. The people along the line from Deniliquin to Moama have a market for their wheat now by sending it in bond to Victoria, and thence by sea to Sydney? Yes. I do not know how it would compare in cost with the railway carriage.

460. At any rate, there is no settlement that this proposed line would serve—no one, except the owner of the Coree Run? On the line itself, no. There are a good many runs; Coree is only one of them.

461. But it will go through this one man's estate of 300,000 acres? Yes.

462. He is the principal man whom it will serve? Yes, he is the principal man.

463. *Mr. Wall.*] Is the River Murray navigable between Moama and Mulwala? Yes.

464. Would not the whole of the produce from within a radius of 20 miles of the proposed railway go by the river boats? No, it does not go now. A good deal of it goes to Echuca from Tocumwal, but not the whole of it by a long way.

465. But taking the country mid-way between the proposed railway line and the river, the river carriage being cheaper, would it not command a great deal of that trade? The fact is, that the river has not developed the country yet. On the New South Wales side there is very little wheat grown, the country being principally occupied by sheep runs; but immediately you cross the border you see farms and a populous country.

466. You anticipate that this railway, if constructed, will carry a good deal of grain towards Victoria? No; I say that that will come into New South Wales. Some of it, as Mr. McCourt suggests, will be carried through Victoria in bond, and thence by sea, but the major part of it, I believe, would come into New South Wales.

467. Then, if the greater portion of the grain produced in that district will come to New South Wales, and if the Victorian Government are offering special advantages in regard to the carriage of wool over their lines, is it not probable that the wool will also go towards Victoria, and not come this way? The wool will go to Victoria always. None of it will come into New South Wales.

468. You made some recommendation with regard to the purchase of the Deniliquin to Moama line. Have you considered whether, having regard to the present prospects of that line, it would be advantageous to the Government to purchase it? Yes, I think it would.

469. The cost of construction of that line was £162,000. If the profits do not realise 15 per cent., then the resumption of the line becomes a question of arbitration? Yes.

470. And to take over that line now, the terms being 15 per cent. on £162,000, the transaction would necessitate an annual payment for twenty-five years of £24,300,—that is, to meet the conditions under which the Government have a right to purchase outside of arbitration? Yes.

471. I find, from the half-yearly report of the Company, that their gross returns were £7,869 for the half-year ending in January—embracing, principally, the wool season. Their annual returns would, therefore, be £15,718? Yes; their gross returns.

472. Then, by paying £24,000 per annum for twenty-five years, that would entail upon the State an annual loss of £8,582 for twenty-five years? Yes; but you are assuming that we should have to purchase on the basis of 15 per cent., and the Company might not get that by arbitration. I do not think any arbitrators would give them such a per centage. They have never earned it yet. At the beginning they earned about 10 per cent.

473. According to the present returns, there would be an annual loss of £8,582 for twenty-five years, which would entail a total loss upon the State of £214,550; so that to purchase the line according to the present terms would not be a profitable transaction? But you create a deficit on an assumption which I say

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say is wrong. You have assumed 15 per cent., and I will not admit it. I do not believe it would be 15 per cent. And then, again, the yearly profits, when the line comes to connect through with New South Wales, will probably be doubled.

474. In your report you give the total area of land available for selection at 350,000 acres, while we have the evidence of an officer of the Lands Department that the total available area is only 80,000 acres. In arriving at your estimate of the country that will be served by the railway, and of the land open for selection, have you adopted any basis in regard to the distance from the proposed line? Yes, twenty miles.

475. Then your evidence conflicts with that of the Chief Draftsman of the Lands Department? I think the figures must be a misprint.

476. Have you made any comparison between the charges for goods by river transit, and the charges by the railway line? No; you can hardly compare them, because on the river they can charge just what they like. They can charge you one thing, and they can charge me another.

477. From your evidence, I take it that the assumption is that the line would open up a trade with Victoria, inside the borders of Victoria, in the vicinity of Moama, in the shape of supplies from Victoria into New South Wales—that this trade would assist to make the line pay? It would depend entirely upon the rates charged from Moama into the country.

478. In judging of the prospects of this line, do you confine your opinion to the immediate local traffic? No; the intercolonial traffic.

479. That would be the northern boundary of Victoria? The western part of Victoria.

480. You think there would be a possibility of establishing a trade with the western part of Victoria that would assist in making this line pay? I think there would be an interchange.

481. But if we are not likely to send our grain into Victoria, is it not more probable that the interchange will take place with our own Colony, where the produce can be sent to? That is the great object of connecting Deniliquin with Jerilderie, in order to enable an interchange to take place with our own Colony.

482. From your evidence, I understand you are inclined to believe that this is likely to be a great grain-producing district, and that the grain will come to Sydney. If that is so, is it not more likely that there will be an exchange of commodities between Sydney and these districts, rather than with the western parts of Victoria? My experience is that, as a rule, where people dispose of their produce they obtain their supplies. A large quantity of stores come to Riverina, in bond, through Victoria. They are taken from Sydney and delivered in Melbourne at the same price as is charged in Sydney, and they are carried in bond through Victoria and delivered in Riverina.

483. But any intercolonial trade that would be effected with Victoria by the construction of this line would not free those goods from bond? No.

484. They would have to pay duty? Yes.

485. Is not that exchange rather inclined to direct our traffic towards Victoria by conveying the goods in bond through Victoria? Yes.

486. That is one of the principal causes by which our trade has been injured already, I think? Yes.

487. And the construction of the railway would not alter that, if they had a lesser length to run on? No.

488. If the railway rates were favourable, and the same policy were adopted of conveying goods in bond, the practice would still be likely to continue? Yes.

489. *Mr. Neild.*] You state on page 3 of your report, that agriculture is falling off in the Deniliquin district. I suppose that is due to the want of a market? Yes.

490. You attribute it wholly to that, and not to the unsuitableness of the locality for agriculture? Yes.

491. Are you not aware that grain grown in New South Wales is sent by way of Corowa to Melbourne by rail, and brought from Melbourne to Sydney by steamer at a lower rate of freight than it could be carried for by rail to Sydney direct over our own lines? Yes, I have heard so.

492. Having in view the distance of Deniliquin from Melbourne, and the distance of Deniliquin from Sydney, do you not think that the same process of carriage is likely to be repeated if this line is constructed? For all grain wanted in Sydney it would be, probably.

493. There is a better market for grain in Sydney than in Melbourne, is there not? I do not know; but, as I said before, most of the grain would not need to come to Sydney. It is required in Wagga Wagga, Narrandera, Jerilderie, and all those places.

494. Is not wheat grown in the neighbourhood of Jerilderie? Yes; but not up to their requirements. A mill has been established there this year, and a new mill has just been started at Narrandera.

495. You speak of grain being wanted in the Wagga Wagga district—is there not a great deal of land under cultivation for grain in the Wagga Wagga district at the present time? Yes; but the grain is of a softer kind. It is not such good milling wheat as that grown in the western portion, where hard milling wheat is produced.

496. Where does Wagga Wagga draw its grain supplies from now? From all round—from everywhere. But the country imports something like 4,000,000 bushels a year.

497. Are you aware that grain grown in the vicinity of Cootamundra and Wagga Wagga is carried as far as the New England districts for consumption? Very likely, for the reason that it is a hard milling wheat, required for mixing with softer wheat.

498. At page 3 of your report there are goods inwards shown as having been received at Deniliquin, Jerilderie, and Hay, are we to understand that those were goods received into the Colony, or merely into the stations? Into the stations.

499. Irrespective of where they came from? Yes.

500. You point out that a large proportion of the traffic over the Deniliquin to Moama line consists of live stock? Yes.

501. I gather from your evidence that you are in favour of the Government resuming the Deniliquin to Moama line? Yes.

502. Would you be in favour of an alteration of the gauge of that line to the standard gauge of this Colony? Yes.

503. Would not such an alteration materially interfere with the live stock traffic to Victoria, necessitating, as it would, re-trucking at Echuca? It would interfere in the same way as the stock tax on the border interferes. But the transfer of cattle is not a very serious matter.

504. Have you considered a number of other proposed lines in this vicinity—for instance, the line from Jerilderie to Tocumwal? Yes.

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505. And you advocate the proposed line, with the alteration which you urge, *via* Coree and Conargo, in preference to a more direct line from Jerilderie to Tocumwal? Yes.
506. Does the Coree Station extend around Jerilderie, or does the present line to Jerilderie run within the limits of the station? No, it does not. Coree is outside of Jerilderie.
507. But I suppose the borders of the station come sufficiently near to be within the full railway influence of the Jerilderie Station? Yes, I think so
508. That is to say, the distance would not be at all prohibitory to the haulage of produce grown on the Coree Station? No, I do not think it would.
509. Would the construction of the proposed line to Deniliquin lead to the cutting up of the Coree Station for agricultural purposes? I do not think it would.
510. Do you think it probable that if there were any disposition on the part of the proprietor to cut up the estate, the construction of the line to Deniliquin would be sufficient to induce him to cut up a portion of it? I do not think that part of the country would be cut up. It is not the class of country.
511. Not the class of country for agricultural settlement? No.
512. Is there any wool trade done at Jerilderie at present. In page 3 of your report you put down 4,000 bales outward. I suppose that is wool sent towards Sydney? Yes.
513. Actually sent to Sydney? Yes.
514. Do you think the construction of this line from Jerilderie to Deniliquin would result in that 4,000 bales, or the output of the station from which that wool came, being sent to Melbourne instead of to Sydney? No; I should not think so. Wool is sent to Sydney not because Sydney is the best market, but for other reasons. It is probably the business connection that induces it to be sent to Sydney.
515. Then you think the mere opening of a railway line does not affect a firm business connection? No. The owner of Coree sends all his wool to Sydney, and Mr. Jenkins, near Narrandera, carts his wool across the river down to Wahgunyah.
516. You are firm, then, in your opinion that this line should be taken *via* Coree and Conargo, rather than direct from Jerilderie to Deniliquin, as shown on the map before the Committee? Yes; I think that would be the best thing to do.
517. Your reason for that is, that *via* Conargo would be the ultimate direction of a line to Balranald? Yes.
518. And I think you also stated that in the vicinity of Conargo there is better agricultural land? Yes, it is slightly better there.
519. Then you think that on account of that agricultural land, and also of the further probable extension of the railway, it would be better to incur the extra expense of taking the line about five miles further? Yes.
520. *Mr. O'Sullivan.*] In the elaborate report on this proposed railway which you addressed to the Under Secretary for Public Works, you appear to consider that it would be more in the public interest to run a line from Jerilderie to Deniliquin than from Hay to Deniliquin? Yes.
521. I see in your report, that the coaching traffic from Deniliquin to Hay last year amounted to 20,808, and that the same traffic from Jerilderie to Deniliquin only amounted to 7,471? That does not refer to the traffic between the different places, but to the total earnings at each place for that year.
522. But the figures imply a great deal more coaching traffic between Deniliquin and Hay than between Deniliquin and Jerilderie? Certainly.
523. There is a line of coaches running at present across the Old Man Plain which conveys a large passenger traffic between Hay and Deniliquin. Would that passenger traffic be likely to come by railway if this line were carried out? Certainly.
524. Then we may look to that as being likely to give us an increase of revenue, not only for the Jerilderie line, but also for the Hay line? Yes.
525. Hay is a great place for the concentration of stock from Queensland? Yes.
526. That stock at the present time goes on to Deniliquin? Yes.
527. Do they truck the stock at Deniliquin? Yes.
528. Is it not probable that if the line were taken from Hay to Deniliquin the stock would be trucked at Hay right through? Yes; it would be.
529. Then that would be a sure traffic in itself, would it not? Yes.
530. In your report you say that last year, from Hay towards Deniliquin, there were 260,000 sheep, 18,756 cattle, and 652 horses? Yes.
531. That would be a very large traffic for the railway to carry? They were trucked at Denilquin, and carried into Victoria. Up to the 30th June, 1890, there were carried on the Deniliquin and Moama railway for that year 336,000 sheep, and 333 head of cattle. While we were there we saw one consignment of cattle comprising 400 head going down into Victoria.
532. If this line between Jerilderie and Deniliquin were carried out, do you think that the stock would be trucked at Hay and brought down to Deniliqum, *via* Jerilderie, instead of going across the Old Man Plain? No; I do not suppose that would be done. It would be too expensive.
533. You do not think it is likely, then, that the railway would serve as a stock-carrying line? No; not for that traffic—not for the Queensland traffic.
534. I notice that the total population you give for this neighbourhood is very small—about 5,000, including the three towns of Jerilderie, Deniliquin, and Moama? It is a very good population for a railway to begin upon. There must be a good deal of importance in a country capable of creating a town like Deniliquin with 2,500 inhabitants.
535. I gather from your report that you look to a very large local trade to support this railway? Yes.
536. I suppose that trade will consist, to a large extent, of the wheat traffic to be taken on to Melbourne? No, of wheat traffic into New South Wales.
537. Will not a large portion of our Riverina wheat go into Victoria? No; the duty is too heavy.
538. Are you aware that that wheat, owing to its superiority, brings 6d. a bushel more than the Victorian wheat? I was not aware of that.
539. If that were so that would counterbalance the difference? The duty is 1s. 10d. per bushel.
540. Then you do not look to any large market for New South Wales wheat in Victoria at any time while the present duties continue? No.
541. But even if the wheat were shipped in bond for Sydney, *via* Melbourne, that would, to a large extent, utilise our railways? Yes, a good deal of it would have to be carried on the railway. 542.

S. Alexander, Esq. 1 June, 1892.

542. In reply to Mr. Wall, you said you did not consider there would be much interference with the traffic on this railway by the steamers on the Murray? There would not be any competition at all.
543. In your report you say that steamers are plying still on the Murrumbidgee, and also on the Edwards? Yes.
544. The Edwards River comes down pretty close, does it not? But it is not navigable beyond Moulamein.
545. Do you anticipate any very large trade in timber from these districts? From the reserves along the Murray and the Edwards, certainly—into New South Wales. Hitherto the timber trade has been entirely confined to Victoria. Log timber is carried free into Victoria, and the mills are all on the Victorian bank. There are very large and powerful mills there. Enormous quantities are brought down by the river, as well as carted across from this side, and none is brought into New South Wales.
546. I suppose that as well as a local trade in passengers and goods, there would be a considerable through traffic, in the shape of passengers from the Riverina district on to Sydney. People who now go round through Victoria would be likely to take this line of railway? Yes; they now go through Victoria, and do not come through New South Wales if they can possibly help it.
547. As a matter of fact, many people go from Sydney, *via* Melbourne and Echuca, in preference to going the shorter route from Jerilderie to Deniliquin? They take that route regularly. I have done so myself.
548. Then persons who desire to cross from the Moama and Deniliquin side will very likely go right through by this railway, instead of travelling round through Victoria, as they do now? Just so.
549. Would not that in itself create a traffic on the railway? Yes.
550. *Mr. Humphery.*] I think, in answer to Mr. Neild, you said there would probably be a market at Wagga Wagga for wheat grown in Deniliquin? Yes.
551. Is the wheat grown at Deniliquin more suitable for milling purposes than that grown at Cootamundra and Young? There is a more moist climate at Cootamundra, the country being nearer the hills. The climate is not similar to the western climate at Deniliquin.
552. Would the wheat grown at Cootamundra, Temora, and Young be as suitable for milling purposes? Yes; I suppose it would.
553. Then, why do you think that the wheat grown between Deniliquin and Moama would be sent so many miles further to Wagga Wagga, in preference to wheat grown in these nearer districts? Well, I suppose there is not enough grown in these nearer districts. In the course of time the railway to Parkes will tap this western country, and the line from Cootamundra to Temora will also tap it.
554. The distance from Junee to Wagga Wagga is about 22 miles, and from Junee to Narrandera about 60 miles? Yes.
555. How many miles is it from Narrandera to Jerilderie? About 65.
556. And from Jerilderie to Deniliquin the distance is about 44 miles? Yes.
557. Therefore the wheat grown between Deniliquin and Moama would have to be carried about 190 miles, as against half that distance? My assumption applied to Wagga Wagga. There is another factor in the matter. There is not only the actual cost of carriage, but also the price at which merchants can buy wheat. In one place the farmers will sell for a much lower price than in another place.
557½. I was only desirous of ascertaining why you selected Wagga Wagga as a possible market for Deniliquin wheat? Wagga Wagga is only one place amongst others. I mentioned also Jerilderie, Narrandera, and Cootamundra.
558. Why do you think there will be any additional trade with the Sydney merchants by reason of the proposed connection between Jerilderie and Deniliquin? Because there will be a possibility of trade with them. It will always be cheaper for Deniliquin to get its goods round through Victoria, unless it is actually barred by the up rates from Moama, and those imposed by the New South Wales Railways. But in retail trade there is often a large quantity of goods wanted in a hurry, in broken parcels, owing to stocks running out, and so on, and these goods have to be sent for to the nearest market, to be obtained as quickly as possible. This kind of trade could be done with more certainty with Sydney by railway direct, than round by sea.
559. Could not the supplies be obtained with equal facility from Deniliquin? No. I am referring to the Deniliquin storekeepers.
560. You say in your report, it is very desirable in the interests of Echuca merchants that this connection should be made. Now Echuca is in Victoria. Will you explain why you think it is so much to the interests of the Echuca merchants that this line should be constructed, and why that is a reason for recommending its construction? I think it must be patent why it must be to the advantage of Echuca to be connected with the centre of New South Wales; but I did not mean to say that that was a reason why the railway should be constructed. I may, however, say that it is reason why the railway should be built.
561. There is this paragraph in your report:—"28. A deputation from Echuca Chamber of Commerce pointed out that a series of railway lines were projected in Victoria, commencing from Echuca, and going south-westwards through Boort and Donald to Murtoa, on the main line to Adelaide. This, entailing 157 miles of construction in Victoria, would very considerably shorten the through route to Adelaide, if the connection between Jerilderie and Deniliquin were completed. The importance of opening out the western districts of Victoria which depend for their supplies of store stock on New South Wales, and the facilities given to transfer of stock by completion of these lines, was insisted upon. The distance from Sydney to Adelaide by the existing route is 1,049 miles. The saving on this route, therefore, amounts to 104 miles in the through journey. Echuca is, next to Wodonga, the most important market for stock on the border. The proposed connection with Jerilderie is now of the greatest importance to the interests of Echuca." Is that a reason, do you think, for the construction of this line between Jerilderie and Deniliquin? Well, the fact of the Echuca merchants laying such great stress upon it would show that they expected to derive great advantage from it, and if they derive advantage, this Colony and the railway must derive advantage also.
562. Would it so happen that the construction of this line would be more advantageous to the Victorian trade than to the New South Wales trade? I think it would be more advantageous to Victorian trade than to New South Wales trade, but I do not see that that is a reason why it should not be built.
563. With the exception of wheat, what other produce would be likely to be carried over the New South Wales line? As a regular trade, I do not suppose there would be any other produce.
564. Nothing but wheat? And barley. It is a very good country for barley.

S. Alexander, Esq. 1 June, 1892.

565. And you say that that wheat and barley would be grown between Deniliquin and Moama, chiefly? Yes.
566. Jerilderie, I think, is about 180 miles nearer to Melbourne than to Sydney? Yes.
567. Except that it will benefit the population between Jerilderie and Deniliquin—which does not appear to be very considerable—in what way will the construction of this line increase the earnings of the New South Wales railways? It will create a through traffic with the western part of Victoria.
568. In what way will it increase the earnings of our railways? There is the traffic in wheat from the country about Deniliquin and Moama, and there is a certain amount of stores required in that part of the country which will be brought direct over the New South Wales railways from Sydney.
569. Brought 450 miles, as against 160? Some of the stores are sure to be, and the rates can be made very favourable.
570. Is there any profit whatever on the carriage of wheat at the present time? I do not know. I suppose there must be since the Railway Commissioners continue to carry it.
571. Can you point out what advantages will be gained by this proposed extension, beyond giving the population between Jerilderie and the Victorian border facilities for trading with their nearest market, which is Melbourne, and not Sydney? I do not think I can say anything more than I have said.
572. *Mr. Hoskins.*] In reply to a question by Mr. Humphery, I think you said that the storekeepers of Deniliquin were anxious to be connected with Sydney by railway? Yes.
573. When did they express that opinion—when you were there? Yes.
574. When was that? About a year and three-quarters ago.
575. Before the present New South Wales tariff came into operation? Yes.
576. The passing of that tariff may have modified their opinion. They were anxious to be connected with Sydney, because, owing to the freetrade tariff, they could purchase certain articles cheaper in Sydney than in Melbourne. But since the tariff has been altered do you think they would express the same opinion? I think they would.
577. Will you state why you think so? Because there is an import duty into New South Wales now, and there was no such duty then, and they could get their stores from Victoria. There is, therefore, much greater necessity to be connected with Sydney now than there was then.
578. Can they not get their stores brought over the railways from Victoria in bond? No. They can get them in bulk. It is worth while to get them in bulk, but not in broken parcels.
579. But supposing they were desirous of purchasing broken parcels in Sydney, would they not, under the present tariff, have to purchase goods with the duties added to the cost price, the same as if they purchased in Melbourne? Yes.
580. Therefore, the conditions which operated in the minds of the Deniliquin storekeepers at the time you spoke to them on the subject may have been modified, in consequence of the tariff now existing in this Colony, and seeing that, previous to the new tariff, they could buy certain goods cheaper here than in Melbourne, while that is not the case now? In regard to broken parcels, they would have to pay two duties if they got them from Victoria.
581. Referring to a question by Mr. O'Sullivan, I understood you to say that if the proposed railway were constructed, persons travelling from Hay to Deniliquin would go by railway from Hay to Narrandera, and then back again almost in the same direction to Jerilderie, to enable them to get to their destination? Yes, they would.
582. I suppose you mean that the railway would give them increased facilities to reach Victoria? Yes, both ways.
583. The construction of the line would offer to the people of Hay increased facilities to get to Victoria? Yes.
584. But not to get to Sydney? Certainly not.
585. Are there many persons living around Jerilderie? No; the land is all held in station properties.
586. There are no farmers around Jerilderie? No.
587. I understood you to say that persons living within 20 miles of a railway would be benefited by its construction;—are there not persons living within 22 miles of the proposed railway who are benefited by the existing railway? Yes.
588. Therefore the people there have railway facilities? Yes, but that only applies to the local effect of the railway. Deniliquin is 45 miles away from Jerilderie.
589. But people within 22 miles are served by the railway? Yes; there are very few within 22 miles of Jerilderie.
590. We have heard that Jerilderie is 180 miles nearer to Melbourne than to Sydney;—can you tell us whether the bulk of the trade to and from Jerilderie at the present time gravitates to Sydney, or to Melbourne? The wool all goes to Melbourne, all except the 4,000 bales already referred to.
591. And the inwards loading? It all comes from Sydney.
592. Are you sure? Yes.
593. You have stated that you did not believe that the proposed railway would increase the trade in and around Jerilderie in regard to wool and station products going to Sydney, or bring any increase of traffic to the New South Wales railways, but that it would bring increased traffic to the Victorian railways? I said that the connection between Jerilderie and Deniliquin would create an up traffic along the New South Wales railways which does not exist now.
594. I have not heard you say of what that traffic will consist? It will consist of wheat and barley grown in Deniliquin, and of a portion of the stores which they require. The figures on this point will be found in my report.
595. But your estimate as to the purchase of stores is based on what you found to exist two years ago, before the present New South Wales tariff was in operation? Of course, that might modify it.
596. As regards wheat from the Deniliquin district, you say it will be carried over our railways? Yes.
597. Do you not think, as a man of business, that in sending wheat from that district you would send it by train to Melbourne, in bond, and then by sea to Sydney, or Newcastle? Yes; as regards wheat required in Sydney or Newcastle; but wheat is required in other places.
598. Where would you expect to send it? To Narrandera, Jerilderie, Wagga Wagga, and Goulburn.
599. Do you not know that the cultivation of wheat has largely increased about Narrandera, Jerilderie, Cootamundra, and all the wheat-growing districts on the southern line, including Goulburn and Crookwell? Goulburn and Crookwell would not count, as the wheat is of a different class altogether.

600.

600. I suppose the wheat grown at Temora, Cootamundra, and Junee is of the same character as that grown on the plains? Yes. The increase in cultivation at Narrandera and Jerilderie has caused the establishment of additional mills. Perhaps I might be wrong in saying that the wheat from Deniliquin would go to Wagga Wagga and Goulburn, but it would, at all events, go to Jerilderie and Narrandera, and be converted into flour. S. Alexander, Esq. 1 June, 1892.

600½. Do you not know that the cultivation of wheat has been largely extended about Narrandera? But it has not yet reached the limit of extension. There is practically no limit to the consumption of flour.

601. At all events, your estimate of the advantages of the proposed line is that it will increase the trade on the New South Wales railways, and the carriage of wheat, and nothing else; that the wool and other produce of the district will not be sent over the railways? There will be a good deal of stock sent over it.

602. *Mr. Ewing.*] You say there is no object in going round by Conargo, except with a view to an extension towards the west? Yes.

603. You told us that the net profits of the Deniliquin to Moama line amounted, roughly, to £10,000? Yes.

604. What is that capitalised? £250,000.

605. And you say that it is essential to purchase the line from Deniliquin to Moama? Yes; I think so.

606. Therefore, we are not considering only a line from Jerilderie to Deniliquin, costing £163,000, but we are considering that line in conjunction with the line from Deniliquin to Moama, which brings the total cost up to £413,000? Yes.

607. And in addition to that, there is the alteration in the gauge from 5 feet 3 inches to 4 feet 8½ inches? Yes.

608. That brings the total, approximately, up to half a million of money? Yes.

THURSDAY, 2 JUNE, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
Thomas Thomson Ewing, Esq.	Charles Collins, Esq.
William Chandos Wall, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Hugh McLachlan, Esq., Secretary to the Railway Commissioners, sworn, and examined:—

609. *Mr. McCourt.*] The Railway Commissioners have reported on this proposed line, have they not? Yes. H. McLachlan, Esq. 2 June, 1892.

610. Did they visit the district? Yes.

611. And they went over all the country? They did.

612. They are not very favourably disposed to the proposed line, are they? Well, I cannot say they are very warmly in favour of the line.

613. Would it be a paying line, in their opinion? In their opinion it is very difficult to give an idea of what the traffic would be. The traffic would be problematical. I think their report was practically to this effect; that it is, perhaps, rather a question for the Government to determine, as a matter of policy, whether it would be advisable to make the railway for the sake of opening up an extent of country, or, perhaps, of improving the value of Crown lands, if there are any Crown lands to be improved in the vicinity. I think the Crown lands by this time have been pretty well alienated, and are in private hands.

614. If this connection were made, would it increase the traffic on the Jerilderie line to any extent? My opinion is, it would not to any great extent. There is an idea that a good deal of traffic might be taken to Deniliquin from Sydney; but, owing to Deniliquin being so much closer to Melbourne, and the Deniliquin to Moama line being in private hands, it is likely that this private line would be able to compete with us successfully for the Deniliquin trade.

615. Would the construction of this line necessitate the resumption by the Government of the Deniliquin to Moama line? I do not know whether it would altogether necessitate it. The Deniliquin to Moama Railway Act gives the Commissioners power to compel the Company to lay down a gauge of 4 ft. 8½ in. But we have no power to prevent the Company, in conjunction with the Victorian people, from imposing such differential rates as would practically cut us out from the traffic, unless we adopted rates which would not pay us.

616. You made an estimate of the working expenses of the proposed line, which you put down at £8,587;—I suppose that is fairly correct? Yes; it is based on information supplied by our officers.

617. *Mr. Wall.*] Do the Commissioners consider that this connection would be of any service to the existing line to Jerilderie? It might, to some extent, but I think it is problematical. Melbourne has such a pull of us on that side, that it is difficult to say what additional traffic we would get to the main line. In fact, the construction of this extension might have the other effect, and draw traffic from us on to the Melbourne side.

618. So far as you know, this is an open question with the Commissioners—they do not desire to express an opinion as to the merits of the line? No. I could not say they would strongly recommend it, unless the Government thought of undertaking it with the object of opening up the country for settlement.

619. *Mr. Neild.*] In the estimate of the running expenses how many trains were calculated per week? I am not sure whether it was one every second day, or one every day, with stock trains, if required.

620. When you say one every day, do you mean one each way every day? No; if they were running daily it would be one each way; but on the Jerilderie line we have been running every alternate day.

621. That is to say, three trains a week each way? Yes; I am not quite certain whether we provided for one each way per day, or only so as to make a service every alternate day.

622. Did the Commissioners consider the break of gauge, necessitating the re-trucking of stock? If the connection were made, we could compel the Deniliquin to Moama Railway Company to lay down a 4 ft. 8½ in. gauge at their own cost.

623.

H. McLachlan, Esq. 2 June, 1892.

623. But in that event the re-trucking would have to take place at Moama or Echuca? Certainly.
624. Was that point considered? Yes, the Commissioners were aware of all the circumstances.
625. Is the cattle traffic out of Albury large—where re-trucking takes place? Large quantities of cattle come right round from Bourke into Albury. There is not much local cattle traffic. But large quantities of cattle come from distant railway stations into Albury, on the way to the Melbourne market.
626. Are they re-trucked? Yes, they are re-trucked.
627. *Mr. Humphery.*] Have you read the Deniliquin to Moama Railway Company's Act? Yes; I read it some time ago.
628. Do you know if the Railway Commissioners have running powers over the existing railway between Deniliquin and Moama? As I have already pointed out, there is a section in the Act which gives the Commissioners power to compel the Company to make their gauge 4 ft. 8½ in. I am not quite certain whether running powers are provided in addition to that. It would, of course, be a matter of arrangement with the Company.
629. Although you can compel the alteration of the line so as to harmonise with our gauge, you do not know whether the Commissioners have taken the ordinary running powers? I do not think that is provided, so far as my memory serves me.
630. You know that that provision is now invariably inserted in all private Bills? Yes.
631. *Mr. Davies.*] What is the loss at the present time on the line from Narrandera to Jerilderie? About £17,500 a year.
632. Is the loss increasing? No. For the year just closed the traffic was about £1,000 better.
633. The traffic on the proposed extension to Deniliquin would solely depend upon the development of a trade? Certainly.
634. There is no trade at present? No. In fact, there is no settlement between the two places, except three sheep stations.
635. The line would pass wholly through private property? Yes, through pastoral property.
636. And there is no settlement along the line? No.
637. Do the Commissioners favour the survey now submitted to the Committee, in preference to the others? The Commissioners make it a rule never to consider alternate routes.
638. I understand you to say that the Commissioners are not strongly in favour of this proposal? They are not.
639. If the line were constructed, it would probably entail a larger loss on railway traffic in that part of the country for some years to come? Yes, it would add to the loss. I do not say it would increase the loss of £17,000 a year on the Narrandera to Jerilderie line, but I do not think the new line itself would pay; so that on the whole of the south-western service there would probably be a heavier loss.
640. You base the estimate of the cost of construction on 3½ per cent. as the price at which money could be obtained? Yes. Taking the present price of debentures at home, perhaps that is a little too low.
641. Taking the £14,000 for working expenses and interest on the proposed line, and the annual loss of £17,000 upon the Narrandera to Jerilderie line, there would be a total loss of something like £30,000? The £14,000 is the annual expenditure for interest and working expenses. There would, of course, be a certain amount of profit on the traffic, and that would reduce the amount a little.
642. Do you think there is any possibility of sufficient traffic developing within the next ten years to make good that £14,000? From the experience of the Hay and Jerilderie line it is very doubtful.
643. *Chairman.*] Supposing a proposal for a line from Narrandera to Jerilderie were now before the Commissioners, do you think they would recommend the construction of that line? I am afraid not. But it is rather a delicate question. The line was made before their time, and, of course, they were not consulted. It is easy to be wise after the event.
644. I understand, from an answer you gave to Mr. Davies, that you do not anticipate that this extension, if constructed, would make the line from Narrandera to Jerilderie pay any better than it does at present? In my opinion it would not do so to any appreciable extent.

WEDNESDAY, 3 AUGUST, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Sutton.	The Hon. John Davies, C.M.G.
The Hon. James Hoskins.	Thomas Thomson Ewing, Esq.
The Hon. Frederick Thomas Humphery.	William Chandos Wall, Esq.
The Hon. Andrew Garran, LL.D.	William McCourt, Esq.

Henry Dawson, Esq.

The Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Hugh McLachlan, Esq., Secretary to the Railway Commissioners, sworn, and further examined:—

H. McLachlan, Esq. 3 Aug., 1892.

645. *Mr. Wall.*] Are you acquainted with the rates charged on the private line from Deniliquin to Moama? Generally—I have not the exact rates.
646. The rates, I understand, are a little higher than the rates charged on our railways? They are on some articles; on general goods, I think, they are about the same.
647. Do you think that the existence of that line at Deniliquin has had a tendency to withdraw traffic from the terminal point of your line at Jerilderie? Yes; I think it has the effect of drawing it to Melbourne.
648. Do you think that if your railways were extended to Deniliquin, and if the Deniliquin-Moama Company were compelled to alter their gauge, that would have a tendency to increase the traffic on our lines? Well, it is very doubtful; it is very problematical. I am inclined to think that it would not increase our trade very much. It should be a condition if the proposed line were made, that the Deniliquin-Moama Company should be compelled to alter their gauge.
649. Could any special outward rate be adopted by the Commissioners in order to make this line pay? I understand that in some cases were new lines are constructed, the Commissioners have under consideration the

H. McLachlan, Esq.
3 Aug., 1892.

the expediency of adopting a special rate in order to pay interest on the cost of construction? In this case, the circumstances are very different from those of the lines where we have adopted that practice. In this instance, the initial line, the starting point of our competitive system, belongs to a private company, and they could adopt a differential rate which would cut against us. Therefore, if we had a higher rate on the new line it would act prejudicially against us, as regards trade from Sydney.

650. But if your higher rate were simply charged outwards towards the Victorian border, would not that have the effect of increasing your trade? The Deniliquin-Moama line would be the key of the position. If we increased our rate from Jerilderie to Deniliquin we would not increase our trade. The Deniliquin-Moama Company could impose a differential rate in order to draw the traffic, and the position of their line makes it difficult for us to see what trade we would get in competition.

651. Have the Commissioners considered the adoption of any special means of trying to command the trade of Riverina at Deniliquin—I suppose they recognise the fact that that trade is now utterly lost to our railways? They have considered it, and they have adopted differential rates. At the present time the road distance between the two places gives us the Jerilderie trade pretty well.

652. I suppose you know that Deniliquin is practically the great central depôt of a very large district? Jerilderie is the centre of its own district.

653. The evidence before the Committee goes to show that it costs from 30s. to 35s. to convey goods from Deniliquin to Jerilderie, and under present circumstances practically the trade of Deniliquin is lost to our lines? Yes; and I am afraid that it would be if we made the proposed railway. The Victorian people have got about 190 miles of railway carriage whereas we should have 500, and they have, generally, an easier line to work. It almost stands to reason that, unless we impose some highly protective duties, they would get the trade, and, even then, people could send goods in bond, by sea, through Sydney to Melbourne, and we should get very little of the Deniliquin trade. The same thing happens at Hay, where we are much better situated.

654. Do you get any of the Hay trade? Some of it.

655. Do you get any trade from Deniliquin at the present time? I do not think so by our lines.

656. Do you know that, since the adoption of protective duties, the Deniliquin merchants have been trading with the merchants of Sydney? By sending round in bond, and they will likely do the same thing even if we make this proposed railway, on account of the distance.

657. Are you aware that Sydney merchants have made arrangements with merchants of Riverina to deliver all goods free of charge in Melbourne; in other words, free on rail in Melbourne, in the execution of orders sent to Sydney? I have not heard that.

658. The evidence before us goes to show that the Sydney merchants land their goods on the railway at Melbourne free. I suppose if you had the railway extended to Deniliquin they could not get their goods landed in Melbourne without costing them something? No; but water freight is very low.

659. But the concession, whatever it is, made by the merchants to carry the goods by water might also be made in carrying them over the railways? I do not think that the Sydney merchants would pay the railway charges.

660. The evidence before us goes to show that the average freight from Sydney to Melbourne by sea is £1 per ton? Yes.

661. What is the difference between the freight, per ton, from Sydney to Jerilderie and from Melbourne to Deniliquin? I think it is somewhere about £1 a ton on general goods cheaper in favour of the Melbourne route.

662. If it is £1 a ton and they charge 30s. for land carriage, if you were to give them the extra distance for 10s. a ton, it would practically place you on equal terms, as regards that trade? Judging from the figures that I have seen, the Melbourne people have an advantage that it would be very difficult for us to overcome, except by imposing rates which would not pay us.

663. Of course your experience in connection with the working of that line has been prior to the imposition of border duties? Yes; to a large extent.

664. When the greater portion of that trade was done through Melbourne? Yes.

665. If the cost of land carriage is 30s. a ton from Jerilderie to Deniliquin, and the difference between your rates from Sydney to Jerilderie, and from Melbourne to Deniliquin, is £1 per ton? I am speaking from memory. The rates, I know, have been handed in. It is £1 a ton or more.

666. If that is so, and if this line were constructed, you would have a better chance of winning that trade with the assistance of the duties than without that connection? Certainly, we would.

667. Between Jerilderie and Deniliquin some of the wool comes to Sydney now? Yes, we get a little wool from Jerilderie.

668. Mr. McCaughey sends his wool here? I can tell you the quantity of wool we carried, according to the last return, but not individual clips.

669. But I am speaking of freight on wool sent from between Jerilderie and Deniliquin, irrespective of any other wool which is sent from Jerilderie? We do not get a very big quantity. We had 4,900 bales altogether from Jerilderie last report—from the whole district drained by Jerilderie.*

670. Do you know that the greater portion of that came from Mr. McCaughey's station, between Jerilderie and Deniliquin? No, I do not think that it did—not quite half of it did; some portion of that wool, I think, was grown further up the Jerilderie line. I think that Mr. McCaughey has more than one station.

671. Mr. McCaughey is pretty shrewd, and if there were any great advantage in sending the wool to Melbourne, he would, in all probability, have sent it there? I think he is pretty shrewd.

672. Can you tell us whether the Jerilderie station was credited with that wool? Certainly.

673. In the case of consignments of produce sent from an outlying station, such as Jerilderie, and paid for by the agents in Sydney, would that station be credited with it? It would be credited with a portion. I dare say you are referring to the sectional earnings. In crediting any line with the earnings we credit the line with a proportion of the mileage, and then work out the proportion of the earnings, that is to say, if Jerilderie is about 450 miles from Sydney, and the Jerilderie line is 85 miles long, we give 85·450ths of the total earnings to the Jerilderie line. We do not credit the Jerilderie line with the whole of the earnings from Jerilderie to Sydney, but we give a fair proportion according to the mileage.

674. Although the actual increase of the railway revenue would be credited with the total cost of the carriage of any produce, whatever it might be? The total railway revenue would, of course, be increased by the total sum received, but it would not be fair to credit all that to the branch line. 675.

* NOTE (*on revision*):—A later return to 30th June, 1892, shows the quantity to be 6,173 bales.

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675. Although, as a matter of fact, the construction of the branch line was mainly the factor that created that revenue? Some of it.
676. Where a branch line brings absolutely new trade to the existing lines, that branch line is a factor in bringing that trade and increasing the revenue to that extent? Yes.
677. And in the accounts that are submitted, only the proportionate earnings of that portion of the railways is credited to that particular station? Yes.
678. I presume you got a large proportion of that trade before the railway to Jerilderie was constructed? We got some of it at Jerilderie, and perhaps some of the trade of the south-western towns. I do not think we got any below Jerilderie, as we are doing now. We are, no doubt, getting some trade which was quite foreign to us before.
679. In viewing the question of the construction of this railway, I suppose you have considered it from every aspect? Yes.
680. And do the Commissioners think that it is desirable to construct this railway at the present time? Well, from a financial point of view, they do not think it will pay; but they do not, of course, enter into politic considerations. That is a matter for the Government.
681. From a national point of view they do not consider it? No.
682. You cannot give us any estimate of the increased revenue added to the railways by goods conveyed along the line from Jerilderie to Sydney? No; not of new traffic.
683. You only keep an account of the sectional traffic—that is, between the two places? Yes.
684. At the present time you are running a tri-weekly service to Jerilderie? Yes.
685. All your trucks, or other rolling stock, remain there until required for the return journey? Yes.
686. The distance between Jerilderie and Deniliquin is 45 miles? Yes.
687. Without any increased cost as regards staff, could not those trains run on to Deniliquin, and return in time to make the return trip? The same engine-driver and the same fireman might be used. They might perhaps make a little overtime occasionally. But if you notice, in the estimate of the Commissioners, they put the working expenses at a very low figure. You can see that by comparing it with the expenses of our lines generally. Taking the whole railway system our working expenses come to about £850 per mile. The cost of working 45 miles of line generally would be about £38,000, but you will see that the Commissioners have put down only £8,000. Therefore, you will see that they have already fixed the working expenses at a very low rate, in fact, the total working expenses of the locomotive branch, I think, are put down at £1,800. So the Commissioners have considered the question of working the line on a very low basis.
688. With this railway, with your present tri-weekly service, there will be exceptional facilities for running this line cheaper? You could not, I think, do it much cheaper than it is put down at. You must have your permanent-way men, and a fixed staff at the stations.
689. What did you say is the cost per mile? The total cost over the whole railway system is about £750 per mile for working expenses. We have put this down at about a quarter of what the cost is generally.
690. Since the construction of the line to Jerilderie, there has been a very large increase in the wheat production of that district? Yes. I have tried to get the figures as regards the wheat production of the Jerilderie district, but I have not yet done so. I only heard last night that I was to be examined to-day.
691. Mr. Thomas Wise, Mayor of Jerilderie, and a local miller, stated, in giving his evidence at Jerilderie, that in the year 1885—that is when the mill started and the railway was open—3,360 bags of wheat were brought to Jerilderie by the railway from Cootamundra, Coolaman, and other places, and that was the consumption of the district. They had no wheat grown in the district. He also said, that in the following year 8,000 bags were produced in the district, and that in 1887, the quantity produced in the district was 9,700 bags, whilst in 1888, there were 18,000 bags, and that in 1889, the crops were bad all over the colonies, but that, in that district, there was an average of from 12 bushels to 14 bushels, which was the best average yield in Australia that year. The total quantity produced there in 1889, was 14,994 bags, in 1890, it was 21,712 bags, which he purchased himself, in addition to 5,000 bags which went to other buyers, making a total of 26,712 bags. In 1891, the quantity was 29,150 bags, in addition to 6,000 bags that went to other buyers, making a total of 35,150 bags. In 1892, 35,000 bags went through his hands, and 15,000 bags to other buyers, making a total for that year of 50,000 bags. So, practically, the increase of wheat production has been from nothing when the railway was opened, to 200,000 bushels? Referring to those figures, I may tell you that if we had the same increase of production in five years, from this proposed new line of 45 miles, and if we got those 200,000 bushels, and every ton was sent to Sydney, the earnings for the new line from that wheat would amount to £200.
692. That is, looking at the railway from a commercial standpoint? Purely. The Commissioners say that, perhaps, from a political point of view, it may be desirable to construct the line, but they do not think that it would be a financial success. They think it might be desirable to construct it, for it passes through good country.
693. Would that £200 be net profit or the actual earnings? The actual earnings.
694. As a matter of fact, is wheat carried in any part of the country at a profit to the railways? No; it does not pay in itself. We consider that it pays about cost price. We have not worked out the cost per ton per mile.
695. Then the Department has recognised that there is some advantage to be gained from the development of this production, if they are carrying it without making a profit? Yes; if we get the back freight, but, in this case, we are afraid that that will go to Victoria. It is a question for the Committee to consider whether most of that would not still go to Melbourne.
696. There is no doubt, however, that the fact of the production of 200,000 bushels of wheat, if we take its value at 5s. makes £50,000 of annual earnings brought about in the district? Yes; for the people themselves. From the State point of view, it might be wise to make the proposed line.
697. With regard to border duties, have you considered the effect that they are likely to have on the trade of Deniliquin; the people could not buy in Victoria with the same facilities as they can now? It ought to improve the railway carriage. We have had to impose differential rates, to enable us to compete with Victoria, in another matter. A lot of the traffic is done by the river steamers and the Commissioners have thought that the Government should impose river dues, inasmuch as a large sum of money has been spent by the country in opening up the rivers, and the steamers are great competitors with us. We have competition with them up as far as Bourke.

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698. Where competition is so keen, do you not think that the fact of the Deniliquin-Moama line, running on the same gauge as that of the lines in Victoria, has the effect of taking away trade from your terminal point? Certainly.
699. Do you not think it desirable to alter the gauge of that line? I think you can only do that under the Act if you connect it, and the Commissioners would recommend that, if you do connect it, you should also alter the gauge.
700. There can be no doubt whatever that, while you have your terminal point at Jerilderie, and it costs from 30s. to 35s. a ton to convey goods from Deniliquin to Jerilderie by road, and while the Victorian railways have their terminal point at Echuca, and can get goods along their railway to that terminal point, they have the best of the competition? Yes. We could not get the Deniliquin trade under present circumstances at any rate.
701. Whatever prospect you have of trade after the construction of a line there you have none now? No, I think not.
702. *Mr. Suttor.*] It came out in evidence at Deniliquin that there is a very large area of land put under cultivation this year for wheat-growing? Yes.
703. It is not likely that the people there will be able to buy all the wheat grown on that land;—do you think it at all likely that, if the proposed line were constructed, it would take that wheat away? No doubt it would open up a good area of wheat country.
704. A large area of land above Deniliquin? Yes.
705. When at Berrigan, we had an undertaking entered into by farmers, who guaranteed that they would pay a certain amount per bushel for their wheat being carried along the proposed line? Yes.
706. What are the rates charged for carrying wheat from Jerilderie to Sydney? It is a very low rate. We have a special rate for the up journey, and that from Jerilderie to Sydney would be about 17s. per ton in nine months of the year for either grain or flour; that is for 6-ton truck loads.
707. Would there be any live-stock traffic from Jerilderie? I do not think we have had a great deal. The report of the Commissioners does not show the number of live stock from each station.
708. *Mr. Dawson.*] Have you taken into consideration the number of passengers from Bendigo and other places, who would come that way to Sydney, but who at present go to Melbourne, and by the south-eastern line. We had evidence that a great many people coming from Bendigo, Castlemaine, and Ararat, would probably come to Sydney by this proposed line if it were constructed;—has that been considered? I do not think that that would affect us a bit. They would actually lose time by taking the shorter route, and travelling by a mixed train, instead of coming all the way to Sydney from Melbourne by express.
709. *Mr. Ewing.*] You told Mr. Wall that you thought the Melbourne system could be worked quite as cheaply as our system? Yes; it ought to be.
710. Because the grades in Victoria are somewhat better than those here? Yes; they have an easier line to work, and they ought to take bigger loads.
711. The possession of coal here does not make a great difference?' Not much difference. We would have to haul our coal a great distance to work this traffic.
712. Therefore, in point of fact, the Victorians having a more concentrated system, they can get their coal pretty well as easily over their system as you can? Yes. I do not think it makes much difference.
713. Therefore, if it comes to a question of competition, and you have to carry 500 miles, and Victoria only 150, she must beat you? She ought to do so.
714. What is the rate for grain per mile—about two-thirds of a penny? Yes, generally.
715. That is not a paying rate? We do not get any profit out of it, but we do it to foster agriculture, and to get a return trade.
716. You have pointed out that from Hay they bring the wool at a cost of £1 down to Echuca, and if you are charging two-thirds of a penny per mile you would get produce from Narrandera to Echuca for about 2s.? I do not think I mentioned the price from Hay, but they do bring much of the wool by river.
717. Therefore, if from Hay by river they can get to Echuca on the Victorian line for £1, and if, in the event of this line being constructed, they could get down there for 8s., do you not think the Narrandera trade would go to Melbourne too? I think the construction of the line might have that effect, unless there were very prohibitory duties or rates.
718. If the lines of New South Wales cost as much as the lines of Victoria, can you show, in any way at all, how New South Wales can hold territory 500 miles from Sydney and only 150 miles from Melbourne? Not under like circumstances.
719. Unless the country pays for it? That seems to be what it comes to. It seems to me that the making of that line would, under ordinary circumstances, be for the benefit of Melbourne.
720. Do you regard the Victorian system as a rival system? It is certainly a competitive system.
721. Do you consider the line from Deniliquin to Moama a feeder to the Melbourne system? It is very much a feeder to the Melbourne line and does not help us a bit.
722. And you tell us you think that this line would be a feeder to the rival system? I am inclined to think it would be.
723. Therefore, it would have a tendency to draw trade from our lines which would otherwise use them? I think it would be likely to have that effect.
724. Supposing that this line were made, could you carry produce from Sydney, 500 miles to Echuca for £1—I mean profitably? We do, at the present time, carry about 500 miles for £1, but there is no profit in it to us.
725. It does not pay? There is no profit. We do it to get return traffic, and also to encourage agriculture. It is a good thing for us to have inland populations.
726. But the people of the country pay for it? It may just about pay working expenses, but no profit at that rate.
727. Could you do it cheaper than £1? I am afraid we could not, with any advantage.
728. Therefore, if by using a route by sea to Melbourne, and then by train to Moama, they can land their stuff at a cost of £1, they are not suffering any great disability? No; I do not think so.
729. In point of fact the fight between the two railway systems gives them an opportunity of getting goods in that part of Riverina as cheaply as you could give them under any circumstances? That has been the effect up to the present.
730. You said just now that you regarded the Victorian system as a rival system? Yes.

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731. And you consider also, that the making of a railway from Jerilderie to Deniliquin transfers the point at which you fight to about Junee, rather than at Deniliquin as at present; I take it that, if you could work the systems at the same rate, the place where trade would split would be half way between the two places? From Deniliquin we could put on a higher rate to cut out the Victorian trade to some extent, but, of course, the Deniliquin-Moama line could cut against us still by imposing cutting rates at the same time, and that would act as a sort of handicap, the line being in private hands, and would help the Victorian people to send trade to that south-western line as at present existing.
732. You do not regard these expedients as satisfactory? It is, perhaps, not a nice thing to have to do.
733. Therefore the extension of the line from Jerilderie would very likely transfer the fighting point? I think it would help them.
734. You think then that it is a feeder to the Melbourne line? The present Deniliquin-Moama line certainly is.
735. And this proposed line is likely to be the same? It is likely to help them.
736. If it is a feeder to the Melbourne line it is likely to pay, is it not, draining, as it would, the traffic off our line from Hay to Narrandera, and Narrandera to Junee? Yes; if you had equal rates.
737. Therefore, if it brings that traffic on to the Deniliquin-Moama line, it will make that line very valuable? It will help that line certainly.
738. And if we resume that line subsequently to the carrying out of the proposed extension we will have to pay a good deal more for it in all probability? Yes, I think it will improve that property.
739. And therefore, if we do things wisely, it means practically the expense entailed by the construction of a line from Jerilderie to Moama? I think it would lead to that, to make the line of best advantage to the Colony.
740. You think, therefore, it would be a dangerous experiment as far as your railway system is concerned? Yes; it is very problematical whether it would not cut against us rather than in our favour.
741. And from a commercial standpoint you do not think it will pay the railways? No.
742. You say, in addition to that, that the people about Moama are getting their goods by way of Melbourne pretty well as cheaply as you could deliver them under any circumstances? I think so.
743. Therefore, they are suffering no disability? I do not see that they are suffering any disability.
744. Then supposing the train went right through, you think it might compel the Moama Company to go to Seymour and pick up the line there? Yes; the quicker service would command the trade. Still, there is very little traffic at the present time from this place. We might get the Moama people—no doubt they would go by the new line rather than right round.
745. But there would be no great volume of trade? No.
746. And if there were, it would be taken from the other line? Yes.
747. *Mr. Humphery.*] You say you could not compete as far as Moama on equal terms with Victoria? I think not. If we went to Moama, that would be another 45 miles, and that would make the distance about 545 miles, as against 150.
748. Would not the distance from Melbourne to Moama be less than one-third of the distance from Sydney to Moama? Yes, less than one-third.
749. How would it be possible for you to compete if you had to carry three times the distance? I do not think we could compete under ordinary circumstances—not unless you put on some prohibitory duties, and then it is a question whether they would not send round in bond by sea, and over the Victorian lines.
750. *Mr. Hoskins.*] In reply to a question put to you by Mr. Wall, you spoke about the differential rates on the railways, will you kindly state, for the information of the Committee, what was the origin of the differential rates? The origin was a fight for the trade between the Victorian, the South Australian, and the New South Wales railways.
751. Which Colony first imposed differential rates? So far as I recollect, Victoria.
752. What was the character of the rates which the Victorians imposed; was it making a large reduction on the carriage of goods taken over their railways to the southern districts of this Colony? Yes; I recollect, for instance, one case in which 7s. 6d. was charged for conveying a bale of wool to a station on their own border, although for a bale of wool going from New South Wales to the same station they only charged 4s. 6d.; although it was carried the same distance on their lines.
753. Is it not a fact that, for the purpose of aggression in trade, or to bring trade over the Victorian railways to Melbourne, the Victorian Government drew a line—an imaginary line, as it were—across the southern districts of this Colony, and that to the south of that line they carried goods at a considerably less rate than they ever charged their own colonists in Victoria? Yes, that is so.
754. The railway authorities of this Colony found it necessary, in self defence, did they not, when our railways were extended to the southern districts, to impose differential rates also? Yes.
755. I suppose you are aware that that led to a great deal of bitterness and ill-feeling? I do not know that there was ill-feeling. It was a matter of business, each trying to get the trade.
756. Is it not a fact that since the present Railway Commissioners have undertaken the duties they now discharge, they have had a conference, after having had some correspondence, with the Railway Commissioners in Victoria; and, I am not sure also, with the Railway Commissioners in South Australia, with the view of coming to some arrangement to prevent excessive competition arising from the imposition of differential rates? Yes, they did; and they induced the other Colony to agree to an all-round increase of £1 per ton on all goods conveyed to the border districts, so that the two Colonies should stand on the same ground, without going into a cut-throat competition.
757. Did you not hear afterwards that the Victorian Railway Department, to neutralise the effect caused by the increase of the rates as agreed to at the conference with the railway authorities of this Colony, increased the rebates—that is, made a reduction in the charges, or increased the rebates that they gave to their customers in this Colony, who have a large quantity of goods from Melbourne? I have had some idea that something of that sort has been done; but the Victorian people claim to have observed their part of the agreement, and say that the rebate given was given outside the agreement that was arrived at—that it was for a part of the country not considered to be within the competitive district.
758. Therefore, after having come to an agreement to charge certain rates, they neutralised the effect of that agreement by giving an additional rebate to their customers in this country? They claim that they did not break the agreement, but that the additional rebate was given to people in districts not considered to be in the competitive district when the agreement was arrived at.

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759. Which are those districts? It was the Riverina district, particularly, we were treating about, and this was some wool coming from a part of the Darling that Victoria has not been very much affected by.
760. But has not the fight between the colonies been for the trade of the Riverina district? This was for some wool some distance up the district. The fiercest competition has been for the district trade between the Murrumbidgee and the Murray.
761. You have not heard, I suppose, that even in that district, since the agreement was made between the Railway Commissioners of Victoria and the Railway Commissioners of this Colony in reference to rates, increased rebates are allowed there by the Victorian Railway Department? I am not sure of that.
762. You have not heard of it? I do not think so.
763. Well, I have. In respect of this line now under consideration, the evidence that you have given has certainly not been favourable to the construction of the line. Mr. Ewing has put it very closely to you; but do you not consider that, if this proposed railway be constructed, it will give increased facilities for persons in the Riverina, for persons even as far as Narrandera, and perhaps further, seeing that Narrandera is not farther from Melbourne than from Sydney, to send their produce to Melbourne which they now send to Sydney, if they were disposed to change? Certainly.
764. You say that since the railway terminus has been at Jerilderie the railway has only carried 4,900 bales of wool? That was for the last published year.
765. Have you ever been in that part of the country? I was there once; but I have not an intimate knowledge of the district.
766. You know, I suppose, that there are other large squatting stations in that part of the Colony, and that Jerilderie may be considered the centre almost, or the nearest town? Yes.
767. If the construction of this railway, or any railway to a particular place, affords additional facilities for the conveyance of anything, either the produce of stations, such as wool, or merchandise to those stations, at a speedy and economical rate, do you not consider from what you know of the Riverina, that portion of it of which Jerilderie is the centre, that if the construction of the railway would tend to bring trade to this Colony, the construction of that line to Jerilderie ought to have led to our having more than 4,900 bales of wool conveyed over our lines from there in one year? It shows that a lot of the wool must go somewhere else—that we do not get it—that the other railways compete with us for that trade at the present time.
768. In spite of its being 45 miles by road from Jerilderie to Deniliquin, nevertheless the greater portion of the wool grown in that district, instead of being sent by rail from Jerilderie to Sydney, is taken to Melbourne? A great portion must be. There must be a larger quantity than 4,900 bales produced in that district.
769. There are special reasons why Mr. McCaughey sends to Sydney? I am not aware.
770. He has two stations on the Darling? You mean we make an all round rate, practically.
771. As a matter of fact, the McCaugheys' get some concession on account of the large quantity of wool that they send to Sydney? Yes; on account of wool from three stations.
772. Seeing that there has been so little wool sent over the Jerilderie railway to Sydney, you do not consider it probable, even if this branch line were extended from Jerilderie to Deniliquin, that there would be an additional quantity of wool sent from that district to Sydney? We might get a little more of the local wool, which the railway would very nearly touch, but I do not think that it would be anything very considerable.
773. Therefore, if this proposed line be constructed, it will be primarily to carry wheat, seeing that information has been received that a large number of persons are settling in that district with a view to cultivate wheat for the Sydney market? That is a view that has been largely put, I think, before the Commissioners—that the land is very suitable for farming, and that if the line were constructed it would open up a large quantity of agricultural land. We would probably get the grain, but our trouble is that we would not get the dearer goods—they would still come, I think, from the other Colony.
774. Supposing the representations of these people are realised, and that a large quantity of wheat would be sent over this proposed line from Deniliquin to Jerilderie, would that traffic—unless loading could be found for the trucks that would bring down the wheat, so that the trucks could be loaded both ways—be calculated to largely increase the net receipts of the railways? No.
775. In point of fact, the wheat traffic is not a profitable traffic? There is no profit on it alone.
776. But it really contributes to the settlement of the country, by affording speedy communication by railway—that is all? Yes.
777. Do you really believe that this proposed railway would be a feeder to the New South Wales Railways? I do not think that it would be a profitable feeder.
778. *Mr. Davies.*] I think that, in reply to Mr. Wall, you stated that the cost of traffic management and control for each mile of railway was £850? That is the general cost over the whole system.
779. How is that made up? That is the total working expenses—the total expenditure on the whole of the railways divided by the total number of miles.
780. How is it made up? The total working expenses of the railways for the last year, for which I have figures here—for the year ending 30th June, 1891—was £1,831,000.
781. On what mileage? Two thousand one hundred and eighty-two.
782. Does that cost include renewals? That includes everything—our total working expenses.
783. Under the head "Working Expenses" you include renewals? Certainly.
784. £850 a mile is rather a large sum? It is rather a low sum considering the traffic.
785. It is on the gross mileage? Yes.
786. If this railway were constructed it would necessitate the resumption or purchase of the existing line running to Moama? That would be a question for the Government to consider, but it seems to me that it would be a thing that would almost have to follow.
787. It would be absolutely necessary, would it not? I think so, but, perhaps, that is not a thing for me to say.
788. But if this portion be constructed you simply run into a private line? Yes.
789. And that of a different gauge? The Act gives the Government power to compel them to adopt the New South Wales gauge.
790. It also gives the Government power to resume? Yes.
791. With resumption and construction it would cost very nearly £500,000? The figures have never been stated, but it will come, at any rate, to £300,000 or £400,000.

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792. Well, taking the report of the private railway company, and the dividends declared, it would be £300,000 or £400,000? Yes.
793. Do you think it possible for any trade to be developed in that locality which would pay interest on so large an expenditure? I do not think the railway would pay—that is, purely from a commercial point of view.
794. You distribute the loss entailed on these non-paying railways over the whole traffic that does pay? In speaking of the whole result—yes.
795. That is to say, then, the suburban passengers—the great bulk of those who travel on our railways and on those portions that do give a good return on the expenditure—have to contribute towards paying the loss of £17,000 on this Jerilderie railway? The railways are treated as a whole. For the State they earn about 3¼ per cent. That is spread over the whole railway system, some sections paying better than others.
796. The suburban railways pay well, do they not? Fairly well.
797. What is the interest returned by them? It has not been worked out.
798. Do you not work that out? We have only worked out the sections for a number of the branch lines.
799. Which branch line pays the best rate of interest? That has not been worked out. The lines we take are Sydney to Kiama, Junee to Hay, Narrandera to Jerilderie, Wallerawang to Mudgee, Werris Creek to Narrabri, Cootamundra to Gundagai, Goulburn to Cooma, Orange to Molong, and Hornsby to St Leonards. These are simply the branch lines that were worked out in detail.
800. What rate of interest do they pay on the capital cost of construction? In the case of each of these branches there was a loss on working.
801. It then, of course, comes back to the question which I put as to making good the loss by the passenger traffic on the main lines? Yes.
802. That is principally done, I presume, by the suburban traffic between Sydney and Parramatta? The whole western line from Sydney to Bourke, taking it as a whole, has done fairly well.
803. Can you tell the Committee what return the line from Sydney to Bourke gives on the capital cost? No; I say the results have not been worked out for the main or suburban lines, but simply on those lines that I have quoted, and upon each of those branch lines there is a loss. Of course, if there is a loss on those, and if the ultimate result is a profit, the trunk lines must make good the loss on the branch lines, but as to which trunk line pays best we have not made that out.
804. But it is a fact that the main lines have to support the feeders? Yes; the profit is on the main lines.
805. The loss incurred on the line from Narrandera to Jerilderie, £17,000 a year, has to be borne by the main lines? Yes. You must always consider that there may not be a great profit on a branch line, but it may be wise to make it on account of the feeding that it may give to the main line.
806. Do you expect this proposed line to be a feeder to the main line? I do not think that financially it will be a great feeder, but I am speaking on the general question.
807. Looking at it from a commercial aspect, it will not be a feeder? I do not think it will be financially successful.
808. You think it will entail a further loss? Yes.
809. *Dr. Garran.*] You have stated distinctly that, from a commercial point of view, this line will not pay? That is my opinion.
810. And that if it be justifiable at all it will be on national grounds—as a matter of public policy? That is so.
811. Is not the policy of the Department at present, with the consent of the Government, one of differential rates for securing the trade of the Colony for Sydney? That has alway been the policy of the Department.
812. It is the policy now? Yes: to bring the trade to Sydney.
813. If the effect of making this line would probably be, as you say, to take the present Jerilderie trade, which now comes to Sydney, down to Melbourne, and perhaps the Narrandera trade too, would not that be a result conflicting with the policy of differential rates? It would to some extent, because the policy of differential rates has been to bring the trade to Sydney.
814. It would be to every extent? Yes.
815. If the policy of differential rates is to keep the Jerilderie and Narrandera trade for Sydney, and if the making of this proposed line would take that trade to Melbourne, then the making of this line must be in direct contradiction to the policy of differential rates? To some extent it might be. The reason, from a railway point of view, why we imposed differential rates was to get traffic we would otherwise lose, and it would not matter, from a carrier's point of view, whether it went to Melbourne or Sydney so long as we got it. For instance, from Albury to Wagga Wagga we fixed a higher rate than for a proportionate distance on any other portion of the line.
816. Still, if this line carried the Narrandera trade to Melbourne, you would lose trade that you are now getting? Yes.
817. That would be against your financial interests? It might not be—it might pay us better to get a fair rate from Narrandera to Moama than to take the traffic at a cheaper rate for a longer distance.
818. You would have to get a larger rate from Narrandera to Moama, and also to buy the Moama line before you could do that? Yes.
819. Although the line to Jerilderie does not pay, and is at present a losing speculation, I suppose that it has brought some additional trade to the main line? It must have done that to some extent.
820. And if you were to extend the line without connecting with Deniliquin, you would still further extend that result? Yes; we would get a little trade, no doubt.
821. Supposing you extend it to Conargo, you would get some additional trade? Yes; a little.
822. Would you be in any greater danger of sending your Jerilderie trade to Melbourne if you did not connect with Deniliquin,—taking the distance between Conargo and Deniliquin as about 13 miles, would that 13 miles of road traffic be sufficient to prevent the Jerilderie trade from going to Deniliquin? I should not think it would affect the course of traffic greatly. You are likely to get more Conargo trade if you make a railway to it.
823. And not have less of the Jerilderie trade? I think not.
824. Supposing you made a line from Jerilderie south to Berrigan, you would get some more of the trade of that district? Yes

825.

825. Would you be in any danger of losing the Jerilderie trade through to Tocumwal? No. I think the road carriage would be a fair handicap, but, of course, every mile you get nearer to the Victorian border you have more chance of losing the trade. H. McLachlan, Esq.

826. Supposing we made a line from Jerilderie to Berrigan, do you think the Jerilderie people would send their goods down to Melbourne with road carriage between Berrigan and Tocumwal, instead of sending it by railway all the way to Sydney? I do not think it would affect the course of trade greatly by making the extension. 3 Aug., 1892.

827. Then the fact is, that if we extend this line and do not make a connection, we get a little more trade without the risk of losing any? That would be the general result, I think.

828. The danger arises the moment we make a connection? A greater danger.

829. Now you are carrying to Jerilderie at a very considerable rebate? Yes.

830. Does that take off 25 per cent. of the natural rate? Yes; more than 25 per cent. of the ordinary mileage rate.

831. Then, if you made this line from Jerilderie to Deniliquin, and wanted to keep your Jerilderie trade which you have now, you would have to take off nearly half in order to keep it? Yes; we would probably have to reduce still further. There would be a risk of our losing some Jerilderie trade, and of its going to Melbourne.

832. So far as the wheat trade is concerned, you cannot afford to do that? We would not lose much of the wheat trade, but there is very little profit on that.

833. But you cannot afford to reduce the rate? No; we could not reduce the rate.

834. So, if the wheat went to Melbourne, it would have to go? Yes.

835. Do you get much wheat from Albury to Sydney right through? Some from this side of Albury, but not a great deal from Albury. We get some from Gerogery and Culcairn.

836. It was given in evidence before a previous Committee, that it paid rather better to send goods from Sydney to the border district by taking them in bond by sea to Melbourne, than from Sydney by rail? Yes.

837. Then it might be thought better to send in bond to Victoria, and round by sea, than by rail? Yes.

838. So there is no certainty that you would get this traffic, even if you made that line? I daresay we would get most of the grain, but it is not profitable in itself.

839. Would you have to send empties up to get the grain? Yes.

840. Did you consider that in your estimate of the net profit? We made no basis of profit, because the Commissioners could form no idea of the traffic.

841. As a matter of fact, you do not know whether you would make a loss on it or not? They would not give an estimate.

842. If you have to send up empty trucks, the probability is you will have to make a loss? We would, certainly.

843. And if you had not to send up empty trucks you might make a small margin of profit? It would certainly pay us to run full trucks up to bring the wheat back.

844. Which is the most bulky—the stores that go up, or the wheat that comes down? The stores that go up.

845. The wheat from the wheat district comes down pretty well within three months of the harvest? It would follow the harvest to a large extent. That depends a great deal on the prices realisable for wheat.

846. As a rule, it is not evenly distributed over the whole year? Oh, no.

847. While the sending up of stores is? No. Like the wool, it is affected by the return trade.

848. It is not concentrated in any two months or three months of the year? Not from an agricultural district.

849. *Mr. McCourt.*] If there were no line at present from Moama to Deniliquin, would you then be in favour of extending the line from Jerilderie to Deniliquin? No doubt we would be in a very much better position to get the trade then.

850. You think that the line might be extended? That point has not been considered; but it would give us a fair advantage. Deniliquin being a centre, we would be very likely to get the trade.

851. Under those circumstances there would be more justification for the extension? Yes; I think so.

852. Therefore, you really look upon the present break between Jerilderie and Deniliquin as a protection to your present line? Yes; to some extent it is.

853. Do Peterson and Sargood send any wool to Sydney—they own a station near Jerilderie? I do not know any of the individual clips.

854. If it has been said that, if this line were constructed, a considerable traffic would grow up in red-gum timber, do you think that is likely? I do not know about a considerable trade. I do not think so—not for the present, at any rate—not for a long time to come, for we have other sources of supply so much nearer.

855. What is the present cost of sleepers delivered at various places for the railway? They cost from 4s. to 4s. 6d. each for ironbark—red-gum is a little cheaper; you might get a 9-foot sleeper for 3s. 9d., or 3s. 10d.

856. If it has been stated that a large traffic in red-gum would result from the construction of this line, you do not think that would be the case? No. As a matter of fact, there are the forests about Albury and Narrandera, which are much nearer; we also get the coast sleepers, ironbark, which we prefer to use.

857. Have you any knowledge of how the Deniliquin-Moama Company got power to run across the river on that bridge? No, I have not. That line has been made about twenty-three years.

858. *Chairman.*] Would not the anxiety of the Deniliquin-Moama Railway Company to get a private right to run up to Jerilderie seem to point to the fact that they desire to annex more of the New South Wales trade? I have not heard that they desire that, but it would indicate that.

859. In the report the Company have said that they are prepared to take it up at any moment; would not that tend to the belief that they wish to annex more of the trade of New South Wales, and not to send stuff on the New South Wales line to Sydney? Yes.

859½. The provision of the Deniliquin-Moama Railway Company's Act, in reference to putting down the New South Wales gauge when the New South Wales railways tap that locality, does not necessitate the doing away with the broad gauge? No; certainly not. I do not think the reading of the Act would imply that.

H. McLachlan, Esq. 3 Aug., 1892.

860. So that, unless that railway were actually resumed, and the broad gauge taken up, and the New South Wales gauge continued to the border, you would still have a competing line? Certainly; and they could make a differential rate on that line as well. I do not think we could stop them from doing that.
861. *Mr. Wall.*] You think that, from a commercial point of view, it is not desirable to construct this railway? I do not say it is not desirable to construct it, but I do not think it would pay.
862. Well, from a national point of view, do you think it would be desirable to prevent these people from constructing a line, in order to promote settlement in that district? The policy of the country of late years has been not to allow private lines.
863. I understand, from some questions asked by Mr. McCourt, that this intervening space acted as a sort of protective barrier for the New South Wales lines? He said if the line were not made, would it not be so?
864. Do you think it would be desirable to retard the development of the whole of the Riverina country in order to maintain a traffic which at the present time does not pay—that is the traffic from Jerilderie? I would not like to express an opinion purely on matters of policy.
865. The Jerilderie line for the year 1891 returned £7,471? Yes.
866. Speaking of the internal traffic of this part of the country, or the actual exchange that would take place, say between Deniliquin and Echuca, I find that the line of this private company returned £18,584? Yes.
867. It is only fair to assume that, if that line were connected with Jerilderie, and if the trend of trade would be from Victoria to Jerilderie, the whole of that traffic would go along that line and augment the present trade that exists between Deniliquin and Moama? Oh, no; a great deal of that Deniliquin-Moama trade comes right down from distant stations, and from districts which this extension would not touch or affect. It drains altogether a different direction.
868. But the actual earnings at the present time, according to the returns, amount to £18,584; and any trade taken from our Jerilderie line would be added to that? Yes.
869. That would mean greater earnings than the £18,000 that represent the present earnings on that line? Yes.
870. Supposing that this line were resumed, you said that the Railway Commissioners would have to make special outward rates to command this traffic? Yes.
871. And I think you have also said that if the present line connected with Deniliquin, and if the private line now working did not exist, that would assist you in commanding the trade of the Riverina? No doubt it would assist us.
872. And if you have the power to make special outward rates, and you get a connection with Deniliquin, what is to prevent your imposing such rates as will assist you to command that trade? We would not gain anything by that. That would not help Deniliquin a bit, because the goods get to Deniliquin. The goods would go over the Deniliquin-Moama line, and would not touch our line, the new line would only affect the district between Deniliquin and Jerilderie.
873. But if you had control of the Deniliquin-Moama line, you could impose such special rates as would assist you in competing for the Victorian trade? We could do that. We do that from Albury. That would mean the resumption of the Deniliquin-Moama line.
874. But if this line did not exist, and the railway authorities were to construct a line from Jerilderie to Moama, would they not adopt the policy of imposing special outward rates in order to compete with Victoria? I think they would.
875. Then the whole question of the construction of this railway resolves itself into the wisdom of resuming the Deniliquin-Moama line? It has a very important bearing, I think, on the case.
876. With the control of that line, and taking into consideration the fact that its earnings amounted to £18,000 per annum as against £7,400 on your line, you think the Commissioners would be able to compete for the Victorian trade by imposing special outward rates? Yes, to a very much better extent, certainly.
877-8. Then the whole question of the construction of this railway resolves itself into the wisdom of resuming this rival line? I do not say that altogether, but that it will have a very important bearing on it.
879. But taking the section of the line traversed by this private line, do you not think that £18,584 per annum is a fair average amount? Yes; from that country I think it is.
880. And assuming that the trade will be, say, only 50 per cent. between there and Jerilderie, that would bring it up to about £25,000 per annum? I do not quite see how you get at your figures.
881. If there were a lighter line of railway corresponding with the railway already in existence there, would not that reduce the cost at all? In what way?
882. We have the evidence of some saw-mill proprietors and others that sleepers could be delivered for that line at 2s. 6d. each;—that would lessen the cost of construction very much, would it not? Yes. You would have perhaps a couple of thousand sleepers per mile, and 1s. on those would mean £100 per mile.
883. I understood that the estimated cost of the other sleepers was 4s. 9d. each? I think not so much, for we get ironbark at Dubbo and other places for 4s.
884. If Mr. Tennant, the Manager of the Deniliquin to Moama railway, said that this line could be constructed for £2,000 per mile, do you think he under-estimated the cost? I think that their own line cost a good deal more than that.
885. Mr. Tennant, in his evidence, made some explanation in reference to that matter, with regard to the cost of iron? I think the cost of their own line ran into £4,000 or more per mile.
886. I understood that, some time ago, the Railway Commissioners suggested that lines should be constructed for about £1,750 per mile? Yes, it is thought we could lay down a cheap line for a little under £2,000 per mile, using second-hand rails and old sleepers, which line could be built up as the traffic grew.
887. And if railway sleepers could be got at a low price, I suppose this line could be laid down almost as cheaply as any other line in the country? I think it ought to be, in a flat country, and with no bridges.
888. *Mr. Hoskins.*] In the replies that you gave to one member of the Committee you referred to the competition our railways have to contend against as regards river-borne goods and produce, and you instanced Hay. I am fully aware of the competition myself, and I know that, when the line was opened to Hay, there was a general reduction of freights on the Murrumbidgee River? Yes.

889.

889. Can you say whether the Commissioners have earnestly called the attention of the Colonial Treasurer to the fact that our railways are subject to severe and almost unfair competition as regards the river-borne goods, and have suggested to the Colonial Treasurer that the Government should impose tonnage dues or tolls upon vessels using that river, which has been greatly improved by the expenditure of the public money of this Colony? Yes; they have suggested that river dues should be imposed. H. McLachlan, Esq. 3 Aug., 1892.
890. Have they done it by any written document? Yes.
891. *Mr. Dawson.*] What would be the rate for carrying wheat from Deniliquin to Sydney? I think about £1 per ton. The cheap freights for nine months in the year would be slightly under £1 per ton.
892. And if it costs from 8d. to 10d. per bushel to send it via Moama, and the trucks have to be changed there on account of the break in the gauge, and it has to be taken out at Melbourne and transhipped from the train to the vessel, and afterwards conveyed to, and unloaded at Sydney, the cost would amount to something over £1 per ton? Yes.
893. And that is more than the present railway rates? Yes.
894. So you could carry wheat at the present rates, and there would not be much competition? I think, with our present rates, we ought to keep the wheat.
895. How long would it take, on that level country, to send 100,000 tons of wheat—that would be 2,000 tons of wheat alone—per week? Yes; that is, of course, assuming that they grow that quantity in the district.

John Eduie Brown, Esq., Director-General of Forests, sworn, and examined:—

896. *Chairman.*] You are Director-General of Forests? Yes. J. E. Brown, Esq. 3 Aug., 1892.
897. *Mr. Suttor.*] Can you give us any information with reference to the forests over which you have control on the Murray? We have about 400,000 acres there all densely covered with red-gum timber.
898. Can you give us any information as to the way in which the timber in those forests is disposed of? At present, all the timber cut goes to Victoria. All the saw mills, which number about seven, on the river, are situated on the Victorian side. The Victorians have not got timber such as we have there, and consequently their saw mills are supplied from our forests.
899. How much of that timber went to Victoria last year? All that was cut.
900. How many feet would that be? I am not sure of the quantity exactly, but the revenue derived from licenses and royalty on the timber cut was altogether about £7,000.
901. You have carried out some operations in reference to thinning out the timber have you not? Yes, we have thinned out about 4,000 acres, upon which we have left, as the coming crop, about 3,000,000 trees.
902. Can you give us an idea of the expenditure in thinning out the timber? It costs from about 2d. to 3d. a tree.
903. The trees that are left? Yes; the coming crop. We are now receiving something like 30s. or 35s. per tree, for piles that go to Victoria, and we have something like 300 trees of full size per acre;—that will give you some idea of the value of the forests there.
904. Have you any money to enable you to go on with the thinning? Unfortunately, we have spent all for this year.
905. Do you think it desirable to spend more money on that? I do indeed. The expenditure is upon reproductive work, and will create a very handsome asset to the State.
906. How much has it cost you up to the present for thinning—Mr. Manton says about 3s. 6d. per acre? Yes.
907. Do you think it is at all likely, if we had any communication by rail to that part of the Colony, that there would be a large trade to Sydney with that timber? I am certain there would be. At present, we cannot convey the timber from the Murray to Sydney at a sufficiently cheap rate for selling purposes.
908. What would that timber probably be used for? For various purposes—such as house building, bridges, railway sleepers, and so on—general constructive purposes.
909. Is the exhibit now produced some of the red-gum grown on the Murray? Yes, it is. It was down about eleven and a half years in Flinders-street, Melbourne. I intended, also, to have some sleepers here, one of which came from the Moama-Deniliquin line, where it had been down seventeen years, and which seemed to be as sound as ever, and good for another seventeen years at all events.
910. What street was this exhibit taken from? From Flinders-street, Melbourne, alongside the foot-path, where the greatest traffic is.
911. Is it very heavy traffic? Yes, very heavy indeed. I think that, during the eleven and a half years, it has only worn off barely a quarter of an inch.
912. Have you any pine forests on the Murray? We have, that is on the sandy country behind the red-gum.
913. Is that of any great use? It is.
914. Do you know if the white ant attacks that sort of timber? No, it does not.
915. Do you think that, with railway communication, there would be any traffic in sending that timber to Sydney? I think so.
916. *Mr. Humphery.*] The block of red-gum which the Chairman is now inspecting is from a forest between Deniliquin and Jerilderie? Yes.
917. Is that superior to ironbark or blue-gum, for street blocks? It is superior to blue-gum—I would not say that with regard to ironbark, although it is my opinion that it is quite as good as ironbark.
918. Would you recommend its use in preference to that of blue-gum? I would, most certainly.
919. Even if blue-gum could be got at less cost? I would recommend that in preference to blue-gum. Even though the blocks cost more than blue-gum, I would recommend the red-gum.
920. You regard the red-gum as ranking in value and durability, next to ironbark? I do.
921. Did you mention where the block produced was obtained? Yes, in Melbourne.
922. What portion? Flinders-street.
923. Was it part of a crossing? No, it was alongside the water-table.
924. Then the heaviest traffic of the street would not be over this particular portion? I think it would
925. If it is close to the water-table? Yes.
926. You think this block has been fairly tested? I do.

J. E. Brown, Esq. 3 Aug., 1892.

927. In any case, in your opinion, it is sufficiently good for street-blocking purposes? That is my opinion
928. Whereabouts in Flinders-street was this taken from? I really could not say. It was sent to me by the City Engineer or the City Surveyor.
929. You do not know how far from the kerb it was taken, do you? I could not say exactly.
930. It is possible for a cube like that to be down fifty years, and only have a cab upon it once in twelve months, in a street like Flinders-street, is it not? I think not.
931. Is the whole street blocked with that wood? Yes.
932. I think you mentioned that the revenue from the forests is about £7,000 per year for royalty and licenses? From the river Murray—yes.
933. That is paid chiefly by Victorian mill proprietors? Altogether.
934. I suppose it does not matter to you whether the money is paid by Victorians or New South Welshmen, so long as the revenue comes to New South Wales? Not a bit.
935. So if it were found impossible to carry the red-gum blocks at a profit on our railways, you may just as well sell the wood to Victoria? Yes, just so; but, if I may express an opinion on the subject of this railway, I think, if the railway were constructed, we should double our revenue from the sale of timber.
936. Why do you say that? Because there is a great demand for red-gum in the country lying back from the Murray.
937. What part? All that open, settled country where the railway is at present.
938. For what purposes would it be required? For house building and fencing.
939. Suitable timber not being securable in those particular localities? No, it is not procurable there.
940. You think there would be a very large quantity of this red-gum timber used by a population that could be reached by the railways, if the connection between Jerilderie and Deniliquin were made? That is my impression.
941. That would be a source of revenue to the railway? It would.
942. *Mr. Davies.*] What class of timber is sawn at the mills you speak of at the Murray;—is it building timber? Yes, all red-gum.
943. For building purposes? Yes.
944. Have you power, under the law, to vary the amount of royalty? We have.
945. Do you think that you get from the Victorians the full value of the timber that they take? I think we do at present.
946. How many trees do you average to the acre? About 5,000—that is young and old together.
947. Trees that could be taken and used for building purposes? At present there are about from forty to fifty to each acre.
948. At what do you value each tree? We ought to get about £5 each for them. The quotation I gave a short time ago—35s.—was for piles from smaller trees; but when you cut a mature tree, say, from 3 feet to 4 feet in diameter, and 30 or 40 feet in height in the bole, we can get £5 for it.
949. What number of sleepers would you get out of a tree of that class? About 200—they are sawn—not hewn sleepers.
950. Are all the sleepers got in that district sawn? Yes, all sawn.
951. What is the life of a sleeper made from this red-gum, as compared with an ironbark sleeper? I should think about equal. I have known red-gum sleepers to have been in the ground in South Australia for thirty years.
952. Do you think that a red-gum sleeper is equal in durability to ironbark? I do.
953. And there is any quantity of that timber in this forest? Any quantity. I would not hesitate one moment in guaranteeing that it would turn out 3,000,000 or 4,000,000 sleepers at the present moment.
954. The only outlet for this timber is across the river to Victoria? Yes.
955. And the amount you receive from royalty and licenses, at the present time, is all received from Victoria? Altogether from Victoria.
956. If the proposed railway were constructed, do you think that any portion of that timber would come to Sydney? I do.
957. Would it pay to carry it that long distance? I think it would.
958. For what purpose would it be used? For general constructive purposes—house building and out-door work as well.
959. You are aware of the distance by rail? Yes.
960. Do you think that it would be possible for any building timber to pay for the cost of carriage over that long distance, as well as the cost of sawing and hewing? I do not see why it should not, for, at the present moment, the people of Jerilderie and other places get timber from the coast, and if it pays to take the timber there, why should it not pay to bring it down here?
961. Are you replanting these forests that are at the present time being denuded of timber? We are not exactly replanting. We are conserving by the system of what we call natural regeneration.
962. That is the young timber? Yes.
963. Nothing more than that is being done at present? Very little.
964. *Dr. Garran.*] You say the whole of the timber obtained from these forests goes to Victoria? It does.
965. Is that not because Victoria at the present time is the only market for it? Yes; to a certain extent, and that is the only means of removing it.
966. You cannot intend to shut up the market? I would not desire to shut it up at all.
967. All you want is to open up a further market in New South Wales? That is all.
968. But if ironbark is an equally good timber for railway purposes, and if ironbark can be gained much nearer Sydney than this, what chance have you of displacing the ironbark by red-gum? As you are aware ironbark forests are getting pretty well thinned out, and the timber on the Murray is something we can fall back upon, it being equally as good as the other.
969. When the ironbark has all gone, the Murray red-gum will take its place? I think so.
970. But so long as it is obtainable nearer, red-gum will not take its place? I must say that the Railway Commissioners prefer the ironbark to any other timber, although, as far as I am aware, they have not tried the red-gum here, whereas in Victoria and South Australia, they will not use any other timber but red-gum for sleepers.

971.

971. The Commissioners have been able to obtain ironbark up to the present? They have. J. E. Brown, Esq.
972. So they have not had to seek for this red-gum? They have not.
973. Does it grow principally on the river banks? Altogether.
974. There are no red-gum forests between Deniliquin and Sydney? Not that I am aware of. 3 Aug., 1892.
975. The Murray is a special locality for that kind of produce? Yes.
976. At what rate per annum are you disposing of your produce now—are you parting with a twentieth part of the timber in those forests per annum? Oh, no; only a very small proportion of it.
977. Are you parting with one-hundredth part of it? Not more than that.
978. You have saleable timber there at this moment, and are only selling one-hundredth part of it? That is about the proportion.
979. Is the remainder injured by staying there? No.
980. How many years will it remain good? For the next twenty or thirty years.
981. And if that forest is not tapped for the next twenty years it will not deteriorate in value? Not a bit.
982. *Mr. Dawson.*] There are some large wharfs at Echuca and Moama—are they built of red-gum? They are.
983. It is a timber that will stand water well, as piles? Yes; those piles have been in for the last twenty-five years, I think.
984. And are still sound? Perfectly, I believe.
985. Is it a fact that a lot of Western Australian timber called Jarra, has been brought here for bridges? I do not know about that, but it has been imported into South Australia and Victoria.
986. Would red-gum do in place of that if it were known that it would stand the white ant and the cobra? Undoubtedly.
987. Have you known red-gum used for timber, trussed bridges over rivers? Yes. In South Australia I know that red-gum sleepers have been in the ground for thirty years, and I have known bridges and wharfs constructed of red-gum which has stood as well as any other timber you could get.
988. You think that if the proposed railway were constructed it would tend to develop that trade to a great extent? That is my opinion.
989. *Chairman.*] Have you any supplies of red-gum nearer Wagga Wagga than the red-gum on the Murray? No; at least not real red-gum. Unfortunately there are so-called red-gum trees of different kinds all over the Colony. The red-gum to which I refer is what you call *eucalyptus rostrata*—the real red-gum. The other red-gum is not so good.
990. That is the natural home of this red-gum? Yes, of the real red-gum.
991. What description of red-gum is that near Albury? That is the true one—on the river banks.
992. Is there much of it about there? Not very much.
993. Is the output of red-gum from your Murray forests increasing yearly? Yes; it is increasing.
994. Is there a greater demand than supply? No. Last year the revenue was about £7,000; this year I expect it will be £10,000.
995. Supposing this railway were constructed, do you think it is at all likely that there would be any large amount of trade with the metropolis, as regards this timber? It is my impression that there would be.
996. But in view of the fact that you can get ironbark from the coast districts landed in Sydney, probably at 10s. per 100 feet, you would not be able to compete, after paying the railway carriage? It ought to pay between here and there—it would not necessarily all come to Sydney.
997. Did I understand you to say that this timber was particularly adapted for fencing purposes? For posts, not for rails.
998. Why not for rails? Because, in its lateral strength, it is not so good as the ironbark, but for underground work it is equal to any other timber that we have.
999. At the present rate of consumption how long will it be before these reserves of yours become denuded? Many years.
1000. And you are more than keeping pace by the annual growth with the timber cut down? We are.
1001. Or only just about equal? More than that. For every tree we cut I should think we get about thirty young trees coming up.
1002. How long does it take to bring them to maturity? From 35 to 40 years. Of course, you can use them as piles when they are 15 years old, but for them to arrive at mature growth, fit for the saw-mills, it takes 35 to 40 years.
1003. What is the girth of trees of that age? The timber would be about 4 feet for 30 or 40 feet of the bole.
1004. Do you think that the preference shown by our railway people for ironbark is not a wise preference? I think they are very wrong. I want them to take the red-gum, but they will not do it—the reason why I cannot tell.

THURSDAY, 4 AUGUST, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN.)

The Hon. WILLIAM HENRY SUTTOR.	The Hon. JOHN DAVIES, C.M.G.
The Hon. JAMES HOSKINS.	THOMAS THOMSON EWING, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM CHANDOS WALL, Esq.
The Hon. ANDREW GARRAN, LL.D.	WILLIAM MCCOURT, Esq.

HENRY DAWSON, Esq.

The Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Stanley Alexander, Esq., Examiner of Public Works, sworn, and further examined.

1005. *Mr. Ewing.*] You made a report to the Public Works Department some time ago, about which we have already had information? Yes S. Alexander, Esq.
1006. You have a full knowledge of that part of Riverina to which this line would go? Yes. 4 Aug., 1892.

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1007. You know the line from Jerilderie to Deniliquin? Yes.
1008. And other facts that would help the Committee in coming to a conclusion? I think so.
1009. What population is there along the direct line from Jerilderie to Deniliquin? I do not think there is any population there except at stations.
1010. There is no farming population? No, not on the direct line.
1011. You recommended, I think, that the line should go by Conargo? Yes.
1012. Comparing that country near Conargo with the Berrigan country, which is the better country? The Berrigan.
1013. Where is the thicker settlement? At Berrigan. The major part of the farming population is between Berrigan and Tocumwal.
1014. During our trip there we heard a great deal with regard to the pastoralists selling to farmers;—in what part of Riverina has that transaction already taken place? In the neighbourhood of Berrigan.
1015. Therefore, Berrigan is the only part of that portion of Riverina where the pastoralist is really giving way to the farmer? Yes, where he is giving way.
1016. I presume you would expect a larger return from a railway passing through a farming settlement than you would from a railway passing through a pastoral settlement? Certainly.
1017. As far as one can gather, in fact I think you stated in your sketch, you think this line should be made *via* Conargo? Yes, I think so.
1018. One of the reasons you give is that it would facilitate settlement? There is settlement between Conargo and Deniliquin and about Conargo. I also say, in that report, that it will allow the development of the country north-west of Conargo.
1019. You speak of settlement, what really does the settlement between Jerilderie and Conargo amount to—how many settlers are there on that line from Jerilderie to Conargo—do you regard it as a thickly-populated district? No, not from Jerilderie to Conargo. I have not actually travelled between those places. I went from Deniliquin to Conargo and back again. There is very little settlement between Jerilderie and Conargo.
1020. Therefore, the settlement is greater between Conargo and Deniliquin? Yes.
1021. What does it amount to in population? I do not suppose there are more than 500 people.
1022. Do you think there is anything like that settlement—what evidence does a person see of great settlement there? There would be 500, I think.
1023. Taking a radius of 10 or 15 miles on both sides of the direct line from Conargo to Deniliquin, what population do you think there would be? When you get nearer Deniliquin you get into population, but about Conargo, and between Conargo and Deniliquin, there are about 500, I suppose.
1024. Do you mean to tell us that you think, without taking the environs of Deniliquin itself, there are as many people between Conargo and Deniliquin as there are in Jerilderie town? I should think so. Five hundred people only means 100 families.
1025. Do you think that there are twenty families—you have no statistics to prove it? No; I have no statistics.
1026. Why do you believe that a line from Deniliquin to Jerilderie would settle population on the ground when the other lines traversing Riverina do not do so—for instance, take the lines from Jerilderie to Hay, from Jerilderie to Narrandera, and from Deniliquin to Moama—all those lines I think practically go through pastoral settlement—is that not so? Yes.
1027. Why will there be a difference on the line from Jerilderie to Deniliquin? In the first place, those lines have not settled a population on the country because the land is either locked up or already alienated.
1028. Therefore, people cannot be settled on the ground which is in the hands of the pastoralist until he is willing to sell? No.
1029. What guarantee have you that between Jerilderie and Deniliquin the pastoralist is willing to sell? There is a great deal of land not in his hands.
1030. How much—I am talking of the direct line which you recommend? In the whole of this country, north of Deniliquin, more than half the country is Crown land.
1031. From Conargo to Deniliquin? I fancy so.
1032. But taking the direct line from Jerilderie to Deniliquin—within 10 miles on either side of that line, how much is in the hands of the pastoralist, how much in the hands of the selector, and how much in the hands of the State? I think I heard an officer from the Lands Department say here that 80,000 acres within 20 miles on either side is in the hands of the State.
1033. You know the surveyed line goes through ninety holdings now in the hands of the pastoralist, ten in the hands of the State, and one selection under lease to the pastoralist, on the direct route between Jerilderie and Deniliquin—would you be surprised to know that these were the facts of the case? What do you call holdings?
1034. I mean, taking large portions of land as surveyed, there would be a certain portion reserved, another would be a conditional purchase, another would be an area of land in the hands of the pastoralist, which he bought at auction;—would you be surprised to hear that nine-tenths of the land from Jerilderie to Deniliquin has been bought by the pastoralist, and is in his possession at present, not counting the environs of those two places? I did not know that.
1035. Of course when you embrace the great Murray forest reserves, and land of that sort, you get a good deal of your area? Yes.
1036. In estimating your reserves, not including towns north of the Yanko, which really is not affected, or is not much affected by this direct line, it is quite possible that a number of your reserves are not especially affected by the railway under consideration? Yes.
1037. Do you think this line will be a feeder to the Victorian system? Certainly.
1038. It would be a feeder to the Victorian system? Certainly.
1039. And not to the New South Wales system? It will be a feeder to the New South Wales system to a considerable extent.
1040. But you regard it primarily as a feeder to the line from Deniliquin to Moama? Certainly.
1041. Supposing that, by any means, we were able to divert the trade between Moama and Deniliquin towards Sydney, would there be as good a chance of the line paying as if the trend of traffic were from the north towards Moama? Just as good.
1042. Why would there be as good? There will always be a traffic towards Moama—stock, and things of that sort.

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1043. With regard to the paying aspect of this line—if the traffic goes from Jerilderie and Deniliquin, and the New South Wales railway system to the north, and finds its nearest market at Melbourne, the line will pay for pretty well the same reasons as the line from Deniliquin to Moama will? It will pay; because it will pay, no matter which way the traffic goes, because it will develop the country.
1044. We may endeavour to discover why it should develop the country more than lines previously constructed in Riverina have developed it. It will only develop the country if the squatter will sell. It appears to me, that if the traffic goes to Melbourne, backed up, as it will be, by the great territory to the north, that line must pay, for the same reasons as the Deniliquin-Moama line pays;—do you agree with me in that? Yes, I do.
1045. If the trend of traffic is from Deniliquin to Sydney, the only country that will affect it will be the country lying between Deniliquin and Moama, about 44 miles—is that not so? Yes.
1046. Therefore, you do not think that we will get very much produce from Victoria? No; you will not get any from there.
1047. Therefore, all there will be to affect this line will be the piece of country from Deniliquin to Moama? Yes.
1048. Therefore does it not appear to you that, if it is a feeder to the Victorian line, it has a much better chance of paying, than if it is a feeder to the New South Wales line? Yes, it has.
1049. Is there any other reason why you think that line will pay;—have you considered the question of an approach to Broken Hill that way? No, except what they said at Echuca. They pointed out the possibility of a line being made from Echuca, *via* Boort, Donald, and Murtoa.
1050. Do you think that would bring much traffic to the through line to Adelaide? At Echuca, they made a great point of that connection.
1051. What do you, yourself, think of the point? I have never seen the country.
1052. As far as you can see from the tread of the Victorian railways, do you think that the Victorians are likely to build a railway to cross the Swan Hill line, the Wycheproof line, and the Donald line, to join on to the Adelaide line at Murtoa—does it seem a feasible thing for Victoria to do—to cut her railway system from Echuca to Murtoa? No. I do not know anything of the merits of it, but at Echuca they were very strong on the subject.
1053. Would you regard it as a strong point? I should not regard it as a probable one.
1054. As far as you can gather from the policy of Victoria, does not such a move as that appear to be the last thing the Victorians would do? Yes; because it would take the through traffic away from Melbourne and divert it altogether.
1055. You have already said you believe this line will be a feeder to the Victorian system? Yes.
1056. If the line went to Berrigan, and to the farmers there, do you think there is enough good land about Berrigan to employ our railways to any great extent? I like that country very much indeed, and I reported very strongly about it, but I do not think the line ought to go from Jerilderie to Berrigan.
1057. Why? It does not open up sufficient country. In my report there is a sort of diagram in colours, showing the amount of country that it would tap. Moreover, it has a connection with the Victorian lines, and that seems to aggravate all the difficulties.
1058. What would be the effect of having a connection with the Victorian lines when Victoria has the balance in her favour, inasmuch as she has to carry only one third the distance that New South Wales has to carry; what must be the result on the rival lines? I believe it would take traffic off our lines.
1059. That will not be the result so long as we have a buffer in the shape of 20 or 30 miles of land carriage to protect our system—would that be so? It is merely a matter of opinion on my part, but I should not think that 20 or 30 miles of land carriage would be sufficient to protect it.
1060. You think not? I should think not.
1061. What would you get 20 or 30 miles of land carriage done for per ton in an ordinary season in Riverina? The Union rates would be 20s. per ton.
1062. Supposing you say 15s. a ton, and if the New South Wales railways carry grain 300 miles for the same price as the carrier is able to carry it 20 miles, is that not a great protection to the railway system? Yes; but you know it is not the grain. The farmers cart the grain with their own carts, horses, and labour.
1063. They may do so? They do. It will not pay to grow grain unless they do. They cannot afford to pay cartage of grain.
1064. If the grain will come to New South Wales, how much more benefited will the farmers near Berrigan be by a line from Jerilderie to Deniliquin than they are at present;—is not, in fact, Berrigan as near Jerilderie as any point of the proposed line would be? The proposed line would not affect Berrigan a bit.
1065. And, therefore, will not affect the only farming population there? I did not say there was no farming population below Jerilderie.
1066. But the best farming population? No.
1067. Therefore, our own farmers are not affected by this proposal? Not about Berrigan; but they will be south of Deniliquin.
1068. What would be the freight from Moama to Melbourne and through to Sydney? I can work it out, but it will take a little time.
1069. What do you think? I cannot say; it is so long ago since I had this subject at my fingers' ends.
1070. Supposing that a person in Moama required to get goods from Sydney, could he get them by steamer to Melbourne, and then along the Victorian railway system to Moama, as cheaply as you can at present at Jerilderie or Hay, by using the railway system of New South Wales? At page 31, Appendix 51, of my report, a number of examples are given. If you add, say, 12s. 6d. a ton to the rate from Melbourne to Echuca, then you can compare.
1071. Do you think that a man in Moama, by using the sea and the Victorian system of railways, could get his goods as cheaply as a man at Hay could get his by using the New South Wales railway system? The difficulty in answering any of these general questions is, that there are a number of different classes of goods.
1072. Still there is a general principle which controls the matter? Well, take groceries for instance. From Melbourne to Deniliquin the freight is 72s. 6d. per ton.

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1073. Put 12s. 6d. on to that? That will make 85s. per ton from Sydney to Deniliquin, *via* Melbourne From Sydney to Deniliquin by rail the freight would be 86s. 8d. per ton, the same as to Jerilderie, because of the truck rate rules on these railways—that is to say, the goods are carried a certain distance, and beyond that distance they are carried for nothing at all.
1074. The goods would be carried another 44 miles for nothing? Yes; those are the truck rate rules.
1075. How does it stand? Well, in the case of groceries, it would cost the same to take them from Sydney to Deniliquin, either by sea to Melbourne or by our railways.
1076. If a person in Moama or Deniliquin, by using the means of transit at his disposal at present—that is, the line from Deniliquin to Moama, the Victorian system, and the sea—can get goods round from Sydney as cheaply by that means as he could if your proposed railway were constructed, how is he suffering any great disability? Well, he can only get the advantage of these low rates by doing it in bulk at 10s. a ton carriage by sea, whereas by railway he could have small parcels whenever he required.
1077. Supposing the freight by sea is 5s. or 10s. per ton, the Victorians carry from Moama to Melbourne 150 miles, and if we take from Sydney to Jerilderie, and consider that the whole country between Jerilderie and Moama is the country in dispute, considering that Jerilderie is 412 miles, and the difference in the distance, taking those two extreme points, is 260 miles; you have got 260 miles of land carriage against the freight from Sydney to Melbourne—is that not so? Yes.
1078. Therefore, you would have to carry in New South Wales 275 miles for 5s. or 10s. to compete with the sea? Yes.
1079. Do you think that the New South Wales railways could carry 270 miles for 5s.; do you think that that is a profitable rate? It is not, item for item; but it is the amount of the freight that makes up. They do it, and are trying to get more of it.
1080. Is it not a fact that the fight between New South Wales and Victoria for the trade of that part of the Colony, has brought into existence differential rates? Yes.
1081. And those differential rates are very satisfactory to that part of the Colony, but very unsatisfactory to the rest of the Colony, inasmuch as the people there have to pay for them;—is that not a fact? They are satisfactory to that part of the country that gets the benefit, but whether they are satisfactory to the Railways, I cannot say.
1082. In point of fact, they have a splendid service there, taking into consideration the distance of Riverina from Sydney? Yes.
1083. If a Riverina man can get his goods from Sydney, by any means at all, for £1 to 25s. a ton he is not doing badly? He must get them in bond, and cannot get any small parcels. If there is any sudden demand he must wait for the goods. The storekeepers there cannot keep large stocks.
1084. What does the railway carry—the produce of the country; and what is it really—wool and wheat? Yes.
1085. Is that in bulk, as a rule, or could not a little management make it always come in bulk? That is produce sent out of the country, but you were asking of stores sent in.
1086. But, the main railway carriage? Yes, that is bulk; but what pays the railways, in any country, is not the produce going out of it, but the stores and merchandise coming into it. They carry the produce out almost for nothing, in order to get the supplies coming into the country.
1087. *Dr. Garran.*] I understand, from your answers to Mr. Ewing, that on the whole, you retain the opinion which you express in this report? I do.
1088. When you say, in paragraph 53, that you believe the working expenses of the line will be at once earned, you do not calculate, I gather, that it will come from wool carriage? Some of it will.
1089. I understood you to say just now, that you knew the wool would not come this way? The wool will go down to Melbourne.
1090. Therefore this piece of line will not earn anything from wool? Yes; it will earn something from wool that is now carted across to Corowa.
1091. Tocumwal, you say in your evidence? From Jerilderie it is carted to Tocumwal, but from north of Jerilderie it is carted to Corowa.
1092. You said, when last here, that wool is now carted across an existing line to Tocumwal for shipment to Melbourne? It is.
1093. If it crosses that line which is already made, in preference to taking the route to Sydney, why should it not equally cross an extension of that line further from Sydney? Because it will be able to go on the same trucks right through to Melbourne. It is on the way to Melbourne. If that line from Jerilderie to Deniliquin were connected, instead of crossing the line in carts to go down to the line in Victoria, the wool would be put on the line there.
1094. The only wool that will be got will be that which crosses the line between Narrandera and Deniliquin? That is so.
1095. And the only grain we should get would be the difference between that obtained at a platform and at Deniliquin? Yes.
1096. And that will be infinitesimally small? It will not be much.
1097. That will not go very far towards making this line pay from the start? No.
1098. If we do not get much from the wool, are we to get it from the wheat? You will get a good deal from the wheat.
1099. You have told us that there is no wheat grown between Jerilderie and Deniliquin? No; there is wheat grown on the Conargo route.
1100. You have told us there is none on the direct line? No.
1101. It is all plain country, and is not likely to be cultivated for wheat until the forest country is used up, or there is irrigation? Yes.
1102. We are still some distance from all the forest country being used up? Yes.
1103. And also from having irrigation in that district? Yes.
1104. Until we get these two conditions farmers will not come, by preference, to this land on either side of the line? No.
1105. And they cannot do it at all until the squatters are willing to sell? They will get Crown lands when the leases fall in, in two years' time.
1106. But the Crown lands you speak of are north of Deniliquin, between it and Conargo? Yes.
1107. If these reserves are thrown open, and if these Crown lands north of Deniliquin are sold, farmers will

will settle, and will be able to ship their wheat at Deniliquin? It will have to go over this line; it will not go to Melbourne. S. Alexander, Esq. 4 Aug., 1892.

1108. But you go to Melbourne to ship to Sydney? I do not think it has been done yet.

1109. It has been done a great deal in the neighbourhood of Albury? I asked about that, and I do not think it has been done from Moama yet.

1110. We have had evidence that a good deal has been shipped from both Albury and this direction, too? I do not believe that it was done two years ago. I asked a great deal about that, for that is one of the obvious routes for grain.

1111. Supposing it is shipped that way, it is a cheaper way, the sea freight from Melbourne to Sydney being so low? I very much doubt if it would be cheaper. They carry grain so very cheaply in this Colony, that I do not think that the other route would be cheaper, if this line is made.

1112. Supposing you were to settle the country on that line, from Jerilderie to Deniliquin with farmers, would our railway revenue be greatly increased by carrying their wheat to Sydney? It would be increased.

1113. If you carry wheat for nothing, per bushel, you cannot make a great fortune if you carry 10,000,000 bushels at the same rate? The railways do not carry it for nothing.

1114. We have it from Mr. McLachlan, that they make no profit at all from wheat, but only get the return traffic? I think I heard him say that the charge was two-thirds of a penny per ton, per mile.

1115. But we are talking of profit? They will make profit on that.

1116. Mr. McLachlan told us that 200,000 bushels of wheat was supposed to be the present production of wheat in that district, and that, if the whole of that were brought to Sydney, the freight would not amount to more than £200? Yes.

1117. Do you think there would be a big profit made out of that? Does he limit the wheat production of the country to 200,000 bushels?

1118. No; that is the present wheat production of that district? Which district?

1119. He meant the Jerilderie district? He was talking about Berrigan—he was quoting from Mr. Wise.

1120. It does not matter where it comes from—the carriage would amount to 200,000 bushels? Multiply it by five.

1121. But that is the gross quantity; where is the profit? That is all additional—it is not there now.

1122. If you have to send empty trucks to get that, the enormous distance from Sydney, you must know that there cannot be much profit made out of that? The trucks cannot go empty one way, but would carry stores into the country.

1123. That is, provided you supply that district—you assume that? Yes; I do assume that, and I maintain that it will come to pass.

1124. But we have been told that there are some places for which, even if we take the produce to Sydney for nothing, stores are bought in Melbourne, so we get the lean and Victoria gets the fat? Then the trucks would be always moving in one direction empty, but that is not so.

1125. But you admit that, if the trucks did go empty, there would be very little profit? Certainly; the railways would be run at a dead loss, but the fact that they are not run at a dead loss shows that that does not take place.

1126. You say the profit on the line will not be from the wool? Yes.

1127. You admit that it will not be from the wheat so far as direct carriage of wheat to Sydney is concerned? I have not admitted that.

1128. I understood you to say that it would yield hardly anything? Not much, but there is a profit on two-thirds of a penny per mile.

1129. Not very much—it is a microscopical profit? Well, the more the profit is multiplied the better.

1130. If we are not going to get anything considerable from either wool or wheat, where are we going to get revenue? From stores coming into the country.

1131. You do not look for any profit from carrying stores down, but the whole of the profit is to come from one way? I say there will be a profit on the carriage of wheat out of that country, and there will be many other things produced when you get population there, and stores will be taken into that country by our railways—a pretty large quantity of them, as is being done at this moment, otherwise trucks would be running empty in one direction.

1132. Apart from that, you give no guarantee that the pastoralists on that line—the large land owners there—are willing to sell? A good many of them are.

1133. There is no evidence before us that they are, and you have not given any in your report? No; I did not, but it is in the evidence. Horsfall and Sproul, for instance, have sold a quantity of land.

1134. Where—at Tuppal is it not? Berrigan.

1135. But Berrigan is not on this line of route? No, but that indicates that the pastoralists will sell their land.

1136. Because they have got the forest country, for which people will give £4 an acre, and they are willing to sell, is no proof that the other people on the north are willing to sell? No; between Jerilderie and Deniliquin there will be very little land sold, if any.

1137. Well where is the wheat to grow? Between Deniliquin and Moama.

1138. That is quite a new light on the subject; then the part which we are to settle is not the part through which we make the railway, but through which the private railway passes further on? That is mentioned in my report. At paragraph 52 I say, "The conclusion at which I had arrived on the subject of connecting Jerilderie and Deniliquin by railway is, that not only the development, but the existence of the agricultural industry in this southern part of Riverina, is dependent upon this communication being made for it with the rest of this Colony."

1139. That is not what you were saying just now, but that we were to make this line in order to carry the produce of the existing settlers between Moama and Deniliquin? Yes; that is it—that is the southern part of the Colony.

1140. This Berrigan settlement, of which you speak so highly, will not be materially benefited by our making a line from Jerilderie to Deniliquin? It will not be benefited a bit.

1141. The Berrigan people go to Jerilderie now, and could go hereafter? Yes.

1142. So far as the good land south of Jerilderie is concerned—this line will not benefit one atom the settlers at Berrigan and higher up? No, it will not benefit them.

1143. And there will be none between Jerilderie and Deniliquin? No.

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1144. And its only benefit will be to those west of Deniliquin, or between Deniliquin and Moama? Yes, that is all.
1145. Are all the large land owners on that line prepared to sell? I think they are. Very large quantities of land have been offered there.
1146. But they have had a market in England, through Victoria, all these years—ever since that railway has been made? I do not think they have taken advantage of it. I asked a great deal about that, but I do not think that any wheat, except trial shipments, has been sent to Europe.
1147. Do you think that they will grow wheat to a large extent the moment we make this connection to Sydney? They will.
1148. Where will be the market? In New South Wales.
1149. Do you know what additional quantity we want to feed ourselves in New South Wales? About 4,000,000 bushels.
1150. About double our present production will be ample, according to Mr. Coghlan? Yes.
1151. Well, considering the number of railways being made in agricultural districts, that is a mere flea-bite? Yes.
1152. If all those railways are going to settle an agricultural population to grow wheat to feed the people of New South Wales, we shall have to eat ten loaves a day each to get rid of it all, or they will have to send it to England? Yes; but it will be some years before that comes to pass.
1153. Victorians send to England, do they not? Yes.
1154. And South Australians? Yes.
1155. The New Zealand people send to England? Yes.
1156. And if we over-produce, we will send to England? Yes.
1157. Well, do you think that the people here will swarm on to the land to produce wheat at 3s. 6d. a bushel, at the remotest part from Sydney at which they could be? They certainly will.
1158. Do you not think that there are many places nearer Sydney where they could grow wheat? They certainly will take up that land—that is my belief—whether it is wise on their part or not.
1159. Are they not making a line to Temora, which is a wheat-growing country? Yes.
1160. That is to settle a large population? It is there already.
1161. They are nearer to Sydney than these people are? Yes.
1162. With equal chances of producing good crops? Yes.
1163. About Forbes and Parkes, we are told, there is beautiful country for wheat-growing? Yes.
1164. They will have a railway? Yes.
1165. They will send wheat to Sydney, and if all those people send wheat to Sydney, will we not be over-stocked? I suppose they will send it somewhere else then.
1166. Then, the question is, is there a large inducement for people to go into agriculture, looking at the fact that a very moderate increase of production will overstock the local market? What are the people to do?
1167. That is not the question; but will they voluntarily go into agriculture instead of stock, as at present? They will certainly go into it.
1168. Even if they go out of it afterwards? Yes.
1169. Do you think there is a permanent opening for agricultural settlement, because, I suppose you would not advocate a line to settle a number of farmers, and see them all clear out in five years? Certainly not.
1170. The object of making lines in agricultural country is to settle a permanent yeomanry? Yes.
1171. Well, is there on this line from Jerilderie to Deniliquin, the prospect of a permanent settlement of yeomanry on either side? In order to answer that, I must assume that the land will do something else besides grow wheat.
1172. When they find that wheat will not pay they can do something else with the land? Yes.
1173. We are told that it is good barley country;—could they grow barley indefinitely? Just across the river there is what we may call a permanent yeomanry in Victoria.
1174. Are not the Victorian settlers selling out rapidly, and crossing the border into New South Wales? That is, I think, because they can get £5 an acre for their land, and buy land here for £3 an acre.
1175. Are they not mostly Victorians who are settling round Berrigan and Forbes and Parkes? Yes.
1176. Wherever we find new settlement, is it not by Victorians coming north? Yes; they are speculating, and intend to sell the land.
1177. They are not permanent yeomanry? No.
1178. They do not mean to stay on the land after five years? I do not think so.
1179. They would sell to any selector or squatter? Yes.
1180. Have your travels convinced you of that? Yes.
1181. You think that the new set of men we are getting will not be more permanent yeomanry than the first batch were? I do not see why they should be.
1182. You think it will pay them better to sell rather than to stay? A large proportion will sell.
1183. Well, if it pays to sell it, it pays some one to buy the land? They will sell to their neighbours. One man does not want to leave, and he buys from his neighbour and increases his holding.
1184. That is to say, the man who knows how to do it, can make money where the man who does not know how to do it cannot? Yes.
1185. And the prosperous man eats up his unprosperous neighbour? Yes. All the men that I have met from over the border are of a very good stamp.
1186. If they are, why should they not settle permanently? I do not know, except that there is a good deal of speculation among them—they are a speculative lot.
1187. Do you think that the land here is better than the land they have been leaving in Victoria? No; I do not think it is.
1188. It is only cheaper? Yes.
1189. And they get more of it? They say it is cheaper and of the same quality; it is the cheapness that attracts them. It is an exchange; in one place they sell for £5, and in another they pick up land for £3 an acre.
1190. Have you seen that land in Victoria? No; but I have been in Moama and Cobram, and heard a great deal about it.

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1191. Do you think it is better than the land at Tuppal and at Berrigan? I certainly think it is not better than the Berrigan land, which is very good indeed, but it is better than the Tuppal land, and also better than that between Deniliquin and Moama.
1192. It appears from your report that the squatters who are willing to sell are expecting to get, on an average, £1 an acre for their land? Yes.
1193. That is a high price for a farm, to begin with? It has fetched that price, but that occurred two or three years ago, and perhaps it would not sell at that now. Horsfall and Sproul, I think, sold at £4 3s. and something.
1194. They do not get cash for that, do they? Not altogether cash.
1195. Do they get interest on the balance? Yes.
1196. If these men have to pay interest on £4 an acre, that is equivalent to a pretty good rent? Yes.
1197. If these squatters either sell or only lease, in either case we shall have a rather heavily-rented farming population settled in this country? Yes.
1198. Do you think that they would be able to become independent freeholders? I think they would.
1199. It would be a hard pull for them? Between Deniliquin and Moama?
1200. No; this new country you are speaking of? Between Jerilderie and Deniliquin?
1201. Yes? I have no great faith in a farming population ever settling there.
1202. You have given up that idea? I do not think I ever had it.
1203. You recommend the Government to construct the line by way of Conargo to Deniliquin? Yes.
1204. Supposing the railway were to go from Jerilderie to Conargo, and stop there, would that be of any benefit to this country? Not to the country south of Deniliquin.
1205. I mean to the benefit of the Colony? I would not advise that to be done.
1206. If it were to go to Wanganilla, and intercept the traffic from Hay, would it be of any use then? It would not intercept any of that traffic—it is on its way to Victoria.
1207. It is all bound to go? Yes.
1208. You do not think anything would be gained by taking the line to Conargo, and stopping there? No.
1209. You only go that way for the sake of settlement there, and at Moulamein and Booroorban? You would serve that country better by going to Wanganilla; but I do not think it is worth while to do it yet awhile.
1210. The river is navigable at Moulamein? Some distance beyond Moulamein.
1211. So, if we made a railway as far as Moulamein, we would get into the same difficulty in competition with the river traffic as at Hay? Just so.
1212. It is not worth our while to do that? No.
1213. It is not worth our while to make a railway to any point then, where we come into competition with Victoria? I cannot say that, because I am recommending the railway to Deniliquin.
1214. But we have proof with regard to the rivers, that it is a mistake to make a line to the river, because the river carriage is cheaper? Yes; certainly.
1215. If we make a railway to any point where there is cheaper railway communication to Melbourne than there is to Sydney we do not gain, do we? No.
1216. Well, there is a cheaper communication between Deniliquin and Melbourne, than between Deniliquin and Sydney, is there not? It will be the same, I think I have shown.
1217. You think we should have to come down to be the same? No. According to the present rates it is the same, I have shown in answer to Mr. Ewing.
1218. I am talking of between Sydney and Deniliquin, and Melbourne and Deniliquin? It is cheaper from Melbourne to Deniliquin.
1219. You have already said that, wherever we come into competition at a point at which it is cheaper to send to Melbourne than to Sydney, we do not do ourselves any benefit? No.
1220. Because if we get the trade at all we have to come down in price to get it—that we have only the pleasure of carrying it without a profit? You are speaking as far as the rival railways alone are concerned.
1221. Yes; and if we go to Deniliquin we shall put ourselves in that position? Yes.
1222. We shall either have the pleasure of seeing the traffic go to Melbourne, as now, or else enjoy the pleasure of carrying it at a loss? Yes.
1223. The Deniliquin-Moama line cannot be compulsorily purchased for two years yet, can it—they have a right for twenty-one years from the 3rd March, 1874, according to your statement, so the 3rd March, 1895, is the earliest date at which the Government could compel them to sell? Yes.
1224. So if we try to buy that line before that term is up, they could ask for a bonus for our breaking the bargain with them? Yes.
1225. So we should negotiate with the Company at a disadvantage, if we attempt to buy before the three years are up? Yes.
1226. And if we make this proposed line to Deniliquin at once, shall we not throw a great deal of traffic on to that railway? Yes.
1227. We shall make it more valuable? Yes.
1228. And raise the price against ourselves? Certainly.
1229. So whether we buy now or three years hence, we must buy at a disadvantage if we make this line? The disadvantage being that you will pay them a heavy price.
1230. A better price than we need? A better price than it cost them.
1231. We shall negotiate at a disadvantage if we attempt to make this railway, or to force a purchase before the three years are up? Yes.
1232. Is not that a reason for leaving this line over for three years? It should not be made until that line is acquired.
1233. You cannot compel them to sell until three years are up? No.
1234. That has a very important bearing on the whole question? Certainly.
1235. I gather from your report that really the best land in this district lies on the other side of the line—drawn from about Culcairn to Tuppal? Yes.
1236. If we had originally made a line from Culcairn to Tuppal we should have gone through the very heart of this picked land? Yes.
1237. But, now that we have made a line to Corowa, there is a proposal to go off to Oil-tree Lagoon? Yes.

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1238. If we did that now should we not rather divert the traffic to Corowa? You would.
1239. You do not mention that in your report as one of the reasons against it? No. In my own mind I do not object to diverting traffic to Victoria.
1240. Having made that connection with Victoria, we had better not connect with that Culcairn to Corowa line? I do not think that is the right thing to do.
1241. You favour going off from the Hanging Rock? Yes.
1242. But what advantage has that over the Narrandera-Jerilderie connection? Well, that one line serves the whole country instead of requiring three lines to do it.
1243. But if we take the whole trade of this district, marked by your red line on this map, up to Hanging Rock, we deliver it much nearer to Melbourne than to Sydney? Yes.
1244. Whereas, if we deliver it through Jerilderie and Narrandera to Junee, we deliver it at a point midway between Sydney and Melbourne? Yes.
1245. Therefore Sydney has as good a pull as Melbourne, other things being equal? Yes.
1246. Well, having made this line from Narrandera to Jerilderie, would it not be better to make our connection through Narrandera, than through the Hanging Rock? It would require three lines to do the work instead of one line.
1247. But supposing that we take the line to about Berrigan, Berrigan would draw the trade between Savernake and Daysdale? No; not as far as Daysdale.
1248. You have said, and other witnesses have said, that a railway is beneficial to agriculturists within 15 miles on either side? Yes.
1249. And on such very level country as this, in dry weather, the benefit would extend to 20 miles? Yes.
1250. If the line were to go to Berrigan it would serve an area with a 20-mile radius round Berrigan? Yes.
1251. That would go between Savernake and Daysdale? Yes, it would.
1252. And on the other side, about half-way between Murray Hut and Tuppal? Yes.
1253. So that a line from Jerilderie to Berrigan would serve a very large area of this beautiful district, though not the whole of it? It would.
1254. And it would serve the largest area that a line so short could serve? Yes.
1255. Because your proposed line from The Rock to Murray Hut is a pretty long line? Yes, over 100 miles.
1256. While from Jerilderie to Berrigan would be only about 25 miles? Yes.
1257. Do you know any other line of 25 miles which would serve the interests of so large an area of existing agricultural settlement? For about half the distance outside Jerilderie it would earn nothing at all.
1258. But after it passed the first 15 miles it would begin to pay? Yes.
1259. If you look at that plan before us you will see that the line from Junee to the Rock is really parallel to the line from Narrandera to Jerilderie? Yes.
1260. There is only a distance of about 45 miles between? Yes.
1261. And each of them serves the country for 16 or 20 miles? Yes.
1262. Well, if you take 20 miles from each railway that makes 40, so there is only a belt of 5 miles practically not served between those two parallel lines? Yes.
1263. So it would hardly pay to make a third line between the two, would it? A formula of that sort is modified considerably by the character of the country. We are not talking of that railway now, but there are very strong reasons why a railway should be made from the Hanging Rock. There is a magnificent piece of country just along there.
1264. Is it good between The Rock and Clear Hills? There are about 20 miles of it which is very poor, on the plains. From The Rock, for about 20 or 30 miles, it is splendid country.
1265. As far as Urangeline Creek? Yes; all very good, indeed. From Urangeline Creek down to the Billabong there is about 20 miles which is low and flat, and liable to flood, and very poor. But then you reach Clear Hills, which is a magnificent country, and all from that point. As soon as you cross the Billabong Creek, at Gunambil, you get on first-class land to Murray Hut.
1266. The whole case would be much clearer if we had not the Narrandera-Jerilderie line made? It is a great pity it was ever made.
1267. We have to adjust ourselves to the thing as it is? Just so; and it seems to me that a central line between the two would fit the case better than anything else.
1268. But it is the length of that line? It will pay expenses.
1269. There are 100 miles of it? Yes; but it will be a splendid line.
1270. Then, on the whole, you still adhere to your idea that it is better to make a line from Jerilderie to Deniliquin and one from The Rock to Murray Hut? I think so. That is one of the reasons why I bent the line from Jerilderie round by Conargo.
1271. On your plan you have marked a line to Mulwala and a line to Barooga? Yes. In course of time they will be made, but not yet awhile.
1272. At present it is not worth our while to multiply our connection with the Victorian lines? Certainly not.
1273. What is the distance between Jerilderie and Conargo? Thirty miles.
1274. And it would be another 12 miles to Wanganilla, I suppose? That is it.
1275. *Mr. McCourt.*] Are you aware that the land held between Jerilderie and Deniliquin, through which the proposed line would run, is held by three or four squatters? Yes.
1276. Therefore it would mainly benefit those three or four persons? Yes.
1277. But, if a line were made from Jerilderie to Berrigan, it would benefit a very large number of farmers settled there? Yes.
1278. You say that, if this line were constructed, a lot of the wheat grown between Deniliquin and Moama would be sent that way to Sydney? It would be distributed through the Colony.
1279. That would be the traffic? That would be the outward traffic from the district.
1280. Why would that wheat come from that district into Sydney? Because it is a particularly good class of wheat—hard, good milling wheat, the best milling wheat that is produced yet.
1281. Is it not on account of excessive protective duties in Victoria? That is it, of course.
1282. In case we have intercolonial freetrade, where would the people growing wheat between Deniliquin and Moama send their wheat? To Europe.

1283.

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1283. By which port? Melbourne.
1284. Therefore, if we had intercolonial freetrade, none of the wheat grown between Deniliquin and Moama would come to Sydney? I do not suppose that any of it will when that time arrives.
1285. Then there would be no traffic on this line from wheat? Some of it would have to go to Jerilderie to feed the population there.
1286. But do not the people of Berrigan supply the people of Jerilderie with wheat? By that time this proposed line of mine to Murray Hut will be made, and it will go along that line.
1287. *Mr. Wall.*] In calculating the earnings on this line, have you taken into consideration its contributions to the Sydney line, or have you considered this line by itself—that is the actual haulage on the line between Deniliquin and Jerilderie? I have not calculated the earnings.
1288. In the calculation that was submitted to us by Mr. McLachlan yesterday, with regard to the wheat traffic, he confined his calculation to the revenue that would be derived by the carriage of wheat along that portion of the railways? Yes.
1289. That is the practice according to which you consider your railways—not the contributions to the main line, but the actual earnings of the particular section under consideration? I would also give it credit for an increment of earnings on the main line.
1290. But in the examination here to-day, the whole tendency of the examination has been to elicit what would be the contribution of this line, and I take it that you have based your calculation on the revenue of the line itself, and not its contribution to the main line to Sydney? Oh, no, I have not. I say it will contribute to the other line. If it develops the country, and much wheat is produced there, the other railway lines of the country will benefit by it.
1291. In making your calculation of the return from the line under consideration, you confine that exclusively to the earnings of that particular section? No, I do not.
1292. We have been unable to elicit any evidence whatever regarding the increased contribution to the main line? Well, you see it is so hard, in this particular case, to find out what exactly is the amount of traffic which this line would carry, because it will be an intercolonial line—a junction between two colonies—so I have not made any calculation.
1293. I want to consider this line on what you may term its intrinsic merits, that is on the local haulage to be carried over the line? Yes.
1294. Hitherto the trade has been not through Melbourne to Riverina, but to Melbourne—is that the result of your investigation of that district—I speak about the time prior to the adoption of border duties? I do not know anything about that.
1295. I am talking of the people of Riverina getting their supplies mainly from Melbourne, and not *via* Sydney? No, they are procured from Sydney.
1296. If these people have sworn before us that the whole of their commercial transactions, prior to the adoption of those duties, were with Melbourne, were they telling an untruth? I only know what they told me and what I have learned of their operations.
1297. I am speaking of the trade of Riverina, and if people there told us that, prior to the imposition of border duties, all their commercial transactions were with Melbourne, and not with Sydney, then the goods must have come from Melbourne direct, and not through Melbourne, as indicated by the evidence to-day; if they got their supplies from Melbourne, that must have been the terminal point of their connection, and the goods did not come to New South Wales *via* Melbourne, but were actually purchased at Melbourne? I do not know what they told you, but what they told me is in my evidence. They certainly did not tell me that. I do not believe they did so before the duties were put on.
1298. If their trade is with Melbourne, taking into consideration the present population and the probable settlement that would follow railway construction, and the general supplies required for the whole of the people of that district, is it not immaterial, when you make your calculation of the local earnings of the line, where the trade goes to, if you consider it from a commercial point of view? Quite immaterial.
1299. It is immaterial whether it goes to Sydney or whether it goes to Melbourne? Yes.
1300. I am not speaking of the commercial advantage of our keeping the trade, but of the actual earnings of the line locally? Yes; it is quite immaterial.
1301. The whole contention this afternoon has been about diverting trade to the Melbourne lines—would it not be diverting trade to a private line if it were diverted in that direction—would it not be diverting it towards the present private line between Moama and Deniliquin? If the connection were made before the line was acquired.
1302. The private line would then connect with the Melbourne lines? Yes.
1303. But if the trade on those lines was sufficient to warrant the construction of this railway, you think we would be justified in constructing it, irrespective of where the trade went to? I think you would be justified irrespective of that, but not until that line is acquired.
1304. If earnings on that line for 1889 or 1890 amounted to £18,000, do you not think it is a reasonable inference that there is some extensive carriage along that line—they have not gained that revenue by running empty? Yes.
1305. Then this is not the barren desert that some members of the Committee have endeavoured to depict, if that line actually earned £18,000 in one year from haulage? They gathered it from a very large extent of country.
1306. That line was not constructed very economically. I learn from the evidence of the manager that it cost a considerable amount of money in consequence of the high price of iron? Yes.
1307. From the evidence adduced there is no very great difference between the rates charged on that line and the rates charged on the Government railways, with the exception of passenger-rates? They are a little higher.
1308. Very little—they bear very favourable comparison? They are higher.
1309. The evidence of the Secretaries of the Railway Department, and of the private railway company, goes to show that there is very little, if any, difference? Yes.
1310. Notwithstanding that that railway was constructed at a high price, it has paid 8 per cent. on the cost of construction? Yes.
1311. Do you consider that that is a favourable return from a railway? Very good.
1312. Irrespective of the settlement brought about by its construction? Yes.
1313. You spoke of the character of the land between Jerilderie and Deniliquin;—have you been through Mr. Blackwood's Hartwood Estate? No; I was not there.

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1314. If I were to state that I have travelled along the Berrigan line, and through Mr. Blackwood's Hartwood Estate, within 7 miles of this proposed line, and that the soil was infinitely superior in quality, and in facilities for clearing, within a radius of 6 miles of that line, would you agree to that? On Hartwood?

1315. Yes? It must be only a good patch then.

1316. Take a greater distance then on the Berrigan line—I will say 20 miles of it—and within 6 miles of this station, which I have learnt this afternoon, for the first time, is not adapted for agriculture, and if I were to tell you that, in my opinion, it is infinitely superior to the land near Berrigan;—would you agree to that? No; I would not. That is not my opinion, but I have not seen that particular place.

1317. It has been pointed out to you that the people in this district are very favourably situated with regard to communication, if they can get their goods *via* Melbourne, and by sea? Yes; it has.

1318. Do you not think that they would be much better served, even though they had to pay a higher price, if they could get those goods by rail, without the unnecessary delay and rehandling that occurs in connection with goods consigned to Melbourne? I think they have shown that in their evidence.

1319. Dr. Garran asked you this afternoon whether, when we produce some 2,000,000 more bushels of wheat, we would not have enough in the Colony;—is it not a matter of fact that, in Victoria, they produce about 13,000,000 bushels? I do not know it.

1320. Is it not a fact that they are still bringing a great quantity of mallee country under cultivation? Yes.

1321. Is it not a fact that in the Goulburn Valley, from which those Victorian settlers are coming to New South Wales, the price of wheat land is £9 and £10 an acre? I have heard so.

1322. Is it not a fact that they get land, which they have stated to you is similar in quality to that in the Goulburn Valley, at from £3 to £4 an acre on this side? Yes; you are right.

1323. If a man has 500 or 600 acres of land, which he can dispose of at £10 an acre, and if he can come into New South Wales and purchase land at £3 an acre, that is a great inducement for him to come from Victoria? Yes; that is what has been done.

1324. You have said something with regard to those farmers coming over here, and being likely to come for speculative purposes? Yes.

1325. Can you point to one instance in the Riverina district, where a farmer has come from Victoria to engage in farming and has sold out to the pastoralist? To the pastoralist?

1326. I am speaking not of the wholesale raid some years ago when the land was not cultivated, but of men who have not alienated from the Crown, but from the pastoralist, as they will have to do under any circumstances now in this country;—have you known any case where a man has alienated from the pastoralist, and then resold his land for speculative purposes? I expect you could buy every acre of that land back if you gave them a price for it. Every man in Berrigan will sell his land.

1327. But you spoke about farmers. I am not speaking of pastoralists, but of farmers. You said that you thought the farmers were coming from Victoria for speculative purposes? What I said was that they are a very speculative lot of men who are coming over. I said they were a very good stamp of men, but also very speculative, and I thought that only a proportion of them would remain where they first bought and settled.

1328. If those men come over from Victoria, and pay from £3 to £4 an acre for land, and bring it under cultivation, do you think that it would suit the purpose of any other persons to purchase from them at a price that would benefit them in selling? They themselves say that the railway will increase the value of their land enormously.

1329. I understand the speculation that took place in that country years ago, but I am speaking of persons coming over and buying land for farming purposes at £3 or £4 per acre;—where would be the margin of profit for them to gamble with it? They themselves say that this land is as good as the Goulburn Valley land, and they hope that it will reach the same price.

1330. But that is in selling out to some persons on exactly the same conditions as they are fulfilling—they will sell out to farmers? That is what I mean.

1331. You do not think they will sell out to squatters, who will lock it up again, and allow the land to remain idle, as it has been heretofore? It will never go back to them.

1332. You think that if they do dispose of it, they will dispose of it to farmers at a higher price? Just so.

1333. And not to the squatters to lock it up again, and allow it to remain idle? No. These men are good intelligent men. They buy 1,000 acres, and they will cut it up, and sell it in farms of 100, 150, or 200 acres. They will get a better price for it, and it will be a very good spec. for them—it will never go back to the squatter.

1334. I suppose you have given this matter very careful consideration; do you think that when we arrive at that stage when we supply our own requirements in the shape of wheat, the cultivation of wheat is to cease—do you regard it as likely to affect, in any way, the development of agriculture in the direction of cultivating wheat when we arrive at that stage when we can produce sufficient wheat for ourselves? I do not see why the land should not produce something else besides wheat.

1335. Assuming that we produced 4,000,000 bushels of wheat, do you think that we are going to stop then, or increase the cultivation of wheat as they have in the sister colony? Oh yes; but Dr. Garran said that if we arrived at that point the wheat would go down to Melbourne and across the sea.

1336. It is immaterial where it goes? So long as it is produced at a profit people will produce it. The supply of the Colony has nothing to do with the matter.

1337. If 10,000,000 bushels were produced in that part of the country, and conveyed either to the Victorian border or into New South Wales, there would still be some earnings in connection with the carriage of that wheat? It depends entirely on the market price.

1338. But if grown in that district, and carried one way or the other, there would still be some earnings from it? Certainly.

1339. There is not the slightest doubt that, where a large farming population settles, other commodities will always have to be carried along that line? Certainly.

1340. Therefore, seeing that there has been carried along that private line, goods which have cost £18,000 for carriage, if this proposed line were constructed, that trade would be likely to be increased if greater settlement were promoted by the construction of the line? Certainly.

1341. I suppose that you and the Railway Commissioners look upon it as being within the range of probability

probability that soon federation will take place, and that those differential rates will be abolished? Yes. S. Alexander, Esq.
1342. When that period arrives, there is no doubt that our wheat will go towards Victoria, even if it does not do so now? Yes. 4 Aug., 1892.
1343. But it will not affect the earnings of that line according to the basis of calculation that you have set up for yourself? Not at all.
1344. There are a good many hundreds of thousands of acres in that part of the country. I am speaking of private land now; what is the total area within a radius of 20 miles of that line? I do not know.
1345. There are many thousands of acres in the Riverina district capable of supporting an agricultural population? Oh, yes.
1346. The State has received a very large revenue from Riverina in the shape of money obtained from the sale of lands? Yes.
1347. It is not the general policy of countries to receive revenue before attempting to settle the people—the general custom, I think, is to construct railways, and offer facilities for settlement—but in this case that cannot be done because the land is already in the hands of private owners? In America they do that.
1348. And they offer special facilities. Have you considered the question of settlement on the American and the Canadian lines of railway? I have read about it, that is all. I never was there.
1349. Do you know they give 100 acres of land for ten dollars on the Canadian line? They make special terms. Companies do that; the State does not do that.
1350. Companies are generally more keen with regard to money-making than even the State ought to be. They are not so paternal in their character, and look purely to the carriage of the produce to pay for the railways? Yes; and to the value of the town blocks which they sell.
1351. They derive a considerable amount of revenue from town blocks, but as a matter of fact, those companies, in the construction of their railways, do not look to derive any benefit from the sale of land that they sell at ten dollars for 100 acres? Yes.
1352. They are practically in the same position as we are with regard to that land which we have already sold? Yes.
1353. Have you considered the betterment principle? No; I have not.
1354. Do you consider that the construction of a line of railway through this private property, which has been acquired on very low terms from the State, would add considerably to the value of those private holdings? Yes; it would.
1355. And if those people, through whose land this railway would pass, have signified their willingness to contribute according to the betterment principle towards the cost of the construction of this line, do you not think the Government would be justified in introducing a measure to make them pay a part of the cost of construction? The amount they could get from the value of the land is very infinitesimal. There are only 18 acres a mile required for the railway.
1356. But the amount which the private owners would get would be something enormous through the increased value of the land in that part of the country? Yes; but that is another thing altogether.
1357. We have evidence that this land will sell for £5 an acre instead of at its present value, £3? I do not think so.
1358. Are you aware that Mr. Falkiner recently sold 10,000 acres of land to Tasmanian farmers at Tuppal for farming purposes? At Booradonilla. I am not aware of that; but eighteen months ago it failed to fetch £2 12s. 6d. I have mentioned that in my report on the Tocumwal Bridge.
1359. There is no doubt that the construction of this line through private property must enhance the value of that property? Certainly.
1360. And, in that light, do you not think that the State would be justified, before constructing this line, in introducing a measure in order to obtain some consideration from those who would so greatly benefit from it—have you considered that principle in connection with railways as one that should be adopted? I would rather not answer a question of that sort.
1361. Speaking of Tuppal, do you know that the whole of Tuppal Run was sold at £2 12s. 6d. per acre? No, I do not. This report was made in the beginning of last year, and up to March last year it was not sold.
1362. Have you made any inquiry into the production of wheat in the Goulburn Valley? No; I have only travelled through it.
1363. Do you know that they are bringing a very large quantity of Mallee country under cultivation? I have read of it; but that is in anticipation of the Goulburn Valley irrigation scheme. The price of land in the Goulburn Valley is very much enhanced on that account.
1364. Do you know, as a matter of fact, from evidence adduced, that the Victorian farmers regard irrigation rather as an injury than as a benefit? They are wrong, then.
1365. They say not? They may look upon it so; but they will find they are wrong by-and-bye
1366. This is very level country where this line will be constructed? Quite level.
1367. And it is intersected by two or three branches of our proposed canal? Yes.
1368. There will not be any great difficulty in bringing water to that land for irrigation purposes? Not a bit.
1369. But do you not anticipate that there will be very great difficulty in getting the water off? In soakage, yes. There is not much soakage there.
1370. It is almost all dead level? That plains land is not adapted for irrigation.
1371. Therefore, the plains land in Victoria is not adapted for irrigation, and hence the Victorians complain of it? If it is similar heavy clay soil. The plains land has a very thin coating of soil; that is the fault of it all. Below that there is impervious clay.
1372. But I think the fall of grades in that country is 1 in 5,000 feet? It is quite level.
1373. Therefore if that country were inundated with water, the first consideration would be, how to get it off? Well, one of the conditions of irrigable land is that the land shall absorb the water put upon it. You cannot let the water flow off irrigated land, for it would create new water-courses.
1374. Is it not the practice to make different levels according to the various positions of the pieces of land, so that water can be taken from one to another? The water is kept under control; but if you once place a block of country under irrigation, the water must be absorbed and not flow off the land.
1375. If that country is a dead level, such as it is represented to be, you think the first consideration, if they were going to irrigate it, would be to see some way of getting the water off it. Having a clay surface

it

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it would not absorb the water, and therefore it would have to be got off? I do not think that that land is suitable for irrigation—the part we are speaking of.

1376. Deniliquin is a fairly populous town, doing a very large business? It has 2,500 inhabitants.

1377. Do you know any other town in New South Wales, as large as Deniliquin, that has no railway connection? I do not know any, except it is Inverell.

1378. Did you remain long in Deniliquin when you were there? Yes; ten days.

1379. What is your general opinion of the place—is it a prosperous town, or one of those towns that were established some years ago, and are going backwards—is it advancing, or what? It is going backwards, certainly, because the population of the country is diminishing. For the last five years, as I have pointed out, it has been diminishing. Farmers have been selling out. The lands have been gradually changing hands, not only to squatters, but I think individuals have been massing the land, gathering it round about them.

1380. On that line from Jerilderie to Berrigan there is a stock route 1 mile wide? Yes.

1381. Is there any necessity for that stock route? Yes, I think there is.

1382. If the railway were constructed? Yes, in spite of it, for travelling store stock.

1383. Have you looked at the return of stock carried along the line from Moama to Deniliquin? Yes.

1384. Did you not find most of the stock carried by rail? Not the store stock. It will not pay to carry it by rail. It is only the fats that are trucked.

1385. I suppose you know that there is not very much probability of store stock going to Victoria with the present stock tax? Well, they must get stock in Victoria from somewhere, if they have to pay for it. Until they can produce it themselves they will have to get it from this Colony.

1386. You think they will be likely to pay 30s. on cattle, and get them over the border? They will have to do so unless they produce their own. The object of the tax is to make the Colony produce its own.

1387. You know that people now in connection with Deniliquin suffer considerable delay in getting to Sydney to do business? Yes; they have to go down to Seymour.

1388. In order to catch the train? Yes.

1389. But is it not just as short to go right on to Melbourne, instead of staying at Seymour? I went to Melbourne.

1390. They have to wait a day if they stay at Seymour? Yes.

1391. To avoid that they have to go to Melbourne? Yes.

1392. If they come to Sydney by land they have a day's coaching to Jerilderie? Yes.

1393. Therefore, there has been no very great inducement for the people there either to trade with Sydney, or to contribute in the shape of passenger traffic to our line? No.

1394. Can you imagine a large population in what I assume to be a very prosperous town such as Deniliquin, agitating for a line which we are led to infer they would never use;—if they are well accommodated by rail, can you understand their coming forward and asking for the construction of a line they do not want to use? I feel sure they want the line very much.

1395. When you were investigating this matter up there, was there an anxious desire on the part of the whole of the people of that district—Moama, and Jerilderie, and Deniliquin—to open up this communication, and trade with Sydney? They were very desirous of it.

1396. If they knew that the construction of this line would entail extra prohibitive charges upon them, and thus prevent them from using it, do you think they would be so anxious to have it constructed? Why should they anticipate that?

1397. The evidence goes to show there is no probability of traffic along this line, but that it will go to Victoria; but the people there ought to know best themselves, ought they not? They asked me when I was there all about the rates, and I explained the matter as well as I could—the rates both ways—and Mr. Chandler, or one of them, said it would, under those rates, pay them to get their goods from Sydney by rail.

1398. You say there is not any very great difference between our rates and the others at the present time, that is, provided the people deal with Sydney in getting their goods? There is no great difference.

1399. They would just as soon get them by rail as by sea to Melbourne, and then put them on the rail to bring them up? Yes.

1400. I suppose you have not considered what has been the effect of the adoption of border duties—whether it has tended to increase the trade between those people and Sydney? I have not been in that country since. Mr. McLachlan, yesterday, when talking about the passenger traffic, said he did not think the passenger traffic would go from Deniliquin towards Sydney by this line, because it would still go through Seymour in order to catch the fast trains, and he assumed, in order to support that argument, that the trains from Deniliquin, through Jerilderie and Narrandera, would have to be mixed and slow trains. I would point out that is an assumption not likely to come to pass.

1401. *Chairman.*] But he is Secretary to the Railway Commissioners, and he ought to know their intentions better than you do? Their intentions might be modified when it comes to actual working. You must not assume that fast trains will not be run towards Sydney.

1402. You think it will be the case? Yes. There will certainly be a fast train that way.

1403. *Mr. Suttor.*] When you were examined before, you expressed the opinion that there should be a line to Conargo;—have you modified that opinion? No.

1404. On what ground should it go through that country? To go through better country and also to leave an opportunity open for a connection in the future with that large tract of country towards Balranald and Booroorban.

1405. Is not a great deal of the land between Jerilderie and Conargo stiff plains country, most of it? Just that part I have not been on. From Deniliquin to Conargo there is a great deal of plains country, but there is some settlement there at all events.

1406. You have not been from Jerilderie to Conargo? No.

1407. You have not seen that country? No.

1408. You can give no opinion of that country from an agricultural point of view, not having seen it? Not having seen just that part of it.

1409. Have you been on the country from Conargo to Deniliquin? Yes; I have been over that.

1410. Do you think that that is good agricultural country? I would not call it agricultural country at all; but there is some settlement, and all over these plains there are patches of good land, and in that part of the country the patches are rather larger than in other parts.

1411.

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1411. *Mr. Dawson.*] Have you ever been over the route of the direct line? No.
1412. Then you really cannot give us any report about that at all? I did not require to go over it.
1413. You have made a statement that you believe in the Conargo route, because it is a better line, and you have not seen the other line? I must trust a great deal to information. I cannot go all over every bit of the country. As it was, it took two and a half months to make that investigation.
1414. I take it that you did not go to the farm of Mr. Doel, who is within a few miles of the direct route? I do not remember the name.
1415. Then, there is Uphill's farm? Yes, I remember that name; but that is within a few miles of Deniliquin.
1416. It is on the route? Yes; I saw something of that country.
1417. Doel's is nearer Jerilderie a great deal? Yes.
1418. Is not that fine country? As you approach Deniliquin you get to a better country.
1419. Do you know Treloar's farm? I think I was on that also.
1420. And Ingram's? I think I was on that.
1421. That is all fine land? Those are good patches; but you cannot call it all very good land.
1422. Do you consider those box and myall forests good country? I am not an expert in the matter of agricultural land. In a general way like that, I could not say.
1423. You read the local evidence other than what you took yourself? I have not seen the evidence taken by the Committee.
1424. The statement has been made that wheat can be sold very profitably at 3s. per bushel? Yes.
1425. Have you been much over New South Wales? During the last three years, I have seen a great deal of it.
1426. Have you, in any other part of New South Wales, seen anything like this part of the country round Berrigan, the Murray Hut, and other places there;—anything to equal that as wheat-producing country, taking the quality of wheat and the quantity per acre? That is the best I have seen.
1427. You were also asked, if a certain amount of wheat were produced, enough for our own consumption—in round numbers, 4,000,000 bushels—what would become of the other wheat? Yes.
1428. Do you think that if this land were cultivated by good farmers, wheat would be grown anywhere else;—do you think that people could profitably grow wheat anywhere else, as against that place? It depends on the price wheat is in the market. It is not regulated by the price in New South Wales, but by the markets of the world.
1429. If wheat could be produced there at 3s. a bushel with the area they have, and the easy cultivation, would it pay to grow wheat elsewhere to compete with it; I think they would have to throw those other wheat areas into something else? If any land is to be used for something else, to revert to sheep or grazing, it will not be the Riverina land first, at any rate.
1430. You were talking about those Victorians whom you have seen: we also saw some of them. Did it strike you that they were mostly young men who had been reared in the Goulburn Valley, and other parts of Victoria? They are.
1431. And that they had sold out their little interests there, left their parents, and come over the border? That is it.
1432. When you say that they are speculators, what you mean to imply is that if they could get a good price, they would sell with a chance of getting land somewhere else? That is it.
1433. But there would be no chance whatever of this land reverting to sheep? Not at all.
1434. If people did buy them out at a price, they would have to use the land in the same way? Just so; they are not the class of persons who settled on the Yanko, and afterwards sold out to the squatters.
1435. You said that Tuppal was offered, and did not bring £2 12s. 6d.? Yes.
1436. But that was the whole estate? It was offered in five large blocks.
1437. How much was each block, from 40,000 to 50,000 acres? That was it.
1438. It would have required a man to have £100,000 to have bought one of those? Yes.
1439. From the land you saw in Riverina, do you think that 4,000,000 bushels of wheat per annum could be produced in Riverina? I believe Riverina could produce it—it certainly could.
1440. Do you think it could produce 4,000,000 bushels per annum, and allow certain land to remain fallow, under a proper system of agriculture? Riverina extends from Balranald to the southern railway line.
1441. Yes; I am talking of the country I saw and some I did not see? Four millions of bushels is the produce of only 200,000 acres of land.
1442. What date were those returns published? Two years ago.
1443. Wheat has increased 200 or 300 per cent. since then, according to Mr. Wise's report? Yes. This year there is an enormous quantity all over the country.
1444. *Mr. Humphery.*] In answer to Dr. Garran, I think you said that there would be a very considerable additional traffic on the Moama-Deniliquin railway if this proposed line between Deniliquin and Jerilderie were constructed? Yes.
1445. Would that add very considerably to the earnings of the Deniliquin to Moama line? Yes.
1446. In your report you referred to the power of the Government to purchase the Moama-Deniliquin railway? Yes.
1447. Are you aware of the terms on which the purchase must be made? Yes.
1448. Twenty-five years of divisible profits? Yes; I know that.
1449. Is that your reason for recommending that the Moama-Deniliquin railway should be acquired before the Deniliquin-Jerilderie railway be constructed? Yes.
1450. You think that is absolutely necessary? Yes.
1451. As the Moama-Deniliquin railway cannot be acquired until after March, 1895, are you of opinion that the consideration of the Jerilderie-Deniliquin railway should be postponed until after that time? No, because an agreement can be arrived at with the Deniliquin-Moama Company. It should not be postponed, and there is no harm in trying for an agreement. I believe they would sell.
1452. But in the event of reasonable terms not being obtained, you think it would be absolutely necessary to postpone the construction of this railway, even if it were recommended by this Committee, until after the Moama-Deniliquin railway were acquired under the terms of their Railway Act? I do think so.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Railway from Jerilderie to Deniliquin.

APPENDIX.

A.

[To Evidence of H. Deane, Esq.]

REPORT BY MR. JOHN WHITTON ON THE DENILIQUIN AND MOAMA RAILWAY.

Department of Public Works, Railway Branch,
Engineer's Office, Sydney, 15 November, 1876.

MINUTE PAPER.—SUBJECT: DENILIQUIN AND MOAMA RAILWAY.

Engineer-in-Chief to Commissioner.

I SUBMIT for the information of the Minister for Works the following Report on the construction of the railway from Deniliquin to Moama:—

This railway, which is a single line throughout, and laid to a gauge of 5 ft. 3 in., commences at the Echuca Station by a junction with the Victorian railway from Sandhurst to Echuca, and is carried across the river Murray by a temporary wooden bridge, pending the completion of a permanent bridge now in course of erection over that river, for both road and railway traffic, by the joint action of the Governments of New South Wales and Victoria. After crossing the river and entering New South Wales, the line passes through the town and parish of Moama, and crossing Greenwich Plain Reserves Nos. 91 and 90, enters the parish of Moira. Reserve No. 89 is then crossed on the Home Plain, and passing through the parish of Culpa, the line enters the township of Mathoura, where a small station has been erected, called Redbank; then passing through the parishes of Mathoura, Boyes, Talama, and Citcatha, it terminates at South Deniliquin, being a length of 45 miles.

Land.

The land throughout has been enclosed for a width of three chains, giving an area of 24 acres to the mile, with an additional width for stations at Moama, Redbank, and Deniliquin. This area, although twice the width requisite for a double line of railway, is not in excess of the quantity named in the Act of Incorporation.

Fencing.

The fencing consists of red-gum posts and top rail, with four wires, No. 8 gauge. The posts are 6 ft. 6 in. in length, 8 in. × 3 in., sunk 2 ft. into the ground, and placed 8 ft. apart. The top rails, 9 ft. long, are 8 in. × 2 in.

Earthwork.

Nearly the whole of the embankments are formed from side cutting. There are very few cuttings on the entire line, the deepest being about 4 ft., and the greatest height of embankment 8 ft. The formation width of both cuttings and embankments is about 14 ft. The country, however, is of such an even surface, that for many miles the ballast has been laid on the ground, the process of forming being unnecessary.

Bridges and Culverts.

The whole of the bridges and culverts are of red-gum timber, procured from Mathoura, about half-way between Deniliquin and Moama. The bridges or flood openings have all the same spans—10 ft. in the clear—with two piles in each bay. The piles are connected transversely by walings 9 in. × 5 in., notched on the heads of the piles and bolted. The longitudinal girders, two in number, rest upon the piles, and are generally 15 in. × 12 in.; upon these girders 3 in. planking is spiked, and this planking carries the ballast and roadway. The following bridges have been provided for the escape of flood waters:—

The distances are from the bank of the river Murray, on the Moama side.

Miles.	Chains.	No. of Openings.	Span.	Miles.	Chains.	No. of Openings.	Span
1	10	12	10 feet.	22	70	3	10 feet.
3	35	4	10 ,,	34	32	2	10 ,,
5	60	54	10 ,,	35	38	5	10 ,,
9	77	2	10 ,,	39	7	10	10 ,,
16	65	2	10 ,,	43	75	6	10 ,,
22	50	4	10 ,,	44	19	6	10 ,,

In addition to these openings there are many timber culverts of various dimensions.

Ballast.

The ballast throughout is a loamy sand, which, at the time of my inspection, was concreted, forming a very hard substance. In wet weather I think it will disintegrate, and render the maintenance of the line difficult and expensive.

Rails.

The rails are single headed and fish jointed throughout, and weigh 50 lb. to the yard, and are secured to the sleepers by wrought-iron spikes.

Sleepers.

The sleepers, 8 ft. 6 in. long, 9 in. × 4½ in., are all of red-gum timber, rectangular in shape, and placed about 2 ft. 6 in. apart, from centre to centre, except at the joints, where they are 1 ft. 9 in. apart.

Curves.

There are only five curves on the whole line, each having a radius of 80 chains.

Gradients.

Gradients.

The line may be considered for all practical purposes level throughout, as the rails at Moama Station are only 17 ft. above the rails at Deniliquin Station, in a distance of nearly 45 miles, and the highest point between the stations named, which is at Redbank, is only 43 ft. above the former station. There is, however, one short incline, which does not appear on the working section, of 1 in 98 for a length of 29 chains.

Stations.

There are three stations on the line, viz., at Moama, Redbank, and Deniliquin.

From the Deniliquin and Moama Railway Company's Act, 37 Victoria, clause 150, I extract the following :—

"*Construction of Railways.*

"150. Upon the completion of the railway and works authorised by this Act to the satisfaction of the Engineer-in-Chief for Railways it shall be lawful for the Governor with the advice of the Executive Council to grant to the Company in fee simple the portion of land herein more particularly described and containing by admeasurement eleven hundred acres more or less, that is to say, &c."

Although this line will be perfectly safe for public traffic so long as it is properly maintained, I regret that I am unable to certify that it has been completed to my satisfaction, and for the following reasons :—

Rails.—The rails weighing 50 lb. to the yard are too light for the heavy rolling stock now running over them.

Ballast.—The ballast is not of a quality to merit my approval, and I do not think a good road can be maintained with it during wet weather.

Bridges.—No care appears to have been taken in selecting the timber for the bridges, as many of the beams in almost every structure are very much split, and have large dead knots, worm holes, and gum veins in them. The driving of the piles has been most erratic ; they are leaning in all directions, and are rarely driven throughout any bridge at equal distances from the centre line of roadway. The carpentry generally is of the roughest possible kind.

The line has not been set out in a satisfactory manner. Those portions which should be straight are in most cases crooked, and some of them to a very considerable extent.

I desire to take this opportunity to thank the directors and officers of the Company for their attention to me during my visit to Deniliquin, and also for the obliging manner in which they furnished me with all the information I required.

JOHN WHITTON.

A 1.

COMPARATIVE STATEMENT OF ESTIMATES OF CONSTRUCTION IN RELATION TO THE RAILWAY FROM NYNGAN TO COBAR, AND THE PROPOSED RAILWAY FROM JERILDERIE TO DENILIQUIN.

Nyngan to Cobar.

Length, 81 miles. (Nyngan 377 miles from Sydney.)

	£	£	
Earthworks	22,881	283 per mile.	
Earthworks, stations, &c.	1,238	15	,,
Culverts and bridges	8,900	109	,,
Level crossings	1,740	22	,,
Fencing	4,875	60	,,
Platforms			,,
Permanent-way : Laying, 2s. 6d. ; ballast, 3s. ; sleepers, 3s.	62,990	778	,,
Permanent-way material	64,786	800	,,
Water supply	4,000	49	,,
Signals and interlocking	1,850	23	,,
Station buildings	13,955	172	,,
Turntable	1,000	12	,,
Engineering and contingencies	19,000	235	,,
Total	£207,215	£2,558	,,
	Say, £207,360	Say, £2,560	,,

Actual length, 81 miles 28 chains. Act provides for £209,280.

Jerilderie to Deniliquin.

Length, 44·85 miles. (Jerilderie 412 miles from Sydney.)

	£	£	
Earthworks	13,455	300 per mile.	
Earthworks, stations, &c.	2,000	42	,,
Culverts and bridges	11,000	245	,,
Level crossings	4,400	98	,,
Fencing	6,750	150	,,
Platforms	800	18	,,
Permanent-way : Laying, 1s. 6d. ; ballast, 4s. 3d. ; sleepers 5s.	47,361	1,056	,,
Permanent-way material	39,680	885	,,
Water supply	897	20	,,
Signals and interlocking	1,166	26	,,
Station buildings	5,000	111	,,
Turntable	1,000	21	,,
Engineering and contingencies	14,710	328	,,
Total	£148,219	£3,300	,,

H.D., 11/6/92.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

RAILWAY FROM JERILDERIE TO DENILIQUIN.

REPORT.

The Sectional Committee appointed on the 2nd June, 1892, to inspect, take evidence, and report upon the proposed Railway from Jerilderie to Deniliquin having concluded their investigation, have to report as follows:—

The full Committee, consisting of the Hon. W. H. Suttor, M.L.C. (Chairman); Mr. T. T. Ewing, M.L.A.; Mr. W. C. Wall, M.L.A.; Mr. Wm. McCourt, M.L.A.; and Mr. H. Dawson, M.L.A., left Sydney by train at 9 p.m. on Saturday, the 4th June, and proceeding *via* Junee and Narrandera, arrived at Jerilderie at half-past 6 o'clock on Sunday evening.

On Monday, the 6th June, the Committee commenced their inquiry at the Court-house, Jerilderie, where they examined the following witnesses:—Mr. Samuel Wilson, farmer and grazier; Mr. Michael Curtin, stock and station agent; Mr. Robt. Gardiner, storekeeper; Mr. Jos. Mawson, railway station-master; Mr. William Raleigh, manager of Hartwood Station; Mr. David M'Caughey, owner of Coree Station; Mr. Patrick Cahill, farmer and grazier.

On Tuesday, the 7th June, the examination of witnesses was resumed, and evidence taken from the following persons:—Mr. D. Reid, manager of Puckawidgee Station; Mr. John Tomkins, farmer and grazier; Mr. Joseph Field, farmer and grazier; Mr. Thos. Wise, Mayor of Jerilderie; Mr. Thos. Blackwood, grazier; Mr. John Kennedy, storekeeper; Mr. Wm. Elliott, newspaper proprietor; Mr. D. M'Caughey, pastoralist.

On Wednesday, the 8th June, the Committee left Jerilderie, by special coach, for Deniliquin, having decided to travel *via* Conargo. At Hartwood, about 18 miles from Jerilderie, Messrs. Wall and Dawson took a different route to Deniliquin, with the view of inspecting the agricultural country under settlement adjacent to the surveyed route.

The other members of the Committee continued their journey by coach to Conargo, where they examined the following witnesses:—Mr. Geo. Currie, grazier; Mr. H. C. Parker, grazier; Mr. Jas. M'Kees, farmer; Mr. John Howie, farmer; and Mr. C. Walker, farmer; after which they left for Deniliquin, which was reached at 5·50 p.m.

On Thursday, the 9th June, the Committee met in the Court-house, Deniliquin, and took evidence from Mr. W. R. Virgoe, grazier; Mr. C. Uphill, farmer and grazier; Mr. Wm. Doel, farmer; Mr. Jas. Robertson, farmer; Mr. J. V. Ingram, farmer; Mr. John Macaulay, grazier; Mr. Thos. Leetham, farmer and grazier; Mr. Colin C. M'Culloch, grazier; Mr. Rupert Clarke, grazier; Mr. Frank Falkiner, grazier; Mr. D. Tennant, secretary and manager of the Deniliquin and Moama Railway Company.

On Friday, the 10th June, the Committee resumed their inquiry in the Court-house, and examined the following witnesses:—Mr. A. Rosenfeld, merchant; Mr. Alfred Jameson, land and commission agent; Mr. Geo. Chandler, storekeeper; Mr. M. Stawell, Supervising Engineer, Railway Construction Branch; Mr. Geo. Sayers, saw-mill proprietor; Mr. G. S. Ridley, relieving officer in charge of the

Land Office at Deniliquin; Mr. D. Tennant, secretary and manager of the Deniliquin and Moama Railway Company. At 2.15 p.m. the Committee left Deniliquin for Moama, for the purpose of taking evidence at that place. They travelled by a special train, placed at their disposal by the manager of the Deniliquin and Moama Railway Company, from whom they were able to obtain many particulars regarding the line owned by this company. At Mathoura, 22 miles from Deniliquin, the Committee visited the red-gum forests in the vicinity, and inspected a quantity of timber on the Gulpa Creek, 3 miles from the railway station, after which they took the evidence of Mr. C. B. Opitz, saw-mill proprietor, and resuming their journey by train, reached Moama at 5·30 p.m.

On Saturday, the 11th June, the Committee met in the Court-house, Moama, when the following witnesses were examined:—Mr. J. Tomlinson, farmer; Mr. E. Berryman, farmer and grazier; Mr. John Holschier, farmer; Mr. Jas. Skelly, farmer; Mr. Jos. Weir, stock inspector; Mr. Thos. Thompson, farmer; Mr. H. Holschier, farmer and grazier; Mr. Chas. Mapperson, market gardener and fruit-grower. In the afternoon, accompanied by Mr. J. Ednie Brown, Director-General of Forests, and Mr. J. A. Manton, Inspector of Forests, the Committee left Moama in the Government steamer "Forester" for the purpose of inspecting the red-gum forests along the Murray River. They landed and made a personal inspection of some of the forests being conserved by the Forestry Department, and during the trip obtained much useful information regarding the probable traffic in red-gum on the proposed railway, and the use of this timber for railway purposes. Landing at Koondrook, 200 miles from Moama, on Sunday evening, the Committee proceeded to Kerang by the tramway line owned by the Swan Hill Shire Council. On their journey to Kerang, and next day during a short trip on the line, they had an opportunity of examining a tramway, 16 miles in length, constructed by the Shire Council at a cost, including rolling stock, of £2,000 per mile.

On Monday, the 13th June, the Committee left Kerang by train, and proceeding *via* Bendigo, arrived at Moama at 11·15 p.m.

On Tuesday, the 14th June, the inquiry was resumed in the Court-house, Moama, when evidence was taken from Mr. John Lewis, general storekeeper; Mr. George Dorward, grazier and farmer; Mr. D. M'Laren, Mayor of Moama; Mr. H. Layfield, farmer and grazier; Mr. A. C. Palmer, flour-mill owner; Mr. F. E. Callaway, coach builder; Mr. J. F. Robinson, farmer; Mr. W. B. Pollard, storekeeper; Mr. E. Berryman, storekeeper; Mr. C. C. Pope, sub-collector of Customs at Moama; Mr. J. M. Chanter, M.L.A., auctioneer and commission agent, and a Director of the Murray River Stock Company; Mr. R. Barbour, M.L.A., commission and land agent; Mr. J. A. Manton, Inspector of Forests; Mr. Geo. Brook, commission agent.

On Wednesday, the 15th June, the Committee visited Tocumwal, where they examined Mr. M. Looney, farmer; Mr. P. A. Dunne, post and telegraph master, and Mr. G. R. Jeffries, storekeeper.

On Thursday, the 16th June, the Committee took the evidence of Mr. J. Foster, sub-collector of Customs, stationed at Tocumwal, and then proceeded by special coach to Berrigan, where they held a sitting and examined the following witnesses:—Mr. E. J. Gorman, auctioneer and farmer; Mr. Jno. Jones, farmer; Mr. C. Drummond, farmer; Mr. A. Hiddle, storekeeper; Mr. W. D. Drummond, farmer; Mr. J. W. Robertson, farmer; Mr. L. Harris, storekeeper.

On Friday, the 17th June, having concluded the taking of evidence, the Committee left Berrigan, and proceeding *via* Cobram, arrived in Sydney on Tuesday, the 21st June.

The Committee, after a careful consideration of the whole of the circumstances surrounding the proposal to construct a line of Railway to connect Deniliquin with Jerilderie, feel that the question is one which, in view of our present commercial relations with the neighbouring Colony of Victoria, and the rivalry that exists between the two colonies to secure that portion of the border trade lying between the Murrumbidgee, the Edwards, and the Murray Rivers, is raised far above local considerations, and must be dealt with as a question affecting our future policy of intercolonial trade. The present connection of the Victorian railway system with Deniliquin, which is the great central depôt of trade for the whole of the country under consideration, has had the effect of securing that trade to Victoria.

Your Committee feel convinced that a grevious blunder was committed in the past by sanctioning the construction of the private line from Moama to Deniliquin, instead of extending our own railways to the latter town, and making it the terminal point of our south-western railway system.

However, that connection with Victoria having been effected, it remained for the Committee to consider, first, whether the magnitude of the trade of the border and its value to this Colony would justify any special effort being made to secure it; and secondly, whether it could be secured by the construction of the line under consideration.

In dealing with the first aspect of the question, your Committee desire to say that they were most strongly impressed with the vast resources of the border country traversed by them in the course of their investigation, and its adaptability for agricultural and pastoral settlement, which, combined with the valuable timber forests on the banks of the Murray now yielding an annual royalty of £9,000, and estimated by the Director of Forests to yield a total royalty of fifteen million pounds sterling, lead them to infer that it will become in the near future one of the most valuable portions of our territory. But your Committee regret that in this, as in many other instances where railways are constructed, the land is practically in the hands of a few private owners, whose estates will be considerably enhanced in value by the construction of the line under consideration; and your Committee are of opinion that these owners who will benefit so largely should, by an extension of the betterment principle, be made to bear a portion of its cost. While your Committee are unanimously of opinion that the border district, owing to the large area that can be brought under cultivation, is specially adapted for the production of cereals, they recognise that its future development in that direction depends on the terms on which the present owners of large estates are prepared to dispose of their land. However, from the evidence adduced, and also from personal observation, they are of opinion that, as the land best adapted for agricultural settlement comprises the box, yarran, and scrub country, which is least valued for grazing purposes, the owners would be prepared to dispose of it for £4 per acre, large quantities having been recently sold on the Tuppal run to Tasmanian farmers at that price, as also portions of the Hartwood estate to Victorian farmers. This may appear a high price for agricultural land on the border, but when compared with the price ruling for similar land on the Victorian side of the Murray, where it ranges from £6 to £9 per acre, your Committee think that it would be freely sought after at that price, more especially if the scheme for irrigation from the Murray, outlined by the Department, is intended to be carried out, as the country lying immediately to the south of the proposed line would be intersected by three branches of the canal. These considerations, together with the present important trade of the border district, lead your Committee to infer that its development in the future will be both permanent and progressive; and in view of that fact, it is their opinion that if New South Wales intends to retain that portion of its territory, and carry out a costly system of irrigation, in order to develop its resources, a special effort should be made to secure the border trade. The question, therefore, to determine is, will the connection between Jerilderie and Deniliquin have the effect of securing that trade. In the consideration of this phase of the question, your Committee have to draw a distinction between what may be termed the general carrying trade, the local carrying trade, and the commercial trade of the district. With regard to the general carrying trade, under which may be classed wool and grain for export, your Committee are of opinion that the river Murray affords such facilities for the shipment of large consignments for export, where despatch is not an important consideration, that carriage by rail could not successfully compete, unless such concessions were offered in the shape of reduced rates, as would, in all probability, leave no margin for a profit on the freight secured. With regard to the local traffic, although the river Murray is the great natural highway for produce intended for export, yet this produce would have to be conveyed for some distance at least along the railway line in order to reach that river, and would thus be a source of considerable revenue to the line under consideration. At the present time the greater portion of the grain produced in the district finds its way along our railway line towards Sydney, and will probably continue to do so until we are forced to look for an outside market, when it is only

reasonable

reasonable to expect that it will then find its way *via* the Murray River. We also think that the carriage of timber to the inland districts would constitute a considerable item of local traffic; and in regard to stock, the return submitted by Mr. Chanter affords some reliable information, showing, as it does, that during the year 1890–91, and for the five months of 1892, there were carried along the private line between Deniliquin and Moama 607,080 sheep and 16,000 head of cattle. In fact, the value and extent of local traffic from the border may be fairly estimated from the half-yearly report published by the directors of the private company, showing a return of 8 per cent. on the capital expended; and from the evidence of Mr. Tennant, the manager of the company, it will be seen that the rates charged on goods are not excessive, but compare favourably with the rates charged on the New South Wales and Victorian lines.

With regard to the commercial trade of the district, it would appear from the evidence adduced before the Committee that prior to the imposition of border duties very few, if any, commercial transactions took place between the people of that portion of the border district and Sydney. Since these duties have been imposed the trade with Sydney has increased considerably, and there appears to be a strong desire on the part of the people to further increase it if opportunities are offered in the shape of railway communication. It has been pointed out to the Committee that at the present time the people of Deniliquin, which, as before stated, is the great central depôt of the border district, have, in order to reach Sydney, to undertake a journey of 56 miles by coach to Jerilderie, or otherwise go by rail direct to Melbourne to catch the Sydney express, and thus avoid a day's delay at Seymour, which is the course usually adopted. This circumstance in itself offers a strong inducement to trade with Melbourne; but so anxious are the people of Deniliquin to form a connection with Sydney by a line to Jerilderie that Mr. Tennant, in his evidence before the Committee, stated that he would find a guarantee to procure the capital necessary for its construction in twenty-four hours if the Government would concede the right to construct it to a private company—a concession which your Committee are strongly of opinion should not be granted, as it would tend not only to interfere with the general policy of our railways, but would also have the effect of extending the line of competition with Victoria further into our territory, and practically surrendering the carrying and commercial trade of the border. Your Committee, therefore, after careful consideration, and having in view the many interests involved, recommend that the line of railway from Jerilderie to Deniliquin be constructed at a cost not to exceed two thousand five hundred pounds per mile. But before carrying out the work they are of opinion that the Public Works Act should be amended in order that the betterment principle might be made to apply to the owners of private property who would so largely benefit by the construction of the line.

The Committee are also of opinion that the private line between Deniliquin and Moama should be resumed, if the same can be effected on reasonable terms; if not, they think that the company, in accordance with the provisions of the Act, should be compelled to alter their gauge, in order that the break should take place at Moama instead of at Deniliquin. If this course is adopted your Committee are of opinion that both passenger and commercial traffic, not only between the border district and Sydney, but between the border district and the Colony generally, will be greatly increased; and this, combined with the developments in agriculture, which they look forward to as almost immediately following the construction of the line, will render it within a very short time a paying extension, more especially if the statement made in evidence before your Committee is correct, namely, that the present staff and rolling-stock now employed on the tri-weekly service to Jerilderie could work the additional section at a nominal increase of cost.

W. H. SUTTOR,
Chairman.

June 23, 1892.

MEMORANDUM

MEMORANDUM BY MESSRS. EWING AND MCCOURT.

FINDING the majority of the Sectional Committee entertained different views with regard to the Railway Extension from Jerilderie to Deniliquin, we have, with the concurrence of the majority—who grant that the importance of the question entitles it to the fullest consideration—the honor to transmit a memorandum, which we trust may contain such information as will enable our attitude to be understood, and also to show that such a position was not decided upon without full consideration.

We have no desire to impugn the, no doubt, weighty reasons which caused a majority of the Sectional Committee to differ from us, but simply to state what appeared to us to be the essence of the case, and the inferences deducted from the facts placed before us during our tour.

We consider the construction of the line from Jerilderie to Deniliquin beset with special difficulties, which may be best explained by (1) an epitome of the considerations which usually control the question of railway construction, and (2) by special environment in this case.

(1.) The considerations which usually control railway construction—

(*a*) The revenue, and how derived.
(*b*) Will it act as a feeder to, and thus render more remunerative, the lines already in existence.
(*c*) The capabilities of the district.
(*d*) The district to be served as at present situated, and local condition generally.
(*e*) The immediate future.

(2.) The special environment in this case—

(*a*) The water carriage already furnished by the rivers Murray and Murrumbidgee.
(*b*) The rival Victorian system of railways.
(*c*) The stock tax and border duties generally.
(*d*) The possibility of reaching the main markets of New South Wales by railway to Melbourne, and thence by sea more cheaply than directly by rail.
(*e*) The present trend of traffic.
(*f*) The future trend of traffic.
(*g*) The probable future action of the colonies with regard to rebate and special rates.
(*h*) The existence of the private line of railway from Moama to Deniliquin.

1. The consideration of those questions which usually control railway construction.

(*a*) What will be the revenue, and how derived?

It has been urged since the Deniliquin to Moama line has been a commercial success, it therefore follows that an extension to Jerilderie, in practically the same character of country, would also be a commercial success; but we are of opinion that such an inference is not fully justifiable—for the Deniliquin-Moama line carries not only the produce of the country through which it passes, but (Deniliquin being the depôt) also the produce (except such as is water-borne on the Murrumbidgee, Murray, and Edwards) of a great territory to the west, and as far north as within about 30 miles of Hay, which in the past has looked to Melbourne as its market and shipping port, has concentrated on Deniliquin, and sought the easiest way to Victoria. If Jerilderie becomes also a depôt for the territory further to the north-east, and the trend of traffic is still to Victoria, there can be little doubt that the section under consideration will pay, but the traffic will be made up to some extent of freight which would otherwise have used a greater length of the New South Wales lines, and found its way to Sydney. It is, therefore, quite possible that this line will be a sucker as far as the New South Wales system is concerned, and not a feeder, being really a feeder to the Victorian system. The eventual or even the immediate result of such connection on our railway system it is difficult to definitely estimate.

Since Jerilderie is 412 miles from Sydney, and 234 miles from Melbourne, it must be at once apparent that goods *for export* (the Victorian market being closed against the produce of Riverina) must find its way to the nearest port unless artificial means are taken to divert it.

Again,

Again, if the Deniliquin-Jerilderie line carries the produce of that country lying north and east of Jerilderie to that point whence Sydney and Melbourne are equi-distant, and also part of the traffic of the Narrandera-Hay line, mainly to Melbourne, it will—backed up as it will be by such a great territory—be much more likely to pay than if it carries the trade of that part of the Colony south of Deniliquin mainly to Sydney—the territory upon which it would then depend being comparatively very small. It does not appear to be at all probable that any trade will be obtained of any great importance from Victoria, for not only has that Colony made full arrangements for her own trade on her own border but has made a definite bid for the trade of the southern part of New South Wales, approach and direct communication with Melbourne being afforded by rail from Wodonga, Wagunyah, Yarrawonga, Cobram, Echuca, Koondrook, and Swan Hill. The river Murray is traversed by boats holding licenses issued by Victoria, and the control of the traffic is in her hands, any misdemeanor being subject to her jurisdiction.

Evidence was placed before your Committee to prove that there would be a large passenger traffic on this line direct to Adelaide—*i.e.*, without touching Melbourne—the route suggested being direct to Murtoa, on the main line from Melbourne to Adelaide. Since to carry out such a connection a new line about 140 miles in length would require to be constructed, crossing the Campaspe River, Mount Hope Creek, the Eaglehawk to Swan Hill line, Bullock Creek, the Loddon River, the line from Inglewood to Boort, the Avoca River, the line from Dunolly to Donald, and the Avon River, we do not consider it is worthy of special consideration at present. It is, however, possible that travellers as far from Echuca as Toolamba to the south-east, and to Bendigo on the south, might use this line as part of a through route to Sydney, but such traffic would be made up to a great extent of leakage from the present main line.

See map of Victoria.

(*b*) Will it act as a feeder, and thus render more remunerative the lines already in existence?

From statements previously made it will be apparent that the tendency will be to draw the traffic off the New South Wales system, and not to increase it, for most of the traffic of this part of the Colony will search for the nearest port and nearest markets, unless artificial means—such as protective duties and differential rates—in one instance drive, and in the other entice, the produce to a more distant market and a further port. That the rival Victorian system would have all through the best of the contest, and that this line would simply feed that system, appears almost certain, for Moama, on our southern boundary, is only about the same distance from Melbourne as Goulburn is from Sydney, and a consideration of the futility of an attempt on the part of the Victorian railways to seize our trade at Goulburn, fairly well explains our endeavour to hold the trade of such a place as Moama. In the contest now in progress it might be very satisfactory to the Southern portion of our Colony to obtain special rates, because of the great competition, but very unsatisfactory to New South Wales generally.

(*c*) The capabilities of the district.

We are of opinion that it is proved that the district is suitable for the production of wool, the growth of fruit, wheat, barley, and for agricultural pursuits generally, and that the amount of produce will be eventually very great indeed.

(*d*) The district as at present situated.

The district at present is in communication by rail with Melbourne at Deniliquin, and by rail with Sydney at Jerilderie—the distance between these towns being but 44 miles; and if the furthest distant point between Deniliquin and Jerilderie, 22 miles, has not now railway communication, the area served by railways must be very small indeed.

At present the land is to an enormous extent in the hands of pastoralists; estates existing up to an area of 300,000 acres—100,000 acres being by no means an uncommon holding. The evidence will show how complete this monopolisation has been. Although it is an extreme case, the direct route before us will serve as an illustration, for from the environs of Jerilderie to the environs of Deniliquin, taking 111 as a basis, the line passes through 100 holdings in hands of the pastoralist, 1 conditional purchase (leased to the pastoralist), and 10 areas of reserved

reserved land. There are other parts where settlement is fairly large, but since in the Murray electorate, a great territory (starting between Barooga and Mulwala, going north to Yathong, and thence west almost to the junction of the Murray and Murrumbidgee Rivers, and thence up the Murray to the point of commencement), there are only about 10,000 people, and of these the towns of Deniliquin, Moama, and Jerilderie, and townships of Moulamein, Moira, Berrigan, Mathoura, Conargo, must total nearly half, to which being added those engaged in pastoral pursuits, leaves the residue at a very small number indeed for such an extent of country. The number of holdings under 2,000 acres and over 1 acre being only 374.

(*c*) The immediate future.

Evidence shows there is a *tendency* on the part of the pastoralists to sell to the farmers, and some considerable transactions, principally on Tuppal run, have already taken place; but the desire for land for farming purposes is dependent not only upon the price of wheat, but also upon the low price of wool, which causes the small holder to be desirous of abandoning wool, and turning his attention to grain-producing; and again, the power of the agriculturists to give such prices as the pastoralist demands, depends on the price of his produce. The present high price of wheat in New South Wales has given an impetus to wheat production, and has created a greater demand for wheat-growing areas than has obtained for some time past. Although we admit there is a *tendency to sell*, we cannot say with any degree of certainty, save in the instance of the settlement about Berrigan, that the pastoralist will continue to sell at such rates as the farmer will be willing to give; in fact, the railways already traversing this part of the Colony have not had this result. The grain upon which this line must partly look for freight cannot be grown unless in the hands of farmers, and in the face of so much conflicting evidence, even after personal investigation, we can only reiterate the previously expressed opinion, "that there is no guarantee that such change in ownership will take place within any reasonable time." Again, the construction of the railway will at best simply enhance the value and increase the price the present large holders will ask from the farmers when they do determine to sell the land.

(2.) The special environment in this case.

(*a*) The water carriage already furnished by the rivers Murray and Murrumbidgee.

Notwithstanding the presence of railway communication at Hay, 454 miles from Sydney (Moama being 501), large quantities of wool, instead of making use of it, as we are assured would be done in the case under consideration, the producers in the Murrumbidgee, in many instances, send their wool down the Murrumbidgee and up the Murray, a distance of 600 miles, transhipping at Echuca, and going thence by rail 145 or 156 miles to Melbourne for shipment. The freight on the river being about 15s. to 20s. per ton, the lowest total freight to Melbourne being 50s. from Hay per ton, against the freight to Sydney (being about 74s.). Is it reasonable to suppose, since wool from Hay (454 miles from Sydney) pays £1 freight by river to reach Moama, that wool which can reach Melbourne without this cost of £1, will pay 501 miles' freight to Sydney? Again, freight in wool from Deniliquin to Melbourne being about an average 50s. per ton, and freight from Jerilderie to Sydney being about 74s., it is difficult to understand how the heavy traffic of this district, unless some special action is taken—which it is difficult to outline—can use the line under consideration to reach Sydney; and, in fact, a good deal of the heavy traffic, when river carriage is possible, will not use it at all.

(*b*) The Victorian system of railways.

The frequent approach to the southern verge of this Colony has been alluded to already. These facilities, with a system of rebates applying roughly to all territory north of a line extending from Jerilderie to Balranald, together with the navigation possible on our rivers, has enabled Victoria fairly well to monopolise the trade and to supply requirements, while the district remains practically a vast pastoral holding. The policy of Victoria being apparently, by her protective and rebate systems, to make Melbourne the trading centre, gain what profit there may be by acting as carrier for the produce, and, at the same time, to prevent the producers of New South Wales having any benefit from her markets.

(*c*) The stock tax and border duties generally.

The recent increase in the stock tax, and the existence of border duties generally, will prevent Victoria furnishing this part of the Colony with a market for any produce unless under considerable disadvantage, but in that these producers do not suffer greater disability than the rest of the Colony, and any produce for use in the colonies must look to New South Wales for consumption, either to the west or immediately north, or in the Sydney markets; therefore it will be advantageous for all producers for the home market living south of Jerilderie to have the communication desired, but the market immediately to the north and west is in such close proximity to other wheat-growing districts that, although it will be advantageous at present, the market available will not be very large and the competition in it is generally likely to be keen.

The result of the stock tax upon New South Wales stock and its permanence are the subjects of much conflicting opinion, and we find it impossible to express any definite opinion regarding them.

(*d*) The possibility of reaching the main market of New South Wales (in bond) by railway to Melbourne and thence by sea, more cheaply than directly by rail—

The distance from Deniliquin to Melbourne is 190 miles; Moama to Melbourne is 145 miles; from Deniliquin to Sydney is 450 miles; Moama to Sydney is 501 miles. It seems very possible that goods and produce could pay the railway freight to Melbourne, 190 or 145 miles, and then the carriage from Melbourne to Sydney, variously stated at from 5s. to 10s. per ton by sea, more cheaply than paying the charge for 450 to 501 miles to Sydney by rail direct. For instance, flour by this route can reach Sydney at £1 per ton from Moama. It is doubtful if the railways can continue to carry profitably 501 miles at such a price. The objections to this mode of reaching the main populations of New South Wales are mainly on the grounds (although it is a common procedure) of trouble with agents, frequent handling of goods, and the presence of exorbitant middlemen.

(*e*) The present trend of traffic—

Will be for local consumption immediately to the north, along the railway from Deniliquin to Jerilderie, and for use in the main markets of New South Wales, along railway (in bond) to Melbourne, unless the New South Wales railways carry at a very low rate indeed. All wool and produce for export will probably be offered sufficient inducement by the Victorian railways to continue to use Melbourne (the freights from Sydney and Melbourne to London being practically the same) as the port of shipment.

(*f*) The future trend of traffic—

It seems probable that the future trend of traffic—in the main products of this district, in wool, meat, and wheat—in that New South Wales, with ordinary seasons, will easily produce more than she requires for home consumption—will mainly be to Melbourne, Port Phillip being only 145 miles from southern confines, and Port Jackson being approximately 400 miles from the northern. Thus, if artificial barriers are removed, the trend will unquestionably be to Melbourne.

(*g*) The probable future action of the colonies—

The questions whether Victoria will continue to exploit, by special rates and rebates, thus endeavouring to annex as much of the trade of New South Wales as possible, and whether New South Wales will endeavour by non-paying rates or by drastic border regulations to control the whole of the trade within her confines, are questions with regard to which we can offer no opinion, but we feel certain that while such a policy does obtain the construction of this railway will place our system at a further disadvantage with the competing system of Victoria.

(*h*) That the construction of the Deniliquin-Jerilderie line will undoubtedly increase the value of the Deniliquin and Moama private line is so apparent that it requires no demonstration, and therefore this line should be resumed at once if it be determined to carry out the line under consideration. Thus the total expenditure from Moama to Jerilderie cannot be less than £400,000. The present line being estimated at £163,000, and from the earnings of the Deniliquin and Moama line it is not likely to be resumed much

much under a quarter of a million. Therefore, the question under consideration is not only the expenditure of about £150,000 between Jerilderie and Deniliquin, but an outlay of nearer half a million, the main result of which will be (although we grant it will be of some local benefit—especially to the holders of vast estates) to enable a keen rival to annex our trade.

It being urged that the red-gum forests on the Murray and tributaries would, by furnishing sleepers and hardwood for the New South Wales railways, not only lessen the cost of construction, but also furnish considerable profit to the railway under consideration, your Committee made a full and careful inspection, as far as time would allow, and although the forests are a very valuable asset, still the question of freight comes in, which has already been fully explained. We are of opinion that, as there is a considerable quantity of hardwood in other parts of the Colony, therefore, the traffic in it over the Deniliquin and Jerilderie line will, at present, be limited to those portions of New South Wales nearer to it than other procurable hardwood.

Evidence was also forthcoming that the line under consideration would form part of a reasonable and expeditious connection with Broken Hill. The route suggested being from Sydney by train to Moama, by Rivers Murray and Darling to Menindie, and thence by rail to Broken Hill. Since, however, Broken Hill can be *See* Map. so cheaply approached by sea from Sydney to the head of Spencer Gulf, and thence by rail through South Australia, it is difficult to understand how any case, either on the grounds of economy or expedition, can be sustained for such a route as that suggested.

Frequent and persistent reference being made to the great change taking place in part of this district by the sale and lease by pastoralists to farmers, thus placing under wheat large areas of land, which would not only show that farmers were settling in Riverina, but that the grain produced by this settlement would contribute to the earnings of the railway under consideration, so definite were the statements, and such stress was laid upon this aspect of the case, that your Committee felt it to be their duty to further investigate, but we are of opinion, although the settlement is genuine, and the area of country coming under the plough very considerable, and fully worthy of consideration at the hands of the Government of New South Wales, still the locality in which the change is going on would not be materially benefited by the construction of the line in question.

Berrigan, which, speaking approximately, is the centre of the farming community in question, is situated about mid-way between Jerilderie and Tocumwal, on the Murray River, a line taken, say, 12 miles to the north of Berrigan, and then taking an east and west line of 18 miles as north boundary, and embracing the land between that line, passing on the west through Murray Hut, and on the east through Savernake to the Murray River, for practical purposes may be said to form boundaries to the settlement in question; thus it will at once be seen, since Jerilderie is as near to the greater portion of this settlement as any part of the proposed line, that this produce, if it is to travel on the railways of New South Wales—looking, as we are assured by all, because of the protective policy of Victoria, for a market in this Colony—will continue to find its way to the railway already in existence in Jerilderie, and would not contribute to the profits of the line from Jerilderie to Deniliquin.

It appears to us that although the line from Jerilderie to Deniliquin is the special case under consideration, in that the end in view is the development of this portion of the Colony, and since the case has been buttressed by the fact that pastoralist occupation is giving way to farming settlement—that, after lengthy and complete inquiries, we may be justified in expressing an opinion as to what is the wisest procedure to bring about the desired result.

We find,—that Berrigan is fairly well the centre of this new occupation.

That the settlement is genuine.

That the produce of the area of land will at present be considerable and in the future very great indeed.

That it is the only part of the district in which the pastoralists really have shown they do intend to sell to the farmer.

That

That there are no difficulties in construction and there is no doubt, from an investigation regarding light railways at Koondrook and Deniliquin, that a sufficient line can be constructed for £1,500 per mile.

That it is highly probable a considerable revenue will be at once derived from the line in question.

That it will bring a good agricultural settlement into touch with the rest of this Colony.

That it will act as a feeder, and not as a sucker, to the railway system of New South Wales.

We, therefore, are of opinion that the extension of our railway system should go *via* Berrigan, that place being the terminus for the present to the farmers who have and are proving their genuineness, and will have produce to feed the line, and not through great pastoral holdings to Deniliquin. The question of making a feeder to the Victorian railways with New South Wales money, thus aiding a system which stands in fighting attitude, might well stand over until that colony is prepared to adopt a more generous, or at least a fairer policy to New South Wales, especially as the people locally are not suffering any serious disadvantage which will be removed by the construction of the railway; in fact, there are few parts of this Colony, removed 500 miles from the Metropolis, that have the same advantages for travel and trade as is afforded this area by the rival systems of the two colonies.

THOS. EWING.
WILLIAM McCOURT.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

RAILWAY FROM JERILDERIE TO DENILIQUIN.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

MONDAY, 6 *JUNE*, 1892.

[*The Sectional Committee met at the Court-house, Jerilderie, at* 11 *a.m.*]

Present:—

THE HONORABLE WILLIAM HENRY SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

The Sectional Committee proceeded to consider the proposed Railway from Jerilderie to Deniliquin.

Mr. Samuel Wilson, farmer and grazier, Carrah, near Jerilderie, sworn, and examined:—

Mr. S. Wilson. 6 June, 1892.

1. *Chairman.*] What are you? Farmer and grazier.
2. Where do you reside? At Carrah, about 7 miles from Jerilderie, in a westerly direction.
3. How long have you been in the district? Nearly nineteen years. I have been carrying on farming operations in the district for seventeen years.
4. What do you cultivate? We have cultivated all sorts of grain, but we now confine ourselves to wheat and growing hay for chaff. As we are situated near to the town we find the latter more profitable.
5. How many acres have you under cultivation? Over 200 acres, but it is not all under crop, as we fallow every year between 50 and 70 acres. We shall in the future fallow, I daresay, 100 acres. We find that fallowing pays better, because we get a large crop in proportion to the expenses.
6. How does wheat answer with you? I came from Victoria, and I find that although ours is not so good a district as the Berrigan district for wheat, still we have a better average, taking the year through, than we had in the part of Victoria where I lived. We average about 12 bushels an acre, and some years we get 16 bushels. Since we fallowed we never get less than 16 bushels; but now we go in mostly for hay, because, being near the town, chaff pays us better than wheat.
7. What do you think about the prospect of wheat crops in the future; you know that there has been a duty of 6d. a bushel placed on foreign wheat lately? We ourselves are extending our area under cultivation, and our neighbours have lately begun to take up farming. One man, for instance, who only had 30 acres last year has got 150 acres this year, and several other neighbours, who have grown none at all lately, are putting in wheat this year.
8. Can you get a ready sale for your wheat in the neighbourhood? We have never had any difficulty. I suppose other people have to send their wheat up to Sydney; but it is a matter of price. They send it where they can get the most money. I do not think the neighbourhood will take all the wheat we shall grow in the future by a long way. In fact, during the last two years, wheat has been sent away, and sometimes we send hay and chaff to Sydney, or wherever we can get the most money for it. At present the bulk of it is sold in the town.
9. You think this district is well adapted for the growth of wheat? Yes; it is a good district for growing wheat.
10. And you think the average yield would be from 12 to 16 bushels per acre? Yes. The quantity grown would depend on the facilities for getting to market.
11. If you had better facilities you think you could get rid of it more readily? No doubt. If the railway had not been brought to Jerilderie there would have been very little wheat grown here. I was the first to put wheat in here, and I was laughed at for doing so, but the people who laughed at me have since followed my example.
12. *Mr. McCourt.*] What is the size of your holding? I rent about 1,000 acres. I have a freehold of 2,400 acres—a selection.
13. What rent do you pay on the 1,000 acres? 2s. an acre.
14. And you can farm profitably at that? No. Without the other land I could not make it pay at 2s. an acre.
15. Taking the ordinary character of the land about here, how much rent per acre could a man pay and follow agriculture profitably? It would vary very much. A man could, perhaps, pay 5s. at Berrigan, while he could not pay 2s. here.
16. What could he pay where you are, 7 miles from Jerilderie? I could not say.
17. Could he pay 1s. an acre? Yes; the land would pay 1s. an acre for grazing.

Mr. S. Wilson. 6 June, 1892.

18. But what could he afford to pay, using the land for agriculture? If he went in for agriculture, and had some good land and liked to work hard, and if he had plenty of capital, and went thoroughly into farming, he might, perhaps, be able to pay 2s. an acre; but, on the other hand, I would not advise any man to do it

19. The land in this district is nearly all in the hands of private owners;—if a railway were constructed, and if these owners were willing to let the land, could they get farmers to give them 2s. an acre for it and work the land profitably? I could not say. I would not do it myself.

20. You do not think it would pay at 2s. an acre? It might pay. I do not think it is likely they would do it.

21. You think the owners of the land would be willing to let it in large quantities at 2s. an acre? I could not say. I am paying 2s. an acre, and I think it is quite enough for sheep.

22. What does the cultivation of your wheat pay you per acre, including seed, ploughing, and everything? I could not say.

23. Do you not take account of what it costs you per acre? I have never gone into the matter so closely as that.

24. What is the lowest price per bushel at which you could cultivate and sell wheat profitably? If we were obliged to do it, I daresay 3s. 6d. would pay us. I do not believe anything less would pay us.

25. If the proposed railway were constructed, would the people in your neighbourhood use it? There is no doubt they would use it for a great many purposes. There is always trading to and fro, and a railway creates trade. The railway to Jerilderie has created trade. I have friends in Victoria who, if we had a railway to Deniliquin, would come here thirty times while now they only come once, and we on this side would go more frequently to see them. At present if we wish to go to Victoria we have to go in the middle of the night, so we generally go round *via* Junee. A railway gives facilities for traffic and opens up trade everywhere, and the same result would occur in the present instance.

26. You only grow sufficient wheat in the neighbourhood for local requirements? We send a great deal to Sydney now.

27. Do you get a net return of 3s. 6d. a bushel for what you send to Sydney? I never send any myself.

28. How much seed do you use per acre? On an average, 1 bushel.

29. *Mr. Ewing.*] You seem to make a difference between the land where you live, west of Jerilderie, and the land near Berrigan;—is that a difference between the plain country and the forest country? It is just the difference between the forest and the plain country. The forest country is more expensive to clear, but when it is cleared it gives a better return. It is better wheat-growing country than the plain country. If in the future artificial manures were used, the plain country might equal the forest country, but the forest land gives at least an average of 5 bushels per acre more than the plain land in its present natural state.

30. Do you not think it is possible by cultivation to improve your plain land considerably? We do that. I consider that all our land is improved by cultivation.

31. Still it remains permanently inferior land to the forest country? I believe so.

32. In regard to the proposed line from Jerilderie to Deniliquin, do you know the country well? Yes.

33. Does the surveyed line run through plain country or forest country? Some of both.

34. Which predominates? It is mostly plain country.

35. Suppose a line went from Jerilderie straight south and struck the Murray at Cobram, what sort of country would it pass through? Better country, no doubt, for grain.

36. Do you think the large estates would be subdivided with a view to the cultivation of wheat? I cannot say. It stands to reason that if the owners could make more money by subdividing than by letting they would do so.

37. From Narrandera to Jerilderie the Committee passed through a country that would grow wheat, and if the effect of a railway is to cause these large estates to be cut up, so that farmers can take up the land for growing grain, we should have seen grain growing between Jerilderie and Narrandera—is not that so? No doubt. There is at present grain grown there, and the selectors are growing more every year.

38. But a vast proportion of the land in this part of the country is in the hands of large holders? Yes; a large proportion.

39. We want to know what the effect of a railway would be in settling the people on these lands;—do you think that private owners would let the land, or sell it? I could not say. I think it is very likely, and it would pay some of them better between here and Deniliquin. There are a good few selectors between here and Deniliquin, but they are not on the main roads. I know several who go in pretty largely for agriculture.

40. Can you give us any information in regard to the effect of the border duties on your wheat? Of course, the import duty on wheat will help us very much. It is what we have always been expecting, and what we should have had years ago. We ought to have a little more on chaff. It is a great injustice that they can bring chaff and other produce from Victoria for nothing, when we have to pay such large freights on the railway.

41. If there were no border duty between this country and Victoria, would the people here send their wheat to that colony? We should send it wherever we could get the most for it. It is more likely that it would be dearer in the interior. I have always found it paid better to send up the country, and Sydney way, than to Melbourne.

42. Then your personal experience enables you to say that you look to a market for your wheat towards the west, and not towards Sydney or Melbourne? We send it up Sydney way, or into the interior.

43. Then a railway from Jerilderie to Deniliquin would be beneficial to the people living between those places, but not to you? It would not benefit me, but I believe it would benefit them.

44. Do you know the country towards Conargo? Yes, well.

45. What is the country like between Jerilderie and Conargo, going west? Similar to what you have seen here.

46. Is it plain country, or forest country? Mostly plain country.

47. In farming do you use double-furrow and three-furrow ploughs? We have four double-furrow ploughs.

48. Of course, you gather everything in by machinery? Everything.

49. And have a steam chaff-cutter? Yes.

50. Do you use the most approved and the best and cheapest means of getting your crop off the land? Yes; so far as our means will allow.

51.

Mr. S. Wilson. 6 June, 1892.

51. Suppose there was a very large market for wheat, how much could be grown in this district? Any quantity. We could grow millions of bushels if there was a market. Instead of 200 acres I should grow 500 acres, or 1,000 acres, because it would pay very much better than sheep.
52. If a market were created you could grow millions of bushels of wheat here? Yes; if you could guarantee 4s. a bushel an unlimited quantity could be grown. I do not know but what it might be done at 3s. 6d., but certainly at 4s. season after season.
53. Is not 4s. about the present market price, or a little below? I sold at 4s. 6d. the other day. The local market is 4s. 4d. at the mill.
54. The land here is easy of cultivation? Some of it is easy, and some hard.
55. Which is the hard? The plain country, some portions being worse than others. In some places it takes four horses to plough where three would be sufficient in other places.
56. You mean that at first the land is hard to break up, but I suppose that after cultivation it comes all right? Some soils are always easier than others. The sandhills for years grow a good crop. Half of our land consists of sandhills, and we can work two horses in a double-furrow plough where three are required in the plains.
57. What other produce do you have here besides wheat;—is wine made in the district? I do not make any wine myself, but I believe a great many other people will do so. I supply this district with grapes. I used formerly to send them to Narrandera and Hay, but now this district takes all I grow. I have a vineyard of about 4 acres, and an orchard consisting of oranges and other trees, of about 4 acres. I have also 30 or 40 acres in lucerne.
58. How many times do you cut lucerne? We graze it.
59. How long does it last? I have some now that has been in twelve years.
60. Where is your market for fat stock from here? For the last few years it has all gone to Sydney. I do not think any has been sent to Melbourne for the last ten years.
61. Would a line from Jerilderie to Deniliquin create a stock trade to Sydney? I should think it would, because a great deal of the stock is travelled from that district to the Jerilderie railway.
62. I suppose anything within 25 miles of Jerilderie comes this way, and anything within 25 miles of Deniliquin goes that way, and to Melbourne? Yes, at present.
63. If a railway were made between here and Deniliquin, would the stock round about Deniliquin go to Sydney? A very great deal of it would. Now that these heavy duties have been put on, and meat preserving companies are starting, we might say that nine-tenths of it would come this way.
64. Is your chaff chiefly wheaten chaff? Yes.
65. Oats will not grow very well? They will grow in the Berrigan district, but not on the plains. We can grow oats in the sand, but one very great disadvantage attaching to growing oats is that the land afterwards becomes foul for wheat-growing, and in the clay and red soil wheat does better.
66. You were talking about Berrigan, and led us to believe that the country round about Berrigan was rather better for agriculture generally than the country round about Jerilderie? Yes.
67. If a line were constructed from Jerilderie to Deniliquin, would the Berrigan district be better served than at present? No; but that is no reason why the line should not be made.
68. Is the Berrigan district served by the present railway? Yes; otherwise the country would not have been taken up, but I do not think they are served as they would like to be.
69. Would a line from Jerilderie to Cobram, or Tocumwal, serve the Berrigan people better, and this district generally? I do not know about this district. This district has been very much neglected, and it is a gross injustice that the connection with Deniliquin was not made years ago.
70. You think that a railway between Jerilderie and Deniliquin would benefit the district generally, and would be a great national line, and a paying line for the country? I do. I am in favour of the line, although it will injure me by bringing produce into the district for which at present I have a monopoly.
71. *Mr. Wall.*] You said you did not think it would pay to rent land at 2s. an acre, the yield of wheat being 12 bushels to the acre, and I think you further stated that the average price was 3s. 6d.? I do not think I said the average price was 3s. 6d.
72. You said that about 3s. 6d. would pay? About one-third of the produce per acre is profit, and that would yield a return of 3s. 6d. a bushel, or 10s. 6d. an acre.
73. Do you think it would pay better to cultivate land at a profit of 10s. 6d. an acre than to keep sheep on it? Most decidedly.
74. Have you had any experience here in regard to sheep? Yes; we have shorn a little over 2,000 sheep every year we have been here.
75. What is the carrying capacity of the land for which you pay 2s. an acre? 1½ acre to the sheep.
76. The cost of keeping your sheep would be 3s.? Yes.
77. What would be the return for sheep after expenses were paid? It depends on the market. Of late years we have had a very low price for wool and stock. I reckon not more than 3s. 9d. to 4s. per sheep at the outside—that is on the basis of 1½ acre to the sheep.
78. That would leave you a profit of 6d. per acre if you devoted the land to pastoral purposes? Something like that.
79. By devoting the land to pastoral purposes, and renting the land at 2s. an acre, you make a net profit, after deducting expenses of 6d. an acre. On the other hand, if you devote the land to agriculture, you make a profit of 10s. 6d. an acre? That is as near as you can estimate it, without going very minutely into the matter.
80. Has the existing railway connection increased the wine-growing in the district? I do not think it has done so up to the present, but I think it is likely it will do so.
81. You came from Victoria, and have been here for a good many years; have your business transactions been mostly with Victoria? My business transactions have mostly been with the town of Jerilderie. I believe in spending the money where I earn it.
82. Do you think the construction of a line would be likely to increase the trade of Victoria? Before the existing line was constructed, with the exception of a little for fruit-trees, I do not think we spent £1 in Sydney. Everything went to Melbourne. But since the line has been constructed we have had nearly everything from Sydney, with the exception of a little agricultural machinery.
83. Viewing this question simply as a business transaction, do you think that if this line were constructed it would be likely to increase our trade with Victoria? I believe it would.

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84. Do you think that increase of traffic would be large? I think there would be a greater increase in the traffic from Deniliquin to Sydney up this way than the other way.
85. What is the average price of land in this district? About £2 an acre.
86. Then, a rental of 2s. an acre would be only 5 per cent. on the capital value? Yes. People cannot afford to let land under 2s. an acre, and for sheep it does not pay to give 2s. an acre, or at any rate any more.
87. Do you think it would pay to give more than 2s. an acre for land for agricultural purposes? Land varies so much. If a man went in heavily for agriculture he could give a little more than 2s. an acre, but there are very few people about here who would be so unwise as to go in entirely for agriculture. The two things—grazing and farming—help one another, and every man should adopt both.
88. If the pastoralists were to lease their land at 2s. an acre for agricultural purposes, do you think they would make more profit out of it than by running sheep on it? I could hardly say.
89. *Mr. Ewing.*] If anyone told you that, down near Mathoura, land was worth £7 an acre, and was let at from 4s. to 6s. 8d. per acre for growing wheat, would you think it probable—is the country somewhat similar to this? I know the country very well. I should not be at all surprised in regard to parts of it.
90. Is it better country than this? Some parts of it are better for growing wheat. It is not so good for sheep as this country.
91. As a whole, is the Mathoura country better for wheat-growing than this country? I do not know that all of it is, but some of it is.
92. Do you think 6s. an acre a very high rent? I do. I would not like to give it.
93. You say that here you would not give 2s. an acre? I did not say I would not. I said there was not much hanging to it. If I had to rent the whole of my land at 2s. an acre it would not pay me.
94. You believe that 6s. an acre can only be paid for wheat-growing in specially good areas? Yes.
95. *Chairman.*] Is there anything else you would like to say? I consider that the line from here to Deniliquin is a national want, as any one can see who looks at the map. We have gone on for a great many years suffering under the disadvantage and injustice of having no railway communication. It should be borne in mind that the cost of ordinary roads in this part of the country is enormous, and this renders communication very difficult. I consider that the people of Deniliquin have a claim for railway communication with the rest of New South Wales, and it is my firm conviction that if a railway is constructed it will not only pay itself, but will also help the other lines to pay. The railway from Narrandera to Jerilderie has never had a fair chance, by reason of the manner in which the returns are calculated by the Railway Department. I believe the railway has not only been directly profitable, but has had the effect of opening up the country and promoting settlement. The proposed railway to Deniliquin will enable people from Victoria and elsewhere, to come and see the district, and learn what it is capable of producing. In this way people will be induced to settle, who would otherwise never come here.

Mr. Michael Curtin, stock and station agent, Jerilderie, sworn, and examined:—

Mr. M. Curtin. 6 June, 1892.

96. *Chairman.*] What are you? I am a stock and station agent at Jerilderie.
97. Do you know much about the district? I know the country well where the railway is proposed to be constructed.
98. What is the character of the country? It is forest country and plain country.
99. Have you any idea as to the use to which it might be put? On the north side of the line it is pretty well all sheep country, and the south side is sheep country too, but there are lots of farms there.
100. Have you any idea of the value of the country from an agricultural point of view? Farmers are paying 5s. an acre for some of the land close to the Murray Hut, about 25 miles south from Jerilderie, towards the Murray River.
101. *Mr. McCourt.*] Does any stock go over to Melbourne from this district? Most of the stock from here goes to Sydney; very little goes to Melbourne.
102. And if the railway were constructed there would be no stock traffic on it to Victoria? I do not think so.
103. But stock would go on from Deniliquin to Sydney? Yes, and right on to Queensland.
104. Do they send stock from Deniliquin to Queensland? Yes; they send thousands of pounds worth in the shape of stud sheep.
105. They would not send sheep in numbers? They send now sometimes twelve trucks at a time of valuable rams, perhaps worth £400 or £500 each.
106. Would that bring much revenue to the railway? I suppose a truck would be about £12 to Bourke for sheep alone.
107. And you say fat stock would go from here to Sydney? Yes.
108. And also from Deniliquin? Yes.
109. Sydney is the market for the stock about here? Yes.
110. Therefore the new line would get no traffic from stock? It would from Deniliquin.
111. But that is a small district as far as stock is concerned? There are some big stations about Deniliquin, and some large farms about Mathoura.
112. Is settlement increasing about here? Certainly.
113. In what way—by selectors coming here, or by people leasing the land? Ten families came from Tasmania the other day and bought land at the Murray Hut.
114. Would they use this proposed line? Yes; from the Murray Hut side.
115. Where would they reach the line? About 12 miles from here.
116. How far in a direct line would they be from the railway? They would be scattered over the place. Some would be 4 or 5 miles away, and some close up.
117. If this line were constructed do you think it would pay? I think so.
118. Where would the traffic come from? It would come from Echuca, Moama, and Deniliquin, right on to Sydney.
119. In passengers and goods? Yes; passengers, and goods, and red gum timber, and other things.
120. The Railway Commissioners estimate that the annual expenditure on the line, in working expenses and interest on cost of construction, would amount to £14,323; do you think that amount of revenue would be obtained from the railway? I do. A large amount of expenditure would be saved in the making of roads.

121. I am speaking of the takings on the line? I am not in a position to prove that.
122. Do you think it would return the amount mentioned? I think so, and it would benefit the existing line of railway right into Sydney.
123. Have you any idea of the price of land about here? It varies. They are selling land at from £4 to £2 10s. an acre—still owing the Government 9s. or 10s. an acre.
124. What would land fit for agriculture be worth? £4 or £5 an acre.
125. Are men willing to give that for it? They are giving that for it.
126. You think that land for wheat-growing is worth £4 or £5 an acre? Yes.
127. Therefore it would be worth 4s. or 5s. an acre rent? Yes.
128. Suppose the large owners were willing to subdivide their land at this price, do you think people would be found to take it up in any quantity? I believe so. Hundreds would come from Victoria and take it up.
129. And would the construction of this line induce the owners to cut up this land? Yes; it would go through splendid agricultural land.
130. Do you think the owners would cut the land up? Yes.
131. How is it that they have not cut up the land between here and Narrandera? It is mostly plain country from here to Narrandera, and a lot of it is cut up.
132. Is it not held in very large holdings now? No doubt; but there is a lot being cut up. There are a lot of farms on the right as you come down the Yanko Creek.
133. But they are selectors? Yes.
134. I am speaking of the probability of the large holders cutting up their land. You say that if the line were constructed to Deniliquin the large holders would be induced to cut up their land, and let it or sell it? I think so.
135. How is it that the large land holders between Jerilderie and Narrandera have not cut up their land, and leased it or sold it? The quality of the land is quite different. The land between Jerilderie and Deniliquin is better for agricultural purposes.
136. *Mr. Ewing.*] Where does the wool go to from this part of the country? Nearly all the wool from here goes to Sydney.
137. You said something with regard to the stock not going to Victoria—are you aware that the Echuca stock market is second to none in the Colony, with the exception, perhaps, of the Wodonga market? I am only speaking with regard to this district. I do not know much about Echuca. I know there is a great stock market at Echuca.
138. Stock goes to Echuca from somewhere? Stock goes there from the Hay direction.
139. If we have going into Victoria as many as 300,000 sheep in the year, is it not reasonable to suppose that some must come from here? The sheep that leave this district generally go into Queensland, and into the north of New South Wales, in big lots.
140. We have it in evidence already that the wool from Jerilderie and Hay, to a very large extent, goes into Victoria? I do not know anything about Hay, but nearly all the wool from about here goes into Sydney.
141. In your opinion, what effect will the Victorian stock tax have on the trade in stock between Riverina and Melbourne? No one can afford to pay 2s. a head on sheep to cross the Murray, and perhaps find a low market in Melbourne. The producers will be compelled to send their stock to Sydney. Whatever stock trade was done between Riverina and Victoria in the past will be killed by a border duty of 2s. a head on sheep.
142. Therefore, any sheep sold must go north? Yes; and the same will apply to fat stock.
143. Like other witnesses, you make a distinction between the plain and the forest country—you regard the forest country as better country? It is better for agricultural purposes.
144. You mentioned, also, that some Tasmanian farmers had settled down at the Murray Hut, or at Berrigan, about 20 miles from here? Yes.
145. That is about 17 or 18 miles from Barooga or Cobram, on the banks of the Murray? Yes.
146. Can you tell us what it would cost to carry wheat from Berrigan to the bank of the Murray River? I suppose about 1s. a bag, or 3d. a bushel.
147. Therefore, any man coming from there to Jerilderie must pay 3d. or 4d. a bushel? Yes; fully that.
148. Is the country round Conargo better than the country along the direct line? I think the country along the direct line is the better country. In the direction of Conargo it is pretty well plain country. There is a certain amount of timber, but not very much.
149. Then, according to your evidence, if this proposed railway is constructed, you cannot expect much traffic in stock from Jerilderie to Deniliquin? That is so—the stock must all go to Sydney.
150. Where do you think the wheat grown about here would go? At present it goes in different directions, principally to Sydney.
151. Does none of it go to Victoria? I do not think so. They bring wheat to the mill at Jerilderie from Deniliquin, and it is sent from here as flour.
152. You believe the wheat grown in Jerilderie would go north or west? Yes; it would go to Sydney.
153. You spoke of land being worth as much as £4 an acre. Have you heard of any sales at that price? There have been very few sales, but I know people have given as high as that for land.
154. Do you think the pastoralists would cut up their estates here? Yes; if the railway were constructed one squatter alone, Mr. Falkiner, would cut up 30,000 acres at once.
155. *Mr. Dawson.*] I think you said that, besides wheat and wool, red-gum was one of the products of this district? Yes. The red-gum grows more about the Deniliquin side—more about Mathoura and Moama.
156. If the railway were constructed, do you think red-gum would be carried along the line for use as sleepers on the New South Wales railways? Most decidedly.
157. It has been proved, I believe, that red-gum is very good for sleepers? Yes.
158. Is there much red-gum in the locality to which you refer? Yes; millions and millions of feet.
159. If the railway were constructed, how far would the red-gum sleepers have to be drawn to reach the nearest point on the line? The forests are within 3 or 4 miles of the railway at Mathoura, on the Deniliquin to Moama line.

Mr. M. Curtin. 6 June, 1892.

Mr. M. Curtin. 6 June, 1892.

160. You have been in the district some time? Yes.
161. If this line were constructed do you think it necessary that it should cross the river Edwards, near Deniliquin, or that it would be sufficient to have the terminal station on this side of the river? I could not tell you anything about the bridge over the Edwards.
162. You think that if the railway were constructed there would be very little traffic going towards Deniliquin, but a good deal coming this way towards Sydney? Yes.
163. *Mr. Wall*.] Have you had large transactions in stock since you have been here? Yes; sometimes.
164. You said that the sheep were principally consigned to Queensland from here—that is stud sheep? Yes.
165. Where are those stud sheep bred? At Conargo, down about Wanganilla, and on some of the stations near Deniliquin.
166. How far is Conargo from here? Thirty-five miles.
167. Then those sheep are already 35 miles from the railway? Some of them are 50 miles from the railway.
168. Are you not aware that Victoria is, to a large extent, dependent on New South Wales for her stock supply? Yes.
169. If this proposed connection were made, would it not lessen the distance stock would have to be carried from the Bland, the Bogan, Hillston, and all the north-western country;—could the people not run their stock from there to Melbourne along this route at less mileage than along the present route? Fat stock would, of course, all go to Sydney from here, and store stock would go to Echuca and Albury for a market.
170. Do you know if a great many fat stock are sent along the present line to Victoria? Not from this side; they might be sent from the Wagga Wagga side.
171-2. In regard to large estates being subdivided in the event of the construction of this line, do you know if any subdivisions have taken place on the existing line between Jerilderie and Narrandera;—is not the character of the country somewhat similar? It is a better country from here to Deniliquin than from here to Narrandera.

Mr. Robert Gardiner, storekeeper, Jerilderie, sworn, and examined:—

Mr. R. Gardiner. 6 June, 1892.

173. *Chairman*.] What are you? I am a storekeeper, carrying on business at Jerilderie.
174. Have you any evidence to give with regard to the proposed railway? Years ago, before the existing line was constructed, my business was entirely with Melbourne, but since the line has been opened it has been gradually drifting away to Sydney. To prove this it will be sufficient to refer alone to my last week's transactions. I got over £1,000 worth of stock from Sydney last week. I am quite certain that if a line had not been opened to Jerilderie not one shilling of that sum would have gone to Sydney.
175. Before the line was constructed you did all your business with Melbourne? Entirely with Melbourne. I was in Sydney last week, and several merchants spoke to me about opening up communication with Deniliquin and Moama, and their travellers are coming up to try and open up new connections in this district. The 10 per cent. duties have virtually closed the Melbourne market, so far as soft goods are concerned.
176. *Mr. Wall*.] In your transactions with Victoria before the construction of the existing line, did you take advantage of the rebate? Certainly.
177. Then you virtually got your goods here free? Yes.
178. As a business man, do you think that the special facilities afforded by the Victorian railway authorities with regard to the conveyance of wool are the cause of a great quantity of wool going to Victoria? I could not say. That is not exactly in my line.
179. In regard to colonial produce grown here, from your knowledge of railway freights, do you think it possible that goods could be sent to Melbourne and thence to Sydney under the rebate system, instead of being sent direct to Sydney? No, I think not; I think the produce would mostly go by rail.
180. How long have you been in Jerilderie? Fourteen years.
181. In regard to the general improvement and development of the place, has it progressed rapidly since the construction of the existing line? No, but I think the proposed railway would make the place go ahead. I know the land pretty well through which the line would run, and it might almost be called the garden of Australia.
182. I suppose you had the same sanguine expectations when the existing line was constructed? No, I had no very sanguine expectations with regard to this line. I did not know so much about the country as I do now. I have travelled over this country, and know nearly every paddock in it, and it contains some of the best land in New South Wales, more especially at the back of Coree, on Hartwood, and a portion of Tuppal. If a railway were constructed, I have no doubt that £4 an acre could be got easily for that land.
183. The land you are speaking of is, I suppose, principally in the hands of private owners? Yes, I know of a transaction not long ago by which 2,000 acres on Barooga were sold at £4 an acre, cash.
184. Do you know that the line from Narrandera to Jerilderie is being worked at a loss of £17,000 a year? I can quite believe it.
185. You think that the construction of that line has given an impetus to settlement? I think so.
186. And do you think that the settlement in this part of the country has been sufficient to compensate for the yearly loss on the railway? I think it will compensate for it in time. I do not say it will at once. I do not say that the proposed railway will pay the New South Wales Government directly, but it will pay indirectly.
187. Do you think the general improvement of the district through which the railway to Narrandera has been constructed has been sufficient to compensate for the small loss entailed? I think so.
188. Do you think the construction of the proposed line would increase our trade with Victoria? Under the present tariff, I think not.
189. Under any altered tariff? I think it would.
190. The principal agriculturists who have settled in this district have come from Victoria? Most of them.
191. *Mr. Dawson*.] In the event of the line being constructed, do you think the merchants and storekeepers of Deniliquin would trade with Sydney? I think so, more especially since the new tariff has been

been imposed. I know that new accounts have been opened in Sydney with firms with whom they never did any business before. Mr. R. Gardiner. 6 June, 1892.
192. The Deniliquin storekeepers now dealing with Sydney merchants must get their goods either by Jerilderie or Hay? Yes.
193. And in either case a road journey of nearly 60 miles is necessary? Yes.
194. In winter it is sometimes very difficult to travel over these roads? Yes.
195. And the Deniliquin people must deal with Melbourne? Yes; they also deal with Sydney, and have their goods brought through Melbourne in bond, in order to save the overland journey.
196. Do you honestly think, as a business man, that if this line were constructed Deniliquin would open up business with Sydney? I am certain of it.
197. It has been stated by Mr. Curtin that stock and produce, instead of going to Deniliquin, would go towards the interior of New South Wales: do you think that if this railway were constructed there would be a large traffic in goods through Jerilderie to Deniliquin as back loading? I think so.
198. If the proposed railway were constructed do you think the passenger traffic would increase? Yes.
199. To what extent would it increase? I think it would be trebled.
200. You think that the railway would diminish the loss on the line between Jerilderie and Narrandera? Yes, I think it would. The private line from Moama to Deniliquin has always paid.
201. Is it a fact that the rates on that line are much higher than those of the New South Wales railways? I could not say.
202. Do you know if the expenses of the line are as heavy as those on the Government lines? I could not say.
203. What is the return fare between Moama and Deniliquin? It think it is 12s. 6d.—a distance of 45 miles.
204. Do you know if the proposed line from Deniliquin to Jerilderie runs through large estates? Yes; it does.
205. Do you know if the owners of those estates would object to the betterment principle? I am not prepared to state. I know that if the land were mine I should very soon cut it up.
206. *Mr. Ewing.*] You wish to give evidence principally with regard to stores. You say you used to deal with Melbourne? Yes; solely.
207. Why used you deal with Melbourne? Because I could get my goods so much better; the freight was so much cheaper. It was a very hard job to get goods here from Sydney.
208. The result to you of trading with Melbourne was that you got your goods delivered at Jerilderie, prior to the making of the Jerilderie to Narrandera line, cheaper than you could get them from Sydney? The freight was cheaper.
209. When you got your goods landed by the New South Wales railway right in Jerilderie, of course you got them more cheaply from Sydney? Yes; and the business went gradually to Sydney.
210. Therefore, where you traded depended primarily on the railway freight? Yes.
211. If you had a continuous line, and were rid of the awkward piece of carriage from Deniliquin to Jerilderie, it is reasonable to suppose that some of your goods would come from Melbourne? It would be reasonable to suppose so, if the tariff were off, but as long as the 10 per cent. duty is in existence the goods will come from Sydney.
212. Do you believe that the one reason why you do not trade with Melbourne is because you have no railway to Deniliquin? I could get the goods landed here the same distance by a line both ways.
213. Suppose you wanted a ton of goods from Deniliquin, what would you have to pay to bring them to Jerilderie? I could not say.
214. The carriage would be almost prohibitory? No; I think it would be about 30s. a ton.
215. Suppose there was a railway for the 44 miles, what do you think the carriage would cost you then? From Jerilderie to Deniliquin it would be about 10s. a ton.
216. Therefore, if this line were made, in trading with Victoria you would be at an advantage to the extent of £1 a ton? While the tariff remains on I am excluded altogether.
217. You say that the tariff prohibits trading between the two colonies? It prohibits any trading in my line. I have pretty well closed all my accounts with Victoria.
218. You say your commercial relations are with Sydney? Yes.
219. And are likely to remain with Sydney because of the border duties? Yes.
220. *Mr. McCourt.*] You get all your soft goods and groceries from Sydney? Yes. Instead of laying out £6,000 or £7,000 with Victoria; the whole of that amount, or perhaps 90 per cent., is laid out in New South Wales.
221. Irrespective of which way the traffic would come, do you think this line would pay? I am not in a position to state that it would pay. I do not think it would pay directly, but it would be a paying line indirectly.
222. Would it have a tendency to increase the population of the district? There is no doubt it would do that.
223. You think it would pay within a period of ten years after construction? Well, it ought to do so. It ought to make the place "hum" for a bit.
224. Would it be a permanent "hum"? If the Colony is going to progress at all it ought to pay in ten years' time.
225. You think the line would pay in ten years' time? I think so.
226. By the increase of settlement? Yes.
227. *Mr. Dawson.*] You say that the 10 per cent. tariff prevents trading with Victoria, but you are aware, of course, that on the goods purchased in Sydney a duty of 10 per cent. has to be paid? That is right enough, but it is not every man who can put his hand in his pocket and pay the duty.
228. The goods are really no dearer to you if the 10 per cent. is paid in Moama or in Sydney? That is true, but still it prevents you dealing with Victoria. But even before the recent 10 per cent. duties were imposed my business was nearly all going to Sydney.
229. On account of the railway being here? Yes.
230. And if the proposed railway is made, you will have a larger business with Melbourne and a larger business also with Sydney? I should hope so.

Mr. Joseph Mawson, railway station-master at Jerilderie, sworn, and examined:—

Mr. J. Mawson. 6 June, 1892.

231. *Chairman.*] What are you? Station-master at Jerilderie.
232. Can you give any information in reference to the railway traffic from Jerilderie to Sydney—the quantity of goods inwards and outwards, including particulars as to stock and wool? I could not give the stock from memory.
233. Could you furnish the Committee with a return giving the traffic from Jerilderie to Narrandera for the last two years? Yes.
234. *Mr. Dawson.*] Suppose a clip of wool from one of the large stations, comprising 1,000 or 2,000 bales, were put upon the railway at Jerilderie, consigned to such a firm as Goldsbrough and Mort, in Sydney, and that the freight were paid in Sydney, would the Jerilderie station get credit for that wool? No.
235. In your return will you include all the wool going from Jerilderie, the freight of which has not been prepaid at your station, and the same with regard to stock? Yes.
236. *Mr. Ewing.*] When was the line from Jerilderie to Narrandera opened? In June, 1885.
237. *Mr. Wall.*] In estimating the earnings of the Jerilderie station, do you take the actual cash received? Yes.
238. When a passenger pays his passage to Sydney at the Jerilderie station, does the Narrandera to Jerilderie line get credit for carrying him over that portion of the railway? This station takes credit for the amount right through to Sydney.
239. Then the return of traffic at a particular station only represents the actual amount in cash received at that station? Yes.
240. As you are not credited with goods shipped here and paid in Sydney, a return would not give us any actual knowledge as to the gross earnings of the line between Jerilderie and Narrandera? This station would not take the credit for goods, the freight of which was paid in Sydney.
241. Could you, in your return, state the actual earnings of this line from its terminal point to its junction with the main line? Yes.
242. And could you furnish us also with the actual earnings of the station in regard to wool not prepaid at Jerilderie—that is to say, the earnings of the line from Jerilderie to Narrandera? Yes.
243. *Mr. McCourt.*] Are the railway charges the same from Jerilderie to Sydney as from Sydney to Jerilderie? The freights from Jerilderie to Sydney are higher.
244. How much? The charge for general merchandise from Sydney to Jerilderie is £7 5s. a ton, against £9 2s. 9d. from Jerilderie to Sydney.
245. What are the passenger fares from Jerilderie to Sydney? Two pounds for second class, single, and £2 15s. for first class, single. The return fares are £4 first class, and £3 second class. From Sydney to Jerilderie, first class return is £4 10s., and second class return, £3 10s. From Sydney to Jerilderie, the second class single fare is £2 5s., and first class single fare, £3 5s.

Mr. William Raleigh, manager of Hartwood Station, near Jerilderie, sworn, and examined:—

Mr. W. Raleigh. 6 June, 1892.

246. *Chairman.*] What are you? Manager of Hartwood Station, the property of Messrs. Blackwood Brothers.
247. How far is that from here? Twenty miles from Jerilderie, on the coach road to Conargo.
248. What is the size of the holding? One hundred and twenty-five thousand acres.
249. Is it all freehold? Nearly all freehold. There are 8,000 acres of Crown lands.
250. The run carries a large number of sheep, I suppose? Yes; it carries a good many.
251. What do you do with your wool? It all goes to Melbourne; it is trucked at Deniliquin.
252. None of it has been sent to Sydney by the Jerilderie to Narrandera line? No.
253. What is the character of the country generally? The south end of the run, where the proposed line goes through, is forest country—very rich agricultural land; in fact, we are finding out that it is too rich for sheep grazing, and that it is getting too valuable for grazing sheep.
254. Is it a fact that some land has been sold in that neighbourhood lately? Yes; there was some land sold about four years ago.
255. What price did it realise? £3 15s. per acre.
256. That was land originally purchased, I suppose, at £1 an acre? Yes; one block of land sold to another selector; we did not buy it ourselves.
257. And, of course, very much improved? Yes; it was a farm, fairly well improved. The man who bought this block of land told me that he came from the Numurkah district, where he sold his land for £9 an acre. He declares that this land which he bought for £3 15s. is much better than the land he sold at Numurkah for £9 an acre. I saw 500 acres of it under crop last season, and it looked magnificent. His yield was very good.
258. Do you think it likely that if the line were constructed from here to Deniliquin, the landed proprietors would cut up their estates and sell or lease the land? Speaking of Hartwood, about 30,000 acres would certainly be leased. Nothing definite has been done, but the matter has been talked of. On the Tuppal Station, adjoining us on the south, 15,000 acres have been leased to farmers from Tasmania.
259. Have you any idea what rental is being received? Five shillings an acre.
260. Do you think the land about here would bring the same sum for farming purposes? Yes; the line passes through land exactly similar. The north end of Hartwood is plain country. It is portion of the Old Man Plain—very good grazing country, but not good agricultural country.
261. *Mr. McCourt.*] Are there any improvements on the land that has been let for 5s. an acre;—is it fenced, and houses put upon it? No; just the bare land.
262. And the tenant has to do all the improvements? Yes.
263. How many sheep will the land carry per acre? In that country we generally allow an acre and a quarter to the sheep, and we lamb there.
264. Is not sheep farming as profitable as agriculture? No.
265. Was it not about two years ago? No; never on that land—not when we get favourable seasons, such as we have been getting. You could get four bags to the acre from that land.
266. Is not sheep farming much easier? I daresay.
267. Do you know that in some parts of the country they are going out of agriculture into sheep-farming? Yes.

Mr. W. Raleigh. 6 June, 1892.

268. The reason being, I suppose, because the latter is more profitable? Certainly.
269. If this line were constructed, do you think it would pay within a reasonable time? I have every reason to believe it would.
270. In what way would it increase settlement on the land here? I think it would increase settlement on the land. Where the line goes through Hartwood, it is all purchased land, but as I said before, we should be able to throw a lot of it open to lease, and people would be encouraged to go on the land by reason of the line running through it.
271. The construction of the line from Narrandera to Jerilderie has not had the effect of subdividing the land, which is still held in large estates? Yes; but the land along the line from Narrandera to Jerilderie is of a very different character, from an agricultural point of view, from the land between here and Deniliquin.
272. The land here is more suitable for agriculture? Yes; it is land on the surface of which the rain does not lodge, which is a sign that it is good land.
273. *Mr. Ewing.*] How far are you from Jerilderie? Twenty miles.
274. You have an idea that you would be able to get from your place straight down to the line? Yes.
275. You would not bring your stuff to Jerilderie? No.
276. You say the wool from your station goes to Melbourne? Yes.
277. I suppose one reason why it goes to Melbourne is that the property is owned in Melbourne? Yes.
278. It is practically Melbourne wool? Yes.
279. And, therefore, you manage your own shipping, selling, and the rest of it in Melbourne? Yes; everything is done there.
280. And even if at a little disadvantage, you would still be likely to send it to the place where the monetary connections are? I think so. I think it would still go to Melbourne if the line were constructed.
281. Do you think the wheat here would go to Melbourne, too? No; it would come to the mill at Jerilderie, and be made into flour. The farmers get the same price at the local mill as they do in Sydney.
282. But the mill only makes sufficient flour for the local demand? I could not say.
283. I suppose you do not know very much about milling operations here? Not a great deal. I know the mill supplies all the neighbourhood with flour.
284. I suppose there is a good stock trade both with the north and the south? Yes.
285. You send some of your stock to Melbourne and some up north? Yes; some may go to Sydney.
286. In your opinion, what will be the effect of the Victorian border duties on the stock trade with regard to cattle and sheep? I think the effect will be to raise the price of our fat stock up here.
287. Having to pay 2s. a head to get into the Melbourne market will raise the price of your stock? Yes.
288. Why do you think so? I think the Victorian supplies will not be sufficient, and the people will have to get their stock from New South Wales to a great extent.
289. You think it will resolve itself into this, that the people of Victoria will pay more for their mutton and beef? I think so.
290. And this rise in price will enable you to pay the 2s. duty? Yes.
291. Then you think, in point of fact, that the stock tax will not affect the quantity of stock going into Victoria? No; I do not think so.
292. You say you know of a sale of land at £3 15s. an acre? Yes.
293. Do you think the land along where you are would reach £3 15s. an acre? Yes; about six months ago we were offered £4 an acre, cash, for 1,000 acres of the country we are speaking of.
294. That was for farming purposes? Yes.
295. Was that with the prospect of the line? No; the line had nothing to do with it.
296. If the line were constructed, would you think it a fair price if you got £4 an acre? Yes.
297. You say that the country between Jerilderie and Narrandera is not as good as the country to which you have referred, and you infer that that is the reason why the pastoralists have not cut up the country there? That is my opinion.
298. I suppose you know that lots of good country from Junee along the main line, going west, is not utilised for farming? I could not say anything with regard to Junee.
299. The cutting up of the large estates does not necessarily follow railway construction? No.
300. Do you think the railway should go from Jerilderie, *via* Conargo, to Deniliquin, or go direct to Deniliquin? I should recommend that it should go *via* Conargo.
301. Have you any reason for believing that is the better route? It would go through nearly all Crown lands. I do not say that it would never touch any freehold lands; but with a little judgment it could be carried through Crown lands the whole way.
302. Does the stock route follow what is called Moulamein along the creek? The stock route follows the Billabong to Conargo.
303. What is the amount of reserved land on that route? I do not say the line would go through Crown lands all the way. To take the line straight you might have to cut across a little freehold land here and there; but on the direct route it is freehold land all the way.
304. You believe that the railway would be contiguous to a greater amount of Crown land if it went *via* Conargo? Yes.
305. Is there any other reason why you think the direct route should not be adopted? I think that a line going *via* Conargo would benefit a greater number of people than one going direct.
306. How many people live at Conargo? The people at Conargo are not numerous; but there are many to the north of Conargo. There are a good many small holders up that way. There are no less than three stations at Conargo, or within a radius of 3 miles from Conargo.
307. You think then, that it would be better to make the whole of the people travelling on the line go 4 miles longer, rather than have a branch line some day to Conargo? Certainly.
308. For two reasons—first, because you believe there is a greater area of Crown land on the route, and secondly, because there is much larger population? Yes.
309. Is the country better? No; the country is not so good. It is mostly plain country; but the line would be very close to the agricultural land. It is within 10 miles of good agricultural land.
310. *Mr. McCourt.*] How long have you been on the Hartwood Station? A little over 6 years.

Mr. W. Raleigh. 6 June, 1892.

311. Have you, in your experience, found any improvement in the land in consequence of sheep grazing? Certainly; the grass has become thicker, and the land can carry more sheep to the acre.
312. Would it also be improved for agriculture? It would.
313. Is it the case throughout the district that where the land has been heavily stocked it has improved in quality? Yes. I think the heavier you stock a country the more it improves. When you get seasonable rains the grass grows very thick after the land has been fully stocked.
314. If this line were constructed, do you think more people would travel? I go to Melbourne very often, and I should always use the railway.
315. Do you think that people coming from Ballarat, Sandhurst, Maryborough, and right up the Victorian side to Echuca, would use this line going to Sydney? Certainly.
316. All the people in that portion of Victoria must use this line? Yes; if they are going to Sydney, and also all the people about Kerang and along the Swan Hill line.
317. What distance would this line save them; if a man at Ballarat wants to go to Sydney, at present he has to go down to Melbourne, and then come up the main line to Wodonga. If this line were constructed, how many miles would he save? I suppose he would save 150 miles.
318. Going from Ballarat to Sydney at present you have to stop some hours in Melbourne? Yes.
319. You think a man going from Ballarat would save 150 miles in mileage, and a good many hours in time? Yes.
320. How far have you to send your wool in teams? Thirty-five miles.
321. If the railway were made, that wool would go by rail? Yes.
322. Either to Melbourne or Sydney? Yes. It might go to Sydney, for all we can say.
323. And you think that, as far as your estate is concerned, it would certainly be leased? Yes.
324. *Mr. Wall.*] I suppose you have a general knowledge of the country within a radius of 20 miles of the proposed line? Yes.
325. Is there any timber upon it valuable for splitting purposes? Yes, there is some very valuable timber upon it—on a portion of Hartwood. Red-gum and pine are the principal timbers.
326. If this line were constructed, would there be any necessity for the retention of the travelling stock reserves;—do you think there are in this part of the country any unnecessary reserves that would be likely to be thrown open if the line were constructed? I think so. I think the travelling stock reserve is very necessary, because if a line were constructed it would not follow that all the sheep coming from Narrandera to Deniliquin would go by the railway. Some very large mobs would go by the stock route.
327. You think the travelling stock reserves would be necessary? I think so.
328. With regard to the timber reserves, do you think they require to be locked up to protect the timber? On many of the reserves the timber is no good, except for firewood.
329. You have had considerable experience in connection with station properties? Yes.
330. It has been necessary to protect the country by the proclamation of unnecessary reserves? Yes.
331. Do you think there are any such reserves about here that could be thrown open in the interests of the public? I do not know of any on our own run.
332. I suppose there are none on your run? No.
333. *Mr. Dawson.*] What is the area of Hartwood? One hundred and twenty-five thousand acres.
334. How many sheep are there on it? About 78,000 at present.
335. That is about two sheep to 3 acres? Yes.

Mr. David McCaughey, owner of Coree Station, sworn, and examined:—

Mr. D. McCaughey. 6 June, 1892.

336. *Mr. Wall.*] What are you? A grazier.
337. You are the owner of Coree Station? Yes.
338. Have you been the owner of Coree for any length of time? For six years.
339. The greater portion of Coree, I presume, is purchased land? There are 125,000 acres of purchased land, and about 25,000 acres of Crown land.
340. How is the Crown land held? Under pastoral lease and occupation license.
341. Your lease expires in 1895? Yes.
342. In the event of the proposed railway being constructed, would you be prepared to dispose of your land for agricultural settlement? From my knowledge of the district, and from what I know of settlement now going on at Tuppal and other places suitable for agriculture, I am of opinion that if a railway were constructed the value of the land would be so enhanced for agricultural purposes that it would not pay us, as squatters, to hold it—that is to say, we should get more for the land than is obtained from sheep-farming.
343. Where do you look for a market for agricultural produce? To Sydney.
344. You think that, notwithstanding the distance and taking all things into consideration, the farmers here would be prepared to compete with those intervening between here and Sydney? The land here is much more easily worked than the land between here and Sydney.
345. Do you know how far the differential rates apply;—do they apply both ways, to and from Sydney;—is there any great difference in the rates between Narrandera and Sydney, and those between Jerilderie and Sydney? I think the freight between Narrandera and Sydney is exactly the same as between Jerilderie and Sydney.
346. Therefore, the farmers here would be on equal terms with the farmers of Narrandera with regard to forwarding their produce? Exactly.
347. How far in that direction would this principle apply—would it apply beyond Narrandera? I am not prepared to say.
348. But you know, as a matter of fact, that it applies to Narrandera? Yes; as regards wool and stock, and I think also as regards agricultural produce.
349. What do you think would be the minimum rent that would be demanded by private owners who might be disposed to let or sell their land for agricultural purposes? My idea is that a letting system would never do, and I do not think there is any station-holder who would attempt such a thing. If you ask my reasons, I would simply say that if the owner of a property of 100,000 acres ventured to let it at a rental of 5s. an acre, or whatever he might be able to get for it, in a country with manhood suffrage, the landlord would be nowhere; the tenants could simply repudiate. I do not believe that any landholder would think

think of letting property. He would sell the land on the deferred-payment system, the same as the Government have done. I, for one, would never think of letting country. As the owner of 100,000 acres let to 100 families, I should be considerably out-voted as a landlord, and I do not think the landlord system would hold.

350. Do you think that, with the rapid strides our democratic institutions are making, the interests of individuals would not be conserved? I should hope so, but I would be very much afraid to try the experiment.

351. What would be about the average return from land devoted to grazing? I should say a fair return would be about 4s. a sheep.

352. And what would be the carrying capacity? My lease is based on 1½ acre to the sheep, and I think the resumed area is the same.

353. Taking all things into consideration, could you give us a rough estimate of the cost per sheep? About 1s. per head.

354. And the return would be about how much? You could put the return at 4s. a head, net. Sheep would require to return you 5s. a head. I am speaking of purchased land, and only of the working expenses.

355. You would net 4s. per sheep, and that would allow for a sinking fund, and cover losses and depreciation? Four shillings means the profit you would have per sheep.

356. As a commercial venture, taking all profit and loss into consideration, and regarding the capital value invested in pastoral pursuits, could you give us an idea of the capital value invested in this district? That is a very difficult question. It varies so tremendously, according to the nature of the country, the management of the country, and other conditions.

357. My reason for asking the question is this: I know by repute that your properties are managed to the very best advantage, and it would be useful information if the Committee could get an idea of the interest returned on the capital value invested in pastoral pursuits in the district, so as to form a comparison, in order to judge whether it would be profitable for the capitalists to let their land on terms? I think the percentage would be about from 6 to 7. In many cases it would be much more, and in many cases it would be much less.

358. Then it would be an advantage to the holders if they could divide their properties at 10 per cent.? Most decidedly; they would do it at once. It is only a matter of the property-holders seeing a better investment for their money.

359. With regard to the sale of land at £4 an acre, have you any idea how much land in a district of this kind a man would require for successful cultivation? A very large area is not required for agriculture;—that is, if the holder goes into farming without combining grazing.

360. How many acres do you think would be the most profitable subdivision to make here? Five hundred or 600 acres would make a very good farm, with a little dairying, and I think that is the most successful kind of farming. I would say from 500 to 1,000 acres.

361. It would require £2,400 to purchase such a holding; do you think there are farmers in Victoria and the other neighbouring colonies with £2,400 who would be likely to invest it in agriculture? Yes; I think there are great numbers. It would not be necessary to have the full amount of capital, as they would get the land on deferred payment. For instance, a man wishing to take 500 or 600 acres would very likely purchase for one-third cash and the balance in two or three, or perhaps four or five years.

362. Would you be prepared to subdivide your land on those terms? That is the recognised way of subdividing. The first deposit would give a guarantee of the *bona fides* of the transaction.

363. You think there is no question whatever but that the pastoralists would be prepared to subdivide their land if they could net from 8 to 10 per cent on the capital value? Not the slightest. I have no hesitation in saying that.

364. Do you think the capital value has been fixed high at £4 an acre? That is a very difficult question. For grazing and squatting purposes it is very high, but for land suitable for farming it would not matter much if you gave £1 or £2 an acre more than you would give for unsuitable land. Very likely, if you got a good farm, the first crop would make a difference of £2 or £3 an acre. So that, looking at it from a saleable point of view to-day, and looking at it from a farming point of view, are two very different things. If I were going into farming to-morrow I would rather give £6 or £7 an acre for suitable land than give £1 an acre for land that was unsuitable, though, judging from the grazing capabilities of the land, there might not be £1 an acre difference.

365. You think there is a class of farmers in the neighbouring colony of Victoria who could afford to take up the necessary quantity of land on the terms you have mentioned, who would be induced to come here if the railway were constructed? I have no hesitation in saying that I do. Within the last twelve months there have been a number of inquiries for land from Victoria and Tasmania.

366. Have you considered the betterment principle, as applied to the owners of private property? I have.

367. Where the State constructs a railway through private property, and the value of Crown land is £2 10s. per acre, and the value placed upon their land by private owners is £4 an acre, which gives an added value of 30s. by the construction of the railway—seeing that the private owners have gained the advantage of that added value, do you think there would be any strong objection to the construction of the line if the Government decided to resume portions of the land, say within a distance of 5 miles from the railway, for the purpose of ensuring that it would be thrown open for agricultural settlement. Some owners might object to subdivide their run, but do you think that, as a general principle, it would be approved of if the Government saw their way to construct this line, and insisted that a certain portion of the land should be thrown open for agricultural settlement? I do not think the private owners would regard the Government in any better light than as to what they could sell the land to any private individual; that is to say, I do not think a private owner would expect that the Government would resume freehold land at £2 to resell it again at, perhaps, £4.

368. Suppose the Government decided to construct a railway through private property with a view to promote agricultural settlement, and that a number of the holders objected to subdivide? If the Government make the railway they have as much land as they could utilise for the next five years within a radius of 4 or 5 miles of the line, they could sell all their Crown land at a very good price. Of course, private owners would much rather that the Government should sell the Crown land, because that would enhance the value of the private lands, and, of course, *vice versa*.

Mr. D. McCaughey. 6 June, 1892.

369. A line direct to Deniliquin would run 40 miles from the river Murray in a parallel direction? Yes.
370. Have you any knowledge of the river frontage? Yes.
371. Are there agricultural settlements along the river? Yes, there is a fair amount back from the river—not on the river flats; they are too much flooded for settlement.
372. Are the facilities for the conveyance of produce to market better by river than by rail? I do not think so; not in that part, at all events.
373. They would prefer to send by rail? Yes. I think there is very little river traffic done there. The river traffic is more in timber.
374. For what distance do you think the people would be served by the construction of a railway—within what radius of the line;—we have taken as a basis 20 miles? Yes; for agricultural purposes you cannot go very much further than that.
375. Taking that as a basis, the people within a radius of 20 miles of the terminal point of the existing line practically have railway communication? Yes; and nearly all the farming is done here within 20 miles of the railway.
376. And those who are 20 miles between here and Deniliquin are practically in no worse position than the farmers who are 20 miles north and south of the line? No, they would not be in any worse position.
377. In the event of the Government constructing the proposed line to Deniliquin, do you think it would be desirable that the line from Deniliquin to Moama should remain in the hands of private owners? No, I think not. It would be much better for the Government to take over that line and have the break of gauge at Moama.
378. Do you think it necessary that 80,000 acres should be locked up in timber reserves in this part of the country? Nearly all the timber reserves are on the Murray, and consist of red-gum forests.
379. Might not many of the reserves on the resumed areas be cancelled with advantage, and the land be thrown open for settlement? Yes.
380. Do you think there is any great necessity for those reserves on the resumed area? I have no hesitation in saying that if a railway were made they would be sold to private owners.
381. Then, practically, there is no necessity for those reserves? Not if you could get settlement.
382. *Mr. Dawson.*] Have you seen any of the red-gum forests which have been referred to? Yes, but not lately—within the last ten years.
383. Do you know whether any trade would be established in red-gum sleepers and other timber if the railway were constructed? I should think there would be.
384. Have you read a recent report as to the value of the red-gum forests? From what knowledge I have I should say they were very valuable; and I have no hesitation in saying that there would be a great trade in red-gum timber.
385. *Mr. McCourt.*] You say you have 125,000 acres of purchased land on your run? Yes.
386. How much leasehold land have you in addition? 25,000 acres, leasehold and resumed area—the Crown lands.
387. Part of the 25,000 acres are leased, and part under occupation license? Yes.
388. Portion of your run was thrown open for occupation in 1885? Yes—12,000 acres.
389. Has that all been selected? A great part of it has been alienated one way or the other.
390. In what way has it induced settlement? Some of it has been settled; a good deal of it has been sold at cost price.
391. Was it not thrown open for selection immediately after the passing of a Land Act? Not all.
392. Half of the 25,000 acres was thrown open? Half of it was resumed.
393. And the other half held on occupation license? Yes.
394. That was open for selection? That was in 1884.
395. That half was open for selection, was it not? No. It contained the travelling stock reserve, and there was a water reserve—a lake of over 2,800 acres—and one or two other reserves on a line of survey for canal purposes, coming from the Murray.
396. After the Land Act of 1884 was passed, was any land open for selection? Yes.
397. Was that land taken up by *bona-fide* selectors? Some of it.
398. And is it still held by those people? Some of it.
399. Have any of the selectors sold out since? Some have. I have bought from some since.
400. Has there been *bona-fide* occupation? They did better elsewhere. A selector would take up a small area, and having made a little money, would then take up 2,500 acres, perhaps at Dubbo, or some other place.
401. He could not get 2,500 acres here. Would he want 2,500 acres here for farming? Not if he had facilities for farming, and if he could get land on better terms.
402. If he had had railway facilities you think he would have remained permanently on the land? If he had had railway facilities he could have done well on a small area of 500 or 600 acres, and if he had not had inducements to go elsewhere to increase his area.
403. Do you send your stock to Melbourne or to Sydney, at the present time? Sometimes to Melbourne, and sometimes to Sydney. The last time I sent fat stock away, about two years ago, they went equally to both places.
404. I want to know the quantity likely to be sent by the proposed railway? This year I sent away about 12,000 fat store stock.
405. And you would send 12,000 away annually by the railway, no matter in what direction? They all went away by rail.
406. If the railway were constructed, you would use it to send stock away in one direction or the other? I have sent away as many as 30,000.
407. How many would you send away annually? From 12,000 to 15,000.
408. Would the other owners of stock in the neighbourhood do the same? Yes; they would be in about the same position as myself.
409. And that would give a considerable revenue to the railway? Yes.
410. If the line were constructed, do you think it would create an intercolonial traffic of any kind? It would, most decidedly, if we had freetrade, but the vexed border duties, and the break of gauge are two things which almost prohibit intercolonial traffic.
411. But if we had intercolonial freetrade? If we had intercolonial freetrade, and the same railway gauge, this line would pay.

412.

412. Do you think the line would in any case pay, say, within ten years? I do not see anything to hinder the line from paying at the start. Mr. D. McCaughey
413. Your opinion is that it would pay within a few years? Without doubt. I go by the Deniliquin to Moama line, and my knowledge of it for the last fifteen years —— 6 June, 1892
414. The Government line would be worked on a different basis; it would not be worked so cheaply as that private line? I hardly know. I think the Government ought to work it even cheaper. There is a large margin of difference. The Deniliquin to Moama line has paid something like 10 per cent. all through. For the first six months after it was opened it paid 15 per cent. on the outlay. It was opened at the commencement of the wool season, and they had a good six months.
415. The line from Jerilderie to Narrandera does not pay, but you think it ought to pay if the Moama line pays? Yes. It does pay, but the returns are not fairly calculated. Goods are put on the line at Jerilderie for which no credit is given. They do not give any credit at all for the work that is done here, and every ton of goods that goes from Jerilderie is a gain to the main line. I myself give from £2,000 to £2,500 for carriage on that line, and have done so since it was opened.
416. And you say no credit is given for that? There is no credit given for the wool at all. Last year I sent away 2,100 bales of wool, the freight of which was paid in Sydney.
417. And for that the Jerilderie station gets no credit? No; all the credit the station gets is for a few paltry things that come back—a few groceries, and odds and ends.
418. *Mr. Dawson.*] I believe you also owned a station at Monaro? Yes; sometime ago.
419. And you send sheep there in summer? Yes, I have done so once or twice.
420. In the case of a dry season, if you wanted to shift the sheep, would you send them by train to Gundagai, or overland? By train. In that respect a railway would be a great advantage to this district. A lot of sheep from that country went off Coree to-day. They were in a most wretched condition through having to travel, and if they could have been trucked a great saving could have been effected. They are going down the Billabong, within 20 miles of Deniliquin. There are other owners in this locality who have runs in the mountain country referred to, among others Messrs. Austin and Miller, and Messrs. Parson and Dale.
421. If this line were constructed, you think that sheep would be sent every summer to Gundagai, and brought back? Most decidedly. It is only in time of drought that they are sent away, and the great object is to get them on to the country in condition. If they could be conveyed by railway they could be kept in the mountains much later, and be brought home when the grass had grown.
422. In that way there would be a certain amount of traffic on the line? Yes. It would amount to a great deal, especially in bad seasons, and there would be a great saving of stock.
423. *Mr. Ewing.*] Where do you send your wool? To Sydney.
424. Have you always sent it to Sydney? Ever since the Jerilderie line was opened.
425. You get it there cheaper than you can get it to Melbourne? No; I could get it to Melbourne a little cheaper,
426. Still you send it to Sydney? Yes.
427. Why is that. Are your commercial arrangements in Sydney? No, my commercial arrangements are in Melbourne; but the land carriage is so much easier, and in the case of wool and other goods you are not so dependent on teams. If the teams meet with bad weather and stop on the way they block your shed. It is better to have short land carriage, for though, perhaps, it may cost a little more it is more expeditious.
428. If the line were extended you would not have any more travelling in sending the stuff by team to Melbourne than you have now in sending it to Sydney? It would be about the same.
429. There is no tax on wool going to Victoria? No.
430. So that the farming community might be inconvenienced, but the pastoralists would not feel it at all, because the only things going into Victoria that are not taxed are things for consumption in Victoria? Yes.
431. Your wool just passes through? Wool would be either shipped or sold; there would be no duty.
432. So that the border duty does not affect you at all in regard to wool? No.
433. Do you think it would with regard to stock? Yes, it would.
434. What is your opinion as to the stock tax—would it destroy the trade with Melbourne? My opinion is that there are so many sheep in Victoria now that the stock tax would destroy our trade with that colony for some time. I heard the evidence of Mr. Raleigh, and I perfectly agree with what he said—that they cannot produce enough fat stock for themselves in Victoria, but it will take some time to bring any trade about. They have been buying very heavily from here, and have filled Victoria with stock in anticipation of the stock tax, and probably it will take twelve or eighteen months for any sort of trade to be established. Then with regard to our store trade, it will do us a tremendous lot of harm. A duty of 2s. a head on our store sheep will be almost prohibitory.
435. You think, then, that the stock tax will, for the time being, destroy your trade with Victoria? I think it certainly will, for the time being.
436. But eventually it will come all right? Eventually they must have fat stock. They must buy it, no matter what they have to pay for it.

Mr. Patrick Cahill, farmer and grazier, Yanko Creek, sworn, and examined:—

437. *Chairman.*] What are you? A farmer and grazier. Mr. P. Cahill.
438. Where do you reside? On the Yanko Creek, about 12 miles from Jerilderie. 6 June, 1892.
439. What is the size of your holding? Two thousand acres.
440. How much do you farm? One hundred acres.
441. What is the rest used for? To run sheep, cattle, and horses.
442. *Mr. McCourt.*] What do you farm on the 100 acres? Principally wheat.
443. For grain, or for hay? Some for hay, some for grain.
444. Is your holding along the proposed line of railway? No, it is not in that direction.
445. You would not use this new line at all then? Oh, yes, occasionally I might.
446. Is your market for wheat at Jerilderie? Yes. If there was a better market at Goulburn or Wagga Wagga, or any of those places, I would send it there.

Mr. P. Cahill. 6 June, 1892.

447. Do the Goulburn millers send buyers to this district? Yes
448. Do they buy any wheat here? Yes, great quantities.
449. And is it sent by rail? Yes.
450. What is about the average yield per acre? About 25 bushels would be a fair average.
451. Do you find that wheat-farming pays you well? Sometimes.
452. Would it not pay you well if you could get 25 bushels to the acre? Not at 2s. 6d. or 3s. a bushel.
453. You cannot grow wheat and sell it at 3s. a bushel? It would not pay very well. It would barely pay, and that is all.
454. What is the lowest paying price you could sell your wheat at? About 3s. 6d. We could hardly do it at 3s. 6d. Say from 3s. 6d. to 5s.
455. Suppose you had to rent land for agricultural purposes, what rent could you afford to pay? About 3s. 6d. an acre, I think, would be a good rent.
456. Could you pay 3s. 6d. an acre? Yes; for good land.
457. And you would be able to lease land at 3s. 6d. an acre suitable for wheat-growing? Some people might give 4s. 6d. and 5s.; but I would not do so.
458. Would the construction of the proposed line from Jerilderie to Deniliquin increase the production of wheat in this district. Would it induce you to put in 300 acres of wheat instead of 100 acres? Yes; because it would open up the country. It would bring more population, and do good. The more the country is opened up by railways the better.
459. But I am speaking of your increased production. Why would you increase your production;—would you expect a better price for your wheat? Yes; because there would be a larger consumption.
460. But would you have any additional markets? Of course; the larger the consumption, the greater will be the production.
461. But where would the consumption be, unless it would be out of the district? We are sending wheat out of the district now. We are sending wheat to Goulburn and Sydney.
462. If you find it pays, why do you not increase your cultivation now? Because I do not want to pay too much wages. I have quite sufficient to do without paying wages. If you paid wages, there would be nothing left for yourself.
463. It would not pay you then? No; it all goes in wages. When you grow 100 acres yourself, you have all the profit yourself.
464. You said that if the railway were constructed, you would put in 300 acres of wheat,—if you did that, would you not have to employ labour? Perhaps I might have one or two more men. That is a very little item.
465. What would it cost to plough the land, provide the seed, and put the wheat in the bags, if you had to employ labour? A good deal depends on the price of the seed wheat; the ploughing is not very much.
466. What is the cost of ploughing in this district per acre? I suppose about 10s. or 12s. for ploughing and harrowing. To that has to be added the price of the seed, and the reaping, and the bagging. I suppose altogether the cost would be about 30s. an acre. You have to pay 4s. an acre rent. 12s. for ploughing, and 5s. a bushel for the seed. That is 21s., and without going into details, I should say, roughly, that the cost per acre would be about 30s
467. Would a lower yield than 25 bushels to the acre pay;—suppose you had only 16 bushels to the acre, would that pay? No; not at 3s. 6d. a bushel.
468. You could not grow wheat at a yield of 16 bushels? Well, at 3s. 6d., I think the grower would be a loser.
469. And if they could do that in other parts of the Colony, you could not compete with them? No.
470. Therefore, there would not be a large increase in the production of wheat in this district caused by the construction of the proposed railway? Yes; the railway would open up the country, and a lot of new people would go into farming.
471. But they would soon find out, according to what you say, that they would not be able to produce wheat profitably? They might be able to do it in a cheaper way than I could.
472. But you could not do it? No.
473. *Mr. Dawson.*] What sort of ploughs do you use? I use a double furrow plough.
474. When you speak of 12s. an acre as the cost of ploughing, you mean that is what you have to pay individually—that would not be a general price throughout the district? In some places they might get it done for less, and in some places they might pay more.
475. According to your showing, it would cost 30s. an acre to get your wheat off? Yes.
476. You say that 16 bushels an acre at 3s. 6d. would not pay you? No.
477. That would be £2 16s. an acre, which would leave you a profit of £1 6s.;—what else could you put your land to that would pay you better? There are the bags, the twine, the cartage, and other things to be reckoned.
478. Suppose you had 500 acres under wheat, and made 10s. an acre, you could not do as well with sheep? I would rather graze sheep than go in for cultivation.
479. If you had 1,000 acres, do you think you could make £500 out of it by sheep? Those who like to try cultivation can do so. I have tried it long enough. I have had forty years' experience of it, and I am full of it. I would rather go on in the old way.
480. You do not believe in farming? It does not pay. If the price of wheat was 8s. or 10s. a bushel, as it used to be eight or ten years ago, then farming might pay.
481. *Mr. Wall.*] You have been a good while in this district? Yes; fifteen years.
482. You have a fair knowledge of the cost of labour;—do you think you could get your land ploughed and harrowed for 12s. an acre? Yes; I think I could.
483. And you would pay 5s. an acre for seed? Yes.
484. That would be taking a very high price? Yes.
485. Can you not grow seed-wheat yourself? Sometimes we have to change the seed.
486. The figures you have given show a profit of 10s. an acre;—do you think you could do better with your land by keeping sheep on it? It all depends upon what you like best to work.
487. *Mr. Ewing.*] Why would you rather keep sheep than farm? There is not so much risk. There are no hot winds blighting your crop, or anything of that sort.
488. Is there less work in growing wool than in growing wheat? Yes.

489. That is why you like it best? Yes; it is more certain. However, I think a railway from Jerilderie to Deniliquin will pay. Mr. P. Cahill.
490. *Mr. Wall.*] Have you any knowledge of the land between here and Deniliquin? Yes; I know it all; I have been over it many times. 6 June, 1892.
491. It is pretty good land, is it not? Yes; very good.

TUESDAY, 7 JUNE, 1892.

[*The Sectional Committee met at the Court-house, Jerilderie, at* 11 *a.m.*]

Present:—

THE HONORABLE WILLIAM HENRY SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

The Sectional Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Mr. Donald Reid, manager of Puckawidgee Station, sworn, and examined:—

492. *Chairman.*] What are you? Manager of the Puckawidgee Station, on the north side of the Billabong, about three miles from Conargo. Mr. D. Reid.
493. What is the area of the station? About 90,000 acres. 7 June, 1892.
494. Is it freehold? Mostly freehold.
495. Is there any Government land within the boundary? Yes; we have about 30,000 acres of Government land.
496. Is the Government land on the resumed area, or is it leasehold;—how is it distributed? It is about equally distributed.
497. What stock does the station carry? We shear between 60,000 and 70,000 sheep.
498. Which way do you send your wool? We send it to Melbourne, and ship it there to England.
499. It is not sold in Melbourne? No.
500. *Mr. Wall.*] How do you convey the wool to Melbourne? It goes by teams to Deniliquin, and thence by rail to Melbourne.
501. Do you know whether the proprietors of your station would be prepared to dispose of their land in the event of a railway being constructed? I could not say.
502. What is the character of the land in the vicinity of Conargo? On the north of the Billabong it is all plain country.
503. Are there many settlers there? No, not many. There are a good many stations north of the Billabong
504. Are there any persons engaged in agricultural pursuits in the vicinity of Conargo? Yes; there are some about Conargo.
505. What do they grow, principally? Wheat, principally.
506. Is their market a local one, or do they send their wheat away? They are badly off for a market. The local market is not very large, and I think if they had facilities for sending their wheat away, they would go more extensively into cultivation.
507. But you say there are not many of them there? There are a good many about Conargo.
508. Are any of these selectors within the boundaries of your run? Yes; we have two or three selectors.
509. I see that there are no Crown lands within your boundaries available for settlement? No; I think there is very little Crown land available.
510. Then, unless the proprietors of your run are disposed to cut it up, and dispose of the land, there will be no further settlement there? No, I do not suppose there will be.
511. What is the difference in distance between the route from Jerilderie to Deniliquin, *via* Conargo, and the direct route as proposed? I should say 8 miles.
512. I suppose you have a general knowledge of the character of the country along those lines? Yes.
513. On which route do you think the country is better adapted for agriculture? I suppose the best land would be on the surveyed route. Still, the land all the way down is very good on both sides of the main road down Conargo way. It is all good land for cultivation.
514. The construction of the proposed line would considerably improve the value of Puckawidgee? I do not know that it would.
515. At the present time how far have you to convey your wool by teams? Twenty-eight miles.
516. Are you aware whether the proprietors would be prepared to make any concessions, provided a line were made *via* Conargo, either by giving land for the construction of the line, or by setting apart a portion of their land for subdivision? The line would not touch our property at all. We are on the north side of the Billabong.
517. How near would the line go to you? The nearest point, I believe, would come within 2 miles of us. Conargo is 3 miles from our homestead.
518. You say that your wool goes to Melbourne. Are there any other stations in the neighbourhood whose wool goes to Melbourne? Yes.
519. If this line were constructed *via* Conargo, do you think they would be likely to use it for the conveyance of wool? I know they would. I believe that most of the other stations in the neighbourhood would use the line. If the railway came to Conargo, I am sure our wool would go to Sydney, and we would ship there, because it would cost us less to send it to Sydney than to Melbourne. It costs us now 13s. a bale from Puckawidgee to Melbourne, and from Jerilderie to Sydney the cost is 11s. a bale.
520. How many bales of wool did you send away last year? Between 900 and 1,000.
521. About what quantity did the adjoining station, Moonbria, send away? About the same quantity.
522. You think a number of stations in your vicinity would be likely to use the railway for the conveyance of their wool? I am sure they all would.
523. They now carry by teams? Yes; the large stations, including our own, on the north side all send their wool to Deniliquin, *via* Conargo.

Mr. D. Reid. 7 June, 1892.

524. What are the stations to which you refer? Boonoke, Willurah, Moonbria, Goolgunbla, Puckawidgee, and Steam Plains.
525. Could you give us an approximate estimate of the number of bales of wool from those stations? Puckawidgee would have about 1,000, Boonoke from 1,200 to 1,500, Willurah from 1,500 to 1,800, Goolgunbla nearly 2,000, Moonbria about 1,000, and Steam Plains about 700 bales.
526. If this line were constructed to Conargo, what distance would the owners of Willurah have to carry their wool to get to the railway? Twenty-five miles. Willurah is 25 miles from Conargo.
527. Do you know where the stations you have mentioned now send their wool? To Melbourne.
528. And I suppose most of them get their supplies from there? Yes; I think they do.
529. *Mr. Dawson.*] The figures you have given make a total of 7,400 bales of wool from the stations mentioned. Is that wool now carried by teams to Deniliquin? Yes. The Willurah wool is carried right into Deniliquin. With regard to Goolgunbla, it is about equi-distant between Deniliquin and Jerilderie, and sometimes the wool is sent here, and sometimes to Deniliquin, and I have known them to send half each way.
530. Goolgunbla would be nearer to Conargo than to Deniliquin, or Jerilderie? Yes; a good deal.
531. And its wool would go to Conargo? Yes.
532. Of the 7,400 bales of wool from these stations, how many do you think would go to Sydney? I could hardly say. It would depend on whether the wool was shipped home.
533. You say you have from 900 to 1,000 bales. If the railway were constructed would you send the wool to Sydney, and ship it there? Yes.
534. If it would pay you to do that would it pay any of the others? Yes; it certainly would.
535. Can you give us an idea of how the 7,400 bales of wool from these six stations would be carried on our lines to Sydney? That is a question I can hardly answer, because it depends entirely on whether the wool is offered in the Colony. If they offer their wool in the Colony they generally send it to Melbourne, in preference to offering it in Sydney. I think it is very likely there are more buyers in Melbourne, and they get a better price there. A great many stations send their wool direct. We have done so for years.
536. Who are the owners of Puckawidgee Station? Messrs. Currie, MacKinnon, and Shaw.
537. They are Melbourne men? Yes.
538. Is there any red gum on the proposed railway line, or near the line? There is very little red gum. There is some red gum along the Billabong, but that is all between here and Deniliquin.
539. The red gum is on the river near Deniliquin? Yes.
540. Do you know whether there is much of it, and whether it would be used on these lines? Yes; I think it would be used a good deal. There is a great deal of red gum on the Edwards, between Deniliquin and Mathoura, where there are some saw-mills.
541. Where do you send your fat stock? To Melbourne.
542. If increased stock duties are imposed by Victoria, is it likely that you will still continue to send there, or will you send to Sydney? I think we should be compelled to send to Sydney. We could not send fat stock to Melbourne if the increased duty were imposed.
543. How many fat stock would be sent from these stations? We send about 10,000 fat wethers yearly, besides cattle.
544. Have you a good many cattle on the run? We have not now, but we had. We sent about 300 last year to Melbourne and Ballarat.
545. And if the stock tax were imposed you would send 10,000 fat sheep every year to Sydney? Yes.
546. *Mr. Ewing.*] In your opinion, ought the proposed line to go direct from Jerilderie to Deniliquin, or *via* Conargo? My opinion is that it should go by Conargo.
547. Why? Because there are all those stations I have mentioned, and besides there are stations on this side of the Billabong, and other settlers. The people about Conargo and on the road down would derive no benefit from the direct line.
548. How many people are there about Conargo. How many do you consider are on the route *via* Conargo? Commencing on this side of Conargo, there are six or seven small holdings round about Conargo—selectors, and others.
549. You say they would derive no benefit at all if a direct line were adopted. How far is Conargo from the direct line? It would be about 12 miles.
550. Do you not think they would derive a benefit if, instead of having to go 40 miles to Jerilderie, they reached a station in 12 miles? No, I think not; because there is no direct road to the line. The road they would be obliged to travel to the line from Conargo would, I daresay, be 16 miles in length.
551. But why would there not be a direct road from Conargo to the line? There is no surveyed road to the nearest point on the line; and then there would be a creek to cross.
552. *Mr. Wall.*] It is much easier to survey a road than to construct a railway? The road would be through bad country.
553. *Mr. Ewing.*] No worse country than the ordinary country here? There is a road from Deniliquin to Conargo at present, and the bad parts are made up. It is a made road, you may say, to Deniliquin, and in sending our wool and other produce, when once we have loaded it at the station, I think it would be better for us to take it to Deniliquin than to take it to the railway.
554. From Conargo to Deniliquin the distance is about 20 miles? Yes.
555. And you think if a railway were made direct it would be better to go from Conargo to Deniliquin than to go to some intermediate station, which you would reach in 12 miles direct? Yes.
556. *Mr. Dawson.*] On account of one road being made and formed, and the other not being made? Yes.
557. *Mr. Ewing.*] You say your wool goes to Melbourne? Yes.
558. Because you get to Deniliquin easier than to Jerilderie, and because you have commercial relations in Melbourne—your owners are in Melbourne? No; one of the owners lives on the station. The others are in Victoria, but not in Melbourne.
559. What is the carriage per ton from Conargo to Deniliquin? From 22s. 6d. to 25s. Wool costs about 3s. a bale.
560. And you think it would cost as much as that to take the wool 12 miles to the railway on the proposed route? Yes; I believe it would.

561. Your reason for believing that the railway ought to go by Conargo is that there are more people there—the country is no better? Yes; there are more people. Mr. D. Reid. 7 June, 1892.
562. That is your only reason? Yes.
563. *Mr. Wall.*] If a railway were constructed *via* Conargo, and you were to put your wool on the trucks there, I suppose it would be a great inconvenience to reload at Deniliquin on account of the break of gauge. Do you think, on this account, there would be an inducement for you to send your wool to Sydney? Yes; I think so. I think we would send it to Sydney in preference to sending it to Deniliquin.
564. If you sent your wool to Melbourne, after putting it on the trucks at Conargo, you would have to unload it again at Deniliquin in order to re-truck it? Yes.
565. You said that the owners of Moonbria sent their wool to Melbourne? Yes.
566. Where do they load their wool on the railway? At Deniliquin.
567. What distance have they to go in order to reach Deniliquin? About 40 miles.
568. Are they not much nearer to Jerilderie? I do not think so. I do not think there is much difference.
569. *Mr. Ewing.*] You send your wool to England;—the freight from Sydney to England and from Melbourne to England is about the same? Yes; about the same.
570. Therefore, you think that if a railway were constructed to Conargo, you would prefer to send your wool between 400 and 500 miles to Sydney than to send it between 200 and 300 miles to Melbourne? Yes.
571. Why? Because it would cost less to send it to Sydney. It costs us from the station to Melbourne 13s. a bale—that is, 10s. by rail and 3s. team carriage. We can send it from Jerilderie to Sydney for 11s. a bale.
572. If the railway went *via* Conargo, you believe that New South Wales would carry your wool at half the rate that Victoria would carry it? They do now.
573. Do you think they would continue to do it? Well, I do not know.
574. You say the reason you would send your wool to Sydney in preference to Melbourne is because the New South Wales Government will carry it for half the cost at which the Victorians will carry it? Yes; that is one reason.
575. Does it not seem, from a business standpoint, a remarkable thing that one colony carries at half the rate of the other? Yes.
576. I suppose you know that New South Wales and Victoria are fighting for the territory, and are undercutting one another;—that will not last long, will it? It would appear as if they were doing so.
577. What do you pay for carriage on the Moama to Deniliquin line? I could not tell you. It is considerably more than the Victorian rate.
578. *Mr. Wall.*] In estimating the total freight to Melbourne, I suppose you include the cost of conveying the wool to Melbourne by team? Yes; that is included in the 13s. per bale.
579. In the event of this railway being constructed to Deniliquin, the same reduction would take place in the Victorian rates as would take place in the New South Wales rates—that is to say, the conveyance of wool by teams would be superseded by the railway? Yes.
580. The same reduction would take place in regard to the sending of your wool to Victoria as you anticipate would take place in regard to sending it to Sydney—team-carriage would be dispensed with;—in making your estimate of the reduction, have you considered that phase of the question? It would depend on the freight from Conargo to Deniliquin whether it would be the same both ways.
581. It would be infinitely less than the cost by team? Yes; I suppose it would. At any rate, it costs us now 10s. from Deniliquin to Melbourne, and it would cost us 11s. from Jerilderie to Sydney, and I suppose from Conargo to Sydney it would be about the same. I think even that then it would be cheaper than the carriage to Melbourne, especially as we should have to load and unload again at Deniliquin.
582. You think that the differential rates would not operate between Conargo and Deniliquin, but that they would operate between Conargo and Sydney; and you think, taking all things into consideration, such as the reloading of your wool at Deniliquin, that it would be cheaper for you to send it to Sydney? Yes; I think so.
583. I believe you have a statement from one of the owners of Puckawidgee which you desire to read? Yes; I would like to read the following letter, signed "Currie and MacKinnon," dated Puckawidgee, 4th June, 1892, and addressed to this Committee:—

In view of evidence being taken at Jerilderie *re* railway to Deniliquin, we beg to give you our reasons why we think it strongly desirable that the line should follow the main road down the Billabong River to the township of Conargo, instead of proceeding across the back country several miles to the south.

1. That by the main road there are homesteads at intervals the whole distance, while by the back way there is not a habitation between Jerilderie and Deniliquin.

2. That several lines of road converge at Conargo from the north, upon which there is a large amount of goods traffic, the railway would doubtless be utilised for the whole of this if it passed close to Conargo, but if several miles distant the greater part of this traffic would certainly continue by teams as hitherto.

3. That on the north side of the Billabong there are six large stations, including our own, that have all along sent their wool and other produce by the roads passing through Conargo; it is next to certain that none of them would utilise the railway unless it was close to that township.

4. In our own case we can speak with certainty, we send annually from 900 to 1,000 bales of wool to Melbourne *via* Deniliquin, receiving in return about 40 tons of back loading. If the railway should come close to Conargo we would make use of it for the whole of our goods, but if a distance of 7 or 8 miles of cross-country had to be traversed, teamsters would require such a disproportionate rate that it would be cheaper and more convenient to continue as hitherto by road; railway communication would thus be completely lost to us, the same would doubtless apply to the other stations already mentioned.

5. We have hitherto sent our wool to Deniliquin and Melbourne, but if we had railway facilities at Conargo, and the cost of carriage nearly equal, we would prefer sending it to Sydney and taking our supplies from there.

6. In view of the Victorian stock tax there is likely to be a large number of fat sheep sent to Sydney from this district; unless there is a station at Conargo all stock would have to be sent by road to Jerilderie to be trucked.

584. Do you think the owners of Puckawidgee would be prepared to enter into a guarantee to use the railway if it were constructed? I am almost sure our people would do so.
585. *Mr. Ewing.*] Is there any permanent water between Jerilderie and Deniliquin on the direct route? No; not a drop of permanent water.
586. Do you know if any water is to be obtained at an ordinary depth by artesian wells? I think water can be obtained by sinking 100 feet.

Mr. D. Reid. 7 June, 1892.

587. Therefore, if a farmer in that part of the country chose to put down a well he could get a supply of water? Yes; but very often the water is not fit for use; it is brackish or salt.
588. If there was a farming population between Jerilderie and Deniliquin, do you think they would have any difficulty in getting water? No; I do not think there would be any difficulty—tanks could be made.
589. Would a man be as well off for water there as he would be on the Yanko or the Billabong, along the route you propose? Yes; I think so.
590. Quite as well off? Not quite as well off. I think having a frontage to a creek would be better than having to make tanks or wells.
591. Do you think there will be a better farming population along the Yanko and the Billabong than there will be in the back country? I could not say; the land is, perhaps, about equal.
592. Does the water along these frontages give a man any advantage over another man in the back country? It does, most certainly.
593. Therefore, there would be a better farming population on the Billabong and the Yanko than there would be in the back country? Well, I think so.
594. You will not speak very definitely about it? No; I will not.

Mr. John Tomkins, selector and farmer, near Conargo, sworn, and examined:—

Mr. J. Tomkins. 7 June, 1892.

595. *Chairman.*] What are you? A selector and farmer.
596. Where do you reside? Five miles this side of Conargo, on the Billabong.
597. What do you do on your selection? Grazing and farming.
598. How much land do you cultivate? About 100 acres.
599. What crops do you grow? Principally hay.
600. Where do you find your market? I do not find any market.
601. You have no market? I can cart it here, or cart it to Deniliquin.
602. Do you sell your produce or use it for your own purposes? I have a great deal on hand now. I am stocked up.
603. Is there no sale for produce of that kind in the district here? Yes; there is a sale for it, but the carriage here costs a great deal.
604. What is the carriage from your place to Jerilderie? I could not get it here under 30s. a ton.
605. What would you get for it when you got it here? About £5 a ton.
606. Cut up into chaff? Yes.
607. Have you any stock upon your holding? Yes; about 4,000 sheep.
608. What is the size of the holding? Five thousand acres.
609. Where do you send your wool? To Melbourne.
610. Is it sold there? Yes.
611. *Mr. Ewing.*] Your place is near the junction of the Billabong and the Yanko? Yes; on the south side of the Billabong.
612. You join the reserve shown on the map; it bounds you on the west, I suppose? Yes.
613. You are about 35 miles from Jerilderie? They call it 35 miles; but I always reckon I am half-way between here and Deniliquin.
614. But how far from Jerilderie? About 26 miles.
615. And about the same distance from Deniliquin? Yes.
616. Do you send any wheat to either place? I send sheep alone, sometimes. I have not grown any wheat for a long time.
617. Where do you send your hay? When I do send it I send it this way. There is no market the other way.
618. Where does it go when it reaches Jerilderie? When once it comes to Jerilderie I can send it anywhere. Not long since I sent some to Narrabri.
619. Then you look for your market for hay to the north and the west? Yes.
620. Your land is suitable for wheat, is it not? Yes.
621. Why have you not grown wheat? Until last year the price of wheat has been so low; there was nothing in growing it.
622. Was there no other reason than the low price of wheat? No; until the last couple of years we could only get 2s. 10d. a bushel at the Deniliquin mills.
623. If the railway went *via* Conargo do you think the farmers would grow wheat then? Yes, I think so.
624. Have you formed any opinion as to where you would find your market then? There are always plenty of buyers coming here throughout the year. Anyone who grows wheat down by Conargo has to send it to Jerilderie and sell it there.
625. What is the carriage by team from Conargo to Jerilderie? About 6d. a bushel, or 2s. a bag. I know some of my neighbours paid that price this summer.
626. That 6d. a bushel would prevent wheat being grown? Yes.
627. *Mr. McCourt.*] Which do you consider would pay best in your neighbourhood—sheep farming or agriculture? I think sheep farming would pay best.
628. Could you employ labour and carry on agriculture profitably? Yes, if we had a railway close at hand. It is the carriage that is the drawback.
629. What could you grow and sell wheat at per bushel with a profit? I should think 3s.
630. Could you sell it at 3s. profitably? Yes.
631. And there would be an ample market for it at that price? Yes, I think it would pay very well to grow wheat at 3s. per bushel.
632. If a witness has stated that he could not grow wheat under 3s. 6d. a bushel, he is not correct? I do not think so. I think it can be grown to pay very well at 3s.
633. *Mr. Dawson.*] Suppose you had an unlimited market at Jerilderie for wheat at 3s. a bushel, how much do you think could be grown about Conargo? We could produce a great deal if we went in for it.
634. The soil is favourable for wheat growing? Yes, it is good land.
635. Have you had much experience in farming? I was farming all my life in Victoria until I came up here.

Mr. J. Tomkins. 7 June, 1892.

636. What part of Victoria? In the western district—Camperdown.
637. And you honestly think that if a railway were made to Conargo you could produce wheat and sell it profitably at 3s. a bushel? Yes; I think so. Our land down there is all open country. There is no grubbing, and nothing requires to be done.
638. And you could get good lengths in your paddock? Yes.
639. Suppose you had an unlimited market here at 3s., how many acres could you put under wheat on your farm? I could put in nearly all the land I have—5,000 acres.
640. Suppose you did this, how much would it cost you to grow the wheat and take it off;—if you were cultivating 1,000 acres, what could you plough it at? I could plough it at 8s. an acre.
641. What would the seed cost? About 1½ bushel to the acre, that would be 5s.
642. What would it cost to take it off and bag it? I suppose it would be worth 10s. an acre to do that—stripping, bagging, and everything connected with it.
643. That would be 23s. an acre;—how many bushels would that land yield, one season with another? On an average, 15 or 16 bushels to the acre.
644. That would be 19s. profit;—what do you do with the straw? Burn it.
645. Then you think that if you had an unlimited market at 3s. it would pay you well to put all your land under wheat? Yes; I think so.
646. Suppose a man were to offer you 3s. for all you could grow, would you go into wheat cultivation now? Yes; I would.
647. *Mr. Wall.*] You send your wool to Melbourne? Yes.
648. How far have you to send it by team? Twenty-six miles.
649. Do you cart it yourself or do you pay for carriage? I mostly pay for carriage.
650. What do you pay per ton? 22s. 6d.
651. If the Government were to construct this line as a special line, would the people be prepared to pay special rates between Jerilderie and Deniliquin? Yes; I think so.

Mr. Joseph Field, farmer, near Conargo, sworn, and examined:—

Mr. J. Field. 7 June, 1892.

652. *Chairman.*] What are you? A farmer.
653. Where do you reside? Fourteen miles this side of Deniliquin, on the Conargo Road, 8 miles from Conargo.
654. What is the size of your holding? A little over 1,000 acres.
655. How much land do you cultivate? I have only about 150 acres under cultivation.
656. What do you do with the rest? Use it for grazing purposes.
657. How many sheep have you? About 700 or 800.
658. Where do you send your wool? To Melbourne.
659. What is done with it there? It is sold.
660. You do not ship it to England? No; the quantity is too small.
661. Do you fatten any stock? No; I generally send the lambs away. I can sell a few wethers now and again, but I have not much to send to Melbourne in the way of stock.
662. Where do you sell your lambs? In Melbourne.
663. *Mr. Wall.*] Did you select your land? I did; in 1873.
664. Do you convey your produce to Deniliquin by your own teams? I do.
665. What distance is it from Deniliquin to your place? About 14 miles.
666. Then you are well served by the railway at Deniliquin at present? No; not at all.
667. Fourteen miles is not a very great distance to have to go to a railway? I cannot send wheat to Melbourne. I paid carriage for wheat to Jerilderie this year.
668. What amount of carriage have you paid to Jerilderie per ton? I have paid 2s. a bag; that is what my neighbours pay also.
669. What would you expect to get wheat conveyed to Jerilderie for if a railway were constructed? From ½d. to 1d. a bushel, if the railway were alongside of me. We pay 6d. a bushel to bring the wheat to Jerilderie, and it only costs 5½d. to carry it from Jerilderie to Sydney.
670. But do you expect that the Government would construct a railway entailing a loss, and allow you to send your grain here at the same rate that is charged on other lines;—would you not be prepared to pay a special rate from your place to Deniliquin in order to get your wheat to the mill;—would it pay you if you could get your wheat here at 10s. a ton? Yes.
671. Then, if the railway were constructed, you would be prepared to pay special rates? It is natural that I should want to be as economical as possible, and get as much out of my wheat as I could.
672. If you could get your wheat conveyed to Jerilderie at a cost of 8s. or 9s. per ton, instead of 18s. or 19s., which you are now paying, would that induce you to put more land under cultivation? Of course it would.
673. *Mr. McCourt.*] What is about the yield per acre of wheat? It depends on the season.
674. Take one year with another? Last year I got about 14 bushels, and the year before I got 26 bushels. I could hardly say what the average would be.
675. Does the agriculture which you carry out pay you? It is what I have to depend upon principally for a living.
676. Then why do you not cultivate more? For the simple reason that I could not sell the wheat.
677. What price per bushel would pay you? If I could get from 3s. to 3s. 6d. here, and I had a fair average crop, that would pay me.
678. Would 3s. pay you? It would if I could not get any more.
679. The reason you do not put more wheat in is because you have no market for it? Yes.
680. Do you know what is the price of wheat in Sydney at the present time? I could not tell you at the present time. I did know a little while ago. The last time Goldsbrough wrote to me he told me it was 4s. 11d.
681. You say it costs you 6d. a bushel to deliver your wheat at Jerilderie, and 5½d. from there to Sydney, which makes 11½d.? Yes.
682. Would you not have a market in Sydney for all the wheat you could grow at 4s. 11d.? Yes; but you are not going to give me that 4s. 11d.

Mr. J. Field. 7 June, 1892.

683. You say the price of wheat in Sydney is 4s. 11d.? It was the last time I heard.
684. And it would cost you 11¼d. to deliver your wheat in Sydney? Yes.
685. Would not that give you an ample profit? Yes.
686. Then it is not because you have no market that you do not grow more wheat? How long ago is it since we had such a price as that? I have been offered 2s. 3d. for wheat.
687. Where? In Deniliquin.
688. But if wheat were 4s. a bushel in Sydney, according to your own showing you could grow it and send it there profitably? Yes; most decidedly.
689. Is not the average price of wheat in Sydney about 4s.? If it were 4s. there that would leave me only 3s.
690. Well, you say 3s. would pay you? I said if I could not get more it would have to pay me.
691. But would it pay you? Well, it would in a sort of way. I do not consider that I would get much out of it. You could live at that price.
692. Therefore, you could send your wheat to Sydney now and live? Yes, there is no doubt; my wheat did go to Sydney.
693. And if you had this railway communication you could do it much better—you would save 5d. a bushel? Yes.
694. If the railway were constructed *via* Conargo, would you be prepared to increase your area under wheat? To tell you the truth, I am starting on spec. now. I have put on a couple of double-furrow ploughs breaking up the ground on spec. If you go along the road you can see it being worked.
695. Do you employ labour? I do.
696. You get the ploughing done at so much an acre? No; I have my own teams, and employ men.
697. Can you employ men and cultivate profitably? Yes.
698. *Mr. Ewing.*] You say you are about 14 miles from Deniliquin? Yes.
699. Therefore, if the direct line from Jerilderie to Deniliquin is constructed, you will still go to Deniliquin with your produce? I think I could get it cheaper to Sydney. There are a good few farmers around me, and we should have a siding, and why should we pay more and send to Melbourne?
700. Do you think the line from Jerilderie to Deniliquin should go direct, or round by Conargo? I think it should go round by Conargo, decidedly.
701. If it goes by Conargo it will go right past your place? Yes.
702. If it does not go by Conargo it will go 12 miles from your place? Yes.
703. Therefore, if the line goes direct and not by Conargo, you will still take your stuff by team to Deniliquin? Yes; of course.
704. You think the line ought to go by Conargo? I do. Look at the difference in the passenger traffic. The Hay traffic comes down our road. Any amount of traffic comes from Hay down our road, and you would pick them all up at Conargo.
705. You do not grow more wheat, you say, because you have no market? Yes.
706. You believe the railway would give you a market? I am sure it would. If I had a railway near me it would be my market, and there are a good few selectors round about me.
707. Where would your market be? In Sydney.
708. You think you would always get a sale in Sydney? Certainly; that would be the only market for me. There is always a better market for chaff in Sydney, leaving wheat out of the question, than there is anywhere about me.
709. Why would you not send your stuff to Melbourne? Instead of paying the tariff on the chaff, I could do better by paying the little extra carriage to Sydney.
710. You say your wheat would not go to Melbourne because of the tariff? Yes. Owing to the border duty, Sydney is a better market for grain. Sending grain to Melbourne is like sending coal to Newcastle, unless you are going to ship it home.
711. If all the wheat is grown in New South Wales that is anticipated there will be more than the Colony can consume? I think not; not at the present time.
712. You do not think that time will come? That is another thing. There is no doubt we should have to export wheat by-and-bye.
713. By-and-bye you think you will have to send your wheat out of the country? Yes, I expect we shall; perhaps not in my time.
714. From here to the seaboard, if Melbourne is your port, the distance is a little over 200 miles; from here to Sydney, if Sydney is your port, the distance is between 400 and 500 miles;—what I want to know is, how you are going to continue to pay the extra 200 miles' carriage to take your produce to the Sydney market? How is it that the Victorian farmers send their wheat to the Sydney market? If they can afford to do so why should not I, if I had a railway at my door.
715. Did you ever hear of produce being sent to Melbourne in bond and round by sea to Sydney, instead of going by railway to Sydney? Yes; I had some things round in bond from Sydney myself this year.
716. And it is cheaper to pay the sea-carriage than it is to pay the extra 200 miles' haulage? Yes.
717. If it is cheaper to get things round in bond, how would it pay you when the railway systems of the two colonies come into competition, to send your produce the extra distance of 200 miles by rail? But if I send wheat to Melbourne in bond for Sydney, I do not pay any duty on it.
718. Then it is a question of the duty. The reason why you look to Sydney for your market is, that there is a border duty between here and Victoria? Yes. Whether or not, Sydney is the best market, and will be for a number of years. It must be while New South Wales has to import wheat to feed her people.
719. You send lambs to Melbourne? Yes.
720. What effect will the border duty have in that respect? If the new stock tax is imposed I should not be able to send them at all, unless I send a blank cheque down, and tell the agent to make up for the deficiency when he sells the lambs and pays expenses.
721. What will be the tax on lambs? The charges will be about 5s. a head, and I do not get a return of 4s. 6d., so that I should have 6d. to pay.
722. You think the stock tax will prohibit any trade in lambs between here and Melbourne? Most decidedly.
723. What will you do with your lambs, then? Goodness only knows.
724. *Mr. Wall.*] When you talk of Sydney as your market, I presume you mean in the direction of Sydney, or do you mean Sydney proper? I could get a market very often at Hay, Cootamundra, or Wagga Wagga.

725.

Mr. J. Field. 7 June, 1892.

725. What can you grow chaff for at a profit? I sold about 100 tons this year at about £4.
726. Where? All round. There has been a lot of traffic on the road; it has been an exceptionally good year. At the present time I am getting £5 10s.
727. Do you consider that a good price? First rate—a sort of "throw in" for us this year.
728. What is the minimum price at which you can afford to sell chaff? It depends on the crop you get. If you have 2 tons to the acre and sell your chaff for £3, that makes £6 to the acre; but if you only get 1 ton to the acre—which, if it is a dry year, we think ourselves lucky to get—you would only make £3 to the acre. But as a rule you can reckon on 25 cwt. to the acre, unless it is an exceptionally bad year.
729. What is the average price you would require? I think about £3 10s. If we had a railway, and I could get that clear after paying expenses, I would send it all away by rail.
730. Do you know that from £3 to £3 10s. is the average price for chaff in Sydney? I think if I had 100 tons in Sydney just now I could get £5 15s. for it.
731. I am talking of the average price. The chaff would have to be of very superior quality even now to fetch over £5? The hay we grow is pronounced to be the best produced anywhere within 200 or 300 miles—so Cobb & Co.'s managers say. We grow the very best of hay. Chaff sent from Jerilderie to Sydney always brings a tip top price.

Mr. Thomas Wise, Mayor of Jerilderie, sworn, and examined:—

Mr. T. Wise. 7 June, 1892.

732. *Chairman.*] What are you? A miller.
733. I believe you are also Mayor of Jerilderie? Yes.
734. You reside in Jerilderie, and carry on milling operations in the town? Yes.
735. Are you well acquainted with the productions of the district? Yes; I was for several years in the eastern portion of the Riverina, and have been for the last seven years in this immediate district.
736. Can you give us any information as to which is the most productive part of the district? The south;—the timbered lands along the Murray generally; the Murray fringe for 30 miles or 40 miles known as the timbered country. I am not exactly sure how far to the east it goes, but for a considerable distance below the Moama line to the west the country is very fertile, much more so than the plains immediately abutting on it.
737. You buy wheat from settlers in that part of the country? Yes.
738. Can you give us any idea of the general average of the crops? The general average for the last thirty years has been, I think, between 15 and 16 bushels. Sometimes it is a great deal more, but very often there is a very large area of self-sown land, which reduces the yield.
739. But on fairly well tilled land the average would be from about 18 to 20 bushels? Yes.
740. How far does that land lie from Jerilderie? It commences about 7 or 8 miles out, and extends to the Murray.
741. Is that in the direction of Cobram? It includes the whole of the Murray fringe—Tuppal, Berrigan, Barooga, and Momolong. In point of fertility I do not think there is much difference.
742. Have you considered the proposed railway from Jerilderie to Deniliquin? Yes; I think it is a very desirable line. I have some figures as to the development of wheat-growing in the district. In the year 1885, the year the mill started, and the railway was opened, 3,360 bags of wheat were brought here by the railway from Cootamundra, Coolaman, and other places, and a good deal of it was sold for seed. In the following year 8,000 bags were produced in the district.
743. In what part of the district? I could not possibly locate it—principally to the south and a little to the east; chiefly in the country of which I have spoken. In 1887 the quantity produced in the district was 9,700 bags; in 1888 there were 18,000 bags. In 1889 the crops were bad all over the colonies, including New South Wales and Victoria, but this district showed an average of from 12 bushels to 14 bushels, which was the best average yield in the Australian colonies in that year. The total quantity produced here in 1889 was 14,994 bags. In 1890 there were 21,712 bags, and I add to this 5,000 bags which went to other buyers, making a total of 34,712 bags. In 1891 the quantity was 29,150 bags, and I estimate that 6,000 bags went to other buyers, making a total of 35,150 bags. In 1892 35,000 bags went through our hands, and 15,000 bags to other buyers, making a total for this year of 50,000 bags. These figures show a large increase in the growth of wheat, which I attribute to the fact of the railway having been constructed. If the railway had not been extended to Jerilderie I may safely say that not a bushel of that wheat would have been produced, because if the railway had not been here the mill would not have been here. Some people attribute the production to the effect of the local market, but I would not have built the mill if the railway had not been here.
744. You have heard it stated that it is desirable to take the railway *via* Conargo; have you considered that question? I have considered it. I consider that taking purely a local view of the question, a detour either to the north or the south—I am not in a position to say which it should be—would be the best; but on intercolonial or national grounds, I consider that a direct line should be constructed. A greater number of people would be served by a detour than by a direct line.
745. There is not much population along the direct route? Not immediately.
746. *Mr. Ewing.*] Is the wheat here very good? Yes; very good.
747. And you attribute the great increase in production altogether to railway communication? Yes, entirely.
748. How many pounds to the bushel does the wheat go? I have seen it go as high as 68, and 66 is common. The average for ordinary wheat, as it is brought to market, would be 64 or 65 lb.
749. You said just now that, from a local standpoint, the line should go either to the north or the south, but on intercolonial grounds it ought to go direct;—will you explain what you mean by intercolonial? I referred to possible traffic between Victoria, South Australia, and New South Wales.
750. You think that people coming from Adelaide might turn off at Ballarat? No; there is a nearer route by Ararat and Maryborough, which would give them a more direct line through. They would leave Ballarat a good deal to the south.
751. You think also that if the people of Deniliquin and the country south were to trade with Sydney it would not be fair to make them go through Victoria to reach their destination? When the lines are completed which the Victorian Government propose to construct there will be a saving of 100 miles in the journey from Sydney to Adelaide, the passengers passing along this route and catching the express at Ararat, and, of course, that would apply to the whole of the line.

Mr. T. Wise. 7 June, 1892.

752. I suppose all the wheat would come here to be made into flour, and the flour would be sent along the line? Sometimes the millers at Goulburn and at Wagga Wagga, as well as ourselves, according to our requirements, want wheat, and will give a little more for it. Sometimes, if the millers at Goulburn or Wagga Wagga have more than they want, they let the wheat go by them, and it goes to Sydney; but the price is generally ruled by that which obtains in Sydney, except when there is a scarcity. As a general rule, throughout harvest time the price is ruled by the Sydney market.
753. We have heard something about goods being sent from this district to Melbourne, and going thence in bond to Sydney. Have you heard of anything of that sort being done, or of goods being brought from Sydney and Melbourne, and thence along the Victorian railways? It is done at Deniliquin.
754. Is it done here? No; I have never heard of it being done here. I think I may state positively that no goods have come from Sydney to Jerilderie by that way.
755. Being done at Deniliquin, and if it is a common practice there, it is clearly to the interests of the Deniliquin people, or else they would not do it? Yes.
756. The reason why it is not done in Jerilderie is, I presume, because of the break in the railway gauge, otherwise if it suited Deniliquin to do it, it might suit Jerilderie to do it, the distance being only 44 miles greater? I do not think that is quite right, because it would mean 44 miles each way, or a total of 88 miles. The people of Jerilderie would have 44 miles disadvantage on this side, and they would have 44 miles extra to pay, so that I think that in point of mileage, leaving out all other questions, such as differential rates and everything else, Narrandera, 60 miles from here, is equidistant from Sydney and Melbourne, *via* Deniliquin.
757. So that you think it could not be done in the case of Jerilderie? No.
758. Can you tell us what controls the price of wheat in the markets of the world? It is generally recognised by people in the trade that Mark Lane is the centre from which all other markets are controlled.
759. Then the London wheat market generally controls the price of wheat? Generally.
760. What is the price of wheat per bushel in London? At the present time the price in London for good sea-borne wheat is 4s. 6d.
761. What is it worth here? Locally, about 4s. 3d. or 4s. 4d.; but at the present time the London market does not control this market. I said generally.
762. I suppose you believe the time will come when we shall over-produce in New South Wales? Yes.
763. And that we shall have to look beyond Sydney and Melbourne for a market? Yes, in some years.
764. You think that the time is not far ahead when we shall have to look to the outside world? I should say that with the progress agriculture is making we shall have to do so in three or five years' time.
765. Therefore, if we go on farming, as I have no doubt we will, we shall have to look beyond our own markets, and be controlled by the price of wheat in London? Yes, London and Europe.
766. The freight to London from Sydney and Melbourne is about the same? Yes.
767. Would you send your stuff to Melbourne, in bond, for export? It would depend on the then local circumstances.
768. If you send it to Melbourne in bond you escape the border duties, which people have to pay who send for consumption in Melbourne? Yes.
769. Therefore, as they are about twice the distance from Sydney that they are from Melbourne, it is reasonable to suppose that the people round about Jerilderie will eventually use the proposed railway to send their wheat to Melbourne to be shipped to some foreign market? Yes.
770. The line would be eventually largely used for that purpose? Yes, in the future. I think that is a very fair view to take of it, and I think that is what will take place.
771. From your local knowledge, do you think the pastoralists here would give the people opportunities of getting on the land? Yes, I think so. One reason for my thinking so is, that this morning I received a letter from the owner of Yathong, who is unable to be present to give evidence, in which he says, "I am in favour of the proposed extension of the railway to Deniliquin. As I am a holder of freehold property, I may in the future let portions of my run for farming purposes."
772. You think that the same thing which obtains at Tuppal and Berrigan, where the owners have leased land, will obtain pretty well all through the district? I think so. I think that if farming continues to be as profitable, or even nearly as profitable, as it has been this year, the squatters will find it more profitable to let their land on terms at which farmers will be willing to take it for cultivation. They will probably do this to some extent, but I could not say to what extent.
773. What would it cost per bushel to take wheat from Australia to London? The cost, including all charges, is generally estimated at about 1s. a bushel.
774. Therefore, if 4s. 6d. is a fair price in London we could depend generally on 3s. 6d. at our own port? Yes.
775. And you would get it from here to Melbourne, or from here to Sydney, pretty well for 6d.? Yes.
776. Therefore, if we had a foreign market we would get 3s. all round for our wheat? Yes.
777. And if there were a large market, and we get 3s. for the wheat, all these lands would be devoted to wheat-growing? Yes, as soon as there were people to take them up. The land is capable of production, and the pursuit is profitable. There are people in the country perhaps, but they are not the class who understand the work, and are willing to undertake it.
778. But you do not doubt that the people would be found if there was money in it? Yes, in time, I suppose.
779. *Mr. McCourt.*] You are Mayor of Jerilderie? Yes.
780. What is the size of the municipality? It contains about 50 square miles, and the population is about 600.
781. With regard to the wheat produced in the district, did not most of it come from Berrigan, and round that way? Yes, most of it did. A lot came from Clear Hills, Tuppal, and Murray Hut.
782. I believe there is a proposal to construct a line from Jerilderie to Berrigan? Yes, there has been an agitation for such a line.
783. Do you think it would be a desirable line to construct? I think so. In fact I think this country wants opening up with railways in every direction.
784. You say the average yield per acre here is about 16 bushels? It is fully that.
785. If there was an increased area put under crop, and wheat-growing continued here, would not the average

average yield tend to decrease? Not for many years; because there is too much new country, and the country here is very strong. It would take several years to run it out. There are paddocks in this district that have been cultivated for seven or eight years, and they give a yield of 20 bushels. The farmers are now going in for fallowing, by which they keep up the average yield. They are more and more adopting this system of farming.

786. What would be the lowest yield that would pay a farmer? I think the evidence given by Mr. Tomkins was correct—that at 3s., a yield of 16 bushels to the acre would pay. I think that is about the most correct estimate that has been given.

787. That would pay the farmer fairly well? Yes.

788. If this line were constructed, would you open up a trade with Deniliquin with your mill? It is impossible to say. There is not a very good mill at Deniliquin now, and if the line were constructed, a mill would be almost sure to be built there, because the mill at present at Deniliquin has no outlet for its surplus stock. Therefore the thing is in a very unsatisfactory position. The line would develop trade all through here.

789. Irrespective of whether the traffic would go to Sydney or Melbourne, do you think that if the proposed line were constructed, it would pay? I certainly do.

790. By the increase of population in the district? By the increased settlement which it would induce, and the increased passenger traffic—not only the local passenger traffic, but the through passenger traffic from the northern parts of Victoria with New South Wales, not necessarily to Sydney, but to New South Wales generally.

791. You think that passengers from the north-west parts of Victoria would come round this way, in preference to going round the other way? Yes; for instance, a person wanting to go to Bourke, or any northern part of New South Wales, from the north-western districts of Victoria could come across by this route, and turn off at Harden.

792. *Mr. Dawson.*] You say that other buyers purchased 15,000 bags of wheat here this year? Yes.

793. When that wheat was sent away, was credit given to the Jerilderie railway station in the railway returns? I do not know how they keep their accounts, but I am sure the Railway Department does not aim at showing the actual profits of any particular section. They work the whole together, and it would entail a lot of trouble to ascertain the actual earnings of a particular section. I have looked at the books, and there is no account kept showing the net profits on any particular line, or showing it correctly.

794. According to your evidence, 200,000 bushels of wheat have been brought to Jerilderie, and purchased by yourself and other buyers; if there was sufficient demand, to what extent could that quantity be increased;—could the farmers grow five times or ten times as much? The amount that could be produced is almost unlimited, even by existing selectors. It would be limited only by the ability of the selectors to put in more wheat and take it off. When there were only 8,000 or 9,000 bags of wheat to be carted in from the farmers, there was not much trouble, but even this year, when there are 50,000 bags, the matter becomes one of considerable difficulty. You can easily get local buyers who can take away a certain quantity of wheat (say 50,000 bags); but if the production were to increase from 50,000 to 500,000 bags, which it might easily do in this district, it would be almost impossible to get teams to carry it away, and there are no roads in the district. So that the block to greater production is the want of facilities to reach the market. Farmers are constantly writing to us asking if they can get teams to carry their wheat away. Under the present system it must be carted before a certain time, because the roads get bad after the first rain and then it cannot be carted at all. The land is there, and the people are there willing to work it, but they cannot get more than a certain quantity of wheat to market. They had a great difficulty this year to get 50,000 bags in, and if that quantity were doubled the difficulty would be more than doubled.

795. Do you go into oats and other agricultural produce? Yes.

796. What is the production of chaff? The yield of the district is considerable.

797. Can you give us the number of tons? In this immediate district you cannot count chaff beyond 15 miles from a railway, because, although it may pay to cart it 30 miles on a pinch, it would not pay to cart chaff more than 12 miles, and, taking a radius of 12 miles from the railway at Jerilderie, the production would be from 1,200 to 1,500 tons.

798. *Mr. Wall.*] Do you not think that if a farmer is situated within 10 or 20 miles of a railway he is fairly well served? Yes.

799. Taking a line midway from here to Deniliquin, the greater portion of the farmers situated within a radius of 20 miles from Jerilderie are fairly well served by the railway at the present time? That is for the Sydney market. I should say those who are within a radius of 15 miles. I think 20 miles is a little too far. If a farmer can land his produce and get home the same night he is right enough, and a man can do that if he is 12 miles away; but if he has to make a two days' journey he is very much handicapped.

800. In the present development of the country it is not to be expected that a railway can be brought within 12 miles of every farmer, and if we take a radius of 20 miles I suppose you do not consider that unfair? No.

801. I gather, from the general tenor of your evidence, that London must eventually be our great wheat market? Yes; I do not see anything else for it.

802. That being the case, assuming that there is no obstacle in the way of forwarding wheat to Melbourne and shipping it there, Jerilderie would be in a better position to compete in the London market than Narrandera or any other portion of the line further on—that is, assuming that the wheat was sent to Melbourne? Yes; a little—that is, providing the line went straight through to Melbourne without any impediment.

803. If a railway were constructed from Jerilderie to Deniliquin, would not the break of gauge and the necessity to unload and reload the trucks be a great obstacle? Yes; it would amount to an additional cost of about ¼d. a bushel.

804. If the Government decided to construct this line, do you think it would be desirable that the Colony should take over the private line from Deniliquin to Moama? I do not see the necessity for that. Knowing the country as I do, I think that if the existing line at Jerilderie were extended to the northern bank of the Edwards, leaving existing arrangements as they are, there would be a large saving of

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expenditure and all purposes would be served just as well, until such time as the traffic increased so as to warrant the extra expenditure in taking over the private line, altering the gauge, and building a bridge over the Edwards.

805. Do you know the estimated cost of the bridge? I believe it is about £25,000.

806. Then there would be a saving of that amount if the bridge were not constructed? Yes.

807. Do the owners of the private railway charge special rates? Yes; I know they are very much higher than the rates on the Victorian and New South Wales lines.

808. Viewing the proposed railway from a commercial point of view, and seeing that none of the persons residing between here and Deniliquin are more than 25 miles from a railway station, do you think it would be reasonable, in the event of the construction of the line, to charge special rates, as the private company are doing, as a kind of guarantee until such time as the line became profitable? I think it would be a very good thing to do.

809. If special rates were imposed, amounting to a reduction (say) of 25 or 30 per cent. on the present rates for team carriage, do you think the owners of station property would be likely to avail themselves of the railway? I think if that were made a condition before constructing the line they would be quite willing to enter into a bond to carry it out. But if the line were constructed without any such condition being imposed, I do not know what they would do. I think it would be a very reasonable and fair thing.

810. It is the custom when private companies construct railways to make special arrangements with those who use the railway until the line becomes payable. Do you think the station holders who now send their wool by teams would be likely to enter into a bond of that kind? Yes; I think they would. I am almost sure they would, but of course, I cannot speak positively on this point. It would be very much to their interest to do so.

811. A large amount of settlement has taken place in the vicinity of Narrandera? Yes; a good deal.

812. Do you get wheat from Narrandera here? No; we send wheat from here to Narrandera.

813. From your knowledge of the business transactions of the district, can you give us any idea of the line where the division of trade takes place between the metropolis of each colony? As far as this place is concerned, the people all trade with Sydney. There is no trade with Melbourne at all worth speaking of. They also trade with Deniliquin, and to a certain extent send in bond to Melbourne.

814. The evidence this morning goes to show that most of the stations between here and Deniliquin trade with Melbourne? If the line were continued on to Deniliquin, and there were no impediments in the shape of border duties, differential rates, and the break of gauge, the trade would go to Melbourne; but the difference of railway gauge, the customs tariff, and other impediments operate in directing the trade, and to some extent check trade with Victoria.

815. Do you ship any wheat? No.

816. Do you know if it is a fact that there are greater facilities for shipping wheat in Sydney than in Melbourne? I do not know that.

817. Most of the ocean-going steamers have to go to Sydney to coal? Yes; in that way I should think Sydney would have an advantage.

818. Shippers would be more likely to get large bottom vessels there? Yes.

819. *Mr. McCourt.*] By the operation of the differential duties do you not get goods as cheaply from Sydney at Jerilderie as they do at Narrandera? Yes.

820. If this line were constructed to Deniliquin, would it not be likely that the differential system would be extended, and that they would get goods as cheaply at Deniliquin as they do here? According to the present tariff sheet they would.

821. Therefore, there would be no revenue on the new line from goods? No; not in that way.

822. Where, then, would the line get its revenue from? The only revenue would be the increased traffic over the present line. For every 5,000 tons of goods going into Deniliquin, freight would have to be paid over this line which is not paid at present.

823. The profit that would be made would be an indirect profit to the main line? Yes.

824. Instead of the goods for Deniliquin going by sea, and in bond through Victoria, they would come from Sydney over the New South Wales lines? Yes.

825. And the New South Wales railways would get the benefit of the through freight? Yes.

826. You said that the people would be in favour of special rates on this new line, but under those circumstances they could not pay special rates, could they? Not on inwards traffic of that kind, but on such traffic as grain and wool they would.

827. If special rates were imposed on inwards traffic they would not pay them, but would go elsewhere? Unless a condition were attached in the first place, and they entered into some bond with the Department.

828. The Railway Commissioners, reporting on this line, have estimated the annual charge for working expenses at £8,587; how often do the trains run from here to Narrandera? Three times a week in, and three times a week out.

829. During the intervening days the engine and men remain here idle, doing nothing? Yes.

830. The men and the engine are here idle four days in the week; if the line were constructed from here to Deniliquin, how many times a week would the train run? I consider that a daily train would be necessary, but for the goods traffic three trains a week would be sufficient.

831. Therefore, the men and the engine might just as well be employed running over the new line, as lying idle at Jerilderie, and the cost would be little more? Hardly any more, except as regards rolling-stock. Two hours after leaving here the train would be in Deniliquin.

832. So that the expense would be very little more? Very little.

833. *Chairman.*] The Engineer-in-Chief for Railways, in his evidence, estimates the cost of the bridge over the Edwards at £11,000? I do not see how they could put a bridge over the Edwards for £11,000.

834. Suppose the estimate of the Engineer-in-Chief to be correct, do you think it would be desirable to connect this line with the line at Deniliquin? No; because a saving of £10,000 would be a considerable item, and the interests of the people would be served just as well. There would be no delay, because temporary station buildings would do just as well at North Deniliquin, and there would be a station there in any case.

835. Is there anything else you would like to say with regard to the proposed railway? In arriving at the belief that the line would pay, I draw my conclusions from what I know of the working of the lines in Victoria in connection with agriculture. If the line is constructed to Deniliquin it will tap the fertile valley of

of the Murray, every acre of which is good agricultural land. In this Colony it has been the experience of everybody in the grain trade, that although you may have a very good season in one portion of the Colony, in other portions it will be quite the reverse. The first use to which the existing railway was put was to bring some thousands of tons of hay and chaff from the northern districts, and very often when we have a surplus here supplies are required at Bourke and other places. The same thing happens in Victoria. When the wheat line in Victoria was only about the Springs and Ballarat, they said wheat would never be grown in the northern parts. As soon as wheat cultivation extended into the north the district south was thrown out of wheat and put to a higher method of agriculture—dairy farming, and that sort of thing. The northern plains were then used for growing wheat, and in this way one part of the Colony supplied the deficiency of the other part. That process is taking place to a very great extent even now. We send the stuff from here to Bourke. If there was a large amount of stuff grown here we could send more, but simply because the stuff is not grown here we cannot do the trade, and the produce is obtained from New Zealand, and wherever they can get it, through Sydney. But if this valley of the Murray were tapped by a railway, as in the case of Albury, the surplus products of this district could supply the wants of the other parts of the Colony, which would cause a trade in the Colony, apart from Sydney altogether, that would amply repay the outlay. I consider that these circumstances, in conjunction with the passenger traffic that would be created, would fully warrant the construction of the proposed line. It is impossible to make roads here. We have attempted to do so in the municipality, but the work is very expensive. The Roads Department endeavour to do what they can every year, but with the limited amount of money at his disposal the Superintendent of Roads can only play with the work. Mr. T. Wise. 7 June, 1892.

836. *Mr. Dawson.*] Does it not cost nearly as much to make a road in this district as it does to make a railway? Quite as much. Roads are impassable. If you get rains about February or March, all traffic is stopped until the following year. It is impossible to get through the plains or any of this country. Unless a railway is constructed I do not see how it will be possible to develop the country, and it must lie dormant as a sheepwalk.

837. *Mr. Ewing.*] The Deniliquin to Moama line pays? Yes.

838. Why does it pay? It pays because Deniliquin is a good big town, and there is a large population there, and a good passenger traffic over the line.

839. It pays because the people find Deniliquin a suitable depôt from which to send their goods to Melbourne? Yes.

840. The line from Jerilderie to Narrandera does not pay although it is situated in similar country? Yes.

841. Therefore the people in Jerilderie do not find the line from here to Narrandera as satisfactory a route to their market as the people do from Deniliquin to Moama. If Sydney were as good a market for the people in Jerilderie as Melbourne is for the people in Deniliquin, the line from Jerilderie to Narrandera would pay as well as the line from Deniliquin to Moama? It is not altogether a question of a market, but it is a question of population. For instance, if you go south for 10 or 12 miles you come upon the populous part of the district fringing the Murray, the population being thicker in some parts than in others. Victoria taps the Murray with her railways at almost every point, and if those people want to do any business—if they want to consult a doctor or a lawyer, for instance—it is too far to come here, and they take the Victorian railways and go to Melbourne.

842. Mr. Wall spoke to you with respect to the trend of traffic. The trend of traffic from Deniliquin to Moama is greater than the trend of traffic from Jerilderie to Narrandera? Yes, there are more people there.

843. The district sets more that way? Yes.

844. And I suppose you do not see any greater reason against connecting the line here than a person would about Albury? None whatever.

845. It cannot be more injurious to New South Wales to allow you to get into Victoria here than it was in connection with the other part of Riverina? No.

846. If that be a reason here, it should have been a reason there? Just so.

847. *Mr. Wall.*] Since the imposition of the Customs duties, has not the trend of traffic been the other way—to Sydney? Yes, before the railway to Sydney extended to Riverina, and when it stopped at Goulburn and Cootamundra, every acre of this country was practically Victorian territory. Nobody ever thought of going to Sydney to get their goods, and Riverina generally did not belong to New South Wales, from a commercial point of view. The wool used to go from north of the Murrumbidgee to Albury in teams, and it used to come right down here when the river was not available, and until the railways were constructed in Riverina generally, this part was completely cut away from New South Wales. Therefore it is only fair to assume that if the railway is further extended into this country it will open up traffic between one part of the Colony and the other. For instance, squatters often want to send stock to Bourke, and there would be traffic backwards and forwards from one part of the Colony to the other. At present, though that kind of traffic is not actually cut off, yet the outlet for agriculture is cut off except to a limited extent, for although 50,000 bags of wheat, the produce for this year, is a good deal, it is very small in proportion to what the district could send away.

848. *Chairman.*] As Mayor of the town, I suppose you have had some experience with regard to road-making? Yes.

849. The Under Secretary for Public Works, in his evidence before the General Committee, said, "The estimated cost of a first-class metalled road in this district is about £3,000 a mile." How does that compare with your experience? That is pretty high. I should say it would cost £2,000 a mile to make a macadamised road. No such road has ever been made here.

850. *Mr. Ewing.*] You use gravel, I suppose? The road is pitched first and broken stone put on top. I consider that a fairly good road could not be made under £1,000 a mile.

Mr. David McCaughey sworn, and further examined:—

851. *Chairman.*] I understand you wish to make a statement with regard to the probable traffic on the proposed railway? I merely wish to refer to the probability of a large through traffic if the line were constructed from Jerilderie to Deniliquin. It is all level country right through, from Junee to Melbourne. From Sandhurst to Melbourne is all down hill, and it is perfectly level country from Junee till you get to Sandhurst. There would scarcely be a cutting on the whole line. My idea is that nearly all the heavy Mr. D. McCaughey. 7 June, 1892.

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heavy traffic, instead of going down the north-east line, could be brought very much cheaper down this line. I refer to the heavy traffic between Sydney and Melbourne that now goes by Wagga Wagga.

852. *Mr. Ewing.*] Have you calculated the distance? There would be very little difference in the distance, but the haulage by this route would be so much easier.

853. *Mr. Wall.*] Do you know what the grades are on the Wodonga line? No; I do not, but there are some very heavy cuttings. It is perfectly level from Junee right through here.

854. *Mr. Ewing.*] Calculating the distance, there would be a difference of 60 miles in favour of the other route, do you think the advantage gained from the easy grades would made up for the difference in length? I think so, and it would save duplicating the line eventually if the traffic increased. There would then be a double line for New South Wales, instead of having to send all the traffic *via* Albury.

855. Is there a double line from Melbourne to Wodonga? No; There is a double line as far as Seymour, and as far as Sandhurst, on the Echuca line.

Mr. Robert Blackwood, owner of Hartford Station, sworn, and examined:—

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856. *Chairman.*] What are you? A grazier.

857. What is the name of your station? Hartwood.

858. What is the area of purchased land? 104,000 acres.

859. Have you any Government land included in your run? Yes; we have, roughly speaking, about 18,000 acres.

860. Partly in the resumed area and partly in the leasehold area? Yes.

861. What number of stock have you on the run? We have now on the run about 79,000 odd sheep. That does not include the lambs at present being dropped. If they were included, I suppose we would have as nearly as possible, 100,000 sheep.

862. What do you do with your wool? Until two years ago, it was all shipped to England and sold there, but during the last two years a portion of it has been sold in Melbourne, and the remainder in England.

863. *Mr. Ewing.*] If there is proper communication given, do you see any probability of selling or leasing your land to farmers? I see a very great probability of selling a greater portion of the land which is suitable for agriculture, and I suppose on the Hartwood Station there are, roughly speaking, something near 30,000 acres of that land.

864. You know what has been done at Tuppal? I have heard.

865. Do you know exactly the terms? The land, I hear, is being leased for a term of seven years, with the option of purchase within any part of that period at £4 an acre; and the rent charged for it is either 4s. 6d. an acre, or 5s.; I would not be certain which.

866. Suppose farmers were disposed to make the same terms with you, would you be disposed to make the same terms with them? No; I cannot say that I would at the present moment.

867. Do you think you could do better by keeping the land under sheep than by selling at that price? No, certainly not. I think it would pay better to sell it at that price, than to keep it under sheep.

868. Then why would you not sell it? Because I think, owing to the insufficient communication there, that the land has not reached its proper value. In fact I think that much of the land now, if it were sold at that price, would be bought, not by people who would settle there and make it their permanent home, and support their families, but to a great extent by people who would look forward at some future time, and probably a very near time, to sell the land again. In fact I think a great deal of it might be taken by speculators instead of by honest settlers.

869. You believe, then, that the land will be worth a great deal more than that? I consider that the land will be worth more than that when communication is better, and farmers see that by settling in that country there would be no trouble in getting their produce away.

870. And although you think that eventually this land will pass into the occupation of farmers, you are inclined to believe it is wise to hold for the rise yourself? Well, I think it is wise to hold for the rise from personal motives, and beyond that I think it is a good thing for the country if the land is held until it reaches its true value; and, as I say, until then I do not believe there will be any great amount of permanent settlement there. Of course there are a few exceptions in the case of men who have settled there already, and have determined not to treat their farms as a speculation, but as a concern out of which they mean to make as much as possible, and those men have done an immense deal of good for the district.

871. Then you would be prepared to treat with genuine men if you were sure they were genuine? The only way of proving that they are genuine is by their giving a price which will pay them, and yet not leave them great room to gamble with the land.

872. But you do not think that the price at Tuppal was high enough? I could not say—I do not know that land.

873. Do you think the land is better than yours? I have been told that it is very similar, but beyond that I cannot say.

874. You would not be prepared to make such terms at present as they have made at Tuppal? Not as to any large extent of country.

875. You would not part with as much as you could at that rate? No, I would not.

876. *Mr. McCourt.*] Would the construction of this railway increase the price of your land? I believe it would increase the price of land suitable for agriculture, on account of the farmers being able to get their produce away more readily.

877. Would it not increase the value of your holding, as a whole, so much an acre? It might make it more saleable from the fact of a railway going through it, but I do not think that anyone would pay more per acre if they were buying a station, simply because the railway was there, because the returns, as far as the sheep are concerned, would be very little altered by the railway, especially in a case where the station is not so very far from the town of Jerilderie.

878. Do you say that for the purposes of pastoral occupation it is just as valuable without a railway as it would be with the railway? Well, I consider that if there is a difference, it is in favour of the railway, but there is not a very great difference. If the railway were there it would be made use of, and instead

of

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of paying the money to drovers and carriers, it would be paid to the Railway Department for the conveyance of the goods.
879. Do you think that the whole of your freehold would be increased in value by the construction of the railway, to the extent of, say, 5s. an acre? I could not say. I could not name any price.
880. But it would be increased, you think, so much an acre all round? A certain quantity of the land would be increased in value, no doubt, but what that would be, distributed over the entire property, I would not like to say.
881. Is the tendency in this district for the large holdings to increase and the small holdings to decrease? It has been up to the present, and I think that was largely due to the fact that small holders found a good deal of trouble in getting their produce away, and land being available elsewhere, they said, "We will go there." In fact, I think they treated the land just as a speculation—a lot of them; I will not say all, because those remaining, who have done well for themselves, have shown that they are men who have honestly gone in to make a livelihood out of their holdings.
882. But the large holdings have increased in this district? Yes; they certainly have.
883. The tendency is to increase them? The tendency has been to increase them.
884. But you think that in the future the tendency will be the other way? Yes; there is no doubt that will be the tendency. If the demand for land sets in, as I believe it will in the future, and if facilities are offered to the people, as soon as they see that it will pay them better to sell their land than to graze sheep on it they will do so. That, I think, applies to the land suitable to agriculture.
885. *Mr. Wall.*] I understand you have about 18,000 acres of leasehold land? That is the quantity, roughly speaking.
886. I presume that includes the reserves? Yes; everything for which we pay rent to the Government.
887. Do you know whether those reserves are necessary to be retained in the public interest? A certain number of them are, but possibly half of them are not.
888. The process of land-gambling to which you refer, has been carried on here by the small holders, who have bought with the object of selling to the large holders? I think there is no doubt about it.
889. And now the large holders are holding this land in anticipation of an increase in value when sufficient accommodation is provided by the State in the shape of railways? Yes.
890. That being the case, and the construction of a railway giving that added value to the land, do you think the large land-holders would be prepared to make any concession in the event of the construction of the line. The custom is for the Railway Commissioners to charge special rates on branch lines. You are now getting your wool to market by teams, but if this railway were constructed would you be prepared to send your wool by railway at special rates, over and above the rates charged on the other lines? You would then have to compare the rates that teams are charging with the rates the railway would charge.
891. The Commissioners might be disposed to make a reduction on the team rates. Would the proprietors of stations be prepared to meet them in that way? If the ordinary rates charged throughout the rest of the Colony were imposed, and if, when all the proper earnings of the line went to the credit of the line, it was found that the railway was not paying, personally I should then be willing to pay extra rates.
892. The Commissioners have power to enforce any rate they choose, but I am only asking whether such a principle would be acceptable to the parties interested, and whether they would be likely to avail themselves of the line to the same extent? They would avail themselves of the line whatever rates were charged, so long as the rates were lower than the charges by the present mode of transit.
893. I suppose, in subdividing for the purpose of agricultural settlement, a certain amount of injury would be done to the holding by severance. It is only portions of the land that would be adapted for agriculture? As far as our own place is concerned, it is almost a solid block of country. There are isolated portions of it that would sell for farms very well, because most farmers like to have a little grazing land as well as agricultural land.
894. You have been sending your wool to Melbourne? Yes.
895. And I suppose the general supplies for the stations mostly come from Melbourne? Yes.
896. With regard to the trucking of stock, do you think the border duties are likely to affect the exchange of stock between Melbourne and this part of New South Wales? I have tried very hard to find that out. I have just returned from Melbourne, and most people there seem very uncertain as to what the effect will be. They think that, on account of the scarcity of fat stock at the present moment, the burden of the tax will not be felt immediately, but that in all probability it will be felt before long.
897. There has been a tax on stock for some years in Victoria? Yes; 6d. a head on sheep.
898. Do you know what was the tax on cattle? No.
899. Have you any knowledge of the price of cattle in Melbourne during the last five or six years? No; it is only within the last two years that I have been much in Australia.
900. You think the construction of this line would cause a greater amount of trade and traffic than takes place at the present time—in any direction? I think it undoubtedly would, because there would be more settlement in the district, and consequently there would be greater production. There would be a falling off very likely in the number of stock, but a great increase in the output of other produce.
901. You anticipate that a large amount of settlement would follow the construction of this line? I anticipate that there would be settlement, one reason being that the owners of the properties would be induced to sell when the land reached its value. Settlement would be brought about in that way. But if communication remains as it is, I think it will be a long day before there is any increase in the population here.
902. Do you think settlement would increase at once on the construction of the line. Do you think the high prices would be realised immediately? No. I think it would come by degrees, slowly. I do not think it would come all at once, because it would take people some time to take advantage of the facilities offered.
903. The settlement could only be brought about by people paying the prices demanded by the private owners. Do you think they would be likely to find purchasers at the price they would ask? I think they would. A great many farmers are now wishing to sell out in the Numurkah country, and similar country in Victoria, desiring to come over here, where they find the land is equally good for grain-growing.
904. Could you give the Committee any idea at what price the present owners could be induced to dispose of their land—take your own land? No, I am afraid I could not.

Mr. David McCaughey, sworn, and further examined :—

Mr. D. McCaughey. 7 June, 1892.

905. *Mr. Ewing.*] Can you tell us the trend of the wool traffic to Riverina. For instance, where does the Hay wool go? All to Sydney.
906. Take the country this side of Hay, Booroorban, the Black Swamp, and Wanganilla, where would the wool from that country go, to as a rule; would it go to Hay, Jerilderie, or Deniliquin? The wool from Wanganilla would go to Deniliquin, the distance being only 20 miles.
907. Take the Black Swamp? It would nearly all go to Deniliquin.
908. Along the main road from Hay? Yes.
909. And that would apply to Booroorban, about 15 miles south of Hay? Any wool within 30 miles south of Hay would go to Hay.
910. But within 40 miles north of Deniliquin, generally speaking, the wool would go down to the Deniliquin and Moama line? Yes.
911. And the other 20 miles right along the Murrumbidgee would pick up the Hay-Narrandera line? Yes.
912. Did you ever hear of any wool coming from Narrandera to Jerilderie being put on drays there, and taken to Deniliquin, and then going that way to Melbourne? No; I never heard of it.
913. You do not think there would be any traffic at all from Narrandera to Jerilderie with the Deniliquin-Moama line as its route to Melbourne? No. I do not think so—especially in the wool trade.
914. You think that once it touches the line it goes to Sydney, and does not come round the main line to Melbourne? From Narrandera it would be the same distance to send it round by Wagga Wagga as it would be to send it by the through route. If this railway were made, Narrandera would have the same advantage as we would have in sending wool to Melbourne.
915. You would have no fancy idea with regard to either place; you would send it where it paid you best to send it? Yes.
916. You have shipped wool in Sydney? Yes.
917. Have you ever shipped wool in Melbourne? Yes.
918. Have you found any greater facilities for shipping wool in Sydney than Melbourne? During the last two years it has been much easier to ship from Melbourne, on account of the block in New South Wales. The Railway Department could not get the wool away, the storage in Sydney not being sufficient; but previously to the strike we found it much easier to ship at Sydney; we found it quicker. The wool would go direct to Darling Harbour, and be put on board straight away.
919. Do you dump your wool in Sydney? No; it is dumped on the station. We had no trouble whatever until the time of the strike, and then we had the wool blocked all along the line. Trucks were lying at Junee for two or three weeks, and unfortunately I had freight engaged.
920. I suppose the freight is the same from Melbourne and from Sydney? I do not think there is any difference.
921. But you think that in ordinary times, when a strike is not prevailing, there are greater facilities for shipment in Sydney? Yes; decidedly.
922. Do you know where the wool from Sandy Creek, the Rock, and Yerong Creek, on the main line goes to? It goes to Melbourne—from Yerong Creek. I know it does.
923. And the wool from Doodle Cooma, and Culcairn, and Gerogery? To Melbourne.
924. Wagga Wagga is 280 miles from Melbourne and 309 miles from Sydney? Melbourne has the advantage there with regard to distance.
925. Then it is simply a matter of carriage? Yes; simply a matter of carriage.

Mr. John Kennedy, storekeeper, Jerilderie, sworn, and examined :—

Mr. J. Kennedy. 7 June, 1892.

926. *Mr. McCourt.*] What are you? I am a storekeeper, carrying on business at Jerilderie.
927. How long have you resided here? Seven years.
928. Do you know the proposed railway route? Yes.
929. If the line were constructed, do you think there would be any chance of its paying in the near future? I have no doubt it would pay.
930. What has caused you to arrive at that conclusion? It would induce settlement, and, consequently, there would be a larger amount of production—settlement from the other colonies, Victoria and Tasmania.
931. Do you deal with Sydney or Melbourne for your goods? Sydney.
932. Is it because you find it cheaper, or is it because of greater certainty? We find the facilities greater; and it is cheaper in every way.
933. If the differential duties were done away with would you still deal with Sydney? Yes.
934. Do you deal in produce here? I do.
935. Where do you sell it? I sell it locally.
936. You do not send any of it to Sydney or elsewhere? No.
937. If this railway were constructed, would there be any trade in timber and railway sleepers? There would be from the Edwards and the Lower Murray.
938. Do you know that of your own knowledge? I have seen the country.
939. *Mr. Dawson.*] Do you get all your goods from Sydney now—both heavy and light goods? Yes.
940. I suppose you have a general store? Yes.
941. And you think that if this line were opened to Deniliquin it would be eventually a paying line? I do.
942. In how many years do you think it would pay interest and working expenses? I am hardly prepared to say.
943. Has the wheat production increased very much during the seven years you have been here? Yes.
944. I take it that farming generally has made rapid strides. Do you think that if the line were constructed it would still go ahead? I think so.
945. And there would be a larger population? Yes.
946. The Government lands would be taken up by men for the purpose of *bona-fide* settlement? Yes.
947. *Mr. Wall.*] Previous to the imposition of the present tariff, did you do any business with Melbourne? No; I have always done business with Sydney.
948. You have a knowledge of the agricultural settlement that has taken place here during the last two or three years? I have.
949. Has it increased? It has.

Mr. J. Kennedy. 7 June, 1892.

950. Do you know whether the settlers obtained their land from the Crown lands or by purchase? By purchase, I think, in many cases.
951. From the run holders? From run holders and from previous selectors who sold out.
952. Could you state an instance where a run holder has sold agricultural land to farmers? Land was sold on Berrigan.
953. Have you any idea of the price given? I think it was from £3 to £4.
954. And have those persons who purchased at £3 and £4, and who have engaged in agriculture, made it pay? Yes.
955. Are the agriculturists about here increasing in wealth, or are they, as a rule, selling out to the large holders? They are increasing in wealth.
956. A few years ago, before the construction of the Jerilderie line, I understand the tendency was the other way—to sell out? It was.
957. Six years ago were there any selectors in this district? Yes; but I could not tell you the exact number.
958. There was a large influx of population here after the division of the runs, was there not. Considerable portions of the resumed area were taken up by selectors? I do not think so.
959. What became of the resumed areas; were they all absorbed in the leasehold? There were none to select.
960. They had all been taken up before? Yes.
961. There is not much land for settlement in this neighbourhood, except land purchased from private owners? I believe not.
962. And you think if this railway were constructed it would cause people to purchase and go in for agriculture? I think it would.
963. Has it had such an effect between here and Narrandera? It has not.
964. What is the reason of that? The quality of the land.
965. In the immediate vicinity of Narrandera there are some large agricultural farms at the present time? I believe so; I do not know the country towards Narrandera.
966. But you think the character of the land is the principal cause which has prevented settlement along the line from Narrandera to Jerilderie? I do. The land is not so suitable for agriculture.
967. In what does the superiority of this country for agriculture consist; is it owing to any special climatic influence, or is it merely attributable to the soil? It is attributable to the soil.
968. You think there is a portion of the country intervening between Narrandera and Jerilderie which is not as good as the land between here and Deniliquin? I do.
969. *Mr. Ewing.*] You say you buy your goods in Sydney? Yes.
970. Is there much difference between the Melbourne and the Sydney prices? There is a considerable difference.
971. Even now, in favour of Sydney? Yes.
972. How do you account for the difference in the price? I could not exactly say.
673. I suppose it is the tariff, really? The tariff has something to do with it.
974. Can you suggest any other reason? I cannot.
975. Your situation is this: It is impossible to deal with Melbourne as long as you have a break between Jerilderie and Deniliquin to be travelled by dray, and so long as the border duties are in existence? Yes.
976. Either would prevent you from dealing with Melbourne? Yes.
977. And therefore you deal with Sydney? Yes.
978. Would you continue to deal with Sydney if we had freetrade between the two colonies, and a railway were constructed between Jerilderie and Deniliquin? I think Sydney would have the preference still.
979. Notwithstanding the distance? Yes.
980. *Mr. McCourt.*] So far as you know, do all the storekeepers in Jerilderie deal with Sydney? I believe so.
981. And have they been doing so for some time? They have, of my own knowledge.

Mr. William Elliot, newspaper proprietor, Jerilderie, sworn, and examined:—

Mr. W. Elliot. 7 June, 1892.

982. *Chairman.*] What are you? Newspaper proprietor, residing in Jerilderie.
983. Have you considered the desirability or otherwise of the proposed line to Deniliquin? I am acquainted with the different routes, and have written on the subject, and have given it a good deal of consideration. It is my belief that the line would pay almost from the start.
984. Why do you consider it would pay? Because it would connect two large centres of population.
985. Which are those? Well, you might say southern Riverina on the one side, and the north-western part of Victoria on the other side.
986. You consider that there would be sufficient traffic on the line to make it pay? I think there ought to be sufficient passenger traffic to make the line pay.
987. What traffic would the railway gather? Traffic from the north-west part of Victoria. The passenger traffic which now goes from there through Melbourne, and *via* Albury, or else by steamer round to Sydney, would come this way, as the nearest, cheapest, and most expeditious route; and, *vice versa*, the passenger traffic going from this way to Melbourne, to the north-western parts of Victoria, and to Ballarat, Ararat, and on to Adelaide, would come by this route instead of *via* Albury, or by steamer.
988. You think there would be a very large passenger traffic from the north of Victoria, through New South Wales? It is my belief there would be.
989. On what ground do you think so? Take the farming industry alone. There are many farmers round about that way who are already viewing New South Wales with the object of settling here at some future time. At present there are some entirely ignorant concerning this part of New South Wales. I was at Tocumwal some months ago, and I was speaking to a man who lived 7 or 8 miles on the Victorian side, and he asked me how far Jerilderie was away, whether it was far back in the interior, what communication it had with Melbourne, where there many blacks about there, and a number of questions like that. They have no idea what the country is like round about here. A railway opening up the country would bring those people here. They would see signs of civilisation, and perhaps travel along the line and settle down.

Mr. W. Elliot. 7 June, 1892.

990. Are you able to give the Committee any information as to stock? With regard to stock, I may say that if the railway to Jerilderie had not been opened in 1886 thousands of stock would have been lost. Over 250,000 store sheep were taken to the mountains by the railway, and hay and other produce were brought by rail from the Hunter River, Sydney, and other places in order to keep the stock alive.
991. *Mr. Dawson.*] You said that Ballarat, Ararat, Sandhurst, and other places in Victoria would be served by this railway. Maryborough and Castlemaine are two large towns? There would be a passenger traffic which would include Maryborough, Castlemaine, Inglewood, Horsham, Murtoa, and extend right away to Adelaide. There would be a direct line from Adelaide across through Ararat and Maryborough, on to Castlemaine, up to Echuca, through Deniliquin, and along this route. It would save 150 miles between Adelaide and Sydney, so that, on national grounds, this line ought to be constructed.
992. How long have you been in the district? Eighteen years.
993. Was there any wheat grown when you first came here? No. The first time any wheat was grown in this district for the market was in 1886, when Mr. Wise started to erect his mill here.
994. You heard Mr. Wise say that 50,000 bags were produced in the district this year? I think there must have been rather more, because there were some buyers at Tocumwal who bought wheat about the Murray Hut, in 1891. They took it to the river, and sent it down to Echuca, from whence it was sent in bond to Melbourne, and round to Sydney. It did not pay them. I think there must have been from 10,000 to 12,000 bushels sent that way. They did not repeat the experiment, so I arrived at the conclusion that it did not pay.
995. *Mr. Ewing.*] What is the name of your paper? The *Jerilderie Herald.*
996. I suppose it circulates as far as Conargo? Yes.
997. And also, I suppose, to Berrigan? Yes.
998. I suppose you have considered the question of the route;—in your opinion, which is the best route? I have business relations in both parts, and I think the more the country is opened up by railways the better it will be for the people generally. As far as Berrigan is concerned, the people there are trying to get a line from the Rock to Murray Hut, but if the line went from here to Cobram, or from here to Tocumwal, it would pass directly through a large agricultural district—within 6 miles of the terminus here right to the river.
999. You think it is worth considering, from your standpoint, whether it would be wise to make a line due south passing to the west of, or through Berrigan, going down to Barooga on the New South Wales side of the Murray, and joining the Victorian railway at Cobram;—would that be as wise a proposal as a line from Jerilderie to Deniliquin? In my opinion, both lines should be constructed.
1000. You would not give one a preference over the other? If I gave any preference at all it would be to the Deniliquin line, from a national point of view. But, speaking from a local point of view, I should certainly say it would be better to have a line from here to Tocumwal, or to Cobram, which is the nearest point on the Murray. The line from Tocumwal would pass along a stock route a mile wide, and there would be no question as to the resumption of land.
1001. There is more settlement, and the land is quite as good? There is settlement on all sides, but if anything, the land there is rather better.
1002. You get more of the Murray fringe there? It runs due south to the Murray.
1003. And, therefore, would pass through the 35 miles of good country that borders the Murray? Yes.
1004. With regard to the route from Jerilderie to Deniliquin, should it go direct, or *via* Conargo? Looking on this line as I do, from a national point of view, I think the direct route would be the better of the two. There is more population along the route on the southern side of the Billabong, but nevertheless, I think the other route would be preferable, speaking generally.
1005. You say in general terms, weighing all things, that if you had to give an opinion it would be better, regarded from a national standpoint, to take the shorter route from Jerilderie to Deniliquin? Yes. The deviation to Conargo would mean 12 miles added to the length of the line.

WEDNESDAY, 8 *JUNE*, 1892.

[*The Sectional Committee met at Cadman's Hotel, Conargo, at* 2 *p.m.*]

Present:—

THE HONORABLE WILLIAM HENRY SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

The Sectional Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Mr. George Currie, part-owner of Puckawidgee Station, near Conargo, sworn, and examined:—

Mr. G. Currie. 8 June, 1892.

1006. *Chairman.*] Where do you reside? At Puckawidgee, about 3 miles from Conargo.
1007. Are you one of the proprietors of Puckawidgee? Yes.
1008. What is the size of your holding? About 90,000 acres.
1009. How much of it is freehold? About 63,000 acres.
1010. How many sheep do you carry? From 50,000 to 60,000.
1011. How much wool do you shear? Between 900 and 1,000 bales.
1012. Is there any Government land included in your holding? Yes; there are about 27,000 acres of Crown land.
1013. Is that land held under leasehold? Leasehold and occupation license.
1014. What do you do with your wool? Ship it to London.
1015. How do you send it? By teams to Deniliquin, and then by rail to Melbourne.
1016. *Mr. McCourt.*] If this line were constructed, would you use it for the conveyance of your wool? Most certainly.
1017. If it went by way of Conargo? Yes.
1018. In case it did not go by way of Conargo, would you strike the line at any point? No; it would not be worth while.
1019. Would you still go to Deniliquin? Yes.

Mr. G. Currie. 8 June, 1892.

1020. If the line were to go by way of Conargo, involving an additional cost of £20,000 for construction, would that be justifiable? I am very doubtful if the extra cost to come by way of Conargo would be as much as that, because along the whole of the route *via* Conargo the country is clear, and there is not a tree upon it, whereas the other route would run through a densely-timbered country, which would require to be grubbed nearly the whole way.
1021. You think it would not cost £20,000 extra? I do not think it would.
1022. Is the land by way of Conargo of a better quality for agriculture than the land along the route as proposed? Probably the timber country is better for agriculture; but then along the whole distance it is purchased land.
1023. Is the land along the Conargo route purchased land, held in large estates? Yes; no matter what route is taken, the land is all purchased.
1024. Are there any settlers near Conargo? Yes; there are a few, I believe.
1025. About how many? I am scarcely prepared to say, for I am not acquainted with the back country on this side.
1026. If the railway came by Conargo, would it improve the value of your estate? Yes; I believe it would.
1027. Would you be inclined, if the railway came this way, to subdivide your land, and either let or sell it? If I found it would be to my advantage to do so, I should very likely be prepared to let part of it.
1028. Not to sell? Not to sell.
1029. I suppose you would do as other owners in the neighbourhood—you would not care to sell? No; I would not care to sell.
1030. In that case what would make the railway pay, if it came by way of Conargo? There is a large tract of country to the north of the Billabong. There are a large number of stations there. They all send their produce, and get their back loading by way of Conargo, and there is very little doubt but that they would make use of the railway. But if the line went across the back country, 7 or 8 miles from here, I do not think one of them would make use of it for any purpose.
1031. How many stations would use it by way of Conargo? There are six that I know of.
1032. Six large stations? Yes.
1033. Do they get all their supplies from Melbourne? Yes, mostly from Melbourne or Deniliquin.
1034. If the line were constructed from Jerilderie here, would they still continue to deal with Melbourne? I am not prepared to say; I can only speak for myself.
1035. Where do you get your supplies from? From Deniliquin and Melbourne.
1036. If a railway were constructed from Jerilderie here, would you still continue to do so? I think it is very likely that I would deal to a considerable extent with Sydney. I only deal to a small extent with Sydney at present, and I find, on the whole, that goods are to be got cheaper from Sydney. I find that the carriage is no more from Sydney to Jerilderie than from Melbourne to Deniliquin.
1037. Would there be any possibility of your sending your wool to Sydney for shipment? All things being equal—if the expenses were about equal—I should certainly send it to Sydney.
1038. In the event of intercolonial freetrade being established, and the abolition of the border duties, would not the natural market both for your supplies and for your wool be Melbourne? Well, it would; but if I could buy cheaper in Sydney I would get the goods there, for I would purchase them wherever I could get them cheapest.
1039. Is it not natural to suppose that the Melbourne merchants would be able to supply you very much cheaper than the Sydney merchants, taking the distance into consideration? I have not found that to be the case.
1040. You know that differential railway rates are in operation at present; is not that the reason why you get your goods more cheaply from Sydney? Yes; I suppose it is.
1041. But if we had intercolonial freetrade it is probable that the differential rates would be done away with? Yes, it is most likely.
1042. And if they were done away with, would not Melbourne be your natural market? Certainly; if the carriage were cheaper to Melbourne it would be the natural market for this part of the country.
1043. All this country? Yes, all the country about here.
1044. And if New South Wales constructed this railway it would simply be making a highway to Melbourne—would that be so? I do not know that that would follow. I believe there would be a very considerable amount of traffic from here to Sydney.
1045. You still think there would be considerable traffic to Sydney? I feel sure there would.
1046. But if it would be more profitable and cheaper to go to Melbourne why would you go to Sydney? There would probably be a great deal more passenger traffic to Sydney. I cannot say exactly about the goods, but there would be a great deal more passenger traffic with Sydney than there has been hitherto.
1047. The Railway Commissioners estimate that there will be an annual charge on the line for interest and working expenses of £14,000 per annum. In view of that, do you think the line would pay if it were constructed? I do think it would pay.
1048. Would it pay at once or in a number of years? Well, it might not pay just at once, but it would gradually come to pay, I believe.
1049. Within what number of years do you think it would pay? I am scarcely prepared to say.
1050. Would it pay within ten years? I think considerably less than that. I was going to say three or four years.
1051. Would you say for certain that it would pay within ten years of construction? I could not say with absolute certainty, but my opinion is that it would pay within ten years.
1052. *Mr. Ewing.*] You are an advocate for the line *via* Conargo in opposition to the direct route from Jerilderie to Deniliquin? Yes.
1053. You have already said, I think, that it should come *via* Conargo because of the population and because Conargo forms a kind of depôt for the stations lying to the north, between the Billabong and the Murrumbidgee? Yes.
1054. You have stated that if the line did not come *via* Conargo the people would rather go direct from Conargo to Deniliquin, than strike in to reach the railway at any intermediate station? Yes; that is what I would do in my own case, and everyone else whom I have heard express an opinion about it has said the same.

Mr. G. Currie. 8 June, 1892.

1055. From how far south of Hay does the wool go to Melbourne, does it go from Euroka Creek? The wool from Worgan and Willurah goes to Melbourne.
1056. How far south of Hay would the wool go to Melbourne? Worgan is, I believe, some 35 miles south.
1057. I suppose the wool goes down through Wonganilla? Yes.
1058. I suppose it can get across the river at Wonganilla as well as here? Yes.
1059. Do you think the Worgan wool would turn from Wonganilla and come into Conargo, instead of going down the main road from Wonganilla to Deniliquin? If there was a railway station at Conargo, I believe it is very likely the Worgan people would send their wool down here, for this is as near as Wonganilla.
1060. You think, then, that Conargo is the depôt for that part of Riverina? Yes, it is my opinion that this would be a central depôt.
1061. And if the railway does not come *via* Conargo it will lose that traffic, and it will go direct to Deniliquin? It will lose the whole or nearly the whole of it, because it will go by teams to Deniliquin, as it does now.
1062. *Chairman.*] It might be necessary, in order to make the railway pay, for the Commissioners to charge special rates;—do you think the settlers along the line would be prepared to pay special rates? As long as the rates were cheaper than the cost of carriage by team; most likely any special rates imposed would be cheaper than the charges for team carriage.
1063. Do you think the people about here would be prepared to enter into any guarantee of that kind? I could only enter into a guarantee that I would send all my produce and receive all my supplies by the railway.

Mr. Hubert Charles Parker, manager of Quiamong Station, near Conargo, sworn, and examined:—

Mr. H. C. Parker. 8 June, 1892.

1064. *Chairman.*] Where do you reside? At Quiamong, half a mile from Conargo.
1065. Is that your holding? Yes; I manage the station for the executors of the late F. L. Parker. I am one of the executors.
1066. How far does it extend from here? It extends 9 miles to the south, and about 4 miles to the east.
1067. What is the extent of the holding altogether? About 20,000 acres.
1068. Are there any Crown lands within that area? About 3,000 acres, including reserves.
1069. How much stock does it carry? For the last three years we have carried nearly a sheep to the acre.
1070. How much wool do you send away? From 200 to 300 bales.
1071. Where do you send your wool? To London; it goes *via* Melbourne.
1072. Do you never sell in Melbourne? Occasionally, part of the clip.
1073. *Mr. McCourt.*] Are you in favour of the line coming *via* Conargo instead of by the direct route? Yes.
1074. Why? For the reason that if it went by the back route it would get none of the wool traffic or the stock traffic; that would still continue, in my opinion, to go to Jerilderie or Deniliquin, as it does now.
1075. Do you sell any fat stock? We have from 3,000 to 4,000 every year.
1076. Where do you send them to? To Melbourne, trucking at Deniliquin.
1077. If the line were constructed to Conargo they would be trucked to Melbourne? Yes, according to the prices and the rates on the railway.
1078. Have you ever sent any of your stock to Sydney? Not fat stock.
1079. Any stock? I have sold stud sheep, and send show sheep every year to shows towards Sydney.
1080. Generally speaking, does most of the fat stock from this district go to Melbourne? The fat stock generally goes to Melbourne; but there is a large quantity of stud sheep sold in this district, which goes through Conargo up to the north, being trucked at Jerilderie.
1081. *Mr. Ewing.*] You say you send 4,000 fat sheep to Melbourne? Yes.
1082. Have you thought of the stock tax, and what effect it will have on your trade? We have not been able to judge very well yet, but I fancy it will make the prices about equal in Sydney and Melbourne.
1083. If the increased stock taxes are imposed, do you think you will continue to send to Melbourne? Not unless the prices there are very high.
1084. You think, then, that the Melbourne prices are high enough to justify your sending there? But I do not think they will keep high enough.
1085. If the line came by Conargo you would send to Jerilderie, and by that way to Sydney? Yes, according to the prices.
1086. It would depend entirely upon where you could best sell your stock? Yes; where we could get the best prices.
1087. With regard to the proposed stock tax, you people here do not see exactly at present what its effects will be? No.
1088. You think Conargo is a depôt for the same reason that Mr. Currie does? Yes, a depôt for the wool traffic, the fat stock traffic, and the stud sheep traffic, which would be missed completely by the other route.
1089. Have you thought of freezing meat at all; have there been any meetings? They have freezing works in Narrandera, I believe.
1090. Frozen mutton going through Melbourne for export would go free, would it not? I believe it would.
1091. Therefore, if you find any trouble with regard to local consumption in Melbourne it is possible that you will freeze your mutton at Deniliquin, and send it right through for export to London? Yes, or else freeze it at Narrandera. In sending frozen mutton to England it would depend entirely on the railway rates as to which would be the cheapest place to send it to.
1092. The only way to escape the border duties, if you send it to Victoria, is to send it not for consumption in that Colony, but for export to the home market? Yes.

Mr. James M'Kees, farmer, near Conargo, sworn, and examined:— Mr. J. M'Kees. 8 June, 1892.

1093. *Chairman.*] Where do you live? About 1½ or 2 miles from here.
1094. What is your occupation? I am a farmer.
1095. What is the size of your holding? One thousand three hundred odd acres.
1096. How do you use your land? I have about 300 acres in crop, and on the rest I run sheep and cattle.
1097. What crop do you grow? Generally, oats and wheat.
1098. What area have you under each? Some years I have 50 acres under wheat, and the rest under oats.
1099. Which do you find the more profitable? There is no sale for wheat about here, and I find that oats are better for hay.
1100. What do you do with the wheat when you grow it? I sell it or make flour out of it.
1101. You sell the wheat to the millers? I sell very little to the millers. They will not give me the price. I find it more profitable to mill it and sell the flour.
1102. What is your average wheat crop? About 20 bushels to the acre; sometimes more, and sometimes less, according to the season.
1103. What price per bushel would you require to get to make that pay? Four shillings would make it pay.
1104. Would not 3s. make it pay? Well, yes, it would make it pay; but 4s. would make it pay better.
1105. Can you give us any idea of the cost per acre of putting in wheat, including ploughing, cost of seed, stripping, and harvesting? About £2 an acre.
1106. And if you got 4s. a bushel, and a yield of 20 bushels to the acre, that would be £4, leaving you a profit of £2 an acre, which would pay very well, would it not? Yes.
1107. *Mr. McCourt.*] If the railway came by way of Conargo, would agriculture in this neighbourhood be increased? Certainly it would.
1108. Why? We would get the produce away cheaper.
1109. What does it cost now to get it to Deniliquin? About £1 a ton.
1110. I suppose if you could make sure of getting 3s. a bushel for your wheat, you would cultivate largely. I should certainly. If I could get that price for it I would grow more of it.
1111. Do you know the average price of wheat in Sydney? No.
1112. You do not take any notice of the Sydney market? I do not take notice of any market, for I have no wheat to send.
1113. You find it more profitable to grow oats for hay? Yes, at present.
1114. And I suppose it is more profitable than either to sheep-farm, or it has been in the past, has it not? Yes, in time past; but I believe it would be better to grow wheat at present prices than to graze sheep, for wheat is higher this year than it has been of late years.
1115. According to the prices for sheep and wool that ruled two or three years ago, it was better to graze sheep than to follow agriculture? Yes.
1116. And if those times came again, you would prefer sheep-farming, would you not? I do not know about that. I would rather go into agriculture than sheep.
1117. That is, if you got 4s. a bushel for your wheat? Yes, or even a little less; but 2s. or 2s. 9d. does not pay.
1118. But 3s. will pay you? I believe 3s. would pay, and 3s. 6d. would pay better.
1119. *Mr. Ewing.*] You say you mill your own flour;—you have a mill of your own? No; I get the wheat ground at the mill at Deniliquin.
1120. What is the freight from here to Deniliquin? I generally used to pay £1 a ton.
1121. You pay 6d. a bushel to go to Deniliquin, and then you pay £1 a ton before the flour is back here again? Yes.
1122. Where do you sell your flour when you get it back? At Conargo.
1123. I suppose to teamsters going into the western or northern country? I do not think I ever sold any to teamsters; but only about Conargo, to supply the local demand.
1124. You have found a sale locally for your flour? Yes; I can always get a sale for it.
1125. If the railway were made, I suppose you would send the wheat by rail to Deniliquin and have it ground there? If I could get a better price for it at Sydney I would send it to Sydney. You can get very little for your wheat at Deniliquin.
1126. But you would send your wheat by rail to be ground at the mill at Deniliquin? I would rather sell it as wheat.

Mr. John Howie, farmer, near Conargo, sworn, and examined:— Mr. J. Howie. 8 June, 1892.

1127. *Chairman.*] What are you? A farmer, residing about 5 miles from Conargo, towards Deniliquin.
1128. How much land have you? About 320 acres.
1129. What do you do with it? Grow wheat, and run a few sheep.
1130. How many acres do you cultivate? Fifty or sixty.
1131. What crops do you grow? Wheat.
1132. What do you do with your wheat? Sell it.
1133. In what market? Deniliquin, principally. I sell it to the flour mill.
1134. What price do you get for it? Three shillings and ten pence we got this year.
1135. What does it cost per acre to cultivate the crop? We mostly do it ourselves—about £1 an acre.
1136. What is the average crop? Sometimes 16 bushels, sometimes 20, according to the seasons. The average would be 18 bushels.

Mr. Christian Walker, grazier, Forest Creek, near Conargo, sworn, and examined:— Mr. C. Walker. 8 June, 1892.

1137. *Chairman.*] What are you? A grazier.
1138. Where do you reside? At Forest Creek, about 4 miles from here in a southerly direction.
1139. What is the extent of your holding? A little over 5,000 acres.
1140. What do you do with it? Graze sheep.
1141. You have no cultivation? No.
1142. What do you do with your wool? Send it to Melbourne.
1143. If this line were constructed, what would you do with it? I think I should send it on to Melbourne if carriage there was less than to Sydney.

Mr. C. Walker. 8 June, 1892.

1144. Your commercial relations are with Melbourne always? At present.
1145. Do you get your supplies from Melbourne as well? Yes, and Deniliquin.
1146. Is your wool sold in Melbourne? Yes.
1147. *Mr. McCourt.*] Have you a good knowledge of the holdings within a radius of 5 miles of this township? Yes; I have been seventeen years in the district.
1148. Could you give us an idea of the area of cultivation within a radius of 5 miles of Conargo—at the present time, or last year? I should say there were about 3,500 acres.
1149. If the railway were constructed by way of Conargo, would it cause that area to be increased, and if so, to what extent? I should think it would cause it to increase at least eight or ten times within four or five years.
1150. Then there would be 40,000 or 50,000 acres under cultivation within four or five years? Yes.
1151. Would you be induced to go into cultivation? I do not think I should myself, but I should let portions of my land.
1152. The land about here is suitable for wheat growing? Yes; a great portion of it. Of course, the open plains are not so good as the scrub country.
1153. Would a line by Conargo, instead of one direct, be more to the public interest, and serve a greater number of people? From a public point of view, I think it would be better by Conargo, but as an individual, I should prefer the straight route.
1154. *Mr. Ewing.*] Have you any idea of the number of holdings between here and Deniliquin, within 5 miles on each side of the road? I should say about thirty.
1155. And how many would you say there were between Conargo and Jerilderie, taking 5 miles on each side of the road? Not many more than from here to Deniliquin.
1156. How many homesteads are there on the direct line from Jerilderie to Deniliquin? I should say there were not more than ten.
1157. You said that if the railway were constructed, about 30,000 acres would be put into wheat cultivation about Conargo? Yes; within a radius of 8 miles of Conargo I believe about 50,000 acres would be put in. It is all more or less good wheat country.
1158. It depends upon whether you could sell it? It would be taken at once. Wheat could not be grown unless it could be sold. It would not pay now on account of the cost of carriage. You have to pay 2s. to take it to Jerilderie by team, and then 1s. 8d. by train, which makes it 3s. 8d.; whereas, if the charge were only 4d. or 5d. from here to Jerilderie, there would be a saving of 1s. 6d. a bag.
1159. It is clear that the isolation of Conargo has something to do with it; but Conargo will grow 50,000 acres of wheat a year, and it is reasonable to suppose that other centres will grow more;—when this large quantity of wheat is produced in the Colony, have you considered what the farmers are to do with it? Of course, the surplus will have to be exported.
1160. Where do you think it will be exported to? If the Victorian people adopt differential rates it will go to a great extent through Melbourne, that being the nearest port if shipped to Europe.
1161. But wheat going to Melbourne for export is not affected at all by border duties? It just depends upon how they treat it. At the present time it is only a certain quantity they will treat as for export. They do not recognise small quantities, so that the buyer would have to come up and purchase.
1162. You think that if the Victorian people act as ordinary carriers in the matter, and the wheat is only sent for export, it will go to the nearest port? I think so, naturally.
1163. Therefore, you would use part of the proposed railway from Conargo to Deniliquin, and then on to Melbourne? Yes, when the Sydney market is over-supplied.

THURSDAY, 9 JUNE, 1892.

[*The Sectional Committee met at the Court-house, Deniliquin, at 11 a.m.*]

Present:—

THE HONORABLE WILLIAM HENRY SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

The Sectional Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Mr. William Richard Virgoe, part-owner and manager of Mathoura Station, near Deniliquin, sworn, and examined:—

Mr. W. R. Virgoe. 9 June, 1892.

1164. *Chairman.*] What are you? Station manager.
1165. What is the name of your station? Mathoura. I am also part-owner.
1166. What business is carried on on the station? Cattle, sheep, and horse breeding.
1167. What is the area of the station? The total area is 111,000 acres, of which 97,000 acres are freehold.
1168. What number of stock do you carry on the run? We shear from 60,000 to 65,000 sheep, and we have 1,500 head of cattle, and 300 or 400 head of horses.
1169. Do you carry on any farming operations? We only grow hay ourselves for the use of the station, but we have a good deal of land leased to farmers.
1170. How many bales of wool do you shear? About 1,000.
1171. What do you do with your wool? Sell it in Melbourne.
1172. Do you send any fat stock to either the Sydney or the Melbourne market? Yes.
1173. Which market? Melbourne.
1174. About how many, on the average? Perhaps 1,000 head of cattle, and 3,000 or 4,000 head of sheep.
1175. They all go to Melbourne? Yes; there are a great many store sheep. We sell more stores than fat stock, and they go away north to New South Wales and Queensland.
1176. Are you aware that quite recently a stock tax has been imposed on the border? Yes.
1177. Do you think that will affect the prospects of holders of stations in this district? We should not be able to send any more stock to Melbourne.
1178. What market do you think you will have to seek? We shall have to go somewhere else. The only market I can see is Sydney.

1179.

Mr. W. R. Virgoe. 9 June, 1892.

1179. Do you think it is likely that cattle and sheep will be sent from this district to Sydney for sale? I think they might if the railway freights were low enough. Even if they were not sent alive, I think, in view of the present agitation for freezing works, they might be frozen and sent.
1180. *Mr. Ewing.*] Do you believe that the giving of better communication in the shape of a railway has a tendency to settle people on the land? I do.
1181. They have communication from Jerilderie to Narrandera and from Hay to Narrandera, and why is it that wheat is not grown along those lines? I do not think the owners have made any attempt to lease the land to small farmers, as we are doing at Mathoura. We have already made sales at from £3 to £6 an acre. We have also leased a lot of land to farmers, and we intend to sell in small lots. Only within the last six weeks we sold 1,200 acres for farming purposes, at £3 an acre, and we intend to dispose of the whole of the estate in that way.
1182. Then you say that along the line from Moama to Deniliquin land suitable for farming is being cut up and sold for farms? Yes; every acre of it suitable for agriculture.
1183. Then if we continue the line from Jerilderie to Deniliquin the same thing will follow? I think most probably it will.
1184. Still, that does not exactly make it clear to us why, along the line from Jerilderie to Narrandera, where the character of the country is practically the same—possibly not quite so good—the pastoralist has not cut up his land? I cannot tell why he has not done so, unless he can afford to hold it; perhaps that is the reason. Perhaps the holders of large areas of land there can afford to hold them, and think they can make as much out of them by the present method; but I think the cutting up of these estates is sure to come about eventually.
1185. In your opinion, it is simply a question of the price of wheat and facilities for getting it to market? That is it.
1186. You believe a railway will afford the opportunity of getting to market? Yes.
1187. I suppose you believe that the duty recently imposed on wheat in this country, and the high prices ruling in other parts of the world, have given an impetus to wheat growing in this country? Yes.
1188. And, therefore, greater attention is being directed to agriculture than would be the case if wheat were low and wool were high? Not only that, but all this land is suitable for fruit growing as well. I have grown splendid oranges and other fruits at Mathoura. It is only a question of water.
1189. Taking the border duties into consideration, do you think that the trend of traffic immediately would be to Melbourne or to Sydney? If these heavy duties are imposed, I think it will be towards Sydney.
1190. You have no doubt that, notwithstanding the fact that it is nearly 200 miles further to Sydney, the stuff must go there on account of the border duties? Yes; I think so.
1191. That is for the present? Yes.
1192. The reason why the border duties affect the producer here is because the products sent from here for consumption in Melbourne, or other parts of Victoria, are subject to a duty? Yes.
1193. That does not apply to the things that pass through Melbourne to go to other parts of the world? No.
1194. Would it apply to wheat for export? No; it would not apply to wheat so much, because we could send it through in bond for export.
1195. It would not apply either to wool for export? No; not to wool for export.
1196. It would not apply to mutton for export? No; I do not think it would.
1197. Therefore, the border duties would not affect the products of this district intended for export? No; not to a large extent.
1198. As the present cost of transit from Melbourne to London would be the same as from Sydney to London, and as it is 200 miles nearer to the port of Melbourne than it is to the port of Sydney, is it not reasonable to suppose that everything for export would go to the nearest port? Probably. I think the border duties will have the effect of making Sydney the head market for wool and other produce, instead of Melbourne, and that possibly the greater quantity of wool sold in the Colonies will go to Sydney.
1199. Even if wool can reach Melbourne in half the distance it can reach Sydney, and there is no duty in Melbourne? A great deal of wool is always offered for sale in Melbourne.
1200. But if it is wool for export that can readily be arranged? I think the effect will be that instead of Melbourne being the head-quarters, as it is now, for the southern Riverina wools, Sydney will become the market, and probably the wool will be offered there, and shipped from there.
1201. Why will there be advantages in Sydney that will cause you to pay 200 miles further carriage? At the present time Melbourne is considered the head market, and sellers always look for a slight advance in price in Melbourne beyond what they can get in Sydney, because the buyers congregate more in Melbourne, and a greater quantity of wool goes there. But I think the border duties may have the effect of making Sydney the head-quarters, and it is just possible that the improvement in price of 1d. a lb. would make it worth while for station-holders to send their wool to Sydney for sale instead of to Melbourne.
1202. But the wool for export is not affected by the border duties—it is only the wool sold in Melbourne? Exactly; but Melbourne is a better market, because there are more buyers of wool there than in Sydney.
1203. But I want to know why Sydney is going to have more buyers in the future than Melbourne? Simply because the border duties may have the effect of making Sydney the head-quarters of the wool buyers.
1204. How do you come to the conclusion that the border duties will take the market in wool from Melbourne to Sydney, when the duty does not affect the wool unless it is for consumption in Victoria? A certain amount of wool is sold in Victoria, and a certain amount is shipped. That makes Melbourne the head-quarters of the wool trade. All the buyers congregate there. But it is just possible that the border duties may divert the wool to another channel, and it may go to Sydney, which may become the head-quarters, and people may look for a little higher price for their wool there than they did before. It will take the buyers from Melbourne to Sydney. It does not affect the price of the wool to be exported, but it attracts the buyers, and makes a better market.
1205. But the vast majority of your wool is exported, and, therefore, not affected by the tax? Yes.

Mr. W. R. Virgoe. 9 June, 1892.

1206. Still you think that, notwithstanding the fact that the main part of the product is not affected by the tax, the market will be changed? Yes; I think it will have the effect of keeping the Colony within itself, as it were.
1207. People will all send their produce to the head-quarters of the Colony, and not across to Melbourne? It will have the effect of making each Colony work on its own bottom.
1208. It will have a tendency to cause the sympathies of this part of the Colony to be more with Sydney, where they do not pay duties on everything, than with Melbourne, where they pay duties on most things? Yes. The fat stock market in Melbourne is always higher than the market in Sydney.
1209. We understand that within 35 miles of Hay, going due north from here, the wool makes for Deniliquin as its depôt on its way to Melbourne, notwithstanding that 35 miles north is another depot—Hay—from whence the wool can go to Sydney? I think that has, to a great extent, been the result of custom; they have been so long sending wool to the one market that they do not like to change.
1210. Because of the commercial relations in Melbourne—habit, you think? Yes; I think so; I should be very sorry now to send wool to Sydney, because it has so long been our custom to send it to Melbourne; but I should certainly do it.
1211. *Mr. McCourt.*] The Railway Commissioners, in their report on the line, state that the annual cost for interest and working expenses will be £14,000; do you think there is a reasonable prospect of the Government getting a fair return for that expenditure? It is very difficult to give an opinion; I have never gone into the matter.
1212. What will be the traffic over this line—have you thought that out? No.
1213. Would you use this line—your station? If I were sending stock away I should certainly use it.
1214. Is there any prospect of your sending stock to Sydney? It will have to come to that sooner or later. I do not know what we are going to do with our surplus stock. I think we shall have to freeze them, and then send them somewhere—either to Sydney or somewhere.
1215. But in the event of intercolonial freetrade, where would you send your stock to? To Melbourne.
1216. You would not use this line? No; not if there was intercolonial freetrade.
1217. Nor would any of the stock-owners in your neighbourhood? I do not think so.
1218. So that in case intercolonial freetrade were established, very little revenue for the new line would be derived from this part of the country? Yes; I think that would be so. As a matter of fact, if there was intercolonial freetrade we should have to go to the nearest market; but if we had to go to Sydney once and Victoria afterwards took off the duties, we should very probably say, "Now that you have made us do this we shall stick to it."
1219. Would there be any intercolonial traffic from Victoria through New South Wales over this new line? Yes; there would be a good deal of traffic into Sydney.
1220. Where from? From the northern parts of Victoria. The nearest way for us to go to Sydney now is to go to Melbourne, and on from there; but if this railway were made, the route would be much shorter.
1221. You will use this railway as a passenger line? Yes.
1222. In that way traffic would be created? Yes.
1223. Would it be so to any extent? I think there would be a good deal of traffic.
1224. *Mr. Wall.*] Your station is already served with railway communication? Yes.
1225. You stated that you have adopted the system of disposing of land for agricultural settlement? Yes.
1226. Do you think that, in the event of intercolonial freetrade, agricultural settlement would be promoted in this district? I am sure it would.
1227. It is not the custom to expose wool for sale that is shipped in bond through Victoria? No; not wool shipped in bond; but there is a great deal of wool offered for sale in Melbourne, and failing to get a price, the owners ship it.
1228. But when exporting wool through Melbourne you are not able to offer that wool in bond? You offer it by the samples.
1229. And if it were sold in Melbourne it would be subject to the duty? Yes.
1230. It is only a question as to the agents inspecting the sample? Yes.
1231. You would not be able to throw the bales open and absolutely offer the wool on the Melbourne market? I do not know what arrangement would be made in that case. Usually, so many bales are opened for inspection, and sold subject to inspection. If the Customs authorities would not allow a sufficient sample to be opened, it would be greatly against the sale of the wool, as buyers like to have a thorough examination.
1232. What do you consider is the capital value of your land, taken as a whole? It is worth fully £4 an acre.
1233. Do you think you could dispose of it at £4 an acre for agricultural settlement? Yes; I have received £6 an acre for some of it.
1234. You infer that the reason why agricultural settlement has not developed to the extent it might develop, is because of the border duties? To a great extent. There is no doubt that a great many people would come over and settle on this side if there was intercolonial freetrade, and I am sure the price of land would increase.
1235. With regard to the wheat market, you do not anticipate that the Victorian market will be sufficient in the event of this country being settled by an agricultural population;—the farmers would then have to seek a market in a wider field than Melbourne? Yes.
1236. In the course of a few years they would have to seek a market in London, or elsewhere? Yes.
1237. How have the people succeeded who have settled on your holding? They have done very well. Notwithstanding that they started with two or three bad seasons, and got back in their rent, they have nearly all paid up since. They have done very well during the last two or three years. Last season on the plain land they averaged from 15 to 16 bushels to the acre, and on the timbered land over 20 bushels. In some instances the yield was as much as 7 bags, which would be 28 bushels.
1238. What is about the cost of clearing the land? It varies a great deal. The average cost of clearing is about 25s. an acre.
1239. That would give a capital value of about £5 an acre to bring the land under cultivation? Yes.
1240. And you think that those engaged in agricultural pursuits have so far succeeded? Yes.
1241. So as to offer inducements to a large number of other settlers? Yes. There is a very fair demand for land springing up in small lots of from 300 to 1,000 acres.

1242.

Mr. W. R. Virgoe. 9 June, 1892.

1242. With regard to the proposal for subsidising the export of frozen meat, have you considered that question in regard to the effect on the surplus stock of the Colony? It would be a very good thing for the stock-raisers. They must get rid of their surplus stock somehow; they cannot consume it themselves.
1243. But unless the depôts were local, do you think it would be a success? They would require to be local. The sheep would have to be frozen immediately.
1244. And if those depôts were established locally in New South Wales, do you think they would open up an export trade? I do.
1245. And would that export trade be carried along this proposed railway line? Yes.
1246. Have you considered the question as to where those depôts should be established? No; I have not.
1247. If the principle of subsidising those who export meat were introduced, and the depôts were located in Sydney in the hands of private people, do you think it would be to their interest to raise the price of stock, and bring about the advance in value which you anticipate? Yes; I think it would.
1248. But if the depôts were local, do you think it would be a still greater advantage? Yes.
1249. And that the traffic on the railway line would be considerably increased? Yes. If you had local depôts the meat would go right away to Sydney, and be shipped from there.
1250. I believe your station is situated about midway along the private line from Deniliquin to Moama? Yes.
1251. Are the rates charged on that line higher than the ordinary railway rates? Well, I had an argument with Mr. Tennant, the manager of the line, some time ago, and he managed to prove that they were just about the same.
1252. Mr. Ewing said something about wool being exported to Melbourne in preference to Sydney; have you any knowledge of the differential rates between here and Sydney; is there any great difference between the charges for conveying wool to Sydney and Melbourne? I do not know what the rates to Sydney are.
1253. Is it not a fact that, taking the land carriage from Jerilderie to Deniliquin, and adding it to the railway freight from there to Melbourne, it costs more to send wool from any part of this disconnected country to Melbourne than it does to Sydney? Yes.
1254. We have it in evidence that the cost of carriage from between 30 or 40 miles of the present line is from 26s. to 30s. a ton; if the proposed railway connection were made, and the same differential system were adopted, do you not think you could get your wool to Sydney quite as cheaply as you could to Melbourne? I think I could. People have been so long in the habit of sending to Melbourne.
1255. In the event of the stock duties recently levied causing you to send your stock to another market, would not that be likely to alter your commercial relations with Melbourne? Yes.
1256. It is generally the custom that where you find a market for the sale of your produce you also get your supplies? Exactly.
1257. As a station-owner, in obtaining supplies, have you always confined your operations to Melbourne? Yes.
1258. Since the imposition of the border duties, do you know whether or not the trade with Sydney has been increased; I know that in certain cases the trade with Sydney has been increased; I refer to clothing and things of that sort? I know several people who have got their clothing from Sydney lately.
1259. Do you know whether it is a fact that business people are increasing their trade with Sydney in consequence of the imposition of these duties? I believe they are.
1260. *Mr. Dawson.*] In the event of the proposed railway being constructed from Jerilderie to Deniliquin, do you think any of the land would be taken up by small farmers? I think the demand for land would be increased. There is a demand for land now, and it certainly would be increased.
1261. Do you know of any other people besides yourself who are desirous of parting with their land either by lease or sale? No; I do not.
1262. Do you know whether the sleepers used on the private line were red-gum or ironbark? I think they were red-gum sleepers.
1263. Do you know whether the line wants repairing? It is in very good order. It is constantly being kept in good order.
1264. Have you ever noticed whether at any time they have been taking sleepers out and putting others in? I have not noticed them taking out sleepers.
1265. There is a good deal of red-gum about here and Moama? Yes; there is a large quantity of red-gum being sent to Melbourne daily.
1266. And it is, I believe, a splendid timber? A first-class timber.
1267. I believe that railway sleepers cost about 6s. or 6s. 6d. between Narrandera and Junee; if this railway were constructed, at what cost do you think red-gum sleepers could be sent to Narrandera and Junee? You can produce the red-gum here at the railway siding at 9s. per 100 feet, and railway sleepers at 3s. or 2s. 6d. each.
1268. Almost an unlimited quantity? Yes; thousands and thousands of feet could be got at Mathoura to my knowledge.
1269. Would an increased demand bring an increased price? No doubt.
1270. Are the New South Wales Customs duties felt here at all and at Moama; you buy a lot of wool-bags, and things like that? Yes.
1271. You have to pay duty here when you get them over the border? We pay our duty at Moama.
1272. Could you get them cheaper by buying them in Sydney and bringing them up by railway if this line were constructed? I think you could.
1273. And about groceries? Yes; it would apply to all goods.
1274. And as a matter of fact, you believe if the railway were constructed, you would get all your station supplies from Sydney? I do.
1275. *Mr. Ewing.*] Can you tell us what is the duty on wool between here and Melbourne—in point of fact, there is no duty? Not that I am aware of.
1276. That brings me back to what I wanted to elicit before;—there is no duty between here and Melbourne? No.
1277. You find yourself here in Deniliquin, 190 miles from Melbourne, and 450 miles from Sydney. What I want to know is, how it is possible that wool, which goes a distance of 190 miles from here to Melbourne, is to turn round and go 450 miles to Sydney, when there is no duty on the product. I could understand

Mr. W. R. Virgoe. 9 June, 1892.

understand that if the wool were affected by the border duty it would be so? In the first place, the railway rates from here to Sydney will be almost as cheap as from here to Melbourne, because the New South Wales rates are cheaper. Then again, the duty on other goods would drive the trade to Sydney for all those goods, and we should also send our wool there.

1278. Do you think it is reasonable to suppose that New South Wales is going to carry goods 400 miles at the same rate for which Victoria would carry them half the distance? I think she would—to induce the trade.

1279. Permanently, you think? Yes.

1280. Would they not have to carry them at a loss in comparison with Victoria? They can work the lines cheaper here than in Victoria.

1281. Then your first reason is, that if New South Wales carries wool 400 miles as cheaply as Victoria carries it 200 miles, there is no reason why the wool should not go to Sydney? Yes; because the border duties would drive all the rest of our trade to Sydney; and therefore, wherever we get the one thing we should get the rest.

1282. Your second reason is, that these border duties would disturb commercial relations with Melbourne, and the wool will follow the rest of the trade? Yes.

1283. *Mr. Wall.*] I find, from the return furnished by the Department, that corrugated iron is carried from Melbourne to Deniliquin and places north of the rebate line at 95s., while from Sydney to Jerilderie, it is carried at 80s.? Yes; the difficulty we are under here is in not being connected by rail with the main line. We can get goods to a certain point, and then we have to bring them here without the advantage of a railway.

1284. According to the present rates, the charge for wire netting from Melbourne to Deniliquin is 71s., and from Sydney to Hay or Jerilderie, it is 66s. 8d.? Yes.

1285. So that the rates would not stand in the way of your trading with Sydney;—that is, if the differential system were extended to this place? No; if we had railway communication, enabling us to reach the main line, we should get our things from Sydney.

1286. Therefore, notwithstanding that you are 200 miles nearer to Melbourne, you would still be in a better position to deal with Sydney, if the differential system were extended to Deniliquin? Yes.

1287. *Mr. Dawson.*] With reference to the passenger traffic from Sandhurst, Castlemaine, Maryborough, Ararat, and Ballarat, would not this proposed railway afford a route for passengers from those places to Sydney? Certainly; they would not have to go by Melbourne.

1288. Do you think there would be a large passenger traffic from the whole of that part of Victoria to New South Wales; not Sydney alone, but other parts of the Colony? Yes; all the commercial travellers would come this way.

1289. You think there would be an increased traffic on that account alone? Yes.

Mr. Charles Uphill, farmer, Pine Hills, near Deniliquin, sworn, and examined:—

Mr. C. Uphill. 9 June, 1892.

1290. *Chairman.*] What are you? A farmer and grazier.

1291. Where do you reside? At Pine Hills, about 21 miles east of Deniliquin.

1292. What is the extent of your holding? Four thousand five hundred acres.

1293. How much do you graze? About 4,200 acres?

1294. Do you farm the remaining 300 acres? Yes.

1295. What crops do you grow? Wheat and hay.

1296. How much under each? It varies considerably. Sometimes I cut more hay than wheat.

1297. What average yield of wheat do you get from your land? Last season I got an average yield of 16½ bushels to the acre.

1298. Was last year a specially good one? No.

1299. What would be the average for the last eight or ten years? The average on that class of country would be about 16 bushels.

1300. How many sheep do you run? About 4,500, lambs included.

1301. You say you grow crops for hay as well? Yes.

1302. How many tons per acre do you get from your hay crop? From 1 to 3 tons.

1303. In exceptionally good seasons you get as high as 3 tons? Yes.

1304. Have you been farming in Victoria? Yes.

1305. What part of Victoria? In the western district—Casterton.

1306. How far is Casterton from Melbourne? About 300 miles.

1307. Have you had an opportunity of comparing the quality of the land there with the quality of the land you now occupy? The best agricultural land in the box country here is more easily worked; and, I think, gives a better average return and a better class of grain and hay.

1308. In carrying on your farming operations, do you use any manure? No; I have not done so.

1309. Do you run sheep over your cultivation land? Yes, when not in crop.

1310. Do you think it would be an advantage if you were to do that? The land has not deteriorated in cropping very much that I can notice. A paddock gets a little foul with wild oats, and I give it a spell. I have paddocks which I cropped sixteen years ago, and last year they gave as much as ever they did, after a year's spell. In the meantime, of course, they had several spells. I have cropped one paddock sixteen years, with spells intervening, aggregating four years.

1311. What market do you find for your hay? Sometimes we get a local market, and we use a good deal for our own consumption.

1312–3. What do you do with your wheat? Send it to the miller at Jerilderie. I sent over 900 bags there this year.

1314. Off how many acres would that be? About 240.

1315. What average would that be per acre? The average was about 16½ bushels—about four bags to the acre.

1316. You think the quality of the land where you are now is superior to the quality of the land you held near Casterton? It is, for wheat-growing.

1317. *Mr. Dawson.*] How long have you been living on your present holding? Over sixteen years.

1318. Then you know the country pretty well between here and Jerilderie? Yes.

Mr. C. Uphill. 9 June, 1892.

1319. Do you know what is called the Conargo route? Yes.
1320. Do you know the surveyed route? Yes.
1321. Which do you think would be the better line? The surveyed route, decidedly.
1322. Why? Because it runs nearest to the land which is most fit for agriculture, and the further south the more agricultural land.
1323. For any other reason? It is the direct route.
1324. With an easy grade and easy of construction? Yes; very easy. There is hardly a culvert or a bridge wanted on the whole line.
1325. You have been a fairly successful farmer;—you put in a fair amount of crop, with a very good yield? Yes.
1326. If this railway were constructed, is it likely that any more men of your class would settle here? Yes; I am sure of it.
1327. In what way? Because there are gentlemen in the district who are willing to cut up the land.
1328. Is it all held as private property? Yes; the greater part.
1329. You say you have used no manure, and seem to have adopted a system of fallowing? I have not, but others have with best results.
1330. You think that if you found the yield decreasing you could, by fallowing and manuring, return the land to its original rich state? Yes.
1331. Could you increase your area under wheat? Yes, I could. I should have had a larger area under cultivation in the past but for the neglected state of our communication.
1332. If you had a railway here, and there was an unlimited market for your wheat, how many acres could you put in? It would just be a question of increasing the plant to enlarge the area to 500 or 1,000 acres.
1333. What is the lowest price per bushel at which you could grow wheat to pay you? Considering that we hold the land at a cheaper rate than leased land could be held, we could, perhaps, produce the wheat cheaper; but I think a fair market price for wheat, to give a man a fair return, is about 4s.—from 3s. 6d. to 4s.
1334. That is at the place? Say at Jerilderie.
1335. Do you know what is the market price of wheat in Sydney at present? About 4s. 9d.
1336. That is rather an exceptional price? Yes.
1337. What governs your wheat market, as a rule? The price in Sydney.
1338. As a matter of fact, wheat for many years has brought from 4s. to 4s. 2d. in Sydney? Yes; the price has been higher than that. In December and January, the year before last, it was worth 5s. and 5s. 2d. in Jerilderie, and we have always found that a much better market than either Deniliquin or further south.
1339. You think if you had a market you could put in 500 or 600 acres of wheat? Yes.
1340. Where do you send your wool? To Melbourne.
1341. Do you grow any store stock or fat lambs; Yes; I send down some fat sheep, sometimes—as a rule, every year.
1342. Would you still continue to send them? We would send them to the best market.
1343. Do you think the border duties recently imposed will affect you in any way? They will affect us at the present time in regard to buying store stock for fattening purposes, but how they will affect us in the course of three or six months it is very difficult to say.
1344. *Mr. Wall.*] How long is it since you settled in this locality? Sixteen years.
1345. What was the extent of your holding when you first settled here? Six hundred and forty acres.
1346. And to what extent have you increased it? Four thousand five hundred acres.
1347. You say you have had some experience of farming in Victoria;—can you give us any idea of the present capital value of farming land in Victoria, compared with the value of similar land in this locality? Land is worth more in Victoria, but it is not of better quality.
1348. What could you get land for in the agricultural districts of Victoria, similar to that on which you are now located? I think for about from £6 to £7 per acre.
1349. Therefore there would be a difference of from £2 to £3 in the capital value? Yes.
1350. Under these circumstances, do you think it is likely that a number of agriculturists would take advantage of facilities for settlement in this district? Yes; I do.
1351. You said something concerning the Sydney market controlling the price of wheat;—is it not a fact that the English market controls the price of wheat? There is no doubt it does, to a certain extent, but as New South Wales has not hitherto produced enough for her own requirements, Sydney is, on that account, a better market.
1352. Do you know the cost of conveying wheat from your farm to the London market? I hardly know what the cost is from the seaboard, but it is about 6½d. from Jerilderie to Sydney.
1353. It costs about 1s. a bushel to take wheat from the farm to the London market, where the average price is 4s. 6d.;—do you think the agriculturists here would regard that market as sufficiently good to induce them to put in large crops and cultivate wheat? I think they would in the class of country that I would recommend anyone to cultivate here.
1354. Have you on the 640 acres that you first took up been able, by the proceeds of your holding and your own industry, to purchase an additional 3,000 acres? Well, we are in that state of progress, at any rate.
1355. Have you been able, by the money you have made on your first selection, to increase your holding to the extent you have increased it? Yes, and by additional selection.
1356. At what price could you purchase land there now from the present holders? I do not think I could purchase any very near me, but I believe you could purchase land equal to that which I hold at £3 10s. or £4 an acre.
1357. Do you think the land which could be purchased at £3 10s. or £4 an acre would be equal to the land which you stated could not be purchased in Victoria for less than £6 an acre? Yes.
1358. What would be the extent of holding you could take in one block, the whole of which would be available for cultivation, without including any waste land? You could take almost any square of country without having waste land. There is hardly any waste land in 640 acres. The land differs very little. You may have a little bit of swamp land in a corner, or something like that, but it is good land all the same. It would be all fit for ploughing.
1359. Is there much waste in the agricultural land in Victoria to which you refer? There is in some parts.

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1360. You could not take up the same sized holding without having more waste? Except in the northern districts of Victoria—Shepparton or Echuca, where the land is something similar to the land here.
1361. You have had some difficulties in the way of water, have you not? Yes.
1362. Is it very hard to obtain water in that country? No; we have just passed through one of the longest droughts I have experienced as regards not being able to get the tanks full. We had no rain heavy enough to cause a flow over the surface of the ground for eight or nine months, which has made us very badly off till now; but still we have good well water, good stock water, and in any quantity.
1363. What does it cost you to carry your grain to Jerilderie per bushel? 4½d.
1364. If you could get your wheat carried to Sydney for an extra 3d. per bushel, do you think the cost of freight would be too much? No; there would be very little difference in the cost of carriage from the siding, to which we would take our wheat, to Sydney, and the cost at present.
1365. *Mr. McCourt.*] You say the lowest price at which you can produce wheat on your farm is 3s. 6d. per bushel? Yes.
1366. In view of the large area which you say would come under cultivation in this district, and the increased area coming into cultivation in the rest of the Colony, do you think that price is likely to be maintained? It is very difficult to say. I have studied the wheat market for over twenty years, and have heard the same question asked for twenty years, but the price has not fluctuated very much. If you were to take all the markets of the Australian colonies for the last twenty-five years, you would find that this estimate of from 3s. 6d. to 4s. per bushel would be borne out.
1367. Have you been in the habit of getting 3s. 6d. in the past years here? Yes, and upwards. Ten years ago I used to sell wheat in Deniliquin, and I have got as much as 5s. a bushel here, and perhaps a little over.
1368. How much profit do you think would be a fair thing for agricultural land—10s. an acre? No; I do not consider that enough. I think that upwards of £1 is quite little enough.
1369. You consider that nothing less than £1 an acre profit would pay for agriculture? Yes.
1370. Would you use this line of railway if it were constructed? Yes.
1371. To any extent? Yes.
1372. How many tons of wheat annually would you send away by it? I sent over 100 tons of wheat to Jerilderie this season.
1373. And that would all go on this line? Yes.
1374. At what point—how many miles from Jerilderie? About 15 or 17 miles.
1375. Would the construction of this line induce you to increase the area under cultivation? Yes.
1376. To what extent? Probably to 500 acres.
1377. And others in the neighbourhood would similarly increase their area? Yes.
1378. *Mr. Ewing.*] I suppose you are somewhere north of Tuppal? Yes.
1379. Are you on the Tuppal run? Yes, on the boundary of Tuppal and Hartwood.
1380. The country is of the same class as the Tasmanian farmers have recently taken? Yes.
1381. And you think if the railway were made direct from Jerilderie to Deniliquin you would have access to it midway between the two places? Yes.
1382. You told us that you would send your wheat to Jerilderie? Yes.
1383. You have not troubled, I suppose, as to what becomes of it afterwards—you sell it to the miller? Yes; I have done so hitherto.
1384. And you have made no inquiries as to what became of it? It is not sold up to the present; it is stored at Jerilderie.
1385. You have stated that you have studied the wheat market for a considerable time; if the increase of production which we are told will follow the construction of railways does set in, I suppose you believe that before very long there will be over-production in New South Wales? Yes, it must naturally follow.
1386. With the small local market of 1,000,000 people, and the great areas we have, we must very soon look to the markets in the other parts of the world? Yes.
1387. Can you form any idea, with reasonable seasons, when this over-production will set in? I should say in three years hence.
1388. We can say that within five years' time it is reasonable to suppose that our wheat-growers will have to look for a market outside the boundary of Australia? Yes; I think it very probable.
1389. *Mr. Dawson.*] Do you mean, speaking of the profits of farming, that you would expect to receive £1 an acre net? Yes.
1390. What do you get from your sheep? About 4s. or 5s.
1391. Do you not think, if you only get 4s. or 5s. for grazing, that it would pay you to go into agriculture if you made 10s. an acre? No; there is so much extra worry and trouble about farming. It is not so easily done as sheep and wool-growing. We take a certain amount of value out of the land by continually cropping it from year to year.
1392. You think that nothing under £1 per acre, net, per annum would pay? Well, I think we ought to reasonably look for that, on account of the extra worry and trouble.
1393. And do you think, as a practical man, that if this land were thrown open, farmers could come here and make £1 an acre net? Yes; I think they could.
1394. *Chairman.*] Would you like to say anything further on the subject of the proposed railway? I might, perhaps, refer to the fruit-growing capabilities of this district. The class of country of which I have been speaking, and through which some of you gentlemen came yesterday, is nearly all fit for the growth of fruit of different kinds, including vines. I started an orchard of about 7 acres four years ago, and it has far exceeded my expectations. I was under the impression that I could not grow fruit without irrigation, but I adopted a system of trenching in the first place, and of afterwards keeping the surface loose, with the result that the trees have grown remarkably well.
1395. What depth did you trench? One plough behind the other —from 9 to 10 or 11 inches, not bringing the subsoil to the surface, but just loosening the ground.
1396. And you think fruit-growing would be a profitable industry in this part of the country? I think so, because I believe a fruit-drying industry would be developed, and we have such a suitable climate for drying fruit in summer. With our dry air we could dry fruits in the sun here better than they could in other parts where the air is moist.
1397. Have you sold the produce of your orchard? No, I have had nothing to sell off it yet. It is only in a state of infancy, but we have had some very good fruit off it.

1398. *Mr. Dawson.*] Are any raisins grown in this district? I believe not; but across the Murray, at Shepparton and Mooroopna, 25 miles on the Victorian side, raisins are produced. Mr. C. Uphill. 9 June, 1892.
1399. Is Mooroopna the place where the raisins were grown of which so much notice has recently been taken in the English market? Yes, they took the prize.
1400. And large orders have been given instead of sending to Spain? Yes, I hear so.
1401. Is that place only 25 miles from here? It is only 25 or 30 miles across the Murray River, south from where I live.
1402. Do you think that industry could be started here too? Yes.

Mr. William Doel, farmer, North Tuppal, near Deniliquin, sworn, and examined:—

1403. *Chairman.*] What are you? A farmer. Mr. W. Doel. 9 June, 1892.
1404. Where do you reside? At North Tuppal.
1405. How long have you been there? Four years.
1406. What occupation do you follow? Wheat-growing, mostly.
1407. What is the size of your holding? About 2,000 acres.
1408. How much of that have you under wheat? About 300 acres.
1409. Do you graze any of your land? We graze the remaining portion.
1410. What is the average crop of wheat on your farm? For the last three years the average has been five bags to the acre—20 bushels.
1411. *Mr. Wall.*] How long have you been in possession of your present holding? Four years.
1412. Were you farming previously to that? Yes.
1413. Where? In the Goulburn Valley.
1414. Anywhere near where irrigation is carried on? Just about the same place where irrigation now is; but irrigation was not carried on when I was there.
1415. Were you farming in the Goulburn Valley for a long time? From 1870.
1416. And you are able to form a comparison between the value of the land there and of that which you now occupy? Yes.
1417. Which do you think is the better land? For wheat-growing purposes, I think where I am now.
1418. What is the average yield in the Goulburn Valley? I was farming four years ago in the Goulburn Valley, and I used to put in from 200 to 400 acres, and my biggest average was 14 bushels to the acre.
1419. Do you still hold a farm in the Goulburn Valley? Yes.
1420. What is the capital value of farm land in the Goulburn Valley, as compared with that you now hold? If this land were in the Goulburn Valley, and adjacent to a railway station, it would be worth from £7 10s. to £8 acre.
1421. At what price can you purchase land in the locality in which you now reside? At £4 an acre.
1422. That leaves a difference of from £3 10s. to £4 an acre? Yes.
1423. In speaking of land at £7 10s. and £8 an acre, I presume you mean cleared land? No, new country, the same as mine.
1424. And you think this land is in every respect equal to that in the Goulburn Valley? I reckon it is better for wheat-growing purposes.
1425. Do you know if the rainfall in the Goulburn Valley is greater than it is here? I do not think so, but I have never studied that question. I know that during the four years I have been here I have beaten the people who have been growing crops at Nathalia.
1426. If the proposed railway were constructed, would the facilities for getting to market be on a par with those in the Goulburn Valley? Yes. My place, for growing wheat, is equal to the township of Nathalia, where they have a railway right at their door. Last year my wheat returned me the same price per bushel, on the ground, as the price at Nathalia.
1427. Can you give us any estimate of the number of people engaged in agricultural pursuits in the Goulburn Valley over a radius (say) of 40 miles? In the Goulburn Valley the average farm is 200 acres in extent, and the farms are side by side.
1428. And the whole of the land there is taken up, unless one farmer purchases from another? Yes; there are not 20 acres of good land to be obtained in the Goulburn Valley.
1429. During the three years you have been here have you experimented with a view to ascertaining to what the land is adapted besides the growth of wheat? The first year I came here I grew barley, and I do not think the land here can be beaten for growing barley. If we had a market, I fancy that we could beat the world in the production of barley.
1430. What does your barley weigh to the bushel? I could not exactly say, but we get five bushels to the bag, so that its weight must be very heavy, as a bag is only supposed to contain four bushels.
1431. What is the cost of clearing? One pound an acre I am paying this year, commencing at the beginning and clearing it right out.
1432. It is light soil for ploughing? Yes, it is nice light soil. The subsoil is down a good depth.
1433. Have you any difficulty in working a double-furrow plough with two horses? Well, we generally have three horses in, but with two good horses you could work a double furrow. I am working a three-furrow plough with four horses, and a man ploughs 3 acres a day.
1434. In speaking of the cost of clearing this land, do you refer to any special portions when you say it can be cleared for £1 an acre, or does that refer to average land? Average land—the whole lot of it. I reckon there are 18 miles by 20 miles that could be cleared for £1 an acre.
1435. In the event of this railway being constructed, do you think it would tend to promote settlement in that district? I think so, very much.
1436. Do you think there would be any difficuly in inducing the private owners to dispose of their land for agricultural purposes? I think they would be likely to dispose of it if they could get £4 an acre, and if the railway were made I do not think there would be any difficulty in getting purchasers at £4 an acre.
1437. What does it cost you now to get your wheat to market? Last year I paid 16d. a bag, or a little over 4d. a bushel.
1438. Was that for land carriage? Yes, to Jerilderie.
1439. How much would that be a ton? There are nine bags to a ton, so that it would be 12s.
1440. Regarding this proposed railway as a branch line, you know, I suppose, that the Commissioners have power to impose special rates on branch lines? Yes.

Mr. W. Doel. 9 June, 1892.

1441. If the Commissioners were to carry your produce along the line at a cost of from 20 to 30 per cent. less than you are now paying to teams, do you think settlement would be likely to be promoted in the district? Yes. I think it would promote settlement if the land were thrown open for sale in blocks of about 320 acres. People cannot afford to give £4 an acre for land for the purpose of grazing sheep, and any number of people in that part of the country from where I came would jump at the chance of getting 320 acres at £4.

1442. Do you know anything of the reserves that have been proclaimed between Jerilderie and Deniliquin? No.

1443. Do you think there is any actual necessity to have 290,000 acres reserved? I did not know there was that quantity reserved.

1444. Do you think, if the reserves distributed over Tuppal and several other holdings were thrown open, it is likely that it would promote settlement? Yes; I do not think there would be any of them left in a short time. It is rather a hard job to get a piece of a reserve. The other day a piece of land was thrown open for selection and I came in to see if I could get a show for it, but on the day when it was to be open for selection I heard it was withdrawn.

1445. Do you think that if the reserves were thrown open in special areas, settlement would be promoted? Yes; I am sure it would.

1446. There is a timber reserve between your place and the town? Yes; I believe there is.

1447. Is it of very great extent? I do not exactly know the extent.

1448. Is there much valuable timber on that reserve? Only timber for firewood.

1449. I suppose that is a great necessity here? Yes.

1450. *Mr. Ewing.*] You sent your wheat to Jerilderie, and you do not know what became of it after that? I believe it is there now. It is only stored there. We must take the wheat away as soon as it is taken off the ground. It is impossible to cart it in the winter time. It would be worth 10s. a bag to take it to Jerilderie in the middle of winter. We have, consequently, to cart it away as soon as it is off the ground, and we have to pay for storage in Jerilderie. If we had a railway we could build a store on our own ground and save all that trouble.

1451. How far would you be from the direct line? I think about 7 miles.

1452. How far are you from Jerilderie? Thirty-two miles.

1453. So that you would have to cart your stuff 7 miles instead of 32 miles? Yes.

1454. And this would remove the isolation from which you suffer at present? Yes; and it would give us the benefit of enabling us to keep our wheat and cart it ourselves instead of having to pay for carting it.

1455. *Mr. Dawson.*] For what distance on each side of the line would the railway serve the farmer—that is, if some of these reserves were thrown open? I do not think he ought to grumble if he is within 12 or 15 miles of the line.

1456. So that he could go to the railway station and back in the day? Yes; or even if he could get his load off the first day, because there is a great risk after the first day—you have to camp out with your horses, and you might lose them.

1457. You think that if a man can get to the railway and unload his goods in one day he is fairly served? Yes.

1458. Have you put in an orchard on your farm? Yes; but it is too young yet.

1459. How do you think it will do? I think it will do very well. My brother-in-law is going in extensively for fruit, and he seems to do very well.

1460. And are you going to follow his example and grow more fruit? I would sooner grow wheat.

1461. Do you know anything about the red-gum in this locality? Yes; I know a little about it.

1562. Is it good timber for sleepers? It cannot be beaten.

1463. How long have you known a red-gum sleeper to last? I could not tell you exactly how long the red-gum lasts, but I know it is the best wood for posts.

1464. How long have you known it to last for posts? I know red-gum posts that have been in for twenty years, and I do not know whether they have been shifted since.

1465. You say you are growing about 300 acres;—how much more wheat would you put in if the railway were made? It would depend on the fluctuations of the market. If there was a scarcity of wheat this year, I would put in a big crop next year. It depends on how you think the market is going to be. This year I thought we should have a good market, and I put in an additional 100 acres.

1466. If the railway were constructed, and you had an unlimited market for your wheat either in Sydney or elsewhere, what would be the lowest price at which you could farm profitably? I think a person could make a good profit at 3s. per bushel on the ground.

1467. You consider that 3s. would be the minimum price at which it would pay? Yes. We can grow it here a little cheaper than they can in other parts. This is a fine dry country, and you can strip the wheat. In many places both in New South Wales and in Victoria you cannot use the stripper.

1468. You use the best machinery for putting your wheat in and taking it off, and I suppose you use three-furrow ploughs? Yes.

1469. By the use of the three-furrow plough, I take it you save the work of two horses and two men? Yes.

1470. *Mr. Ewing.*] Some of your barley has been tried for malting purposes in Deniliquin, I believe? Yes.

1471. And it has been proved to be better than the best Victorian barley? I did not send mine to Victoria; I sent it to the local brewer, and he said he was perfectly well satisfied with it. I used to grow barley on my place in Victoria, only 45 miles south from here, and some of the barley grown in the district took the prize in France as the best barley in the world. This part of the country is even superior for growing barley than the part of Victoria from which I came. The subsoil is so much deeper, and there is nice light soil on the top. Where I came from you may, perhaps, get 200 or 300 acres of nice land and then you will have 30 acres on clay land. The land is not so general in its character as it is here. It is more patchy.

1472. *Mr. Dawson.*] You know the Conargo route and what is known as the direct route;—in your opinion, which is the better of the two? There cannot be any other opinion than that the direct route is the better one to suit the farmers.

1473. But to suit the country? Well, to suit the railway.

1474. Is it also the shorter? Yes, I think so.

Mr. James Robertson, farmer, near Deniliquin, sworn, and examined:—.

Mr. J. Robertson. 9 June, 1892.

1475. *Chairman.*] What are you? A farmer.
1476. Where do you reside? My holding is about 12 miles east from here, on the boundary of the Deniliquin and Tuppal runs.
1477. What operations do you carry on? Farming and grazing.
1478. What is the size of your holding? 1,280 acres in this district.
1479. How much do you farm? I have 200 acres in crop this year, and there are besides 300 acres that have been under crop.
1480. What is the average yield per acre? From 16 to 20 bushels.
1481. Say an average of 18 bushels? Yes.
1482. How long have you been here? Sixteen years.
1483. *Mr. Ewing.*] You are growing only wheat and wool? I have grown no wool as yet. I have a few sheep now, but I have grown no wool. I graze cattle.
1484. Your land is the same as the adjoining land in the district? Yes.
1485. And is suitable for farming? Yes.
1486. And you think that if you had better railway communication you could do a great deal better? Yes.
1487. How do you think the line from Jerilderie to Deniliquin would benefit you? I could get my wheat delivered in Sydney, I suppose, at very nearly the same price as it costs me to deliver it in Jerilderie.
1488. At present do you take your wheat to Jerilderie? Yes.
1489. And you think that by railway communication you would be able to get your stuff to Sydney as easily as you now get it to Jerilderie? Yes.
1490. That would enable you to grow a great deal more, I suppose? Yes.
1491. Would you extend your operations? Yes.
1492. *Mr. Wall.*] How long have you been in the district? Over sixteen years.
1493 Did you come here with the intention of settling as a farmer? Yes.
1494. How long have you been farming in the district? All the time I have been here—sixteen years.
1495. Has settlement increased here to any extent during the last few years? It has decreased considerably. There is not one now for every six there were formerly.
1496. Can you assign any cause for that? It was partly because they could not find a market for their agricultural produce.
1497. Do you not think that the decrease in the farming population here is in a very great extent attributable to the fact that they could get a higher price for their land from the adjoining station holders—that they sold out at an immediate profit, rather than engage in an industry which returned only a slow profit—has that not had a tendency to decrease the farming population? That might have had a tendency to do so, but if the farmers had had a ready market they would not have been compelled to go somewhere else.
1498. Then there have been a good many who have settled in the district and sold out? Yes; it is the few, the very few, who remain on the land.
1499. Do you know whether they came here as *bona fide* farmers or simply as land gamblers? I do not know.
1500. Do you think that a *bona fide* farmer, coming here with the intention of farming, can make agriculture a success? Yes.
1501. Do you think, from your practical knowledge, that he can make it a success and pay from £4 to £5 an acre for his land? If he has good land, yes.
1502. Can he get good land at that price? Yes, for less than that.
1503. Have you a large family? Yes.
1504. Grown up? They are grown up now.
1505. Are they engaged in farming? Yes, in other districts.
1506. *Mr. Dawson.*] Do you know anything about red-gum, as to whether or not it is suitable for railway purposes? Yes; it is. It has been used a great deal for that purpose in Victoria. There was a good deal of red-gum on the land I had in Victoria, and it was taken to Clunes and used for railway sleepers.
1507. Do you know whether the red-gum is still plentiful or whether it is getting scarce? I do not know what extent of red-gum forests there are.
1508. Have you been growing fruit at all? Only a little for my own use. Fruit can be grown successfully in this district.
1509. Where do you sell your wheat? Jerilderie is the principal market.
1510. What does it cost per bushel to deliver it at Jerilderie? Sixpence a bushel, some of it less.
1511. If the railway were constructed, and the ordinary rates from your place to Jerilderie being 1d. or 1½d. per bushel, would you still send your wheat in that direction if the Railway Commissioners were to charge 2d. or 2½d. per bushel? Most decidedly. I think it would be advisable that they should charge a little extra, because otherwise the line might not pay for a time.
1512. Then you quite agree with that principle? Yes.
1513. Could you put in any extra breadth of wheat? Yes, I could extend the area to 600 acres.
1514. And what do you think would be the lowest possible price you could take to make wheat growing pay? It would pay very well at 3s. on the ground, or at the siding.
1515. That is, if you could grow a large quantity and get a ready market for it? Yes.
1516. And generally, outside your own farm, you think there are thousands of acres that could be devoted to wheat growing if the railway were constructed? Yes, hundreds of thousands.
1517. *Chairman.*] Is there anything you would like to add to the evidence you have already given? I merely wish to emphasise my opinion in regard to the capabilities of the country. I have been in districts in Victoria where farming land is as high as £14 an acre, and in the Ballarat district and the Learmonth district it was as high as £20 an acre, and yet it would not grow better crops than the land in this district. I was down twelve months ago, and they were cutting their crop, chiefly for hay, and it was not better, or even so good, as the crops we grow here.
1518. *Mr. Dawson.*] All the people living in that part of Victoria would come to Sydney this way? It would be the nearest way.

Mr. James V. Ingram, farmer, Norwood, near Deniliquin, sworn, and examined :—

Mr. J. V. Ingram. 9 June, 1892.

1519. *Chairman.*] Where do you reside? At Norwood, about 10 miles from Deniliquin, in an easterly direction.
1520. What are you? A farmer.
1521. What is the size of your holding? About 1,200 acres.
1522. How much do you farm? I generally average about 300 acres in crop. This year I have about 270 acres.
1523. *Mr. Dawson.*] What is your yield? On an average, about four bags—17 bushels to the acre.
1524. Where is your market now? I sold my wheat at Jerilderie last year.
1525. Could you put in any greater breadth? I could put it all in; it is all good cultivation land.
1526. You could put the whole 1,200 acres in? Yes.
1527. If you had a market would you put the whole 1,200 acres in? No doubt about it.
1528. What is the lowest price you could farm it at profitably? I suppose 3s. It would pay very well at that.
1529. How long have you been on the holding? Fifteen or sixteen years.
1530. Do you know anything of the district around? I know most of it.
1531. Have you been on what they call the Conargo route—the mail route? Yes.
1532. Do you think it would be better to construct a line *via* Conargo than to go direct? It would not suit me so well.
1533. Would it serve more people if it went by Conargo? Excepting the stations, I do not think it would. It would catch more of the stations, but it would be better on the south side of the line for the farmers.
1534. There is better land on the south side? Yes.
1535. Have you gone into fruit growing at all? Only for my own use. I had some thoughts about it this year.
1536. Do you know anything about the red-gum forests? I have been through them a good deal down on the Murray.
1537. Is there plenty of red-gum there? Yes, a considerable quantity, and it is always growing.
1538. Is it good for railway purposes? Yes, it is about the best you can get, I believe. It is good for posts, so I believe it would be good for sleepers.
1539. Where do you send your sheep to? I sell them locally
1540. Have you much wool? Not a great lot.
1541. Where does it go to? To Melbourne.
1542. If the railway were constructed, would you send it to Sydney? I should be likely to do so.
1543. Do you think the farmers round would be likely to do so? There is no doubt. Of course, it all depends on the market. No doubt there is a better market in Sydney, and a better chance of selling your produce, both hay and wheat, if there was a railway.
1544. I suppose in regard to your inwards goods for the use of the place, you buy them locally? Mostly. I got some machinery up last year; I sent wheat to Jerilderie, and brought machinery back from Sydney. I deal with Sydney as far as I can.
1545. As a resident of this district, do you think that the stock tax lately imposed by Victoria is likely to have the effect of sending the stock to Sydney? There is no doubt about it.
1546. *Mr. Wall.*] How long have you been growing wheat in this district? For fifteen years.
1547. It is only since the establishment of the mill at Jerilderie, I suppose, that wheat growing has developed to its present extent? On that side, yes; of course, we had a mill here all the time.
1548. Is there a mill here? Yes. There has always been a better market in Jerilderie for wheat, since the mill started, than there has been here.
1549. How far are you living now from railway communication? Deniliquin is the closest—10 miles.
1550. You do not consider you are badly served in regard to railway communication? No; but no thanks to the Sydney Government for it.
1551. I suppose you understand that railways are purely commercial transactions? Certainly, I quite understand that.
1552. And if the Government or the taxpayers of this country construct a railway, they expect it to pay? But they would not allow the local people to build a railway.
1553. Do you think the construction of this railway would promote settlement in the district? I do.
1554. And open up a trade with Sydney? No doubt about it.
1555. Do you think there is a sufficient extent of agricultural land in this district to support a large agricultural population? There is no limit to the population it would support.
1556. And do you think this land could be purchased from the present holders at such a price as would offer inducements for a population to settle here? Yes, I do.
1557. How far are you from the proposed line? About 4½ miles to the south.

Mr. John Macaulay, grazier, Calimo Run, near Deniliquin, sworn, and examined :—

Mr. J. Macaulay. 9 June, 1892.

1558. *Chairman.*] Where do you reside? Seventeen miles from Deniliquin, on the south side of the Edwards, on the Calimo Run.
1559. What do you do? I follow grazing.
1560. Any farming? We farm about 100 acres for hay.
1561. What sheep do you carry? We have two holdings. We have one about 70 miles from here.
1562. What do you do there? Graze.
1563. How many sheep have you on both holdings? About 12,000.
1564. What do you do with your wool? Send it to Melbourne.
1565. And your fat stock? Send them to Melbourne also.
1566. *Mr. Ewing.*] Is the land to the west of Deniliquin, where you are, as good as the land at Tuppal for agricultural purposes? I do not know if it is as good as the Tuppal land, but it is good land for agriculture.
1567. How is it that the farmers, as a rule, have gone down towards Tuppal and Berrigan? Perhaps there was more land there open for settlement.

Mr. J. Macaulay. 9 June, 1892.

1568. They have been able to make terms with the owners there, and they have not, perhaps, in other places? No, they have not where I am.
1569. What is the size of your holding here? Four thousand four hundred acres.
1570. Of what value would the line from Jerilderie to Deniliquin be to you? It would enable me to go into farming and grow grain.
1571. Why? There is no market elsewhere that would pay us.
1572. You want to send your stuff up into New South Wales? We want to send our stuff to Sydney. We have been here fourteen years, and have not grown a bag of wheat, merely because we have not had a market.
1573. And you think that by getting to Sydney you would have a market? Yes, and we would go into cultivation.
1574. *Mr. Dawson.*] What could you grow—what quantity? We could grow fair crops, according to the crops for hay we have had. It is suitable for wheat-growing; we could grow, perhaps, up to 1,000 acres.
1575. How many bushels of wheat would you expect to grow if you had a market? From 12,000 to 20,000 bushels.
1576. And if this railway were constructed you would put in 1,000 acres? Yes.
1577. In the event of your wheat being sent to Sydney, would you get your back loading this way? Yes, I would get all my provisions from there.
1578. Suppose the Railway Commissioners made a charge of 1½d. per bushel, instead of the ordinary rate of 1d., do you think that would be a fair thing? Yes, I think it would.
1579. *Mr. McCourt.*] Why do you look to Sydney for your market? There is a duty at present on wheat going into Victoria. Besides, Victoria grows more wheat than she can consume.
1580. In case the duty were removed, would you not send your wheat to Melbourne in preference to Sydney? It would all depend on the expense.
1581. Would it not be cheaper to send it 190 miles to Melbourne, than to send it 400 miles to Sydney, supposing the duty were removed? I do not know; it might.
1582. In case the duties were removed, would you not look to Melbourne as your market? If the duties were all removed, of course I would naturally look to Melbourne.
1583. You would look to Melbourne wholly and solely for your market? If I opened a trade with Sydney, I might have some reluctance to change my business.
1584. But if it were cheaper to send it to Melbourne, as it would be if the duties were removed, would you not avail yourself of that market? Certainly.

Mr. Thomas Leetham, farmer and grazier, near Deniliquin, sworn, and examined:—

Mr. T. Leetham. 9 June, 1892.

1585. *Chairman.*] What are you? A farmer and grazier.
1586. Where is your holding? Nine miles from Deniliquin, on the railway line.
1587. What do you do with your holding? I follow farming, as well as grazing.
1588. What is the size of your holding? 14,000 acres. That is the family holding. I have three sons.
1589. Do you cultivate much? Yes; I have about 1,000 acres under cultivation.
1590. What do you grow principally? I grew wheat the last year.
1591. What did you do with your wheat? I shipped it round to Sydney this year.
1592. From Melbourne? Yes.
1593. What price did you get for it in Sydney? I sold it to a party who is doing business in Sydney. An agent came round and I got 3s. 9d. in the truck—that is, about a mile from my place.
1594. What is your average yield per acre? Five bags. I got a little over this year. The bags run about 4½ bushels each.
1595. Did you grow any other crop besides wheat? Not last year. I have grown barley and oats—very good crops of each.
1596. Do you find that barley does well here? Very well, if you select the proper ground.
1597. What kind of ground does barley like best? Nice mellow loam.
1598. What crops of barley did you grow? Very good crops, and a very fine sample.
1599. Do you grow any other crop besides wheat and barley? Oats.
1600. How much have you under oats? It was chiefly for hay, but it was a very heavy crop.
1601. What is the largest crop you get? I had 2½ tons of hay to the acre.
1602. Last year? No, not quite so much last year; the hay crop last year was off land that had been cropped with wheat for years.
1603. What does it run generally? From 1½ to 2 tons to the acre.
1604. Two tons to the acre would pay very well? Yes; some seasons we get much more.
1605. What market have you for your hay? During the last few years I have mostly consumed it all myself.
1606. How many sheep do you shear? From 10,000 to 12,000.
1607. Do you send your wool to Melbourne? Yes.
1608. *Mr. McCourt.*] What is the cost, per bushel, for freight from your place to Melbourne? I do not know this year. I sold my wheat at the door.
1609. But if this line were constructed, do you know whether it would be cheaper to send wheat to Sydney *via* Melbourne, or direct by railway? Certainly; we could not sell it in Victoria. If the railway could carry it cheaper it would go to Sydney or some other foreign market.
1610. But if the duty were taken off you would find a market in Victoria, I presume? I think Victoria grows as much as she consumes, and it would still have to be exported.
1611. Would you contribute any revenue to this railway if it were constructed? Yes, we should have to use it.
1612. In what way? We cannot send stuff to Victoria in the face of the stock tax; therefore, what is to be done?
1613. I suppose those duties will not last for ever? I could not say that.
1614. Then, while they last, would you send your produce to Sydney? I would have to do so.
1615. And your stock, too? Yes; I cannot see any other market, unless we could get a slaughter place here and slaughter our own.

Mr. T. Leetham. 9 June, 1892.

1616. You are likely to send all your stuff to Sydney, then? Yes, as far as I can judge at present.
1617. *Mr. Wall.*] In the event of your sending your produce to Sydney, would you send it in the manner adopted by the persons who purchase from you, that is to say, would you send it in bond through Victoria and round to Sydney by water? I made up my mind that next year, if I lived so long, I should go round to Sydney myself and dispose of it.
1618. I suppose that as far as its commercial relations are concerned this part of the country is practically part of Victoria? Well, it is at present, because we have never had an outlet; we have always been shut up in a corner.
1619. Did you select your land? I selected some, and bought other portions.
1620. What is the capital value of the land in the neighbourhood where you reside? From £3 10s. to £4 an acre.
1621. Do you think those persons who hold large areas would be willing to sell at that price? I have had land offered to me at that price.
1622. Good agricultural land? Yes, as good land as you would find anywhere. Round here there is an area of good land that will grow any kind of cereal.
1623. Do you know the cost per ton to convey grain to Sydney by sending it in bond to Melbourne, and then by sea? I could not tell you.
1624. It would be much cheaper than if carried overland? I could not say. As to the quality of the land you cannot beat it.
1625. Do you know whether large quantities of chaff have been sent from Jerilderie to Sydney? Not from personal knowledge; I have only heard it spoken of.
1626. I suppose you have seen occasionally that Jerilderie chaff does sell in the Sydney market? Yes.
1627. You have no idea what it would cost to send hay or grain to Sydney? No.
1628. *Mr. Dawson.*] You say that you will have to send your stock to Sydney unless there is a slaughter-house here;—if there was a slaughter-house here it would be for the purpose of sending frozen meat away, would it not? Yes.
1629. That would simply mean that the railway would have to carry dead meat instead of live meat? Yes.
1630. How far are you from the red-gum country? I live on the border of it. In fact, I take some of it in.
1631. Is there plenty of timber there for sleepers? Yes.
1632. It is very good, is it not? Very good.
1633. For railway sleepers you could use butts and a lot of sizes of timber that could not be used for other purposes? Yes, there are hundreds of acres of timber of that description. The most valuable timber has been taken out, but there is any amount of timber 18 or 20 feet long fit for sleepers, without touching the valuable timber.
1634. Apart from the valuable timber, you say there are hundreds of acres of timber suitable for sleepers? Yes.
1635. Have you any idea what the cost would be per sleeper? No.
1636. In regard to the cultivation of wheat, if you had an unlimited market for all you grew, what do you think would be a favourable price? With the machinery we have now we can take it off at a much lower price than formerly. I think now we could do very well at 3s., or even below that. The combined harvester is a great help to the farmer, and I have four of them.
1637. As far as railway communication is concerned you are well served, being only 1 mile off? No, the present state of things does not suit me at all. It would be much better if I could get my wheat to Jerilderie, unless I send it round by Melbourne to Sydney.
1638. At present you have railway communication with Melbourne only, and as you have no market there you might as well be nowhere? Yes.
1639. Whereas if you had railway communication at Jerilderie you could not only supply Sydney, but also Wagga Wagga, Bourke, and other places? Yes, the whole inland country. I intend breaking up a great deal more land. I have ten furrows going every day breaking up new land, for I can see that I can make much more out of agriculture than out of pastoral pursuits.
1640. *Chairman.*] With the new machinery of which you speak, what is the cost of putting in and harvesting your crop? I can put it in and take it off, for from 30s. to 35s.
1641. That includes the whole operation—ploughing, sowing the seed, and everything? Yes. Some of the forest land I have cleared has cost me 35s. an acre, but when cleared this land will, as a rule, yield much more in the first year than the plain land.
1642. How do you account for that? The land is mellow and fresh, and when you root out the timber it is the same as if the ground were trenched. We find that the timber country grows far heavier crops for the first four years, but after that the plain country will grow good crops when the other is done.
1643. *Mr. Wall.*] You think that after a few years' cultivation the plain country is as good as the other? It will bear cropping longer.

Mr. Colin C. M'Culloch, manager of Warbracken Station, near Deniliquin, sworn, and examined:—

Mr. C. C. M'Culloch. 9 June, 1892.

1644. *Chairman.*] What are you? Manager of Warbracken Station, about 4 miles from here, down the Edwards.
1645. You are the son of the owner? Yes.
1646. What is the size of the property? About 64,000 acres.
1647. Is it all freehold? Yes.
1648. Is there any Government land on it at all? Very little.
1649. What stock do you carry? About 48,000.
1650. Do you cultivate any of the land? Only a little for our own use.
1651. What do you do with your wool? Try and sell it in Melbourne, and if we cannot we send it home.
1652. What have you hitherto done with your fat stock? We have sent them to Melbourne; there has been nothing else for it.
1653. *Mr. Ewing.*] Have you considered whether if this railway is constructed you will dispose of your land in a manner which will permit of its going into agriculture? We will dispose of it in any way if we can get a fair price for it.
1654. You are prepared to sell? Yes.

Mr. C. C. M'Culloch. 9 June, 1892.

1655. And if proper means of communication are given you will be able to sell? I think so.
1656. You have no desire to hold your land if you can do better with it? Oh, no, we would sell to-morrow if we could get a fair price.
1657. Is your land as good as the land to the eastward? It is more plain country than that.
1658. And not quite so much sought after at present? No, perhaps not quite.
1659. What would you use the proposed railway for? If the cost of conveyance were cheaper than by the other way we should use it. Of course, we could not use it if it were more expensive.
1660. You will send your wool to Sydney if it pays you to send it there? Yes.
1661. And the farmers whom you eventually hope to see in that country will send their wheat there if it pays them? They are sure to send it that way. I do not see how they can send it any other way.
1662. Why? They would have less distance to cart it, and it would be cheaper for them to send it to Sydney. I refer to the farmers of Murray Hut.
1663. They will send their wheat to Sydney for the next few years because of the border duties on the Victorian side; but when over-production sets in, and they can get their wheat from Melbourne to London as cheaply as they can from Sydney to London, can you see any reason why they should then send it a distance of 400 miles instead of 200 miles? If I could get my produce carried to Sydney as cheaply I would rather send it that way than through Victoria, on account of the way the Victorians have been treating us.
1664. But you would not preserve your animosity if it paid you better to send to Melbourne—you would send where it paid you best? Yes.
1665. *Mr. McCourt.*] You will continue to send your wool to Melbourne under present conditions? I daresay it would suit me better; I have nowhere else to send it at present.
1666. Even if this railway were constructed it would be a matter of freight. One route would be 190 miles, and the other 450 miles? I expect we would send it to Melbourne.
1667. Therefore, practically you would give no traffic to this new line? I do not know that.
1668. If you would send your wool to Melbourne, what would you send on this proposed line? We have got stock; we cannot send stock to Melbourne now.
1669. Would you send stock to Sydney? Yes.
1670. Have you ever sent stock to Sydney? No.
1671. How far is your station from Jerilderie? About 70 miles.
1672. Could you not travel stock there now? I do not think so.
1673. Do they not do it in other parts of the country? They do, but here we are handy to the market; we can send them in three days' notice.
1674. What about the duty of 2s. on sheep, would it not be better to travel them the 70 miles, and truck them at Jerilderie, than to send them to Melbourne? If it would pay us, but I doubt whether it would with the travelling expenses.
1675. Therefore, whether this line is constructed or not, the probability is that you will send sheep to Jerilderie and Sydney while the stock tax is on? Yes.
1676. Whether this line is constructed or not? I do not think so, because there are a lot of expenses—travelling expenses—and then they get knocked about; fat stock will not stand travelling.
1677. But if you find it is to your advantage you will do that now? Yes.
1678. If the line were constructed, the probability is that you would send fat stock over it? Yes.
1679. But not your wool? No; I do not think so.
1680. *Mr. Wall.*] Do you know that the Victorian railways are working at a loss at the present time? I believe they have been.
1681. Are you aware that the line from Narrandera to Jerilderie entails an annual loss of £17,000? I was not aware of that.
1682. Taking into consideration the fact that the Victoria railways are entailing a loss, do you think it would pay New South Wales to carry your goods twice the distance for the same amount of money it costs you now to convey your goods to Melbourne? I do not think it would suit us on this side at all; it is the people on the other side whom it would suit.
1683. You are aware that the Railway Commissioners have power to levy special rates on new lines until such time as they become payable? Yes.
1684. If those special rates were levied in connection with this line do you think you would be likely to use it for the conveyance of your produce to market? I do not know that I should from here.
1685. Then as far as you are concerned it is simply a matter of personal convenience. You are not deprived of railway communication, and you would not be prepared to utilise this railway unless there were special concessions which would give you equal terms with those offered by the Melbourne line—only under those circumstances would you be likely to use the railway? Yes; that is all.
1686. I suppose the present stock tax would compel the owners of stock here to utilise the lines leading to Sydney? Yes.
1687. Do you think the imposition of the border duties would have a tendency to induce the people to utilise the lines in conveying their supplies from Sydney? Yes, I do; I should get all mine from Sydney.
1688. If, supposing we were to double or treble the border duties, we would be sure to get this Riverina trade? I think so.
1689. With regard to the shipment of frozen meat; there is a large quantity of stock in this district, and if the exportation of frozen meat were subsidised, do you think there would be a large quantity sent along the New South Wales line? Yes, I do.
1690. Do you know whether the stock-owners of Victoria propose to tax themselves to subsidise the export of meat? I do not think so.
1691. In the event of our making the subsidy applicable only to the port of shipment at which the meat is exported, would you send your meat to Sydney along these lines? Yes, I would.
1692. I suppose you know Mr. McCaughey is a pretty shrewd man of business. He sends his wool by way of Sydney. Do you think if he suffered any serious pecuniary loss a spirit of patriotism would induce him to send his wool there? I hardly think so.
1693. Then, as a business matter, there is really not very much difference? No; I do not think there is, as far as he is concerned.
1694. But the commercial relations of the people of Riverina being with Victoria, there is a mutual interchange brought about with regard to the stock and supplies? Yes.

Mr. C. C. M'Culloch. 9 June, 1892.

1695. And you think with the present border duties, commercial relations with the Riverina district and Sydney are likely to be increased? Yes, I do.
1696. That being so, this proposed railway extension would be essential? Yes.
1697. *Mr. Dawson.*] Taking stock to Jerilderie, you have to travel them along the roads, and there is not much grass along the stock routes? No grass at all.
1698. How long would it take to travel fat stock to Jerilderie, a distance of 70 miles? We have to travel very quickly. There is no feed for them.
1699. By the time you took them there and paid wages it would almost pay you as well to give the 2s. a head and go into Victoria? It would pay us better.
1700. There would be so much depreciation that it would be better to do so than travel the stock 70 miles along the road? When they begin to waste at all they fall off 1s. or 2s.
1701. Where do you get your supplies from? From Melbourne and Deniliquin.
1702. If the railway were opened would you then get your supplies from Sydney? Yes, everything.
1703. *Mr. McCourt.*] What would be the cost of delivering 2,000 sheep from your station to Jerilderie (say) 60 miles? The actual cost would not be very much. With your own men you could do it for 1d., but they would fall away so much in consequence of the ten days' knocking about. They would lose 1s. 6d. in value in that time, and more in hot weather.
1704. *Mr. Wall.*] I suppose the stock route is not very well grassed? No; there is little or no grass upon it.
1705. It would mean practically shutting the sheep up for ten days? Yes; you have to travel as fast as you can to get there.

Mr. Rupert Clarke, lessee of Cobram Station, near Deniliquin, sworn, and examined:—

Mr. R. Clarke. 9 June, 1892.

1706. *Chairman.*] What are you? I am leasing Cobram at present.
1707. How far is that from here? About 20 odd miles from Deniliquin.
1708. Where is it situated? Adjoining Warbracken.
1709. Is it on the Murray River? Yes; we have a small frontage to the Murray.
1710. Is the holding freehold? It is chiefly freehold; there are some reserves.
1711. What is the size of it? Close on 300,000 acres.
1712. Is there much of it Crown land? Very little.
1713. How many sheep do you run upon it? From 100,000 to 130,000.
1714. What do you do with your wool? Send it all to England by Melbourne.
1715. Do you never sell in Melbourne? Never, the first clip of wool.
1716. Is there any cultivation on the station? Only for our own use.
1717. *Mr. McCourt.*] If this line were constructed, what trade would you be likely to give it? We should get all our stores from Sydney, and all our shearing supplies. We cannot get them from Melbourne. In fact, I am going round to Sydney now to have them sent round in bond to Melbourne, and brought up to the station.
1718. Is it cheaper to buy in Sydney than in Melbourne? I believe so. The duty, the commission, and the carriage bring up the cost of Melbourne goods to a fabulous price, and you have to pay the duty before you get any use of your stores, and so lose interest on the money.
1719. Would you be likely to use this line for sending stock to Sydney? It would all depend on the state of the market. We might send and we might not. We have a place in Victoria, and we send down to Victoria and fatten the stock there.
1720. *Mr. Ewing.*] Have you any idea whether, if proper communication were given to you, any of your land would be leased or sold to farmers? I am almost sure that if there was good communication, and if my father could see his way to make more out of the land by cutting it up for farms, as he did at Ballarat, he would dispose of it in that way.
1721. You have gone through the same experience in Victoria? Yes; we had a large holding at Ballarat, and when railway communication was established we found it better to cut up the land and lease it to tenants than to continue sheep-grazing.
1722. And you would do the same here? Of course, I cannot speak definitely as to my father's intention; but most probably he would do that. If a man can make 4s. or 5s. an acre rent it is not likely he will continue grazing, at which he makes only 3s. an acre.
1723. You say you get your things through in bond by vessel from Sydney to Melbourne? That is what we intend to do in the future. Mr. Hawkins tried the experiment, and he found when everything was paid that he got his goods much cheaper from Sydney, so I am going over to Sydney to try and make similar arrangements myself.
1724. And I suppose you infer that if the connection were made between Jerilderie and Deniliquin you would be able to deal with the Sydney merchants better that way than by going round by Melbourne? Most decidedly, and with less trouble. At present we have to have an agent to see the things transhipped from the vessel to the railway; but if we had this connection the goods would be put on the trucks in Sydney, and we would unload them from the trucks here.
1725. And that state of things would obtain so long as the protective tariff existed in Victoria? Yes. It would obtain so long as we could get our things cheaper in Sydney.
1726. And I suppose you would send your wool to England by Sydney if you could send it cheaper than from Melbourne? No; we would never send through Sydney. Our offices are in Melbourne, and our people there act as agents.
1727. Your commercial relations are in Melbourne? Yes.
1728. And that fact, combined with the shortness of carriage, induces you to send your wool to Melbourne for shipment? Yes.
1729. *Mr. McCourt.*] How far are you from this line? We would tap it at Hill Plains, between here and Mathoura, the distance from Cobram being about 18 miles.
1730. *Mr. Wall.*] You have been connected with pastoral pursuits in Victoria for some considerable time—your people have? Yes.
1731. Do you think Victoria has arrived at that stage of pastoral development when she will be able to supply her own wants with regard to stock? I do not think she will. I do not think it will ever pay them to breed the stock.

1732. And you think these border duties are only a temporary expedient? I could hardly say. They suit the big holders but not the small holders, so that I think they will only be temporary. Mr. R. Clarke. 9 June, 1892.
1733. I understand they were brought about at the request of the small holders in Victoria? Most decidedly, but I know they suit us very well.
1734. Being interested in the pastoral development of Victoria, have you considered what is the object of these border duties? No, I have not.
1735. Do you think they will have the effect of increasing the price of stock in Victoria? Yes, I am certain of it; they have had that effect already.
1736. Do you think that increase will be temporary or permanent? It is hard to say. If people get into the habit of sending their stock to Sydney they will continue to do so.
1737. You have had a stock tax in Victoria for some time on cattle? Yes; a small one—5s. a head.
1738. Do you know that store stock has been selling at Wodonga for the last four years at 18s. a head? Yes.
1739. Stock that have actually paid that tax? Yes.
1740. With regard to the Bill proposed to be introduced to subsidise the export of frozen meat, as a pastoralist, perhaps you may have some idea of the views of the other pastoralists in this locality. Do you think they would approve of a measure of that kind, and tax themselves for the purpose of keeping up the price of stock in New South Wales? I do not think so.
1741. Do you think it would tend to promote the export of frozen meat if a subsidy were paid to the freezing companies? Yes, I think so; if they were subsidised they could send the meat home cheaper for us. At the present time I believe the cost is 2d. a lb. A member of one of the large firms in Melbourne informed me that he would guarantee to send meat home for 2d. a lb.
1742. A private firm? Yes. Mr Turnbull has taken over one of the large freezing works, and he told me he would send the meat home for 2d. a lb.
1743. If this trade were to develop, do you think it likely that much stock would be slaughtered in the Riverina district and shipped? In a good season a very large quantity. We cannot get rid of our surplus stock, and it gets knocked about by trucking.
1744. Therefore, if the Parliament of New South Wales were to pass a bill enabling the pastoralists to subsidise the exporters of frozen meat, and make it applicable to the port of shipment, do you think that would afford facilities for the people of this district to dispose of their surplus stock? Most decidedly. In a good season you cannot dispose of it here without giving it away, and you would always get a fair price for it by sending it to England.
1745. Your commercial relations being with Victoria, I suppose you have never thought whether it would suit you better to send your wool this way? The sole reason why we send it to Victoria is that we have to keep an office in Melbourne and the clerks there do all the shipping; it saves us employing agents.
1746. You cannot speak from an economic point of view? The clerks have to be kept doing something, and it is only a little extra work. It does not make any difference.
1747. Have you disposed of any land on your holding for agricultural purposes? No; we would not do so unless we could see our way to cut up the lot. The way it was done in Ballarat was that the lot was cut up and worked into farms. We did not keep an acre of it.
1748. Unless you could dispose of the lot you would not be inclined to sell? Or the greater portion of it.
1749. I suppose the run would suffer by severance if it were cut up? Yes, certain parts of it.
1750. *Mr. McCourt.*] Would the construction of this line improve the value of your estate? I should think so.
1751. Are you in favour of the construction of the line? Most decidedly.
1752. Would you be in favour of the Government compelling people whose property would be increased in value by the railway, to contribute towards the cost of its construction. I mean on the betterment principle. If the railway would add 5s. an acre to the value of your estate, do you not think you ought to contribute towards its construction? Yes, if there is proof positive that it has that result.
1753. But you say it will? Yes, to the best of my belief.
1754. Do you not think it is fair that you should contribute some portion of that increased value towards the cost of constructing the railway—yourself as well as other owners? Most decidedly. We would contribute because we would send a certain amount of goods to the railway.
1755. But I mean contribute directly—that the land holders whose land would be benefited by the construction of the railway, should really build the railway—do you believe in that principle? Yes, if they had a guarantee that it would improve the value of their land.
1756. That would have to be found out by arbitration and valuation? I do not know whether arbitration would do.
1757. You say the railway would increase the value of your land? I most decidedly think so.
1758. For instance, there is no chance of cutting it up and selling it unless this railway is constructed? We might be able to do so.
1759. You think the principle is a fair one, that the owners of land through which a railway is made should contribute directly towards the cost of its construction? It all depends on the benefits they get.
1760. But admitting the benefit? Yes, I think admitting the benefit and where it gives the land a greater value they should pay something towards it.
1761. Some of that added value, you think, should go to the State, towards the cost of construction? Yes, some proportion—some small proportion.
1762. Would 25 per cent. of the increased value be a fair contribution? Most decidedly not.
1763. Suppose the railway added £1 an acre to the value of the land, would it not be fair that you should pay 5s. an acre towards the cost of construction? But a bad season comes and I lose what I have had before. You cannot put a fixed value. If the railway added £1 in value to the land, and if it were a fixed value, we should not grumble at about 2s. 6d.
1764. *Mr. Dawson.*] If this line were constructed would you use it? I should use it for the purpose of getting all my station supplies. Instead of sending them round I should have them brought here, because they always get damaged by being handled two or three times, and you have to have agents to see them trucked.

Mr. Frank S. Falkiner, owner of Tuppal Station, near Deniliquin, sworn, and examined:—

Mr. F. S. Falkiner. 9 June, 1892.

1765. *Chairman.*] What are you? A grazier.
1766. Where is your holding? I hold three holdings in the district.
1767. What are they? Boonoke, 3 miles from Conargo; Moonbria, 14 miles from Conargo; and Tuppal, 20 miles from the same place.
1768. Are you the gentleman who lately leased some land on Tuppal to farmers from Tasmania? Yes.
1769. Will you give us some account of that transaction? I could not have leased that land but for the promise that the railway would be made to The Murray Hut. I have 150,000 acres there of first class agricultural land, and it is my intention to lease it all for farming purposes. But if there is no railway through Tuppal I might not be able to lease the land. We cannot get to Sydney. The cost of cartage from here to Jerilderie is more than the freight from here to Melbourne.
1770. You say there was a promise of a railway to The Murray Hut—who made the promise? The Government. They had the line surveyed, and promised to make the railway from the Hanging Rock.
1771. Would you have any objection to inform the Committee what arrangement was made with these farmers from Tasmania? I rent the land at 5s. an acre, with the right of purchase within seven years, at £4 an acre. The whole of the land I rented to them I bought from selectors, or, as I call them, blackmailers. About 50,000 acres on Tuppal have been sold by selectors, most of whom have gone and selected elsewhere.
1772. How much land have you let to the Tasmanian farmers on the terms just mentioned? 15,000 acres on the eastern part of the run; on the other side the land is better, and I intend leasing that, too. In fact, I gave Mr. Chanter particulars some six months ago, and I would have had it done before but the season has been so bad that I have been short of grass, and I had a large fire, 30,000 acres being burned.
1773. When did they commence farming operations? I do not know; but I hear they will have 10,000 acres under crop this year.
1774. Is this the first year? Yes. I was out there recently and there were eight or nine ploughs going on two of the farms. Most of the country from the Yanko Creek to the Murray is splendid agricultural land.
1775. Is your Boonoke country good agricultural land. No, it is not; most of it is salt-bush and plains. The frontage is sand-hills, to a large extent.
1776. What kind of land is there on the Moonbria property? It is boree country.
1777. Is that fit for agriculture? It would grow hay, but it is not much good; there is not sufficient rainfall.
1778. *Mr. Ewing.*] How far would this land be from the proposed railway? The boundary of Tuppal is 20 miles from Conargo.
1779. If the line were made from Jerilderie to Deniliquin would the farmers use that line, or would they take their wheat direct to Jerilderie? They must have a railway to take their wheat to Jerilderie, unless the price of wheat is very high.
1780. Would you rather have a line coming south from Jerilderie through this country of which we have been speaking? The line that would be of most benefit would be a line from Jerilderie to Deniliquin, south of Conargo. If I want to go to Sydney I have to come here 20 miles and go on to Melbourne, and thence by train to Albury. In the winter time if I take my passage overland in the coach it is ten chances to one that I have to pull the coach myself. It is the same going from here to Jerilderie. Both those roads are in a frightful state in winter time.
1781. You think ,then, the right route is from Jerilderie to Deniliquin, *via* Conargo? I do, for traffic—not for settlement.
1782. Why is it better than the direct route? Because I want to deal with Sydney. I have no sympathy with Victoria now. I would not deal with Victoria if I could. But it costs me more to get goods from Jerilderie to my place than it does for carriage from my place to Melbourne. Unless you get a full bullock team you cannot get a load, and they will not take a small quantity. You must have sufficient loading for two teams, so that they can pull one another out when they get stuck.
1783. *Mr. Dawson.*] You say you are in favour of the route *via* Conargo? I prefer the direct route.
1784. Have you been over what is called the direct route? Yes, I have been all over it. I live three miles from Conargo.
1785. But I mean the surveyed line—it goes right through Tuppal? Individually that suits me best, but I am speaking of the district at large.
1786. Would it not go through better land by the direct route? The further you come this way towards the Murray the better the land is. Every mile you go from Deniliquin east and north-east to Wagga Wagga the land is getting better, and every mile the other way to the west it gets worse, and you get into the salt-bush country, which means an insufficient rainfall. When you get green grass country and plenty of timber you can tell you have agricultural country. The men about Berrigan and Tuppal all stick to their land, but the men on the saltbush plains have all sold out; you can see nothing now but the stacks of their chimneys.
1787. You think it is better land *via* Conargo, than *via* Tuppal? No, it is better land *via* Tuppal, but there is some good land on the Conargo route, because that is on the south side of the Billabong and the Yanko.
1788. The Conargo route would be 6 or 7 miles longer, would it not? If the line is made by Conargo all the wool between the Murrumbidgee and Billabong, 20 miles each side of Conargo, would be loaded there.
1789. I suppose you have a few fat sheep every year? Most of my fat sheep go to Queensland, and the north—stud sheep. But where the railway would be most profitable would be in conveying sheep to the mountain country in bad seasons. Going from Deniliquin, I have seen the country when there has been no water on the road after crossing the Edwards till you get to Jerilderie. I have seen the Billabong dry, and the country is at such a time impassable for stock. About a million of sheep must, in a very bad season, go to the Tumut and Gundagai districts for feed. If we could truck the sheep up we would willingly pay for doing so. No less than 35,000 sheep died in one lot between Jerilderie and the Pine Ridge.
1790. But you cannot truck sheep past Gundagai now? If we could get them up there anywhere on the hills, or even to Wagga Wagga or Junee, we would be all right; but you cannot travel sheep on these plains in a very bad season, for there is neither feed nor water.
1791. How long have you been here? Fifteen years.

Mr. F. S. Falkiner. 9 June, 1892.

1792. If this line were constructed, how many fat stock could you send away? I could not tell you.
1793. I mean in a good season? I might send 60,000 or 70,000 fat stock away. I reckon to shear this year 350,000 sheep.
1794. Would you cut up more of this land if you could? Yes, I will cut up every acre if I can get buyers. If the Government did not throw so much land open about here the value of land in this district would increase 50 per cent.; but when a man can go and take up land for nothing he will not buy. In Victoria, when the country was all selected, land went up from £2 to £30—land on the Goulburn Valley that I know well; but, of course, if the Government are throwing land open for nothing, they cannot expect the land to go up in value.
1795. You have done pretty well out of it, have you not? That remains to be proved. I have done well, but I do not know how I am going to do now.
1796. You really think this railway would pay? Yes, if they did not put on too high freights from here to Sydney.
1797. Does it run through any of your land? No.
1798. Or near it? About 3 miles at Boonoke.
1799. Do you think that if this line were constructed as you wish it, it would make your Boonoke property saleable, so that you could sell it better? It might make some of the frontage more saleable, but I do not know that it would affect the back country.
1800. I suppose, on the betterment principle, you would not mind paying the State a little? No, I think if the State provides us with a railway, it is the duty of the whole district to pay a proportion; but I do not believe in one man paying and another not doing so.
1801. Would you pay your fair proportion with others? Yes; I should be quite willing to pay my fair proportion. The want of a railway hurts us a good deal, because if they can come up from Melbourne by train in five or six hours, buyers will come and look at the stock; but they will not do so if they have to take a coach journey in the winter time. It takes about thirteen hours to get by coach from here to Hay, and about the same time to go to Jerilderie.
1802. You say that the Tasmanian farmers on Tuppal are putting in 10,000 acres of wheat this year;—about what yield do you think they will get? I think the first crop from that land ought to go 40 bushels to the acre. There is a Victorian farmer living alongside of me who has 7,000 acres there, and he told me that he reckons that is what it will go. Brothers of these men who have bought the land have been here for four or five years. They have had the country adjoining, and they know what the land is.
1803. I suppose you got all this land at £1 an acre from the Government? No; I did not. Mr. Brown bought it from the selectors, and it cost me nearly £3 per acre for the portion leased to farmers.
1804. Did selectors have this land before? Yes, and sold it again. They put up a bit of a tin hut, put their improvements on the land, and then turned it over to Mr. Brown. I bought the place from Mr. Brown last April twelve months. With regard to the railway, I would guarantee to send 5,000 or 6,000 bales of wool to Sydney every year if I could rely on reasonable rates.
1805. Is your wool all sent to England? No. Sometimes I sell in Melbourne, and sometimes I ship it; It depends on the market.
1806. The cost of carriage is about as cheap now from Jerilderie to Sydney as it is from Deniliquin to Melbourne? Yes; but the cartage by bullock teams to Jerilderie is too high.
1807. If the railway were carried on to Jerilderie and there was very little difference in the railway freights, you would send 5,000 or 6,000 bales of wool to Sydney? Yes; because the shipping charges in Sydney, I am told, are far cheaper than they are in Melbourne. You can get insurance and everything cheaper there.
1808. Would it not be as well if, of the coming clip, you tried (say) 5,000 bales? I have sold a lot of wool in Sydney. I sold 1,200 bales in Sydney about two years ago.
1809. *Mr. Wall.*] Do you think you would have any difficulty in disposing of your estate in the manner in which you say you intend to dispose of it? Not unless the Government threw a large amount of land open for selection.
1810. You think that in your interest the Government should check the sale of Crown lands? Well, according to the population of the Colony, there is too much land occupied now. I believe in men keeping land and cultivating it. I do not believe in men taking up land, holding it for a time, and selling it, and annoying you in every way they can.
1811. You think the *bona fide* settlers would avail themselves of liberal conditions, and would settle down and devote their attention to agriculture, if they could get on the land? Yes; and if fixity of tenure were made one of the conditions of selection, it would be a good thing, because a man would not take up any land except what he knew was suitable, and such as he could live upon. As it is now, the whole of their cry is to cut the reserves up. They know the lessee must buy them no matter what he pays for them.
1812. Do you not think that an accumulated land tax would have the effect of breaking up the large estates? They will break up very well without any land tax, because half of them are mortgaged now, and they will be broken up.
1813. Regarding this as a purely commercial transaction, and seeing that there are no Crown lands in the vicinity to recoup the Government for the outlay, do you think the proposed railway would pay expenses? I do. There is a lot of Crown land about Conargo which has been unoccupied for the last thirty years. The common during the whole of that time has only been used by two or three people. If that land were sold it would go a good way towards building the railway.
1814. Do you think that the people who would settle on the land, and those who would be contiguous to the railway, would be prepared to pay special rates until the line became profitable? I am certain the railway will pay, because there is a tremendous extent of country to the west which has no communication with Sydney. You are a long way from the Adelaide boundary, and there is no railway between here and the boundary town.
1815. I understood you to say that if you could get your goods to Sydney at the same rate as to Melbourne you would utilise the railway? Yes.
1816. Do you think the actual trade between Deniliquin and Jerilderie would cover the interest on the cost of the line? No, not the trade between those two points only, but the trade from the district generally would. The railway would open up a very large district which has never traded with Sydney before.

Mr. F. S. Falkiner. 9 June, 1892.

1817. Apart from its connection with Sydney, and from any inducement it would offer to the people to deal with Sydney, do you think the district would progress and settlement be promoted by the construction of the railway to such an extent as would warrant the Government in undertaking the work? I am certain it would, because the farmers have no market now. They are cut off from Victoria, and where are they to send their stock to? It is only a farce to throw land open for settlement when the people have no market to send their stock to. This would have been one of the most prosperous districts in New South Wales if we had had a railway here. A farmer grows hay, and he has to keep it till a bad season before he can sell, because in a good season no one wants it. We can buy cheaper in Sydney than we can in Melbourne.

1818. *Mr. McCourt.*] What is the size of the Conargo common to which you referred? I do not know; it is a pretty big one.

1819. Does it contain 10,000 acres? I do not know that it comprises quite so much as that, but the area cannot be far short of 10,000 acres.

1820. You say if it were sold it would help towards the cost of the railway? Certainly.

1821. How much per acre would it bring? That I could not tell you. I believe a lot of it would be sold at so much a foot if there was a township there. Land at The Murray Hut is now bringing good prices; there was a Government sale there last week. I know also that Mr. M'Farlane has been getting good prices for his land.

1822. Where would be the best place to have the break of gauge;—do you think a bridge across the Edwards might be dispensed with and the terminus of the railway fixed on the other side of the river? I have not sufficient engineering knowledge to say. I could not tell you anything about that. All I know is that if you make the railway it will open up the district, increase the value of property, and promote settlement. If it is estimated that the railway across the Edwards would cost £20,000 I would make the present bridge do.

1823. You think the present bridge would carry the railway? Certainly it would. I know any number of railway bridges in Victoria not half as good. It might want a little extra strengthening.

1824. *Mr. Dawson.*] It is a red-gum bridge? Yes, I think it is. I have seen bullock teams going over with loads of 12 or 14 tons. The general loading here in good seasons is 8 or 9 tons.

1825. *Mr. McCourt.*] The Railway Commissioners have estimated the annual cost of the line for interest and working expense at £14,000;—do you think there is any likelihood of a return per annum from the railway? I think so, in a bad season particularly.

1826. Only in a bad season? No, I think it would pay in any season, but far better in a bad season.

1827. Do you think it will return a revenue of £14,000 per annum to the Government? I do.

1828. How do you arrive at that conclusion? From the size of the district. There is a very bitter feeling against Victoria now, and all the people here will trade with Sydney, even if they pay a little more. I know I would do so myself.

1829. But suppose the border duties are removed? They will never remove them. You will never get any Government to pass a Bill to repeal a revenue duty. The Government will reap the benefit of the border duties. We will pay the taxes, and the Victorian farmers will derive no benefit.

1830. Do you not think we shall have federation between the colonies at some time? I do not know. We might in 1,000 years, but not in our day—not till we do away with payment of Members.*

Mr. David Tennant, Secretary and Manager of the Deniliquin and Moama Railway Company, sworn, and examined:—

Mr. D. Tennant. 9 June, 1892.

1831. *Chairman.*] What are you? Secretary and Manager of the Deniliquin and Moama Railway Company.

1832. Can you give us any information as to the rates charged from here to Melbourne? The rate from here to Melbourne, for wool per bale, is 9s. 6d.

1833. What is it for wheat and other produce? 18s. a ton for wheat.

1834. Is there much fat stock sent from here? A very large quantity of sheep. The freight is £5 19s. 2d. per truck.

1835. There is a difference between sheep and cattle? Yes; cattle are rather dearer—£6 6s. 8d. per truck.

1836. Have you had any experience with reference to railway construction; can you give us any information as to the suitableness of red-gum for railway sleepers? The line from Deniliquin to Moama is laid entirely with red-gum sleepers, and the great bulk of the sleepers which were laid seventeen years ago are there now. We have not renewed over 5 per cent. of them in ten years. I furnished this information in a written declaration, and I am prepared to support it now.

1837. *Mr. Ewing.*] I suppose the present position of Deniliquin is, briefly, this: It is the depôt for the country to the north which trades with Melbourne. Trade from Deniliquin to Sydney is practically impossible because of the gap between Jerilderie and Deniliquin, in which there is not a railway? Yes; that is, briefly, the position.

1838. From a distance within 30 miles of Hay the wool comes to Deniliquin, being conveyed by the road *via* Wonganilla, and then coming down more to the west through Barratta and on towards Moulamein—Deniliquin is the depôt for the whole of that country? Yes.

1839. Looking at the returns, I find that in the year 1890, you sent 23,000 bales of wool to Melbourne? 25,000 bales. From Deniliquin alone there were 23,000 odd bales.

1840. I find that the total earnings on your line for the same year amounted to £22,233? Yes.

1841. I find that in the same twelve months 4,000 bales were sent from Jerilderie to Sydney, and that the total earnings amounted to £7,471. That shows that Deniliquin is a better centre for trade to go to its proper market than Jerilderie is for the Riverina country. Therefore, the tendency is for pastoralists to make to Deniliquin with their wool rather than to Jerilderie? At present.

1842. Can you explain why that is. It is a question of the trend of traffic of the Riverina district, that is why I ask the question? If you refer to the map, you will find that the great bulk of the stations from which we get our wool here are as nearly as possible equidistant from Jerilderie and Deniliquin. But the roads into Deniliquin are far better, and many stations start here that would otherwise send to Jerilderie, for the simple reason that there are no roads leading to Jerilderie. Apart from that, they have hitherto been in the habit of dealing with Melbourne; most of these stations get their stores and send their produce to Melbourne.

1843.

* NOTE (*on revision*):—Since giving my evidence I have made a careful examination of both lines, and have come to the conclusion that the direct line is the more favourable one, as it goes through the best agricultural land in the district for its greatest length, and will offer better inducements for settlement. It is also the shortest route, and will save building two railway bridges over the Forest Creek, that would have to be made if the other route is adopted.—F. S. FALKINER, 16/7/92.

Mr. D. Tennant. 9 June, 1892.

1843. That explains, perhaps, part of it, but when you find people coming almost from Hay—a New South Wales depôt—and coming down by dray from Deniliquin and loading there for Melbourne, must there not be something more in the case; does it not prove this—that Melbourne is the true outlet, geographically, for Riverina, in that it is only 200 miles from Riverina? I think that goes without saying.
1844. And if you have to do 200 miles of carriage against 400 miles of carriage, it is absolutely certain that the wool must eventually go to its proper market? Certainly.
1845. Therefore, the comparative size of the towns of Jerilderie and Deniliquin as depôts fairly well explains the case. The trade going from Deniliquin to Melbourne is just about as much more important than the trade going from Jerilderie to Sydney as the township of Deniliquin is more important than the township of Jerilderie? Well, I do not know that the size of the townships is an absolute indication, because there are the outlying districts to be considered.
1846. You will see that if there is no barrier between Victoria and Riverina, the trade must go to Melbourne? Certainly.
1847. And the produce in the past has gone to Melbourne? Certainly.
1848. Will you explain why you believe that in future the trade will be driven to Sydney; do you think the border duties will affect it? Certainly they will.
1849. Will they affect wool on which there is no duty? No; they cannot possibly do so.
1850. Do you think they will affect wheat, if wheat has to be exported to find a sale? All articles, on which are imposed duties that might be called prohibitive in Victoria, must of necessity find some other market.
1851. But I am looking forward a year or two, when the Colonies will grow more wheat than they can use; when that time comes, I presume, the Victorian Government will act simply as carriers—they will carry the wheat in bond, and it will be exported to London? Certainly.
1852. When that time comes where do you think the wheat from Jerilderie and Deniliquin will go? Speaking from a railway point of view, I think it would certainly go to the nearest seaport.
1853. You people, as carriers, will make it your business to carry more cheaply than those who have to carry twice as far? Yes; but there is a contingency. Between Albury and Wagga Wagga the New South Wales Government put on differential rates. If the New South Wales Government owned all the railways in the Colony they would not, of course, carry goods from here to Moama to compete as against Sydney.
1854. Is not a differential rate a special rate put on to get trade which you would not otherwise get, because competition would meet you at certain places? Certainly; you provide certain facilities, and you say in return, "You must pay me something for it."
1855. And the New South Wales Government, finding themselves met on the border by the Victorian railways at certain places, set to work to fight the Victorian railways for the trade of Riverina, and, therefore, they put on what we call differential rates? Yes.
1856. Therefore, there is a fight going on between the two railways for the trade of Riverina, Victoria fixing a rebate line, and so on? Yes.
1857. And also with regard to mutton for export abroad—it will pass through to the nearest port without paying any duty? Yes; under bond.
1858. All the heavy stuff—anything not for consumption in Victoria—goes through in bond? Unless differential rates are adopted, so as to induce the traffic to go to Sydney.
1859. The only way in which you could do that would be by putting an export duty on? No; you could raise the railway rates.
1860. Where to? From here to the Victorian border, the same as they do from Wagga to Albury.
1861. But a prohibitive rate on anything coming this way would practically amount to an export duty? Yes.
1862. I understand that your company would be glad of an extension from Jerilderie to Deniliquin? We are quite open to build the line.
1863. There is only one reason why you would build the line, and that is because you believe it would pay? Certainly.
1864. And you base that belief on your experience of the Moama to Deniliquin line? Certainly.
1865. There is no doubt whatever that a local line would pay? No doubt whatever. About three years ago, on the suggestion of Mr. J. M. Chanter, M.P. for The Murray, I offered to give a guarantee to the New South Wales Government that in forty-eight hours I would produce the capital to build the line, and we would take all the risk, either as the present company, or by forming a separate company among gentlemen in the district. We were prepared to put down the capital in forty-eight hours. I was authorised to say that.
1866. Therefore, if the New South Wales Government had nothing further to consider, there is no doubt it would be a paying transaction? Certainly. I think the line would pay under any conditions.
1867. But it would remove the centre of competition with the New South Wales railways from Deniliquin to Jerilderie? Not necessarily.
1868. What is it that forces goods now to go to Jerilderie rather than to Melbourne? Just the proximity of the railway station.
1869. The gap between Jerilderie and Deniliquin? Yes
1870. Therefore, if you moved the railway from Deniliquin to Jerilderie there is no doubt you would remove the centre of competition from Deniliquin to Jerilderie? I did not understand you to mean if we built that line as a private company. Certainly, if a private company built that line to Jerilderie it would then become the fighting point.
1871. If, commercially speaking, distance and cost of carriage control trade, and Melbourne and Sydney are equally good ports of shipment, it would be reasonable to suppose that you would find the point where the trade divided going to those two places, midway between them? Yes; if the rates were equal.
1872. Then you would find the place where the trade would split would be somewhere between Narrandera and Junee, supposing that to be half-way between Melbourne and Sydney? Of course, in this case it does not apply, but in a general argument it would hold good.
1873. And, therefore, but for the differential duties, if the line were made from Deniliquin to Jerilderie the Melbourne people would meet the Sydney people—with regard to things upon which they paid no tax—somewhere about Junee? I think you are overlooking one point. The further the railways extend the cheaper the rates can be made. A railway company can afford to carry goods 1,000 miles at a far

cheaper

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cheaper rate per ton, or per head, than they can carry them 100 or 200 miles. Therefore, the distance of the railway from Sydney must be taken into consideration. Although the trade might be small between Jerilderie and Deniliquin, the New South Wales railways would get the benefit over the whole of the mileage to Sydney. Where the district would only get the benefit of the rates between Jerilderie and Deniliquin, the whole of the New South Wales system would receive the benefit of the rates between Jerilderie and Sydney.

1874. It seems reasonable that if this line were made, the line possibly to Hay, and that from Narrandera to Jerilderie, would become feeders to the Deniliquin and Moama line? I do not think so.

1875. Notwithstanding the fact that the cost of shipping in Melbourne is the same as in Sydney and that the distance is less? I do not see how the line beyond Narrandera would be a feeder to this private line. It would not be if I had the management of the New South Wales lines, though the line from Jerilderie to Narrandera would be a feeder.

1876. You could manage, you think, by special rates? Yes.

1877. But if you put those special rates on the people of the Colony would have to pay them? No, you could give them fair rates. As I have already said, when you carry a long distance you can carry at a low rate and still leave a margin of profit, which perhaps you cannot do on short lines.

1878. How is New South Wales going to carry more cheaply than Victoria? It would not carry goods 100 miles to Melbourne at the same rate as you carry goods 400 miles from Narrandera to Sydney.

1879. Then, you think that by a heavy rate from Narrandera to Deniliquin you could block the traffic and drive it the other way? Certainly.

1880. And you believe, yourself, that if you were manager of the New South Wales railways, and wanted to bring trade to the port of Sydney that is what you would do? That is scarcely a fair question to put to me.

1881. Supposing the people in this district want to get to Melbourne and you drive them to Sydney, where they do not want to go, are you not placing them under disabilities? Certainly, if you drive them to it.

1882. Therefore, in order to make the railways pay and secure the trade to Sydney, the disability must be placed on the Riverina people of forcing them to Sydney, though geographically they ought to go to Melbourne? Well, if they have the advantage of two markets open to them I think they have the right to pay something for it.

1883. Section 185 of the Act under which your line is running provides that, if required, you shall, within twelve months, alter your gauge to that of the New South Wales railways;—would you be prepared to make that alteration in gauge? I cannot possibly answer that. The matter would have to come before the board of directors.

1884. Section 181 of the Act deals with the mode of sale when the line is purchased by the Government;—if the line from Jerilderie to Deniliquin is constructed, it is reasonable to suppose that it will render the line from Deniliquin to Moama a little more valuable? Certainly.

1885. The Government of New South Wales is not in a position to deal with the company until the year 1895? I do not see it.

1886. Unless with the permission of your directors;—can you give us any opinion as to whether your directors would be prepared to consider an offer now? I am quite certain they would; but, of course, I am speaking without authority. My own opinion is that the company would deal with the Government just as well now as in 1895.

1887. It would appear, on general principles, a wiser thing to buy a property before you made it more valuable? For the buyer.

1888. If New South Wales makes this line from Jerilderie to Deniliquin as a feeder for the Moama and Deniliquin line it might be just as well that they should get the profit themselves—better to buy before making the property more valuable? You are only taking the one side. If you built the line from Jerilderie to Deniliquin, the fact of our line being here, would make that line more valuable.

1889. This private line must be eventually bought? That is the general opinion.

1890. You would be able to put on such rates that would prevent our trading at all—you could force us to buy—if we built the line from Jerilderie to Deniliquin, the Victorian Government having extended their railways to Moama, you would hold a key between the two, and you could simply force New South Wales to buy? Of course we have to live, and we should make the best of it.

1891. I suppose you cannot tell us more than that, in your opinion, it might suit your company to enter into negotiations at once? I feel quite certain, speaking without authority, that the directors and the company would be quite open to entertain any proposal at the present time just as well as in two or three years hence.

1892. How do your rates compare with the New South Wales and Victorian rates? On the whole our rates are rather higher, but for the large bulk of traffic—which is sheep—they are cheaper; our sheep rates are cheaper than the sheep rates in Victoria.

1893. You think, then, your rates are not very high? No; not for a short line.

1894. Could you give us a schedule of your rates? Yes; I will hand one in. In running a short line you cannot carry at such low rates as you can on a long line. If our line were double the length our expenses would be very much reduced. An engine-driver and guard occupied for half a day on a short journey would cost just as much as if they were running a longer distance for a whole day.

1895. *Mr. Wall.*] Can you give the Committee any idea of the cost of construction of your line, not including rolling-stock? It cost £2,500 a mile, but the same work could be done for £2,000 a mile.

1896. What is the cost of sleepers now? Two shillings and sixpence, delivered in small quantities—delivered at our station for use.

1897. Your station at Deniliquin? At Mathoura.

1898. What quantity of ballast to the mile do you use on your line? I have not gone into that.

1899. Could you give the Committee any idea of the cost of repairs to the line—the percentage on the total cost since the line was constructed;—I only speak of the cost of repairs on the permanent-way? The renewals of rails have only amounted to 6 per cent., and of sleepers scarcely 5 per cent. We have been running for sixteen years, but practically the line has been constructed for seventeen years.

1900. Is that 5 per cent. on the total cost of the line? Five per cent. in proportion, and 6 per cent. in rails.

1901. In regard to the service that exists at the present time between Jerilderie and Narrandera, I believe

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believe it is a tri-weekly service, and the engines and rolling stock remain twenty-four hours at Jerilderie before the return journey? I am not aware how they apportion their locomotives, but I understand that is the case.

1902. Do you think it would entail any great cost to run those locomotives on to Deniliquin, instead of letting them remain idle at Jerilderie? Certainly not. An engine is just as well running as standing in the shed.

1903. Therefore the present rolling stock lying at Jerilderie could be utilised for the proposed extension at a very small cost? Yes.

1904. I believe your company at the present time is paying 8 per cent.? We paid 8 per cent. until the last half-year, when we declared a dividend of 7 per cent.

1905. Are you prepared to say whether, in negotiating with the Government for the sale of the line, your company would be prepared to deal with them on the basis of the last seven years' dividends, your returns not having reached 15 per cent., as mentioned in the Act? Not having consulted the Chairman of Directors, I scarcely feel prepared to make a definite statement; but I am quite certain that our people would be willing to enter into any reasonable arrangement.

1906. What do you estimate the value of the rolling stock on your line? The amount I have set down in the capital account as being the value of the rolling stock—that is, the cost to the company—is between £29,000 and £30,000.

1907. Being of a different gauge, would that rolling stock be available for our lines? That is a matter of the axles and wheels.

1908. There is nothing in the construction of the trucks that would prevent them from being made available on our railways? No; that difficulty could be got over very easily.

1909. I understand that this line was inspected by the railway officials after its construction, and that Mr. Whitton, who was then Engineer-in-Chief, refused to certify that it was properly constructed? Yes; he said the ballast would all blow away, but it is there yet. That objection has been removed; the Government withdrew it, and passed the line.

1910. My reason for asking about the cost of repairs to the permanent-way was to show how far Mr. Whitton was correct in his estimate of the probable damage to the line, owing to the way it was constructed? Very little ballast has been put on the line, even since Mr. Whitton's inspection. You would be surprised at the small quantity required.

1911. Where do you get your ballast from? In a pit about 10 miles from here; there is an unlimited quantity.

1912. *Mr. McCourt.*] What was the capital of the company originally? £125,000, in 25,000 shares of £5 each.

1913. Is that all paid up? Only £4 per share is paid up, which represents a total capital of £100,000; of course the company borrowed a considerable amount on debentures.

1914. What is the capital now? It remains the same, only we have paid off £10,000 of the debentures we originally had, and we have expended on the line £163,282, and the difference between that has all been paid out of the receipts, so that the profits of the line have been considerably more than the dividends would show.

1915. The dividend was paid on the £125,000? On the £100,000, the paid-up capital.

1916. I believe some sleepers were taken out of the line, which had been there for seventeen years, and were sent for inspection to the Public Works Committee in Sydney? Yes.

1917. In what condition were those sleepers? They were just as good as ever. If the Committee wish, I am quite ready to go and ask the men to open up the line, and take out a couple of sleepers to-morrow. I could go to a place where I am positive the sleepers have never been disturbed since the day they were laid in 1875.

1918. You say this railway could be constructed for £2,000 a mile? The Deniliquin and Moama line could.

1919. Would it carry our engines now used on the Jerilderie line? I do not suppose you use any heavier engines than we do.

1920. Do you know the country between Jerilderie and Deniliquin? Yes.

1921. Would that line be more difficult to construct than the line between Deniliquin and Moama? No, not a bit.

1922. If the estimate we have received of the cost of constructing that line is £3,300 a mile, you consider that altogether too high? No; that includes the bridge. When you build a bridge across the Edwards that puts so much a mile on to the total cost. I think Mr. Deane has a thorough knowledge of that. I have great faith in Mr. Deane.

1923. The cost of the bridge is estimated at £11,000, so that the cost of construction would be £3,000 a mile without the bridge, and that would include station buildings, but not rolling stock? You have to allow something for station buildings. £3,000 a mile is a very fair estimate. I am quite sure it can be done for that.

1924. But you think it ought to be done for £2,000 a mile? I only said that would be the cost of the Deniliquin and Moama line, because from the time you leave Moama till you get here there are no obstacles.

1925. The country is similar to that over which the proposed line would go? Yes; very much the same.

1926. *Mr. Ewing.*] I think you said that Mr. Whitton refused to pass the line, but that subsequently he did pass it? It was not passed by Mr. Whitton, but the Government withdrew—they acknowledged that it was correct.

1927. Has it been officially examined and passed since? Well, we have had engineers over it since, two or three times.

1928. I think Mr. Deane says that it has been a satisfactory line, and has been very much improved since it was laid down. There has been an official investigation and the objection has been withdrawn? Yes.

1929. What is the weight of your rails? 50-lb., and they were iron rails. You can now get 70-lb. steel rails for less than we paid for 50-lb. iron rails. You could now lay the line down with steel rails cheaper than we did with iron rails, the rails being much heavier.

1930. I suppose the ballast you use is river sand? It is a small gravel; it is not a sand.

1931. It does not blow away? No.

1932. It has not blown away? No. There is a cement in it that binds it, and I think preserves the line.

FRIDAY,

FRIDAY, 10 *JUNE*, 1892.

[*The Sectional Committee met at the Court-house, Deniliquin, at* 10 *a.m.*]

Present:—

THE HONORABLE WILLIAM HENRY SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

The Sectional Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Mr. Adolphe Rosenfeld, merchant, Deniliquin, sworn, and examined :—

Mr. A. Rosenfeld. 10 June, 1892.

1933. *Chairman.*] What are you? I am a merchant, carrying on business in Deniliquin.
1934. How long have you been in business in Deniliquin? About thirty years.
1935. Can you give us any information with reference to the trade of Deniliquin? I prepared a long statement on the subject for the information of Mr. Alexander, Examiner of Public Works, and showed the amount of trade I did per annum, and all the other particulars I could supply.
1936. Can you give us any further information as to the state of business here? I went into a calculation as to the amount which the railway would cost, and I found that our people alone would, in the shape of freight, pay the interest on the cost of construction. Assuming that the distance was 44 miles at £2,000 a mile, the total cost would be £88,000. At 3½ per cent. the interest on that would amount to £3,120, and at 4 per cent. it would amount to £3,520. If the line should cost £2,500 a mile, the interest at 3½ per cent. would be £3,850, and at 4 per cent. £4,400; and even at a cost of £3,300 a mile, the Departmental estimate, the interest at 3½ per cent. would be £4,620, and at 4 per cent. £5,880. I, myself, last year paid over £1,500 for freight, and there are several other firms in Deniliquin paying the same, or very nearly the same. I was a shareholder in the Moama and Deniliquin railway, and I know the country through which the proposed railway would run, and I do not think it would be any more difficult to build the line between here and Jerilderie than it was to build the Deniliquin and Moama line, which did not cost more than £2,500, including carriages, locomotives, and buildings.
1937. *Mr. McCourt.*] You say it cost you last year £1,500 for carriage on goods. I suppose they were carried on the Melbourne line? Yes.
1938. Would that traffic go over the proposed railway if it were constructed? It would. I have dealt lately with Sydney; but I found the difficulty in regard to shipping so great, that I have been partly obliged to go back to Melbourne. If you send wheat by Melbourne there are wharfage charges and commission, and sometimes the goods are detained at the border for about a fortnight, because the Sydney merchants omit to send the production orders. This delay is often a great drawback, and there are many other difficulties in the way. If these difficulties are to remain, I would rather pay the difference and deal with Victoria.
1939. In the event of intercolonial freetrade being adopted, where would you deal? I should certainly deal with Sydney.
1940. Would you pay the difference in carriage? I hardly think the difference would be so very great. In my statement to Mr Alexander, I think the average of my freight was put down at £5 per ton on general goods, and I was told that a truck between Sydney and Jerilderie, holding 6 tons, would only cost £20.
1941. If intercolonial freetrade came about, do you not think the railways would be worked on commercial principles? I believe that if any line in New South Wales could be worked on commercial principles this would be the line.
1942. But if the railways are worked on commercial principles, you cannot expect the New South Wales Government will carry goods 450 miles as cheaply as the Victorian Government will carry them 200 miles? If we only had to deal with the Victorian people we would be right enough; but we have to pay more in proportion for the short distance of 44 miles than we have to pay on the Victorian lines. For instance, between Melbourne and Echuca the carriage of potatoes does not cost any more than between Echuca and Deniliquin.
1943. But do you not think, if the line between Jerilderie and Deniliquin were constructed, the Government would be obliged to resume the line between Deniliquin and Moama? And I think it would pay them to do so.
1944. In that case, this excessive charge of which you speak would be done away with? Well, I do not know. If the communication was good, I would prefer to deal with Sydney.
1945. Do you think it possible, if the line were worked on commercial principles, and the differential duties done away with, that New South Wales could compete with Victoria, and carry goods 450 miles as against 200 miles? It depends on what you understand by commercial principles—whether you think it would be sufficient to pay interest and the cost of wear and tear.
1946. Do you think we can carry goods on the New South Wales line 450 miles as against Victoria carrying them 200 miles? No; you cannot. At the same time the Deniliquin and Moama Company are charging at the rate of 150 miles.
1947. Do you not think it possible that that line would be resumed if we made this connection? I could not tell you.
1948. Do you not think it is possible? Well, you might do a good many things. I am not to be presumed to know what you could do.
1949. What do you think ought to be done? I have never thought of it.
1950. The Railway Commissioners say that the cost for interest and working expenses on this proposed line would be £14,000 per annum. Do you think we would be able to get that revenue from this piece of line? I think so. When I went to Sydney as a delegate about the Deniliquin and Moama line, I made a statement with reference to the probable traffic to Mr. Cowper, which statement was considered correct at the time, and has since proved to be so.
1951. But you were all separationists then, were you not? No; I was not. It was not quite as bad as that.
1952. Are there many town lots in Deniliquin still in the hands of the Government? There are.
1953. Any quantity? I think so—still unsold.

1954. Would that land be increased in value by the construction of the railway? I think so. I might also point out that the common here is far too large. It would still be large enough if you took away 10,000 acres. Mr. A. Rosenfeld. 10 June, 1892.
1955. What is the size of the common? Twenty thousand odd acres.
1956. And you think 10,000 acres could be taken away and sold? Yes; and there would be plenty left.
1957. How much would that realise? At least about £50,000.
1958. Is there any other reason why you think this line should be constructed? It would help the district, and it would show the people here that we are children of New South Wales, and not step-children. We have never been treated kindly by our Government. Our Government has compelled us to do business with Melbourne against our will.
1959. You have had a pretty lavish expenditure of Government money here? I do not think so. We have had very little. We have a white elephant here in the shape of a Court-house, and that is about all.
1960. Do you think that wheat could be sent in bond through Victoria, and by ship to Sydney, as cheaply as it could be sent to Sydney over this railway? I think so, as return freight. It will cost very nearly as much to send back empty trucks as it will to send loaded trucks. You can carry wheat cheaply in that way.
1961. Then you think it could be carried over this railway to Sydney as cheaply as it could be carried by rail to Melbourne, and thence by steamer to Sydney? Yes.
1962. If the two charges were equal, do you think the preference would be given to the railway? Yes; even if the cost by rail to Sydney were a trifle higher I think we should prefer that market, on account of the treatment we have recently received from Victoria. We have a little feeling about that.
1963. *Mr. Ewing.*] Have you had goods brought from Sydney round by Melbourne, and then by rail to Deniliquin? Yes.
1964. Can you tell us, roughly, what is the freight from Deniliquin to Melbourne on general goods? About £5 per ton on general goods.
1965. Do you know the freight from Sydney to Melbourne? With all the charges, it makes a difference of about £1 a ton.
1966. So you get goods delivered at Deniliquin, through Melbourne, from Sydney, at £6 a ton, including all charges? Yes.
1967. Do you know what the freight would be on the same class of goods direct from Sydney to Jerilderie? I have been informed that you can get a truck of goods for about £20, but I understand that it would cost more. In getting goods from Sydney, *via* Melbourne, there is always a certain amount of loss owing to delay and pilferage, we often find a good deal of the stuff missing.
1968. Then the main difficulty that besets you in getting goods by water and then by rail, is the loss of time, and what you call pilferage—those are the two main things? Yes.
1969. If the agents did their work properly, you would not have those difficulties? They will not do it. I have tried them. I have often threatened that I would withdraw my trade from them, but I see there is no help for it.
1970. If there was a direct line, and those supplying you could load the goods in Sydney, and send them direct to Deniliquin by rail, you would prefer to deal that way, and pay a little more? I would, certainly.
1971. *Mr. Wall.*] You have been dealing with Melbourne recently? Yes.
1972. Do you think the advantage in the conveyance of goods from Melbourne to Deniliquin is counter-balanced by the border duty? I would rather deal with Sydney, considering all the advantages and disadvantages. With the border duty, and the cost of haulage from Melbourne, the advantage would be in favour of Sydney.
1973. With the present border tariff, and the cost of haulage, is it not absolutely cheaper to get goods from Sydney? It is cheaper.
1974. That is one of the principal reasons why trade is likely to be diverted from Melbourne to Sydney? It is.
1975. What amount did you say you paid for carriage? About £1,500 a year.
1976. You are doing a very large business here? Yes.
1977. Do you deal in produce of any description? No; except in potatoes and onions. I buy wheat for my own use, but not for shipment.
1978. Have you any knowledge of any trade that would be likely to come from any other direction by the construction of this line? It would be a feeder for all the country here, and the people would send their goods by it.
1979. Has this place been advancing in any rapid degree? Well; we are doing more business now. The profits are a great deal smaller, but the amount of business is just as great as ever.
1980. If the railway were made between Deniliquin and Jerilderie, your business would extend in the direction of Jerilderie, would it not? Yes; I intended to build a mill here, with the most improved machinery; but, on considering the matter, I found that we should have no outlet, because on the one side are the border duties, and on the other side a gap of 44 miles, which prevents access to the rest of New South Wales. I found that I should have to pay £5 a ton for carriage over 44 miles, and, under these circumstances, I found it would not pay me to erect a mill at a cost of £11,000.
1981. Do you look forward to a large agricultural settlement in this part of the country? I do, indeed.
1982. Of course, before that comes about, the division of the large estates will be necessary? I should not be surprised. The owners, I think, would be only too glad to divide their estates if they could get any reasonable price.
1983. You think they would have no hesitation in doing that? They are talking continually about it, and they say that if they can get a fair price they will either sell or let their land, and I think it would pay them better to let the land than to graze sheep upon it.
1984. And you think that, with railway connection between Deniliquin and Sydney, the commercial relations between the two places are likely to increase? Yes, to a great extent.

Mr. Alfred Jameson, land and commission agent, Deniliquin, sworn, and examined:—

1985. *Chairman.*] What are you? I am a land and commission agent, carrying on business at Deniliquin, and I am also connected with the proprietary of the gas-works here. Mr. A. Jameson. 10 June, 1892.
1986. Can you give us any information with reference to the proposed railway? Yes; I think so.

Mr. A. Jameson. 10 June, 1892.

1987. What do you know with reference to it? Well, I will take the gas-works first. We are in the habit of importing coal from Newcastle, principally from the Stockton Mine. The cost of the coal at the pit's mouth is 11s. a ton. The contractors' price in Melbourne for supplying us here is 18s. The carriage to Deniliquin by the Victorian railways is 13s. a ton to Echuca, being at the rate of 1d. per mile, and from Echuca to Deniliquin the carriage is 5s. 7d. Therefore, the carriage from Melbourne to Deniliquin, amounts to 18s. 7d. per ton. If I am not mistaken, according to the railway rates of New South Wales, the carriage from Newcastle to Deniliquin would be 5s. 6d. a ton. My authority for this statement is the handbook issued by the Railway Commissioners. I could, therefore, land the coal in Deniliquin by rail from Newcastle cheaper than I could bring it round by steamer to Melbourne, and from there to Deniliquin.

1988. I think you will find that the rate you have quoted from the New South Wales handbook is not correct, and that the charge would be a great deal more than 5s. 6d. per ton? I may be mistaken, but I took my figures from the official publication issued by the Railway Commissioners.*

1989. Are there any business operations carried on here about which you would like to give us information? I should like to say, from an absolute knowledge of the fact, that almost all soft goods could be bought in Sydney and landed in Deniliquin at a cheaper rate than they could be bought wholesale in Melbourne. I would exclude some standard goods, such as cotton, linen, and things of that sort. I should also like to say that if the railway were extended from Jerilderie to Deniliquin, it would enhance the value of land in the neighbourhood. It would lead to an increased amount of agriculture on the part of the farmers, who, at the present time, are unable to enlarge their cultivation, owing to the want of a market. No matter how much grain may be produced in the Deniliquin district, there is only a limited demand. To send wheat in bond through Melbourne to Sydney—which is not done here that I am aware of—would be rather unsatisfactory, owing to the buyers being so particular. For instance, if you are going to export wheat from here to England, you would have to show a sample to the shippers, and every bag would have to be equal to that sample, and would have to be tested on the Melbourne wharf before shipment. Any bag not up to sample is thrown aside and sold at the owner's risk. People will not undergo such risks as that. I, myself, have had orders for thousands of bags of wheat up here on behalf of Melbourne buyers, intended for shipment home, and the growers here will not risk sending their wheat down for fear of the loss they might sustain. On the other hand, if the line were constructed between Jerilderie and Deniliquin, there would be a market not only in Sydney, but also between Sydney and Jerilderie, Wagga Wagga, and Goulburn, for instance. I am speaking now from absolute knowledge. I have been offered a high price to deliver wheat at Jerilderie. I have been offered as much as 1½d. per bushel more to supply wheat in Jerilderie than the buyers from Goulburn, and the other large towns on the main trunk-line of New South Wales, could buy it for themselves at Jerilderie.

1990. You said the land would be enhanced in value if the line were made—whose land would be enhanced in value? The lands in this district.

1991. I suppose you are aware that there is not much Government land left in this district? I cannot speak accurately as to the amount of Crown land in the district, but I do not think I am wrong in saying that there may be 2,000,000 acres in the land district of Deniliquin.

1992. You are aware that a great deal of that land is shut up in reserves, which are, perhaps, necessary in the public interest? Yes. Apart from that fact, there is no doubt that, in the course of time, the law will be altered here in regard to the public estate. At the present time, outside of municipalities, there are no taxes. Sooner or later a Local Government Bill must be introduced. That will no doubt cause people who own large estates to contribute their share towards the public revenue. If their land is worth £3 or £4 an acre I consider it will not pay to grass it under present circumstances, and that they must go in for cultivation as well. It is necessary to have first-class sheep on land which is worth £4 an acre to make it pay in this district.

1993. And you think that in the future a large portion of this land will be used for purposes other than those of sheep grazing? I do.

1994. What other purposes? For growing cereals. A finer wheat country does not exist in Australia than this district.

1995. *Mr. Dawson.*] How long have you been here? Twenty-two years.

1996. The wheat trade has been increasing pretty considerably, has it not? I should not like to say that it has been increasing considerably. The reason is this: On the one hand the Government of New South Wales refuse to allow us the means of communication with Sydney, and on the other hand the Victorians will not allow us to deal with them, as far as our produce is concerned. They will take our money, but will not allow us to send our commodities there.

1997. What do you mean by the Government of New South Wales refusing? They would not build the railway to connect with the metropolis nor allow it to be done by private enterprise.

1998. *Mr. Wall.*] You have watched the progress of this place for a considerable time? I have.

1999. And it has been advancing pretty rapidly—I mean with regard to the amount of trade done? The town of Deniliquin is in a perfectly sound condition, and is holding its own. Comparing it with other centres of population at the present time, it is ahead of other districts.

2000. The business has been principally with Melbourne in the past? Almost exclusively with Melbourne. We had no other choice.

2001. Do you think the construction of this railway would cause a larger business to be done with New South Wales? I have not the least hesitation in answering "yes."

2002. As a business man, do you not think that practically this has been part of the Victorian territory, as regards trade connection? Yes.

2003. The only connection it has had with the Government of New South Wales has been that the Government has had to provide for the public requirements? Yes; we have had no trade with New South Wales because the Government have completely shut us out from our own Colony.

2004. Do you know of any trade besides that of Deniliquin likely to be opened up by the construction of this line? Yes; between here and the Mathoura railway station there is an estate called Mathoura, on which there are 80,000 acres of freehold lands, and they are open for sale now.

2005. Have you any knowledge of the River Murray? Some knowledge.

2006. Do you think it is likely that any trade will be done in the direction of the Murray? Yes.

2007.

* NOTE (*on revision*): The mistake in this matter has, no doubt, arisen from taking the classification marked M as standing for minimum, instead of miscellaneous. There are collieries nearer to Deniliquin than Newcastle from which I could get supplies, if there were direct railway connection.

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2007. Have you any idea as to the cost of sending goods by the Murray to Adelaide? No.
2008. Do you think a trade would be opened up in that direction? No; it is too far, and the river is not always navigable. In reference to the Government expenditure in this district, if I am not mistaken, the Government of New South Wales have had something like £5,000,000 from this district, for which we have had no adequate return.
2009. But you will admit that in return for that £5,000,000 the persons who purchased the land have received nearly £20,000,000 value for it? No.
2010. Taking the price of the land at the present time, and the upset price at which it was purchased, do you not think the Government made a very bad bargain? The Government never part with their right to the public estate, because they can tax it at any time they like.
2011. Do you know whether the Murray River has ever been availed of for the conveyance of goods from here to Wilcannia and Broken Hill? No; not to my knowledge.
2012. We are advised that between this line and the Murray, going back towards Jerilderie, on the fringe of the River Murray, there is a considerable quantity of land fit for settlement? Yes; that is so.
2013. If that land is made use for agricultural settlement, do you think it likely that people would send their produce to Echuca, and thence down the river? Not to Adelaide; the market is not there.
2014. Could they not ship at Adelaide again? They could, certainly, but, as I have already explained, the Murray is not always navigable. I should like here to state that an immense quantity of grain grown here could be got rid of before it passed Goulburn.
2015. I suppose you are aware that wheat-growing has been entered into very largely at Narrandera, Cootamundra, and other places? Yes.
2016. In the development of the wheat-growing industry, do you not look to a foreign market instead of a local or even intermediate market? Not in the immediate future. I think there is any amount of scope for the supply of wheat and flour in Riverina alone. For instance, the consumption beyond the town of Hay, westward, would take all we could produce for many years to come, if we could send it there sufficiently cheap.
2017. The evidence we have had goes to show that in the event of the construction of this railway most of the farmers would put twice the amount of land under cultivation? Yes; they would do so.
2018. Then that would meet the demand. Our consumption in this Colony is only about 6,000,000 bushels, and if the development takes place to which the evidence points, we ought to have sufficient wheat to meet our requirements within a year. I do not, however, anticipate that such will be the case; but, in the event of the wheat-growing industry developing to the extent anticipated, there is no question but that the foreign market—London or some other place—will control the price of wheat here? That would be all the better, for by sending our wheat to Sydney we should know that we would not have to pay 8d. a bushel if it were rejected on the wharf, as we have to do in Melbourne.
2019. Apart from any question of the railway centralising trade, as a business man who has been here for a number of years, do you think that the various industries of the district would so increase as to warrant the Government in constructing this railway with the view of getting a return? I do, decidedly.
2020. You are aware that a loss is sustained on the line from Jerilderie to Narrandera? Yes.
2021. Do you think that the trade in this district is much larger than the trade of Jerilderie? Yes, certainly.
2022. And if the railway could be constructed at a small cost, and worked at a small cost, you think that the trade here would make up the loss that now occurs in connection with the Jerilderie line? I do. I consider that if the line were made the Railway Commissioners could save the cost of construction by purchasing all their red-gum sleepers at Mathoura.
2023. Have you been forwarding wool in your capacity as agent? Yes.
2024. Have you forwarded any on the Sydney line? No.
2025. What is the general custom here with regard to the payment of railway freight on consignments of wool,—is it paid at the office where the wool is trucked, or do the agents pay it on receipt? It is paid on receipt.
2026. We have great difficulty in ascertaining the actual returns taken at a railway station, because the Department only show the cash received? The *modus operandi* here is that the wool is trucked, and that sellers of the wool—the auctioneers—pay all costs, including freight and everything else, on receipt.
2027. *Mr. McCourt.*] You say that if this line were constructed you would get the coal for the gas-works from Sydney? Yes.
2028. How many tons per annum do you use? Four hundred tons at present.
2029. And you say, according to your reckoning, it could be brought for 5s. 6d. from Newcastle here? According to my reading of the hand-book.
2030. Do you know that the carriage of coal leaves very little profit to the railway? I daresay.
2031. With regard to the carriage of wheat, would large quantities of wheat go from this district to Sydney if the line were constructed? Yes, the wheat would go towards Sydney—for instance, to Goulburn. If I am not mistaken, the Goulburn millers had to close up last season because they had not sufficient grain.
2032. Are you aware whether, at present rates, wheat is a profitable commodity for the railway to carry? I am not.
2033. If the rate from Sydney to Jerilderie were 16s. 2d. per ton, do you think that a paying price? No; I do not. I think it would be 34s. from here *via* Melbourne.
2034. It is 16s. 2d. from Jerilderie to Sydney; do you think that is a paying price? Not unless you had a very great quantity to send. It would depend on the quantity. If you could make up a whole train load of wheat periodically, I think it would pay.
2035. Do you think that the carriage of coal, wheat, and other goods would be sufficient to make this railway pay? Yes, and merchandise. I have already said that you can land almost all soft goods cheaper from Sydney by rail than you can buy them wholesale in Melbourne, with the exception of a few standard goods—such as calicoes, linens, cottons, &c.
2036. That is because of the present border duties? They would have to pay the duty under any circumstances, coming from Sydney.
2037. But if the duties were abolished, and we had intercolonial freetrade, you would not bring Sydney goods here? The answer to that would be, that if we had intercolonial freetrade it would not interfere with

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Mr. A. Jamieson. 10 June, 1892.

the import duty. I have always understood, from the published speeches, that the differential rates would be allowed for in some way or other. For instance, an article imported, and coming through either Victoria or New South Wales, would have to pay the import duty in one place or the other.
2038. But if there were duties against the outside world they would be universal? Yes.
2039. Under those circumstances would it not be cheaper to get your goods from Melbourne than from Sydney, the railway carriage being only 200 miles, as against 450 miles? If there was one universal tariff for all the colonies, no doubt it would be cheaper to get the goods from Melbourne, the nearest seaport. But that is all problematical.
2040. *Mr. Wall.*] Have you any idea of the cost of coal in Melbourne, as compared with the price in Sydney? No.
2041. Do you think that the Victorians, paying 100 or 50 per cent. more for their coal, could run their railways more cheaply than the people of New South Wales? Certainly not. There is no doubt about that. The first cost is less in Sydney.
2042. *Mr. McCourt.*] If they had a coal depôt at Narrandera would it not cost the New South Wales Railway Commissioners so much to land their coal there from Sydney? It would.
2043. And would not that equalise the water carriage from Melbourne? Yes.
2044. Would they not meet on equal terms then? No; because there would be a general average.
2045. Would it not cost the Railway Commissioners something to deliver their coal to Narrandera for use on these lines? Yes.
2046. Would that not be the same as the water carriage from Melbourne? I daresay it would. In regard to the supply of railway-sleepers, I may say that I made an offer to supply 2,000,000 sleepers at 2s. 6d. There would be a great saving in red-gum sleepers.*
2047. *Mr. Dawson.*] What could you buy 2,000,000 red-gum sleepers at? Two shillings and sixpence each.
2048. But if you could buy 9-ft. sleepers by the 100 at 2s. 6d., could you not buy 1,000,000 8-ft. sleepers for less? I could not say, without making inquiries.
2049. Would the passenger traffic from Ararat, Ballarat, Sandhurst, and Maryborough going to New South Wales come this way if the railway were constructed? Yes; and I may say, also, that this would be a more direct route to Adelaide. If the line were constructed, there would be more traffic than that from the immediate district, because people from Bendigo, Swan Hill, and other towns in Victoria wishing to go to Sydney, or other parts of New South Wales, would come this way instead of going round by Melbourne.
2050. *Mr. McCourt.*] But if they came round this way, would not that take the traffic off the line between Albury and Junee? I think it would increase the traffic. There would be greater facilities to deal with Sydney.
2051. But if the passengers came this way instead of going round through Albury, would it not take the traffic off the line between Albury and Junee? That might appear to be so; but my experience is that when a railway is opened, and population increases, traffic also increases; and it must be borne in mind that from Jerilderie to Sydney you can get a first-class return ticket for £4 10s., while if you go *via* Melbourne it costs you £6 1s. 6d., exclusive of the cost from here to Melbourne, which means another £3. It costs, therefore, £9 to go from here to Sydney *via* Melbourne, as against £7, or a little less, from here to Sydney *via* Jerilderie, the return coach fare between here and Jerilderie being 30s.
2052. *Mr. Wall.*] It takes you longer to go to Sydney now *via* Melbourne than if you took the coach and went to Jerilderie, there being a day lost on the road? Yes; we can start from here in the evening, and catch the train from Jerilderie next morning. If you go from here to Sydney by the Victorian railways, you must either stop a night at Seymour, or go on to Melbourne; and as Seymour is such a short distance from Melbourne, people invariably go on to the latter place, and there take the Sydney express.
2053. According to the existing train arrangements you have to go to Melbourne before you can reach Sydney? Yes; and this is commented upon in Melbourne as being such a foolish thing to do.
2054. *Mr. Ewing.*] Can you tell us what are the new border duties on stock? Thirty shillings on cattle; 50s. on horses; 2s. on sheep; 10s. on pigs; 7s. per hundred on beef or mutton; 10s. per hundred on pork.
2055. What is going to be the effect of those duties here, as far as you can tell? In my opinion, for the next few months stock will be stagnant here. It will not pay small owners to breed stock and send them to Victoria, and pay this iniquitous duty.
2056. And then after that—do you limit your answer to a few months? In my opinion the feeling amongst the community here is so great, that if there is any possibility of doing business with Sydney, even at the sacrifice of their pocket, they will do it, rather than suffer these charges which the Victorians are putting on.
2057. Do you think the stock tax will keep the New South Wales cattle and sheep permanently out of the Victorian market? Not permanently.
2058. You believe Victoria does not grow enough? Victoria does not grow enough. The result will be that the Victorians will pay more for their meat, and we will not get so much for our stock. The stock tax may have a tendency to establish freezing-works here, and so enable us to export our meat direct.
2058½. Then you say this, briefly, that for the present you believe it means stagnation, as far as cattle and sheep here are concerned, but you are not quite sure what the permanent effect will be? Yes; it is impossible to supply the Victorian market at such a price. Until recently the prices were extremely low, and there was a difficulty in obtaining stock in the past season. The Sydney market is not a first-class one for stock.

Mr. George Chandler, Mayor of Deniliquin, sworn, and examined:—

Mr. G. Chandler. 10 June, 1892.

2059. *Chairman.*] What are you? A storekeeper, carrying on business in Deniliquin.
2060. You are also Mayor of Deniliquin? Yes.
2061. Have you considered the question of the construction of the proposed railway from Jerilderie to Deniliquin? Yes; I have given it some consideration for the last twelve years, more particularly in connection with the development of the resources of the district.
2062. Can you give us any information as to the development of those resources? In regard to the growth of wheat, I am well acquainted with the quality of the soil and the capabilities of the district, and also with the country on the other side of the Murray, every mile of which I know pretty well before I came to Deniliquin. 2063.

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* NOTE (*on revision*):—I understand that the Railway Commissioners require 2,000,000 sleepers this year, and are willing to give an average of 5s. each. If such is the case, I am prepared to supply that number at 2s. 6d. each of red-gum. Thus the saving will be more than sufficient to construct the proposed railway.

Mr. G. Chandler. 10 June, 1892.

2063. The country on the other side of the Murray would not affect this question very much? It is the principal wheat-growing district in Victoria, and the country on this side is very much better, but settlement here is retarded by want of railway communication.
2064. The crops grown on this side of the Murray are better than those on the Victorian side? If you take a square mile of country here it is nearly all fit to grow wheat. The proportion of land only suitable for grazing is very much smaller on this side of the Murray.
2065. If the proposed railway were constructed, do you think a large quantity of wheat would be grown in this district? Undoubtedly. At the present time, having that possibility in view, land has been bought at £4 an acre, which is about £1 or 30s. more than a wool-grower can afford to give for it.
2066. In what direction from Deniliquin is it likely that the wheat-growing industry would be established? Between here and Jerilderie, on the Tuppal Estate, and all up in the direction of the Murray Hut—nearly all the country between here and Jerilderie.
2067. That would be all the country lying south of the line? Yes; right down to the Murray on the south side, and for a distance of 20 miles on the left-hand side.
2068. Have you any personal knowledge of the quantity of wheat per acre grown on this land? I am pretty well acquainted with all the growers, and I think that for the last ten years the average would be 20 bushels to the acre. The principal part of the wheat has gone in the direction of Jerilderie; the trend of trade is that way, and the best market lies in that direction.
2069. Would the merchants of Deniliquin be likely to trade with Sydney if this line were constructed? Undoubtedly; all the colonially-manufactured goods would be used in Deniliquin. Before the duties were imposed in New South Wales, I dealt largely with Sydney for drapery goods, and boots and shoes, because I could buy them much cheaper there than in Melbourne; but the principal part of the boots and shoes used in my business have come from Sydney for the last eight or ten years.
2070. But since duties on all those articles have been put on in Sydney, do you find there has been much difference? There are several articles that are about the same price in Sydney as in Melbourne, such as jams, biscuits, and confectionery. These we must get from Sydney now. The duty being 2d. per lb., of course, that would cover a lot of freight. The freight and shipping charges are not very high, but the Customs' charges, wharfage rates, Customs' supervision, and other expenses amount to a good deal of money in getting goods through Melbourne in bond.
2071. *Mr. Wall.*] How long have you been connected with municipal matters in Deniliquin? About eight or nine years.
2072. What is the present municipal rate? One shilling in the £.
2073. And the amount of the last assessment? About £1,300.
2074. Irrespective of Government endowments? Yes, that is the amount of the municipal rate. There is also a water rate, which amounts to a similar sum.
2075. That is on an assessment at 5 per cent. on the annual value? Yes; less the one-tenth.
2076. What has been the increase in the rates since the previous assessment? I could not speak accurately, but there is an increase every year.
2077. How often do you assess? Every year.
2078. And there has been an increase every year? Yes; I think without exception, speaking from memory.
2079. Could you give us any idea of the cost of the formation and metalling of the roads? Nearly £4,000 a mile.
2080. That is the ordinary main road? Yes; laid with burnt bricks and burnt clay.
2081. Is there any material available for road-making besides these bricks? We get a coarse sand out of the river, which is used for roads, where there is only light traffic.
2082. With regard to a road suitable for heavy traffic, what is the lowest you think it could be constructed for—say a road from here to Jerilderie? About £4,000 a mile.
2083. Then it would actually cost more to construct a road than to build a railway? Yes.
2084. *Mr. Ewing.*] I gather that what you regard as being the principal disability of the producers of this district is isolation? Yes.
2085. That isolation is brought about partly by the protective tariff of Victoria, and partly by the unbridged gulf between Jerilderie and Deniliquin? Yes; we are the most protected part of Australia. We have a barrier of border duties in one direction and impassable roads in the other.
2086. That exactly explains your isolation? Yes.
2087. You believe the construction of this railway would, to some extent, remove this isolation? It would.
2088. And you, as a business man in Deniliquin, would be prepared to use the railway to obtain your goods, even at a little sacrifice? Yes. The general rate of goods from Sydney to Jerilderie at the present time is about £5 a ton, and the average rate from Melbourne to Deniliquin is about £5. With regard to the cost of coal, it has been pointed out that it costs the New South Wales Commissioners 10s. per ton to send the coal to Narrandera; but it should also be remembered that it costs the Victorian Commissioners probably about 10s. to send coal up to Echuca. I think that if the rate charged to Jerilderie were continued on to Deniliquin, the bulk of our goods would be got from Sydney.
2089. It would suit you very well to use this line from Jerilderie to Deniliquin under these circumstances? Yes; and the line would be a feeder to the existing railways. Assuming, for the sake of argument, that 3,000 tons of goods would be sent over the railway, which I think would be well within the mark, that would give £15,000 to be added to the earnings of the through line, without very much extra cost.

Mr. Molesworth Stawell, Supervising Engineer, Railway Construction Branch, Department of Public Works, sworn, and examined:—

Mr. M. Stawell. 10 June, 1892.

2090. *Chairman.*] What are you? Supervising Engineer, Railway Construction Branch.
2091. I believe that the survey of the line from Jerilderie to Deniliquin was made by you? Yes, and Mr. Marshall was engaged in the work also.
2092. When was the line surveyed? About four years ago.
2093-4. Can you tell what has been done with the line with regard to marking it out? The centre line has simply been staked and levelled; the property through which it passes has been surveyed, all creeks and rivers surveyed, and an estimate made of the cost.

Mr. M. Stawell. 10 June, 1892.

2095. Can you give us any idea of the probable cost of the line? The Departmental estimate is £3,300 per mile—that includes everything.
2096. Could you tell us how that was made up? I cannot tell you all the items now from memory. I know the earth-work runs into about £300 a mile, and the permanent-way and ballasting about £2,000.
2097. Have you had any communication from Mr. Deane with reference to the cost of the bridge over the river? Yes. Mr. Deane told me that the cost of the bridge would be £4,170.
2098. Is there not some other expense in connection with the approach of that bridge in regard to water-ways? No, not in connection with that bridge. There will be a small bridge required over the Billabong, just after you leave the sand-hills.
2099. *Mr. Ewing.*] The Departmental estimate is something like £3,000 a mile? Yes.
2100. Would that line be a heavier or lighter one than the line from Junee to Hay? I should say, taking it all through, it would be a lighter line.
2101. And a lighter line, also, than that from Narrandera to Jerilderie? Yes; including the bridge over the Murrumbidgee at Narrandera, it would be a lighter line.
2102. I see that the cost of that was about £6,000 a mile, and it is called a light line; would you briefly describe what a light line is? The only difference between a light line and other lines is in the weight of the rails; the rails in a light line are 60 lb. to the yard, and on other lines they are 72 lb. to the yard.
2103. That is the only difference? Yes; in other respects they are practically the same.
2104. I notice that on your plan flood-waters are shown; I suppose those only show in the depressions; the general run of the country is above flood-level? In some places the flood-waters run over the plains.
2105. But it is only still water—back-water? Well, there is a very slight current in it, but still there is a current.
2106. From an engineering standpoint, there is no danger from flood-waters? Not if you have a good bank and plenty of water-ways.
2107. There is no practical difficulty with regard to floods? No; they can easily be dealt with.
2108. The line is a simple one to construct? Yes, very easy.
2109. Do you know the general height of this country? I forget it now, but I could inform the Committee.
2110. And the difference in height between Jerilderie and Deniliquin? Yes.
2111. Your ruling grade is 1 in 200? Yes.
2112. When does the grade cease and run out to level? For instance, I see you give such grades as 1 in 20,640 and 1 in 50,280? The grades are put on to suit the suface of the ground, and they follow the surface of the ground as nearly as possible.
2113. But when does it cease to be a grade; is not 1 in 50,280 practically level? Yes, practically.
2114. You could not, without careful levelling, tell which way the grade was? You could tell easily enough by levelling.
2115. But not otherwise? No.
2116. A train would go up it as quickly as it came down it, pretty well? Well, practically so.
2117. So that when it gets to that it is getting pretty close to level? Yes.
2118. *Mr. McCourt.*] In the estimate of the cost, do you know what was put down for sleepers, and what sleepers were to be used. I could not say what kind of sleepers was to be used. I did not take out the estimate for this line myself.
2119. What is the usual charge for sleepers—say on the Parkes line, on which you are now engaged? We are paying 3s. 10d. each for ironbark sleepers, not put in the road and fixed, and 3s. 6d. for approved hardwood—that would mean red-gum or any other approved hardwood which the engineer in charge of the work might pass.
2120. But that is exceptionally cheap; the timber must be close? Yes; we run through ironbark country.
2121. Have you been engaged on any other line? Yes; I have been engaged on the Illawarra line, and on the Young to Cowra line.
2122. What were the sleepers on the Young to Cowra line? I can hardly remember. I think they were 4s. for ironbark, and 3s. 9d. for red-gum, but I would not be sure; that does not include fixing in the line.
2123. Have you made any survey of the line *via* Conargo? No.
2124. Has there been a trial survey? There was one made, but the plans were burnt.
2125. Do you think that the straight line is the better one in the interests of the public? I cannot say with regard to the interests of the public, but from an engineering point of view it is undoubtedly the better line.
2126. Are there any engineering difficulties on the other line—there are more, I suppose? There are a few more water-courses to cross; but the main thing is that the direct line is the shorter line, and by going round, while you increase the distance, you do not gain anything in the way of grades.
2127. *Mr. Wall.*] Do you know what price the Railway Commissioners are paying for their general supply of sleepers? No, that is not in our Department. I do not know what they pay.
2128. What number of sleepers are used to the mile on our railways? The number varies with the description of rails used. With 21-foot rails there would be 2,012 sleepers to the mile; with 24-foot rails there would be 1,980, and with 30-foot rails 1,936.
2129. If the estimated cost of sleepers for this line is £5,000 over and above the amount for which they could be procured, that would represent a difference of £5,000 per mile in the cost of construction, if each sleeper were 5s. less than the estimated cost? But the estimated cost of a sleeper is not 5s. to begin with.
2130. On this line? No, I should think the sleepers were estimated at 4s. at the outside.
2131. Are you sure? We have had some information to the effect that the cost was estimated at 8s.? I am certain it must be a mistake. I do not believe such a price has ever been paid for sleepers. I think from 4s. to 4s. 6d. is the usual price paid by the Department.
2132. But you do not know the actual estimate in this case? I could not say in this case; I think it would have been kept pretty low.
2133. You think it would be about 4s. or 4s. 6d.? I should put 4s. 6d. as the outside price.
2134. *Chairman.*] You have been working on the Forbes line lately? Yes.
2135. Do you know what the contractors have been paying for sleepers? The contractors told me that it is costing them as much to get the sleepers as they are getting from us; but it is very hard to believe contractors.

Mr. David Tennant, Secretary and Manager of the Deniliquin and Moama Railway Company, sworn, and further examined :—

Mr. D. Tennant. 10 June, 1892.

2136. *Mr. Ewing.*] Have you any means of ascertaining how much of the traffic on the Deniliquin to Moama line is in bond? The great bulk of the inwards traffic. The whole of the traffic from Melbourne comes in bond.
2137. Why does it come in bond? On account of the duty.
2138. But things bought from the Melbourne merchants would not come in bond? Yes; there is a Customs officer here; the New South Wales duty is collected in Deniliquin. Deniliquin is just the same as a border town with a Customs office.
2139. How much of the traffic from here is subject to duty and how much is free? The only traffic from here is wool, and of course that finds its market in London, or somewhere else outside the colonies.
2140. You think that the traffic along the line from Deniliquin to Moama does not consist, as a rule, of goods for consumption in Victoria? Certainly; nothing goes from here for consumption in Victoria.
2141. But the stock must go for consumption in Melbourne? Yes, of course. I understood you were referring to goods.
2142. I mean the whole traffic? Of course, the live-stock would go for consumption in Melbourne.
2143. All the rest, speaking in general terms, is for shipment? Yes.
2144. If goods come round from Sydney in bond to Deniliquin, the extension of this line 44 miles to Jerilderie might enable the same operation in bond to take place there? The duties being paid in Sydney on all goods, of course there would be an inducement for merchants here to get their goods from Sydney, as they would have no trouble with the Customs at this end.
2145. What the Deniliquin man does with regard to his goods now would also be rendered possible at Jerilderie by the construction of this line? Possible, but not probable.
2146. Roughly speaking, what is the freight on goods to Melbourne? Taking the average of the general bulk of goods, I should say £5. On some goods the freight is as high as £7, and on potatoes, or articles of that description, it is as low as £3, so that £5 would be a fair average.
2147. There is a special rate for some goods? Yes.
2148. Do you know the freight by boat from Melbourne to Sydney? I do not think there is any fixed rate. I believe the shipping people make special arrangements.
2149. Would you say it would be over 10s. per ton? Yes.
2150. Then the case stands this way—a man in Deniliquin wishing to trade with Sydney has to decide whether he will send 450 miles along the line to Sydney, or whether he will send to Melbourne and pay the freight by boat to Sydney? Yes. There are a great many charges coming round by sea, such as Customs entries, duties, and cartage in Melbourne.
2151. You said it would be possible, by a system of rates here, to prevent goods going to Victoria if you wanted to secure the trade; you believe that in a competition between the two railway systems it would be possible in a district such as this to put on such rates as would practically prohibit goods going to Melbourne? It would be quite practicable.
2152. Let us see how this is going to be brought about. The Sydney men are determined to secure the trade of Riverina, and the Melbourne men want it also. The first step taken by the Sydney Government is to put on the lowest possible rate of tariff over 450 miles. The next step would be taken by the Melbourne Government, and that would be to remove the rebate line down to the border, would it not? Of course, it would be open for them to do that.
2153. That would be a very good step for them to take, would it not? The rebate line now runs up somewhere south of Jerilderie and round south of Hay.
2154. As a business step, the first thing the Victorian Government would do would be to remove the rebate line down to the Murray? Yes.
2155. The rebate line being removed down to the Murray, the case stands about this way. The Sydney Government have to carry very nearly 500 miles, and the Victorian Government have to carry 145 miles. The case does not quite end there. If you make a special rate from Narrandera to Moama you must also make a special rate from Junee to Albury, because if you do not do that the goods will go round, as far as the rates will permit, from Hay and Narrandera to Junee, and down that way to Melbourne—you have to include that in the rebate, too? But there are already differential rates between Junee and Albury.
2156. You would have to put special rates on between Junee and Wodonga, would you not? Not to effect this.
2157. But if you found the trade of Riverina going to Victoria, and put special rates on this line? You refer to the Hay and Narrandera traffic; then, of course, you would have to put special rates on both connections.
2158. Then the case stands this way—that the people here would have to pay extra rates if they wanted to go to Melbourne? In proportion. On the part of the New South Wales railways over which they would travel they would have to pay a much higher rate in proportion to the rate over the 450 miles of railway.
2159. That would be putting them in a worse position in regard to the prohibitive border duties. If they had to go to Melbourne they would have the prohibitive border duty and this special rate too, which would be put on to force them to go to Sydney? Yes.
2160. Then, seeing that there is competition between the steamers and the railways, do you think it would be possible to work these differential rates at all? Of course, if the Victorian railways removed the line of demarcation, where the rebate comes in, down to the Murray, they might take off their rates all that New South Wales put on. It is quite possible for them to do so. I do not think the people of the Colony would allow it now, but still that is in keeping with the policy hitherto in existence.
2161. And they would practically carry for nothing? Yes.
2162. That would not pay? The whole feeling now is against these special, or rebate rates.
2163. As there is competition with the railways by steamer from Sydney to Melbourne, you cannot exactly work your railways as you would if there was no competition? No.
2164. That might be a strong element, and might prevent any scheme of special rates in Riverina from interfering with the trend of traffic? Not as I imagine, but it would interfere with the scheme.
2165. Do you not think it likely that eventually the nearest port must win? If one man is carrying 400 or 500 miles and the other man carrying 200 miles, must not the 200 miles' man win eventually? As I said yesterday, that goes without saying.

Mr. D. Tennant. 10 June, 1892.

2166. With regard to this line from Jerilderie to Deniliquin, if the traffic is going from Melbourne to Deniliquin it will carry the traffic from as far as Narrandera and the adjoining country—that is, if the traffic of Riverina is going to Melbourne? Yes.
2167. Therefore, it is reasonable to assume that if the Deniliquin to Moama line pays carrying traffic to Melbourne, so the Deniliquin to Jerilderie line will pay carrying traffic to Melbourne? Certainly; but the object of the special rate to which I referred yesterday was to prevent the traffic that now goes to Sydney from going to Melbourne. It did not apply to this immediate district at all.
2168. But the reason why the Deniliquin to Jerilderie line will pay is simply because of the extension to the Deniliquin and Moama line, which has paid because of its trade with the metroplis of Victoria? No; I think it will create a fresh traffic altogether, in addition to that.
2169. The Deniliquin to Jerilderie line will pay, in your opinion, if the goods go to Melbourne. Will the Deniliquin to Jerilderie line pay if the goods are going to Sydney? In one instance it is draining pretty well all Riverina; in the other instance it is draining the country from Moama to Deniliquin, and it terminates at the base of operations? I think it will pay in any case.
2170. Wherever the goods go? Yes.
2171. But railways only pay because of the volume of goods going along them, and if the volume is great going from Riverina to Melbourne the line will pay, but if the volume is small going from Riverina to Sydney the line will not pay? But there will be traffic both ways.
2172. But the trade of Riverina, north of Deniliquin, is enormously greater than the trade of Riverina, south of Deniliquin? Certainly.
2173. Therefore, a line carrying stuff from the north of Deniliquin to Melbourne would be likely to have a great deal more traffic than a line carrying stuff from the south of Deniliquin to Sydney. Any traffic going to Melbourne from the north would be larger in volume than what you could possibly expect to get from south of Deniliquin—that is, between here and the border. The live stock is the one principal item of traffic, and that is bound to go to the nearest market; but I am speaking of the volume of trade, and it must be greater north of Deniliquin than south of Deniliquin? Yes, by one line.
2174. Therefore, if the large volume of trade north of Deniliquin is going to Melbourne it will make the line pay; if the small volume of trade south of Deniliquin is going to Sydney the line might not pay? No, if that were all you had to depend upon, but you would have traffic both ways.
2175. You spoke of the intercolonial passenger traffic. The distance from Echuca to Mangalore or Seymour is about 84 miles, from there to Wodonga 119 miles, and from Wodonga to Sydney 396 miles, making the distance for any man travelling from Moama to Sydney by that route 599 miles. If he were to go from Moama by the line now under consideration from Deniliquin to Jerilderie and on to Sydney he would travel 500 miles? Yes, I suppose so.
2176. Therefore, this direct route would save 99 miles in mileage? Yes, and it ought to save a day.
2177. Can you explain how, if the proposed line were constructed, this would become the direct route to Adelaide? One of the proposals in Victoria is to connect their railways by cutting across from Echuca and joining on to the through line to Adelaide; but that is only a speculative proposal at present.
2178. From Tolambo, where you join on to the nearest eastern line, a man might just as well go on to the main Victorian line and go to Sydney that way if the same service is given from Seymour as is given from Echuca—half-way between these two places will be where the passenger traffic splits? Yes.
2179. Therefore, if a person were going to Sydney from about Tolambo it would suit him to go west, and a person on the other side of Tolambo would go east? Yes.
2180. Therefore, it is reasonable to suppose that we should annex the passenger traffic from Tolambo to Echuca? Yes; and down to Bendigo.
2181. Unless the Victorian Government constructed a direct line across from Echuca to Boort, the only passenger traffic we could expect to get would be that between Echuca and Bendigo, and Echuca and Tolambo? I should say as far as Castlemaine. At present all the passengers from there have to go to Melbourne.
2182. Could you give us any particulars as regards the passenger traffic on the Deniliquin to Moama line for last year? For the six months ending December, 1891, we carried 9,292 passengers, and for the whole year we carried 16,500 passengers; that is an average of fifty per day.
2183. *Mr. Wall.*] Could you give us an idea, in connection with the working of your line, what is the cost of fuel to the Victorian Railway Commissioners, put on the trucks at Melbourne? We only use firewood.
2184. Have you any information as regards the cost of coal put on the trucks at Melbourne? Yes; we sometimes get small quantities; I have paid from 18s. to 23s. per ton put on the trucks.
2185. Do you know that the Railway Commissioners of New South Wales are getting coal put on the trucks at Lithgow for 4s. 9d.? I do not know the exact figures; but I believe they can get it for that.
2186. Do you know the price of coal put on the trucks at Moss Vale? I have not taken any particular notice. I understand the rate is very low.
2187. Do you think it would make a material difference in the cost of working the railways if New South Wales obtained her supplies of coal at an average of 5s. per ton, as against from 18s. to 23s. in Victoria? Certainly.
2188. Would the cost of working be very much greater? There is a difference of over 10s. a ton. I suppose the Victorian Railway Commissioners purchasing their coal in large quantities would get it at 15s. or 16s., and that would make a difference of 10s. per ton in favour of New South Wales.
2189. And would that make a material difference in working the line for long distances? Yes.
2190. What is the distance from here to Melbourne? Two hundred and one miles by way of Bendigo, and 190 miles by way of Seymour.
2191. The distance from here to Sydney would be 450 miles? There would be no necessity to use coal in this district.
2192. But it would be much cheaper to use coal for intermediate traffic; wood might be used on the return? The locomotives that would be used here would all be stationed outside the coal country.
2193. The distance from here to where the New South Wales railways would get their coal supplies would be a little over 300 miles; do you think that, in competing for the Riverina trade, or for any trade involving long distance carriage—either along the Hay line or this line—the New South Wales railways would have an advantage over the Victorian railways with regard to the cost of fuel? Certainly.
2194. *Mr. Dawson.*] Of the 16,000 passengers carried on your line in the year 1891, did any come from Castlemaine, Bendigo, and the northern parts of Victoria? Yes. 2195.

2195. But they were not going to Sydney? No; at the present time no one comes by this route to Sydney. Mr. D. Tennant.

2196. If this railway were constructed, do you think the passenger traffic would increase to the extent of double? That is rather a high estimate. 10 June, 1892.

2197. Well, say 50 per cent? Yes.

2198. And instead of your line carrying 16,000 passengers it would carry at least 24,000 passengers? Yes.

2199. *Mr. McCourt.*] Does your company arrange its freight charges in conjunction with the Victorian railways. If the Victorian railway authorities removed the rebate line to the Murray, would you lower your freights also? Certainly not.

2200. You do not work in conjunction with them, then? No; our rates are quite apart from theirs.

2201. If they lower their rates, they do so on their own responsibility? Yes.

2202. *Mr. Ewing.*] Can a person pay for his ticket here right through to Melbourne? Yes; that is adjusted at the end of the month; they collect there for us, and *vice versa*.

2203. Therefore, you do work for them, but upon a basis you establish yourselves? Yes; it is simply a mutual arrangement.

2204. *Mr. McCourt.*] Are the rates on your line anything like those provided in the Act? Yes; but we have reduced our rates in some cases.

2205. About how much are they reduced below the scale in the Act? Not much—10 per cent. in some instances, and in other instances they are up to the standard. I made the assertion yesterday that the Deniliquin to Moama railway could be built for less than it was, and I have put down a few figures to prove my contention. Our rails, which were 50-lb. iron rails, cost us £10 15s. 3d. per ton. The last lot of steel rails we bought—60-lb. rails—cost £6 3s. 5d. That is a difference of £4 11s. 9d. Steel rails are cheaper now than they were when this line was constructed. When you take an average of 80 tons of rails to the mile, that makes a reduction of £350 to the mile on that one item alone. Then, with regard to sleepers, we paid 2s. 9d., and we can get them now in small quantities for 2s. 6d. I reckon we can get them for 2s. 4d., and I would put the reduction on sleepers at an average of £40 per mile. Therefore, on those two items alone, of rails and sleepers, the cost at the present time would be about £400 a mile less than we paid when the line was constructed.

2206. Are you aware that it is proposed to put down 60-lb. steel rails on this railway if it is constructed? Yes.

2207. That being so, do you think it could be constructed very much cheaper than the estimated cost of £3,300 per mile? I understand that that estimate includes stations and plant.

2208. It does not include rolling stock? Except rolling stock, £3,000 to equip the line is a very fair estimate.

2209. But leaving the station-buildings out of the question, what do you think the line ought to be constructed for per mile with 60-lb. steel rails? It would be necessary to take the estimate of the different works. Our line cost £2,500 a mile without any stations or plant; and, as I have shown in the two items alone of rails and sleepers, there would be a saving of £400 if the line had to be built now. But that is without any equipment.

2210. Without any equipment, do you think that this line ought to be constructed, and made a good permanent line with 60-lb. steel rails, for £2,500 per mile? Yes; without any equipment.

Mr. George Sayers, proprietor of a saw-mill, near Deniliquin, sworn, and examined:—

2211. *Chairman.*] What are you? A saw-mill proprietor.

2212. Where is your mill? About 14 miles from here, up the Edwards River. Mr. G. Sayers.

2213. Is there a large quantity of timber in the neighbourhood of your saw-mill? Yes; a very large quantity. 10 June, 1892.

2214. What kind of timber? Red-gum.

2215. Have you any other timber in the neighbourhood besides red-gum? Nothing worth speaking about.

2216. None to use for your saw-mill? No; we use a little colonial pine occasionally.

2217. Do you know anything about the durability of the red-gum timber? I consider that a red-gum sleeper will last at least thirty-five or forty years as a sleeper.

2218. Have you been in the habit of getting sleepers? Yes.

2219. Where do they go to? To Victoria.

2220. How many do they take from you? I suppose we send through perhaps 100,000 to the different lines.

2221. From your mill alone? Yes.

2222. In what time? We have been getting various orders; I could not say the time.

2223. *Mr. Dawson.*] At what price could you supply 2,000,000 8-feet sleepers? About 2s. 6d.

2224. Could you not supply a large order like that for the Government cheaper? No, not at a less price than 2s. 6d.

2225. I believe you supply 9-feet sleepers by the 100 at 2s. 6d.? Yes; delivered at the railway station, only 4 miles from the mill.

2226. And if the 2,000,000 8-feet sleepers were to be delivered at the railway station? Well, they might be done for a trifle less, but not a great deal.

2227. Would there not be some difference between cutting 8-feet sleepers and 9-feet sleepers? There would be a trifle of difference, but not a great deal.

2228. And would it not make a difference if you got such a large order as I have mentioned? Yes, it would make a difference; but still we could not do it for much less than 2s. 6d. delivered on the line.

2229. I suppose you have an inexhaustible quantity there? Any quantity.

2230. *Chairman.*] Could you give us an estimate of the number of acres in the red-gum forest? There are about 90,000 acres in the two forests up here.

2231. Where do these forests extend—along from the Murray River and along the Edwards? Yes; and they include the Gulpa Island.

2232. *Mr. Dawson.*] Do you pay a lease for the land or a royalty on the timber? A royalty on the timber.

2233. *Mr. Ewing.*] Does the timber go into Victoria as dressed timber? No.

2234. What duty do you pay? Two shillings per 100 now.

Mr. G. Sayers. 10 June, 1892.

2235. Therefore, you could supply New South Wales cheaper, as you would save the duty? Yes.
2236. Have you taken that into consideration, too? Yes.
2237. What would 2s. per 100 come to per sleeper? About 3d.
2238. Then the price would be cut down to 2s. 3d. at once? We get 3s. 3d., as a rule, in Victoria.
2239. *Mr. Dawson.*] What does the royalty come to per sleeper? About 3d. as nearly as possible.
2240. *Chairman.*] Can you give us an idea of the average number of trees to the acre? About twelve, I should say.
2241. And there are 90,000 acres? Yes.
2242. All these are trees suitable for your purpose? Yes.
2243. Have the trees been very much diminished in number in the two forests of 90,000 acres? No; not a very great deal.
2244. *Mr. Dawson.*] How many sleepers do you get from a tree? An average of about forty; from some we get eighty or ninety, and from others we get thirty.
2245. Then, you have 36,000,000 sleepers in that forest? Yes; I should say so.
2246. At 2s. 6d. per sleeper they would come to over £4,000,000? Yes.

Mr. George Sackville Ridley, Relieving Officer, in charge of the Land Office at Deniliquin, sworn, and examined:—

Mr. G. S. Ridley. 10 June, 1892.

2247. *Chairman.*] What are you? Relieving Officer, at present in charge of the Land Office in Denilquin.
2248. How long have you been here? Nearly ten months.
2249. Can you furnish the Committee with any information in regard to Crown lands in this district? Yes; I have prepared the following return, giving particulars in regard to the Crown lands: Country land sold at auction from 1 January, 1891, to date:—Area, 3,532½ acres; amount, £8,258 8s. 10d. Special areas selected as residence conditional purchases, to 31 December, 1891, and standing good at that date:—Area, 60,623½ acres; amount, £110,677 6s. 3d. Special areas selected as non-residence conditional purchases to 31 December, 1891, and standing good at that date:—Area, 2,785 acres; amount, £8,547 10s. One hundred and sixty-six conditional purchases, and twenty conditional leases applied for during year 1891; sixty conditional purchases, and seventeen conditional leases applied for from 1 January to 9 June, 1892. Total collections at Land Office, Deniliquin, during year 1890—£33,539 2s. 10d.; 1891—£40,494 12s. 1d.

Mr. Osborne Wilshire, Forest Inspector, Deniliquin, sworn, and examined:—

Mr. O. Wilshire. 10 June, 1892.

2250. *Mr. Dawson.*] You are the Forest Inspector here? Yes.
2251. How long have you been in this district? Nearly fifteen years.
2252. Can you give us the quantity of red-gum timber in this district on which royalty has been paid? The figures for the last six months are these: From Millewa, for Victorian mills—timber which entered Victoria in the logs—the quantity was 2,093,872 superficial feet, on which the royalty paid amounted to £1,425 3s. 6d. To local mills, from Millewa and Gulpa Island, the quantity sent was 595,245 superficial feet, upon which the royalty amounted to £401 17s. 1d. The permits for getting this timber amounted to £71.
2253. What was the total revenue from those two forests for the last six months? £1,898.
2254. And the revenue from the whole of the forests? I think about £17,000 last year.
2255. *Mr. McCourt.*] Do you think New South Wales is getting a fair return from this timber? No; I think we ought to increase the royalty, especially on timber going into Victoria, and I have made a recommendation to that effect.
2256. To what extent do you think the royalty should be increased? I would charge them 1s. 9d.
2257. What is the royalty now? One shilling and threepence. The timber goes to Victoria in the round, free of duty.
2258. *Mr. Dawson.*] I suppose the supply is inexhaustible? I think so.
2259. *Mr. Wall.*] You have control of the reserves in this district, have you not? Yes.
2260. There are a number of travelling stock reserves, and water reserves, surrounded by private property; considering that those reserves are not available to any person but the owners of the runs on which they are situated, is there any necessity for their retention, in your opinion? No; there are a number of them that could be thrown open.
2261. Could you prepare a report on the reserves which are accessible to the public as distinct from those which are on private holdings, and available only to the owners of the surrounding land? I think the District Surveyor would be better able to do that.
2262. But you would report on them, would you not? Yes.
2263. Do you think there is any necessity for the retention of a reserve in the interests of the public, if it is not available to the public, but is enclosed by private land? It depends on what sort of reserve it is.
2264. Take a water reserve? No, I do not think so.
2265. Do you think there is a necessity for the retention of any reserve that is not available or accessible to the public? No. I do not see the necessity for a reserve if it is not available to the public.
2266. Would you recommend the cancellation of those reserves if a report were obtained? Of a number I would; it would depend on the circumstances.
2267. But you do not think that where a reserve is surrounded by private land, and to which only the owner of that private land has access, there is any necessity for the retention of that reserve in the public interest? I do not think so. Possibly portions of such reserves might be kept for prospective value in the public interest.
2268. I notice that there are not even roads going to these reserves; they are simply surrounded by private land? Yes, I think they should be thrown open.
2269. *Mr. McCourt.*] Is there a preponderance of saw-mills on the Victorian side? Yes, there are only two mills in my district.
2270. Would you be prepared to recommend the prohibition of red-gum timber going into Victoria in logs—that is, to prevent timber from this side going into Victoria in logs? Yes; my idea would be to retain the timber for New South Wales, and not let any of it into Victoria in logs.
2271. Have you recommended that? No.

Mr. O. Wilshire. 10 June, 1892.

2272. Would you be prepared to recommend it? Yes, because there is a cry that the Forest Department is no good, because it returns no revenue to the Government, and the Department wants to make as much revenue as it can. The bulk of the timber goes into Victoria.
2273. The Forest Department wants to show a revenue? Yes.
2274. You believe it would be better for New South Wales to keep the timber? Yes.
2275. And sell it? Yes; keep it for our own use, and let none of it go into Victoria.
2276. *Mr. Dawson.*] Cut it here, charge our own royalty, and let them buy it when it is cut? Yes.
2277. *Mr. Wall.*] With regard to the reserves, do you think that in the event of those reserves being cancelled they would be likely to pass into the private holdings under the operation of the present system of special areas? I do not think so. I think there is a good demand for land here—good land.
2278. Do you think the private owners would not outbid others? No doubt they do to a certain extent.
2279. Have you any knowledge of the system lately adopted by the Minister for Lands of granting agricultural leases on certain lands for special purposes? No.
2280. Do you think that if these reserves were let under some system that would compel their cultivation, it would be of more advantage to the district than throwing them open in special areas, and allowing them to be purchased? Yes; I believe in the leasing system altogether.
2281. Most of the land that has been sold here, as soon as the conditions have been complied with, has found its way into the hands of private owners? Yes.
2282. And do you think, if there was some system adopted, such as the leasehold system, for agricultural purposes, it would check that accumulation in private hands? Yes.
2283. And would benefit the district? Yes—give them a good tenure, and prevent the land from going into the hands of large holders.
2284. *Mr. Ewing.*] Is there a large quantity of red-gum on the Victorian side of the Murray? Yes.
2285. To what extent are the Victorian mills dependent upon the New South Wales timber? Well, the Victorian people have never had stringent regulations as we have had. They have allowed the timber-getters there to cut most of the timber at a nominal fee, and the timber in Victoria is pretty well all in short lengths. Here it is good long timber: in fact, some of it is maiden forest.
2286. Suppose New South Wales refused to sell any more timber to Victoria, what would be the effect on the Victorian mills—could they go on with their own timber? They would have to go on with their own timber.
2287. They would suffer a great disadvantage in so doing? They would suffer a disadvantage, because they could not get the long lengths that we can get here.
2288. Could they go on at all? Yes.
2289. But not very satisfactorily? No; not with the timber they would like.
2290. You think that practically New South Wales has the control of the timber trade, because she has the best timber? New South Wales at present has the best timber. On this side there is a royalty of 1s. 3d. per 100 feet, and 10s. per month for each man, while in Victoria they can cut timber simply by paying £10 for a 1,000 acre block.
2291. *Mr. McCourt.*] Are you aware that Victoria has closed her forests against timber-cutting? No, I am not; if she has done so it has been very lately.
2292. And that the Victorians are conserving their forests? They are now.
2293. They are conserving their own forests and cutting ours? Yes.

Mr. Alexander McCullough, Inspector of Stock, Deniliquin, sworn, and examined:—

Mr. A. McCullough. 10 June, 1892.

2294. *Chairman.*] What are you? Inspector of Stock.
2295. Can you furnish us with any information as to the number of stock in the district? On the 1st January last there were 1,556,829 sheep in the district, 15,000 cattle, and 5,600 horses.
2296. How far does the district extend? To Tocumwal on the one side, and to Murgo, and to within 12 miles of Jerilderie.
2297. And towards the westward? Down to Weri, on the Edwards River.
2298. Does it follow down the Edwards River? No, it follows down to Murgo, the last station on the Edwards River, and from thence it extends to the Murray at Koondrook.
2299. *Mr. Ewing.*] The volume of trade has been towards Melbourne? Yes, altogether; with the exception of rams, very few sheep have gone to Sydney.
2300. Will the border duties drive the volume of trade the other way—towards the north? I hardly think they will—with the exception of rams.
2301. You believe that the volume of trade will be still towards Victoria? Yes, unless they get a chilling establishment here.

Mr. James Watson, storekeeper, Deniliquin, sworn, and examined:—

Mr. J. Watson. 10 June, 1892.

2302. *Chairman.*] What are you? A storekeeper. I have been carrying on business in Deniliquin as a storekeeper for twenty-nine years.
2303. Where do you trade? We have been trading with Melbourne until within a few years.
2304. Have you been doing any business with Sydney? There has been a complete change lately in our view of where we should deal, and we are driven to deal with Sydney.
2305. What has been the cause of that change? The first cause is that Sydney is a cheaper port. It is a free port, comparatively speaking—a cheaper market. We can buy cheaper in Sydney, and I think the extension of the railway to Hay and Jerilderie has also had the effect of drawing our attention more closely to Sydney. The merchants of Sydney have ignored this place till lately. Lately they have been sending down travellers, and we find we can buy many articles of merchandise, including boots and shoes, drapery, and other goods, at least 25 per cent. cheaper from Sydney. This has changed our business considerably. In fact, the Melbourne travellers who come here now have to go back without any orders.
2306. Then you think if this line were completed from Jerilderie to Deniliquin that trade would increase and grow largely? I think it would. I do not say that we should get all out goods from Sydney by any means; but if the Railway Commissioners, in the event of the line being made, would put Deniliquin on the same footing as Hay, I have no hesitation in saying that the greater portion of our trade would go to Sydney.

Mr. J. Watson. 10 June, 1892.

2307. I suppose you are aware that the Hay line is run at a very heavy loss? Yes; but I suppose that is a matter for the Commissioners and the Parliament to decide. The average cost of carriage just now from Melbourne is £4 18s., and the Hay people can get goods down for about £4 6s. Hay and Deniliquin are about the same distance from Sydney, and if the Commissioners can see their way to grant these facilities to Hay, I do not see why they should not grant them to Deniliquin, and in that case a great deal of our trade would go to Sydney.

2308. *Mr. McCourt.*] Supposing the goods were carried to Deniliquin at the same rate as to Hay, what revenue would come to this new piece of line? I can only form an estimate from the goods that come into the town. We pay about £1,400 or £1,500 every year to the Deniliquin and Moama railway.

2309. In any case, only a portion of those goods would be carried over this line? Yes; the agricultural produce, such as potatoes and oats, would not go over the line.

2310. I suppose, as a storekeeper, the construction of this line would increase your business and would suit you? Yes.

2311. I suppose a line in any direction would suit you and increase your business? Of course, it would increase our business up towards Jerilderie. I think we should do more business if we had greater facilities.

2312. But the more railway lines you have the more would your business be increased, and, therefore, you are in favour of any line from Deniliquin, either west or north? I would be more in favour of the line from Jerilderie, for instance, than Hay. That is merely from a local point of view; but I do not think the Hay line would do us so much good as the line to Jerilderie.

2313. But a line from this town in any direction would increase your business? Yes, I believe so.

2314. *Mr. Dawson.*] Did I understand you to say that you would expect that this proposed line would carry your goods to Deniliquin at the same rate as that at which the goods are carried to Hay? I said that if the Commissioners would do so, our business would go to Sydney.

2315. Suppose they put the extra 10s. or 12s. a ton on to make it equal to Melbourne, would you be satisfied then? Once having opened up relations with Sydney it would not be easy to break them, and in any case I think the matter is settled now nearly for ever. As long as Victoria keeps up her highly protective duties we must still deal with Sydney. I do not think the trade we have commenced with Sydney will ever go back again to Melbourne.

2316. If you were charged a freight of £5 per ton, would you trade with Sydney? Yes; we would pay that willingly.

2317. *Chairman.*] Do you know whether the Sydney merchants offer special inducements at the present time to trade with Sydney? They have been directing their attention to this part of the Colony, and are now sending round their travellers. We find that they supply us with excellent goods, and give us as good terms as do the Melbourne merchants.

Mr. Henry John Wooldridge, stock agent, Deniliquin, sworn, and examined:—

Mr. H. J. Wooldridge. 10 June, 1892.

2318. *Chairman.*] What are you? I am a stock agent.

2319. How long have you resided in Deniliquin? For the last twenty years.

2320. Have you taken into consideration the question of the proposed railway line? More with reference to stock than anything else. I think if a meat-freezing depôt were established here, some of the traffic might be induced to go by Sydney. I have had overtures from a Sydney meat-freezing company who offer to establish works here if we will subscribe £20,000 locally. There is a large company being established in Sydney with a capital of £500,000. They mention that a bonus on the export of frozen meat will probably be given by the New South Wales Government, and that concessions would be made to enable the trade to be done with Sydney if the railway were constructed to this place.

2321. Do you think the sheep owners about here would be likely to come forward and subscribe the amount of money asked for—£20,000? I could not say. They may be forced into doing something of the kind by the recent increase in the stock tax. In my opinion, the present stock tax will have the effect of compelling the establishment here of a freezing depôt in the course of a few months. As soon as there is a surplus of fat stock here some outlet must be obtained for it.

2322. Would it only be on the assumption that the Government would assist by legislation that they would come forward? The dead meat would be frozen here in the ordinary course, sent through Victoria in bond, and shipped in Melbourne, because the carriage is only 200 miles as against 450 miles to Sydney. But other things may be arranged to enable the traffic to be taken to Sydney.

2323. *Mr. Ewing.*] Hitherto the stock has gone to Victoria—the main body of it? Yes.

2324. You believe the border duties will have the effect of sending the stock to Sydney? They will have the effect of forcing some other market, because Melbourne is our only market at present, and if there is a surplus of stock the extra tax will come out of the pocket of the producer. When there is a scarcity of stock all over the colonies, as at the present time, no doubt the tax comes out of the pocket of the consumer; but when there is a surplus, as there was six months ago all over the colonies, the stock must go to Melbourne—there is nowhere else for it to go—and in that case the tax comes out of the pocket of the producer.

2325. You think then, that the stock tax will have some effect, but you are not quite certain what the effect will be? It depends on the seasons, and the supply. The supply depends on the season, and the market prices depend on the supply.

2326. And the tendency will be to take the stock north rather than south? I think the feeling the stock tax is likely to engender will make stock owners do all that they possibly can to send the stock to Sydney, if it can be reasonably done from a commercial point of view.

2327. *Mr. McCourt.*] Would not the sending of fat stock from this district to Sydney tend to reduce the price of stock in Sydney? At present I think it would, but there are so many meat-freezing companies forming, and prices in the London market are better than prices in any of the local markets. I think it is very probable that in the course of another twelve months there will be a very large trade with London, and the fact of our sending stock to Sydney would not influence that market at all. The market here would be ruled more by the London market than by any local market, the same as is the case with regard to wheat.

2328. Until a large export of meat takes place, the sending of fat stock from this district to Sydney would tend to reduce the price of stock there? Certainly.

2329.

2329. Therefore, when the price is reduced to a certain point they would not send to Sydney, but to Melbourne, which would be a better market? Yes. Mr. H. J. Wooldridge.

2330. *Mr. Wall.*] Having some knowledge of the interests of stock owners, do you think it is reasonable to suppose that they would export meat to Melbourne, and subsidise the exporters there if they were taxed to increase the value of their own stock—do you not think they would subsidise for direct shipment from Sydney? Yes, if it could possibly be done commercially; I do not think any of them would do it at a loss. 10 June, 1892.

2331. But in sending export meat by Victoria, if they were to tax themselves to subsidise the export of that meat, it would necessitate a classification between New South Wales meat and Victorian meat? Yes.

2332. And if they were to adopt the system at all of subsidising the export of meat, they would necessarily have to export from New South Wales, and therefore, the meat instead of going to Melbourne would go to Sydney along our lines? I do not think that necessarily follows, because you could send it to Victoria in bond, and ship it there for London.

2333. But in passing a measure they would have to get the authority of the Government before they could impose a tax, and that measure would be subject to any conditions we might like to impose? Certainly.

2334. Therefore, if we insisted in that measure that the subsidy should be paid on shipment from Sydney this would practically compel the export of meat to be confined to New South Wales? Certainly.

2335. Therefore, there would be no very great difficulty in diverting the trade from Melbourne to Sydney in regard to the export of meat; we could surround the matter with such provisions in the Bill as we thought fit? It could be done, but it would be a very unwise thing to interfere with trade and compel it to go in one direction at a heavy loss.

2336. It would depend on the cost of freight from here to Sydney? Yes; that would be the chief consideration.

2337. In the event of a system being adopted here for the export of frozen meat, it would necessitate very great improvements in connection with our railways, in the shape of refrigerating cars? Yes.

2338. That being the case, and depôts for the freezing of meat being established here, do you think it would be reasonable that our Commissioners should establish those depôts and run those refrigerating cars empty? Certainly not.

2339. If Victoria established refrigerating works here, it would be reasonable to suppose that we would send our meat by Victoria; but if we went to the trouble of establishing freezing works here and running refrigerating cars, it would be necessary to protect ourselves in some measure, and insist on this freight going on our lines? Yes.

2340. Have you considered this question of the meat subsidy to any extent? I have thought it over. I think that considering the prices realised in London, meat export companies ought to be able to dispense with the subsidy; but no doubt, for the first year or so, a subsidy would be an advantage in supporting the industry. The export of meat benefits not only the stock-owners, but the whole Colony, the same as the export of wool does.

2341. Do you think that under a system of joint co-operation for the establishing of freezing works, it would be to the interests of the pastoralists to retain the trade within the Colony? I think there would be every inclination and every wish to send the trade *via* Sydney if possible, in consequence of the feeling engendered by the stock tax.

2342. And you think that without the co-operation of the Railway Commissioners in running refrigerating cars, the frozen meat companies would be a failure? Yes; I think they would be unless the Commissioners would run proper cars.

2343. Seeing that the Commissioners could not run the cars unless they had a guarantee of the trade, do you think those forming the co-operative companies would guarantee to send their meat to Sydney? Yes.

Mr. William Tindale, manager of the Riverina Brewing and Milling Company, Deniliquin, sworn, and examined:—

2344. *Chairman.*] What are you? Manager of the Riverina Brewing and Milling Company, and a wine and spirit merchant. Mr. W. Tindale.

2345. Have you taken into consideration the desirability of the proposed railway? Yes. I think it would be beneficial to the milling industry, and also in my dealing with the Sydney people. 10 June, 1892.

2346. What business do you carry on? The manufacture of ærated waters, a wine and spirit business, and a brewery.

2347. Do you use any of the products of the district in your brewing operations? Yes, entirely. I have used nothing but locally grown barley for the past ten years.

2348. Do you think this is a good climate for growing barley? The best in the colonies, and I say this, having had twenty years' experience in malting.

2349. One of the witnesses before the Committee yesterday, Mr. Doel, referred to the barley he had grown;—have you bought any barley from him? Yes.

2350. How did you find that barley compared with foreign barley? I think it was superior to any foreign barley I have bought. I have malted very largely in Melbourne, and think this barley is equal, and even superior to the barley imported from New Zealand, California, and the other colonies.

2351. Is it very heavy barley? Yes, and generally in good clean condition.

2352. Do you deal in wheat? Yes.

2353. Have you any idea of the capabilities of the country as a wheat-growing district? Yes, I think it is one of the finest in the colonies.

2354. You say this of your own knowledge of the yield per acre? Yes. The yield is as high as eight or nine bags for some of the best land, and it goes down to an average of about 4 bags.

2355. How much per acre would eight or nine bags be? About 36 bushels, or a little over. About four bags is a fair average.

2356. *Mr. Ewing.*] I presume if this line were constructed you would send you beer to Narrandera, and as far round as Hay;—would you use this line for the carriage of your products? Yes.

2357. There is no brewery, I suppose, in Jerilderie? No.

2358. And none in Narrandera? Yes, there is one there.

Mr. W. Tindale. 10 June, 1892.

2359. You would send your beer as far as Jerilderie, anyhow? Yes.
2360. And then you would have a fair competition with the brewers further along? Yes.
2361. Therefore, there would be some revenue to the railway in that way? Certainly, and also in sending my mill produce—flour, bran, &c. I have often been unable to sell this produce from the mill.
2362. You look to the north and west for a market for your products? Yes.
2363. Therefore, you would use the line in sending to the north and west? Yes, and also buy a great portion of my goods in Sydney.

Mr. Henry Hawkins, coach-builder, sworn, and examined:—

Mr. H. Hawkins. 10 June, 1892.

2364. *Chairman.*] What are you? I am a coach-builder by trade, and I am also connected with the country round here.
2365. Where do you carry on business? In Deniliquin.
2366. *Mr. McCourt.*] Where do you get your materials from? Owing to the high tariff in Victoria I have to go to Sydney. I was over in Sydney last month and bought a lot there; and I find it will pay me to continue to deal in Sydney. The houses with whom I do business now in Sydney have agreed to send their travellers here regularly, and I shall continue to deal there, as I find it to my advantage both in point of quality and value.
2367. And if this connection were made between Jerilderie and Deniliquin, you would still be more likely to deal with Sydney? Yes; my trade with Sydney would increase.
2368. Would you have a trade in your business towards Jerilderie, too? Yes.
2369. Have you any trade there now? Yes.
2370. Would the railway increase it? Yes.
2371. Have you any statement to make with regard to the proposed railway;—you say you are interested in land? I am quite sure we would extend our cultivation.
2372. Do you cultivate now? Yes: up to 300 acres—wheat and barley.
2373. Where do you send it to? Some seasons we have had to take it to Jerilderie. When the state of the local market has been such that we could not sell it, we have had to go to Jerilderie.
2374. If this line were made, would you be prepared to increase your area under cultivation? Yes; to 1,000 acres.
2375. What is the lowest price at which it would pay you to grow wheat. We can make 2s. 6d. pay very well in a good season.
2376. Using all the latest machinery, you could make it pay at 2s. 6d. Yes; in good seasons. We have had as much as 30 bushels to the acre on our land, and never less than 16 bushels.

FRIDAY, 10 *JUNE*, 1892.

[*The Sectional Committee met at the Railway Station, Mathoura, at* 4·40 *p.m.*]

Present:—

THE HONORABLE WILLIAM HENRY SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

The Sectional Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Mr. Charles Benjamin Opitz, proprietor of a saw-mill, Gulpa Creek, near Mathoura, sworn, and examined:—

Mr. C. B. Opitz. 10 June, 1892.

2377. *Chairman.*] What are you? A saw-mill proprietor, carrying on business on Gulpa Creek.
2378. How many mills have you? Two.
2379. Are they both at work? No; there is only one at work at present. We are working short-handed.
2380. You are acquainted, too, with the large gum forests in the Gulpa? Yes.
2381. Are they very extensive? Yes; the forest we go over, I suppose, would be something like 7 or 8 miles square.
2382. The Sectional Committee saw some timber in the forest, lying on the bank of the creek, was that your timber? Yes.
2383. Can you give us any idea of the value and size of some of the largest logs we saw? They have all been measured, and they average over 1,800 feet each.
2384. Did we not see some very much larger? Some would go about 3,000 feet, and some not 1,000.
2385. What would be the value of the logs measuring 3,000 feet when cut into good timber. The value of the timber cut from such a log would be from £12 to £15.
2386. Is that a good return for the outlay? Yes; it is a very fair return.
2387. What do you do with the timber? At present my market is only local.
2388. What do you mean by local? Between here and Moama, and between here and Deniliquin.
2389. Have you ever exported any to Victoria? Yes; large quantities, before they increased their duties.
2390. What were their duties? The duty formerly was 1s. per 100 feet, and now it is 2s.
2391. And has our own Government done anything with regard to a royalty or anything of that kind lately? When I used to supply Victoria with timber we were paying from 5s. to 10s. per 1,000 feet for royalty, and now we pay 12s. 6d.
2392. Where does that royalty go to? To the New South Wales Government.
2393. Have you to pay any other charge besides so much for your men? Yes; of course, I have to pay all the costs.
2394. Have you to take out licenses for your men? Yes, 10s. per month.
2395. Have you many men? I have to take out a license whatever number I employ. In the summer time I employ from fifteen to twenty, and in the winter time none at all.
2396. Has the trade with Victoria fallen off very much? Yes; it has fallen off greatly.
2397. Do you export any timber at all to Victoria now? No, none.
2398. *Mr. McCourt.*] Will the construction of the proposed railway open up to you a trade with New South Wales? Yes; a very large one.

Mr. C. B. Opitz. 10 June, 1892.

2399. What leads you to that conclusion? I know that people have made inquiries for timber; but the present cost of transit is too great. About two years ago I sent 2,000 feet of sawn timber to Jerilderie for wheelwright purposes, and when it arrived there it cost 32s. 6d. per 100. Had the railway been in existence I should have been glad to deliver it there for 15s. per 100.
2400. And at that price you would get an unlimited market? Yes.
2401. Could you supply railway sleepers in large quantities? Yes; with my present plant I could turn out about 2,000 sleepers a week.
2402. What would be the price of sleepers in a large order—say, 1,000,000 sleepers? I would willingly put them on the railway siding for 2s. 6d. each, and if the Government would forego the royalty for 2s. each.
2403. But if the Government would not forego the royalty? Two shillings and sixpence each.
2404. *Mr. Wall.*] Is it not a fact that in Victoria they reserve their timber on that side of the Murray, and pay royalty, and take timber from the New South Wales side? Well, I think not. The frontage of their forests is well worked out, and they come over here simply to get the prime timber.
2405. Is not that the cause of the diminution of the Victorian trade—that they are cutting the timber on the Murray themselves? No; they were cutting it all the same formerly; only the timber is not there now, and the duty makes a difference.
2406. Is there a large quantity of timber cut on the New South Wales side by the Victorian timber-getters? Yes; there must have been some thousands of logs got this year.
2407. What is the average royalty per log on the logs we saw to-day? About 22s. or 23s.
2408. That is exclusive of the license fee? Yes.
2409. *Mr. Ewing.*] There are about 30,000 acres in this reserve? Yes.
2410. And, therefore, the amount of timber is practically unlimited? Yes.
2411. You say that a sleeper is worth about 2s. 6d. Can you tell us how much of that is royalty, how much is labour, and how much is the value of the timber? The royalty, as near as can be is 6d.; the profit I reckon is from 12 to 15 per cent.
2412. Taking the profit at 12 per cent., you have a residuum of 88 per cent.,—how much of that is labour, and how much is the value of the timber? Of the 2s. left after deducting the royalty I should think 1s. 8d. would be the whole cost.
2413. Then 1s. 8d. would be the total cost, and that would make 12 per cent. for your profit? I reckon that about 4d. a sleeper is my profit.
2414. Then 2s. 6d. being the total value of the sleeper, you regard the royalty of 6d. as the value of the timber? Yes.
2415. Therefore, the timber is worth 6d. a sleeper without any labour put upon it? Yes.
2416. Take Narrandera, for instance, is there any other timber of this description anywhere near? Not that I am aware of.
2417. Therefore, a line from here would carry all the sleepers that were wanted for Riverina? Yes. There is other timber along the Edwards, and at other places; but you may include that in this district.

SATURDAY, 11 *JUNE*, 1892.

[*The Sectional Committee met at the Court-house, Moama, at* 10 *a.m.*]

Present:—

THE HONORABLE WILLIAM SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

The Sectional Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Mr. John Tomlinson, farmer, near Mathoura, sworn, and examined:—

Mr. J. Tomlinson. 11 June, 1892.

2418. *Chairman.*] What are you? A farmer.
2419. Where is your holding? Eleven miles from the Mathoura Railway Station, parish of Thyra.
2420. In what direction is that from here? About 23 miles north-north-west.
2421. Do you carry on both grazing and agriculture? Yes; both combined, but principally agriculture.
2422. How much land do you cultivate? For the last five years the average has been 850 acres.
2423. What crops do you grow? Wheat; I have grown barley, but not lately.
2424. What do you do with your wheat? Sell it in Moama and Echuca.
2425. What has been the average crop for that series of years—the highest and the lowest? The highest yield was 6½ bags, or 27 bushels to the acre, and the average lowest yield was 11 bushels.
2426. What would be the general average? I think the average for the five years would be 17½ bushels.
2427. How many acres do you graze? Eleven hundred acres.
2428. How many sheep have you? About 500 or 600, and I have generally about 25 head of cattle, and 35 horses.
2429. What do you do with your wool? Send it to Melbourne.
2430. Is it sold there? Yes.
2431. *Mr. McCourt.*] You know the line proposed to be constructed? Yes.
2432. What would be the probable traffic that you would send over it—would you send your wheat over it? That depends upon circumstances. As long as prices were equal we should send it to Sydney. This year every bag would have gone to Sydney, and nearly all has gone to Sydney.
2433. Is Sydney generally a better market than Melbourne? It has always been so since I have been here. For sixteen years wheat has been higher in Sydney than in Melbourne.
2434. You have to pay border duties, have you not;—how much per bushel? I have never paid the border duties, but I believe it is about 14½d.
2435. Where is your wheat sold, then? It is sent in bond.
2436. Do you send it round yourself? No; it is bought here by agents.
2437. Do Sydney and Goulburn agents come to this district to purchase wheat? Yes; we have frequently had Sydney agents here buying wheat.
2438. If this line were constructed, have you any idea what would be the cost per bushel of sending wheat to Sydney? No; I have no definite information on that point, but I believe the cost would be cheaper than by the way we are sending now.
2439. It would depend on circumstances as to whether or not you would use this railway? Of course, we would sell where we would get the best price.

Mr. J. Tomlinson. 11 June, 1892.

2440. The Deniliquin and Moama Railway Company charge special rates on their lines, do they not? Yes; the rates are much higher than on the Victorian lines.
2441. About how much higher—double? Very nearly, I think; at the present time they have a higher tariff in Victoria, the rates having recently been raised. The rates on the Deniliquin to Moama line previously to that were double the Victorian rates.
2442. Unless the Deniliquin to Moama line were resumed, do you think if higher rates were charged on that line it would prevent you from sending to Sydney? No; but if the same rates were charged on the Jerilderie to Deniliquin line as are charged on the Deniliquin to Moama line I fear we would be prevented from sending our wheat to Sydney by that route.
2443. What is the lowest price per bushel at which you can produce wheat at a profit to yourself? We can produce it at 3s. per bushel.
2444. Not any cheaper? We have produced it much cheaper.
2445. What is the lowest price at which you can produce it;—we have evidence that it can be produced profitably for 2s. 6d.? We could produce it, no doubt, at much less than 2s. 6d. and pay all expenses.
2446. You could if it were necessary? Yes; I have done so.
2447. I suppose you know that as time goes on, and if all the land is put under wheat, which we anticipate, we should have over-production sooner or later, and have to export our wheat? Yes; I am sure of that.
2448. In that case you could produce wheat, and sell it at less than 2s. 6d. profitably to yourself? Yes; on the place.
2449. *Mr. Wall.*] Do you know if the wheat that you sell in Echuca is conveyed by rail or sent down the river? Both.
2450. Have you any idea of the difference in freight by the river and rail? The wheat that is carried on the river goes up the Darling, and supplies the country west, and the wheat that goes by rail is taken to Melbourne, and goes from there to Sydney, Queensland, and elsewhere. Wheat has been largely bought in bond.
2451. Is there much of the produce of this district sent up the Darling? No; very little.
2452. *Mr. Ewing.*] As a wheat-grower, have you considered the markets of the world, and the price that wheat brings in the London market? Yes; wheat at the present time is worth more in the colonies than the price it would fetch if it were to go abroad.
2453. But do you think that in years to come, when we have to go abroad, you can compete in the markets of the world with the foreign grower? I do not think there is any part of the world where wheat can be grown cheaper than it can in Riverina. The only thing that will handicap us will be the distance from the market and the difficulty of transit. I believe we can grow wheat as cheaply as any part of the world, including America.
2454. And you believe you can hold your own eventually? Yes.
2455. *Mr. Dawson.*] Your wheat goes to New South Wales on account of the duty in Victoria? Yes; it would all go to Melbourne if it were not for the duty.
2456. If federation were established, with intercolonial freetrade, where would your wheat go? I believe it would go through Victoria, unless there was a differential tariff.
2457. You believe that people would send their wheat 190 miles to Melbourne rather than send it 500 miles to Sydney? Of course they would; the cost would be less.
2458. So that if we had federation and intercolonial freetrade, this projected line, if it were constructed, would not be used at all by the wheat-growers here to send their produce to Sydney? It is not very likely it would.
2459. They would naturally go to the nearest market? Naturally.
2460. Have you found generally that when a railway is constructed the traffic has increased? Yes.
2461. *Mr. Ewing.*] As Melbourne is your nearest port, I presume you would send your wheat there for shipment? I take it that the party buying my wheat here would send it by the way in which it would reach the ship cheapest, and no doubt it would be sent to Melbourne, a distance of 190 miles, in preference to Sydney, a distance of 500 miles.
2462. And the same with regard to Jerilderie;—Jerilderie being nearer to Melbourne than to Sydney, the people of that place would send along this line to Deniliquin in order to get to the Melbourne market? Very likely.
2463. Therefore, there would be some traffic to the line by the wheat-growers about Jerilderie? I think there would be a large traffic on the line under federation.
2464. To get to the nearest market? There would be a large traffic under federation, but the tariff prevents the traffic now.
2465. *Mr. Wall.*] Can you give us any information as to the facilities for obtaining agricultural land in this district;—is there any difficulty in purchasing land from the private owners? The prices asked so far have been too high for us to make the land pay, considering the way we are handicapped for want of a market, and by other difficulties. I believe there is plenty of land offering on the Mathoura Estate.
2466. Are they offering it at such a price as would induce settlement in the event of this railway being constructed? Yes; they are at present offering it at a suitable price.
2467. Has agriculture increased in this district during the last few years? Yes; largely. During the last ten years it has increased at least four-fold.
2468. What do you think is the capital value of land here—that is, the price demanded for farming land? It varies from £3 to £7, or even £10, but £10 is more for land of the character of suburban land. Away from town there is good land at the present time that will fetch £7 an acre.
2469. Is there any difficulty in obtaining land at £7? There is land now open at £7, but it is a little too far from the market. Several blocks of land have changed hands during the last twelve months at prices varying from £4 5s. to £11.
2470. Practically, all your commercial transactions have taken place with Victoria? Yes.
2471. Do you think the border duties are likely to alter the state of affairs? Yes; a good deal. They have already done so. There are parties getting their things from Sydney now, and even bringing them by steamer to Melbourne, and by rail through Victorian bond.
2472. All those persons, prior to the imposition of the duties, obtained their supplies from Melbourne? Yes.
2473. Do you think the stock tax would be prohibitive in regard to the sending of stock from here to Melbourne? No.

Mr. J. Tomlinson. 11 June, 1892.

2474. You think the stock-owners are still likely to send their stock to Melbourne? For a time, and a time only. They must have an outlet for their stock.
2475. At the expiration of that time do you think they are likely to send their stock to Sydney by rail? Owing to the stock tax, the price in Melbourne will be so reduced in a few years' time that it will not pay us to send stock to Melbourne and pay the duty.
2476. How do you anticipate that prices will be reduced;—will not the scarcity of stock tend to keep up prices? A great many of the farmers of Victoria, being protected in this way, will turn their attention more to grazing, and, like everything else, it will be overdone.
2477. You think they will be able to supply themselves? I am sure they will.
2478. *Chairman.*] Can you give us any information as to the average yield of wheat? In 1890, I threshed 7,500 bags for myself and other people, and the average was 24 bushels to the acre. In 1891, I threshed 10,000 bags, averaging 26 bushels to the acre. In 1892 the quantity threshed was greatly reduced, because it was a better year for stripping. I threshed 5,000 acres independently of my own, the average being a trifle over 6 bags, or 24 bushels to the acre.
2478½. Within what radius of Moama was that wheat grown? Some of it was grown within 3 or 4 miles, and some of it was grown half-way from Deniliquin, at Hill Plains. There were good averages all over the place.

Mr. Edward P. Berryman, farmer and grazier, near Mathoura, sworn, and examined:—

Mr. E. P. Berryman. 11 June, 1892.

2479. *Chairman.*] What are you? A farmer and grazier.
2480. Where is your holding? On the Moira Run, 15 miles from here.
2481. Near the railway line? Within a mile and a half of it on the western side.
2482. What is the size of your holding? Three thousand five hundred acres.
2483. What operations do you carry on? I grow wheat, and keep sheep and a few cattle.
2484. How much land do you cultivate? I have got 360 acres under crop, and the rest is used for grazing sheep.
2485. How many sheep does your land carry? There were 4,000 before the sheep began to lamb; with the lambs I suppose the number is 5,500.
2486. What crops do you grow? Wheat.
2487. How many years have you been cultivating? I have been in the district for twenty-eight years, and my average crop for that time has been from four to five bags to the acre; you can put it down at about 18 bushels.
2488. What do you do with your wool? I have been sending it to Melbourne. I load it at the Moira siding, and send it on to Melbourne, where it is sold.
2489. *Mr. McCourt.*] Which do you find pays the better, sheep-farming or agriculture? Agriculture pays the best.
2490. Not in any special year, but taking one year with another? Yes. Taking one year with another, I can make far more out of 320 acres by growing wheat on it than I could by grazing sheep.
2491. Do you think the construction of this line would cause you to increase the area under cultivation? Yes.
2492. Why? Because I should have an outlet. I should have a market.
2493. Where? In Sydney. That is my market to-day, and has been for some time now.
2494. Do you send your wheat direct, or has it been bought here by agents? It has been bought by agents.
2495. And which way has it been sent to Sydney? By Melbourne, in bond.
2496. And would it not continue to be so sent in future years? Not if there was a railway from here to Sydney.
2497. Would it be cheaper to send by rail to Sydney than to send in bond to Melbourne, and then by water? Yes; according to the tariff, to-day I could send wheat far cheaper to Sydney, and would do away with any middlemen. I could go to Sydney, and send wheat to my own miller, whereas I am now entirely at the mercy of a few individuals, who might offer me a certain price to-day, and to-morrow, if it did not suit them, they would not offer me anything. If we had a railway I could send the stuff straight to my own market in our own Colony, but at present we are so hampered that we cannot do this.
2498. What do you think will be the effect of the stock tax on the Victorian farmers;—will it cause them to go out of agriculture and into grazing? I should judge, from my own personal knowledge, that it will do Victoria a great deal of harm, because most of the farmers under the influence of the stock tax will give up growing grain, and will go in for stock, and eventually the population will be driven out of Victoria and into New South Wales.
2499. If the farmers of Victoria go out of production, would not that have the effect of increasing the price of wheat in Melbourne? I do not suppose it would, because production would have to fall off a great deal before it would come to that. Victoria is a great export country now; in fact, for the last fifteen years our market has been open to her free.
2500. You are quite sure, then, that you would use this line for the export of your produce to Sydney? I would, most decidedly.
2501. Do you know if there is any great profit to the railway on the carriage of wheat at the present rates;—you know the present rate for the carriage of wheat from Jerilderie to Sydney? I have been informed that it is about 4d. per bushel. It costs us about 10½d. sent in bond through Victoria, and delivered in Sydney. If the railway were constructed from Jerilderie to Deniliquin we could send it to Sydney, I suppose, for 7d.
2502. What is the rate per bushel for wheat from Echuca to Melbourne? I am not exactly certain, but I believe since they raised the rates on the railway it costs something like 6d. to send wheat from here to Melbourne.
2503. That is a cost of 6d. for 190 miles, as against 4½d. for 412 miles from Jerilderie to Sydney? Yes.
2504. In case the border duties are done away with and we federate, and the railways are worked on commercial principles, do you think the present differential tariff is likely to last, and that we, in New South Wales, will carry wheat at 4½d. for 412 miles, while Victorians charge 6d. for carrying it 200 miles? That would have to be argued out. I could not go into that question.
2505. If we had intercolonial freetrade, which would be your market? I should prefer Sydney, provided it was the best market.
2506. And provided you still had these differential rates? Yes.

Mr. E. P. Berryman. 11 June, 1892.

2507. And that you could get your wheat carried 412 miles for 4½d. as against 200 miles for 6d.? Perhaps by that time Victoria would begin to look round and alter things.
2508. Have you any idea whether 4½d. is a paying price at which to carry wheat 412 miles? Well, it might not pay as regards the line, but still we have had many things that have not paid. You would get the commerce of our country, whereas, at present, we are blocked out altogether. We are hemmed in, and cannot trade with our own Colony.
2509. If you sent your produce to Sydney, would there be any possibilty of your trading with Sydney? Yes.
2510. Would you get your return goods from Sydney? Yes; and I would send my wool there as well as my grain.
2511. Hitherto you have never been able to do so? No.
2512. And you want facilities to trade with your own country? Yes.
2513. *Mr. Dawson.*] Have you ever got any goods from Sydney? Yes.
2514. How did you get them? Some were sent to Hay and down the Murrumbidgee, and then up the Murray to Moama.
2515. You have been dealing with Sydney? A little; but I was so hampered by having to pay commission to other people that I found I could buy here in my own market better. But if there was railway connection I could get my goods far cheaper from Sydney direct.
2516. Do you think the stock tax in Victoria is likely to lead to the establishment of meat-chilling works in this district, or at Deniliquin? Yes, I think it will.
2517. Under those circumstances, would you have your sheep chilled and sent to Sydney? Most decidedly; in preference to sending it to Victoria.
2518. Do you know anything about the red-gum country? Yes.
2519. I suppose the supply of timber is inexhaustible? They have been cutting timber for many years, and I do not see any difference. There is still plenty in the forests.
2520. I believe it is excellent timber for railway sleepers? I do not think it can be surpassed.
2521. Do you know whether the Victorians are taking the timber to their side in the log? Yes; they take it all over there in logs, and use their own labour in Victoria to cut it up, and have done so for many years. I think the timber should be cut up in our own country.
2522. Have you grown any barley about here? Not lately.
2523. What sort of a barley-producing district is this? It will grow barley splendidly.
2524. Are there no malsters here or in Echuca? No; when people have grown barley here there has been no outlet for it.
2525. *Mr. Ewing.*] You are aware that Moama is 157 miles from Melbourne, and 500 miles from Sydney? Yes.
2526. You think that notwithstanding that you are 300 miles nearer Melbourne the protective duties will prevent you from making use of Melbourne as a market? We cannot do it.
2527. Therefore, if you want to sell in the colonies, you must sell in Sydney, and pay the extra 350 miles carriage? Yes.
2528. Then again you have told us that you object to sending to Melbourne and round by sea to Sydney, because the middleman gets rather too much out of the transaction? Yes.
2529. And therefore, rather than use the Victorian railways and the steamer round to Sydney it would suit you better to pay a little more and send direct to Sydney? I would rather pay a little more and send direct to Sydney than I would send through Victoria. I should prefer to send through our own territory.
2530. Therefore you believe if you are to sell in the colonies at all you must sell in Sydney, and the best approach to Sydney, even if you pay a little more, will be by rail direct? Yes.
2531. When the time comes to sell in the outside world, the freight from Melbourne being the same as the freight from Sydney, you will then, I presume, send from Melbourne? It stands to reason that we will send where we can make the most money.
2532. That is in the future? Yes.
2533. *Mr. Wall.*] Is it not a fact that there is no market in Melbourne for New South Wales wheat—that, in fact, the Victorians export 5,000,000 bushels of wheat already, and therefore there is no market there for wheat? There has not been for many years.
2534. And any wheat going to Melbourne must go in bond for export? Yes. We cannot sell in the Victorian market at all, and have not done so for many years.
2535. The border duties, together with the fact of over production in Victoria, prevent your making Melbourne a market? We cannot do it.
2536. Speaking of the farmers and of the population generally, is there a desire to trade with Sydney if facilities are offered? Yes; that is the unanimous desire. I believe there is not a man in the district but would trade with Sydney if we had a line right through.
2537. I suppose the cost of carriage by teams between Jerilderie and Deniliquin almost prohibits your trading with Sydney? Yes; because we can send our wheat cheaper to Victoria than if we carted it by teams from here to Jerilderie.
2538. If the line from Jerilderie to Deniliquin were constructed, and the line from Moama to Deniliquin were to continue at the same gauge, do you not think that the transhipment that would necessarily take place would be almost prohibitive in regard to the traffic? I do not think so.
2539. It would be a great obstacle in the way of sending goods by way of Sydney to have to tranship them into New South Wales railway trucks at Deniliquin? Well, it might be for a bit, but we would live in hopes.
2540. That some day the Government would take the private line over and alter the gauge? Yes.
2541. But if the gauge were altered so that the goods could be put on the trucks at Moama and sent on, would it not be very much better? Yes, it would save any transhipment; but even with that we should be in a far better position than we are now.
2542. You think there is a general desire on the part of the people here to trade with Sydney if facilities were afforded for the conveyance of their produce? Yes.
2543. And they would utilise the railway if constructed? Yes.
2544. *Mr. McCourt.*] In case you sent your produce to Sydney, would not that fact create also a passenger traffic to Sydney—you would visit Sydney once or twice a year? Yes; I should go to Sydney once or twice a year. I have not been there for twenty-nine years. If the line were opened I should go straight to Sydney.

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2545. And that would be the case with several other farmers here? Yes, it would.
2546. If they sent their produce to Sydney a passenger traffic would also be created? Yes. Many people from Deniliquin, Echuca, and other parts of the district, instead of going down to Seymour and taking the train from there to Sydney, would come this way direct to Sydney if the railway were constructed. People would have facilities for visiting their friends in various parts of New South Wales, and they would avail themselves of the line in that way.
2547. Therefore, you think the passenger traffic over this line would be considerable? Yes.
2548. I suppose the construction of the railway would increase the value of your land? Yes; I anticipate it would.
2549. To what extent do you think its value would be increased? I should say from 10s. to £1 per acre.
2550. That being so, would you be favourable to the application of what is known as the betterment principle. If the construction of the line increased the value of your holding of 3,500 acres to the extent of £3,500, would you be willing to pay to the New South Wales Government 25 per cent. of that increased value to assist in the construction of the line? Yes; provided the line was constructed.
2551. You would be willing to pay 25 per cent. of the increased value given to your land? Yes.*

Mr. John Holschier, farmer, near Moama, sworn, and examined:—

Mr. J. Holschier. 11 June, 1892.

2552. *Chairman.*] What are you? A farmer, residing about 7 miles from Moama, in a westerly direction.
2553. What operations do you carry on? Farming and grazing.
2554. What is the size of your holding? One thousand and thirty-three acres.
2555. How much of it do you cultivate? About 200 acres, and the rest is in grass.
2556. What crops do you grow? Wheat, principally.
2557. What do you do with your wheat? Sell it.
2558. On the spot? We must sell it as we can. It is very seldom we can sell it on the spot. As far as the farmers in this part of the country are concerned, you must bear in mind that we occupy a very anomalous position, because geographically we belong to Victoria, and politically we belong to New South Wales. So long as Victoria allowed us free ingress into that Colony the agricultural industry fared pretty well here, but since the little cabbage garden is defying the big Colony of New South Wales, and shutting the door in our face, we are placed in a worse position than ever. Forty or fifty farmers in the district have subscribed capital, and have erected in Moama a large grain store, with the view of concentrating our wheat in bulk, thereby creating a market for ourselves, thinking that we may entice purchasers to come here and relieve us of our produce. At present we have only two outlets for our wheat. We must either sell it for export to England, or it will have to go round to our own metropolis, Sydney. To go round to Sydney it is necessary that it should be conveyed over the Victorian railways to Melbourne, where extra handling is required, and where agents have to be employed. The expense in various ways becomes so great that the process is like throwing pennies into a jug—the few which drop into the jug belong to the farmer for his wheat, and all those which drop outside he loses. I do not think that the Sectional Committee could have visited us at a more opportune time, because this week the last straw has been put on the proverbial camel's back by Victoria. She has imposed a tax of 2s. on every sheep or lamb sent into her market, 30s. for every head of cattle, and 50s. for every horse. These duties cut us out altogether. We have no more connection with Victoria now. I am sure I express the feeling of everybody in this part of the Colony when I say that our desire is to be connected with our own metropolis. It is not perhaps wise always to adopt a policy of retaliation, but in this instance a little patriotic feeling comes in, and the people of this part of the country are most anxious to be connected with our own metropolis, and since Victoria means to defy us we wish to show her that we can do without Victoria as well as Victoria can do without New South Wales.
2559. Is it really a patriotic feeling or is it a business feeling? Well, it is both. If you tread on the worm it will turn round, and if it had a mouth big enough it would bite you—it would wriggle; and it is the same with us here.
2560. Can you give us any idea of the cost of sending wheat from here to Melbourne? I daresay the average cost would be something like 8d. a bushel.
2561. How much of that do the railways take? About 5d. or 5½d. About 2d. or 2½d. would go for freight by sea and the rest for commission.
2562. *Mr. Ewing.*] You say that the Victorian railways charge you 5½d.? I think that is the rate.
2563. And that the sea charge is about 2½d.? Yes.
2564. That covers handling and all the rest? There will be commission in addition to that. You would have to send the wheat through an agent. That was principally our motive in endeavouring to concentrate a market at Moama, by erecting a store here. Our object is to attract the buyers here, and so dispense with intermediate handling and the middleman in Melbourne.
2565. If New South Wales were to offer to carry wheat from Moama to Sydney at 8d. a bushel on her railways, you would prefer to use them? I feel certain that under those circumstances every grain of wheat grown in this district would go to Sydney. We have no outlet for our wheat now but Sydney or the home market.
2566. But suppose that Victoria, finding the wheat being sent to Sydney, offered to carry it for 2½d. instead of 5½d.? I, for my part, would sooner give an extra 2d. to the New South Wales Government just to show the Victorians that we can be independent of them as they can be independent of us.
2567. That is if you could afford to do it? Yes; of course everything naturally turns on £ s. d., but as long as the shoe does not pinch too hard a man puts up with it.
2568. But you have to live? Yes; I believe I am one of the oldest settlers in Moama. I am an old Victorian. I came from Victoria in 1864. There were very few settlers then, only two or three before me. At that time there appeared to be a grand promise for the future of this country, but ever since everything has worked contrary, and things have not turned out as we expected.
2569. Your place is 7 miles from Moama and 1 mile from the bank of the Murray River? Yes.
2570. How do you get your produce into market? With my own teams. 2571.

* Note (*on revision*):—I beg to withdraw my answers to questions 2,550 and 2,551, as I think it would be unfair to the people of this district, who have been so long neglected in regard to rail communication with their capital, to bear the burden of such a tax, when other districts have had railways constructed solely at the expense of the State.

Mr. J. Holschier. 11 June, 1892.

2571. The farmers, as a rule, do not appear to use the river for carrying grain? Not for a short distance like that. It would involve extra handling, and the expense would be greater than the cost of carriage by teams.
2572. *Mr. Dawson.*] Your evidence is this, that if this line is constructed between Jerilderie and Deniliquin, and you can send your wheat at anything like the same price, you will send it to Sydney instead of Melbourne? Most decidedly.
2573. Do you know that the Jerilderie line is worked at a loss of about £17,000 a year? I am not surprised at that. I have scarcely known any of your branch lines to pay until after a number of years. If a trunk line is constructed it will feed itself. A mistake has been made in New South Wales in regard to the construction of branch lines. Victoria first settles her population on the land, and then brings the railway there to keep the people on the land, by giving them facilities to get their produce to market. New South Wales, on the other hand, is constructing lines through large estates, and what traffic can she expect from them. One train loaded with wool carries away the whole of the produce. There is no other traffic because there is no population.
2574. Then, according to your argument, it would never pay New South Wales to build the proposed railway which goes through three or four large estates, because there are no people on the land? But you must tap the land where the population is.
2575. Where is that? Round about here—between here and Deniliquin.
2576. How many people live between here and Deniliquin? I can scarcely tell you.
2577. How many owners of land are there between those two places? I could not tell you.
2578. Are there twenty *bona fide* owners of land between here and Deniliquin who would use the line? Yes; a great many more.
2579. How many farmers are there between here and Deniliquin? I reckon there are over 200.
2580. Where are they? If you go 5 miles or 10 miles from the railway you will find them. All the land along the line has been secured by monopolists and land-owners.
2581. Do you know if the 200 farmers to whom you refer would use the line? Every one of them.
2582. If there are 200 *bona fide* farmers between here and Deniliquin, is not that a sign of prosperity? When settlement started here in 1862 or 1864 I thought this would be a grand district, but the policy of the New South Wales Government ever since has been not to settle people on the land but to keep them away from it.
2583. You say you will send your wheat to Sydney and have nothing to do with Victoria. Suppose Victoria were to turn round and say, "you are paying 7d. per bushel for the conveyance of your wheat to Sydney; we will take it to Melbourne for 2d.,"—would you go to Sydney then? Most decidedly not.
2584. Will you give us, shortly, some sensible reason why this railway should be constructed? We are labouring under great disadvantages. We belong to New South Wales, but we are not recognised by the Government as part of that Colony. The people are not only entitled to this railway connection, but they have a right to demand it as New South Welshmen. They expect to be treated fairly, the same as other New South Welshmen.
2585. Then you think you should have your produce taken to Sydney for nothing if it suits you, at a loss to the country? No; I should be willing to pay a fair thing, but I have been living on the land in New South Wales, and after eighteen years of hard labour I do not like to see my property sacrificed.
2586. You have done very well here? No; I have not. I might have done better; and many a time I have rued the day when I came across the Murray.
2587. *Mr. Wall.*] If the proposed railway were constructed, do you think the farmers would be prepared to use it at the ordinary rates on our railways, according to which I think the freight from here to Sydney on wheat would be about 7d. per bushel, including bags? That, of course, would be as cheap as the cost of sending it round by Melbourne. The border duties were imposed by Victoria in order to enable her farmers to compete against Riverina and Adelaide.
2588. The object of Victoria imposing the Border duties was to protect her farmers against the competition of the Riverina farmers? Decidedly.
2589. Therefore, you are under no obligation to Victoria, and you trade there as a matter of convenience? Exactly.
2590. And if you could conveniently trade with New South Wales you would do so? Most decidedly.
2591. Is that the general view taken by the farmers of this district? I believe so, and it has been for years.
2592. *Mr. McCourt.*] Are you aware that if this line were constructed, and the present rates were charged, you could get a ton of flour taken to Sydney as cheap as a ton of wheat? Yes.
2593. Would it pay the farmer better to send a ton of flour or a ton of wheat? It would be better for me to send wheat.
2594. Why? Because it would be plain sailing for me. It is not every farmer who is quite equal to the task of ascertaining how many sacks of flour should be turned out of a certain number of sacks of wheat, and he would be at the mercy of the miller and the middle man.
2595. Speaking roughly, how many bushels of wheat would it take to make a ton of flour? About 43.
2596. How many bushels are there in a ton of wheat? Thirty-eight.
2597. Are you in a position to say whether it would be better to convert the wheat into flour here and send the flour to Sydney, or to send the wheat to Sydney? That would be a question for the millers.
2598. Is there a mill in Moama? Yes; we have a big roller mill.

Mr. James Skelly, farmer, near Moama, sworn, and examined:—

Mr. J. Skelly. 11 June, 1892.

2599. *Chairman.*] What are you? A farmer.
2600. Where do you reside? Ten miles from Moama.
2601. Along the railway line? Not exactly; north-west.
2602. What operations do you carry on? Until two years ago I carried on farming as well as grazing; but about that time wheat got so low in price that I left off growing it.
2603. What do you use your land for now? For grazing only at present, but I am going to start wheat-growing again.
2604. What is the size of your holding? Four thousand acres.
2605. Is it on the Moira Run? Yes, principally; part of it is on Perricoota.
2606. What do you do with your wool? It goes to Melbourne and is sold there.
2607. Do you ever send any fat stock to Melbourne? Yes; all my fat stock.
2608. How much do you send on an average? About 100 head of cattle and 1,000 sheep in the year.

Mr. J. Skelly. 11 June, 1892.

2609. Do you think the duties lately placed on sheep and cattle by the Victorian Government will have an injurious effect on the graziers of this district? Yes; I think so.
2610. In what way? We should not be able to trade with Victoria in the future.
2611. *Mr. Ewing.*] What trade have you had with Victoria in the past? Nearly everything we grew went there.
2612. What have you sold in Melbourne? Sheep and cattle.
2613. Any wheat? No; I have sold the wheat here, as a rule.
2614. Therefore, your operations with Melbourne were confined to the sale of sheep and cattle, and to the purchase of your stores? Yes.
2615. What was the border duty on cattle previous to the recent increase? Five shillings a head; it is now 30s.
2616. And the same proportion, practically, in regard to sheep? Yes.
2617. And that renders it impossible for you to enter that market? Well, we cannot grow stores here. We cannot breed here and sell in the Melbourne market.
2618. Therefore, you must look to the market in your own colony? Yes.
2619. You have sold your wheat locally? Yes; all my wheat had to be shipped to London. All the wheat grown in the district went to London. At one time I was buying here for a firm in Melbourne.
2620. What price did you pay here for the wheat that went to London? We were giving about 1d. under the Victorian rates.
2621. What were those rates? About the time we were shipping from here they were from 2s. 10d. to 3s.
2622. Then Australian wheat, for which from 2s. 10d. to 3s. was given to the producer, has been sold in the London market? Yes.
2623. Have you any idea whether that transaction was satisfactory to the purchaser? I should think so.
2624. It paid the man who sent it? I think so.
2625. It is your opinion, I presume, that if the price in the London market remains the same as it was then, the farmers can afford to grow wheat in Riverina and send it to London? I do not think so—not as long as we have a duty in our own Colony.
2626. You mean that if we can sell it locally it will pay us better to do so? Yes.
2627. You believe that any wheat from here sold in the colonies must be sold in the Sydney market at present—that the protective duty keeps you out of the Melbourne market? Yes.
2628. You believe that the best way to get to the Sydney market would be by this railway if it were constructed? Yes.
2629. That is, always supposing that the 500 miles land carriage is cheaper than the 140 miles land carriage and the sea carriage to Sydney? I think that, according to the rates ruling in New South Wales, the carriage from here by the proposed railway would be cheaper than the carriage to Melbourne, and thence by sea.
2630. It depends to some extent on the cheapness of carriage? I do not think it depends entirely upon that. The feeling of the people, I think, is in favour of doing business with Sydney.
2631. They feel that there is a barrier between them and Victoria at present? Yes.
2632. And you would rather deal with Sydney if you could? Yes.
2633. *Mr. Wall.*] Do you know what was the price of wheat in London at the time you were purchasing for shipment? I cannot recollect.
2634. Do you think that the 2s. 10d. per bushel which the farmers received here for it paid them for cultivation? I do not think so. That is why I knocked off growing wheat myself.
2635. I think you said that you proposed to cultivate again? Yes; this next year.
2636. Have you arrived at that conclusion in consequence of the border duties? I have arrived at the conclusion that at the price of wheat ruling at the present time, and the price likely to rule for some time, wheat-growing will pay.
2637. Has the levying of the customs duties in New South Wales induced you to grow wheat again? Yes.
2638. Do you think that, in consequence of the imposition of those duties, there will be very much more land under cultivation in this district than there has been? Yes; I think so.
2639. How much more do you think? I believe that in a great many instances the quantity will be doubled.
2640. If the area is doubled in this district, and the same effect follows in other districts, seeing that we produce nearly half the quantity of wheat we require at the present time, it will not be long before we supply the whole of our market? It is not every part of the country that is as well adapted for wheat-growing as this district.
2641. If the cost of carriage from here to London were 1s. a bushel and the ruling price of wheat in London averaged 4s. 6d., do you think it would pay the farmers to produce wheat here, the price being 3s. 6d.? Yes; they could afford to produce it here at 3s. 6d.
2642. And you think that under those circumstances there would be a large area of land put under cultivation here? I do.
2643. Have you ever sent any wheat to Sydney yourself? Not direct to Sydney; but I have sent it to Melbourne.
2644. Do you know what the cost of carriage would be from here to Sydney, shipped in bond? I understand that Mr. Stretton has been sending, and that he has paid from 9½d. to 10½d. for carriage and wharfage rates; that includes the cost of bags and everything.
2645. Does it include the intermediate charges, such as agency, and cover all other costs? Yes.
2646. *Mr. McCourt.*] You say you gave up wheat-growing because you could not produce it at 2s. 10d. per bushel? Yes.
2647. If a witness has stated that he can produce it for less than 2s. 6d. with a profit to himself, do you think that is correct? There are men in this district, I believe, who could produce wheat cheaper than I could.
2648. How could they produce it cheaper? A man who devotes himself to wheat-growing alone can produce it cheaper than a man who has other business to attend to as well.
2649. And a man who devoted his time solely to wheat-growing could produce it for 2s. 6d.? I cannot say.
2650. Do you think he could? I believe there are men here who could do it.
2651. Do you generally notice the price which rules in the English market? At present it is from 30s. to 35s. a quarter.
2652. And it would cost over 1s. a bushel including all charges to send it home? I expect so.

Mr. J. Skelly. 11 June, 1892.

2653. Would that give you 2s. 6d. here? Yes.
2654. *Mr. Wall.*] I presume you abandoned farming because you were engaged in other pursuits which you found more profitable? Not exactly; but labour was difficult to get, and unless you are at the face of the work you cannot get it done so cheaply.
2655. How much land were you previously cultivating? 250 acres.
2656. What is the average extent of land cultivated by farmers here? Some go as high as 500 or 600 acres.
2657. I suppose those who cultivate large areas like that can produce more cheaply than those who cultivate only 200 acres? Yes; they have better machinery and give their whole attention to it.
2658. *Mr. Ewing.*] The appliances with which you are working are not, I presume, as good as the appliances in other parts of the world? Yes; I think so.
2659. How many steam ploughs are there here? There are not many steam ploughs in the district. One has just started.
2660. But the ordinary farmer does not use appliances of that description? No.
2661. When you get appliances of that description, possibly on the co-operative principle, you will be able to produce wheat cheaper than you do now? I am not able to answer that question.
2662. Is it not reasonable to suppose so? Yes.
2663. It would be just about as much better as the two or three furrow plough is better than the old plough? Well; I suppose the comparison would be about the same.
2664. Therefore, you have not got to the minimum rate at which you can produce wheat here? No; if steam ploughs would enable us to produce it cheaper than we have hitherto done.

Mr. Joseph Weir, Inspector of Stock, Moama, sworn, and examined:—

Mr. J. Weir. 11 June, 1892.

2665. *Chairman.*] What are you? Inspector of Stock at Moama.
2666. How far does your district extend? I am border inspector, attending to the crossings of stock from Victoria, at Moama and Echuca.
2667. You have nothing to do with the general supervision of the stock in the district? No; I do not travel about. There is a District Inspector.
2668. Can you give us any information with reference to the stock crossing at Echuca? I hand in a return of all stock, including sheep, cattle, horses, and pigs, crossing at Moama, both by rail and road; also a similar return of stock imported to Moama from Victoria. Both these returns are for the years 1890, 1891, and up to the 31st May, 1892. There is also a return for the same periods showing the Victorian sheep, and New South Wales sheep, that have been reintroduced.
2669. What do you mean by re-introduced? If an owner of sheep takes his stock to Echuca and sells them there, and they are bought by a buyer on this side, they are re-introduced and are not treated as Victorian sheep. In the case of all Victorian sheep the buyer has to procure a clean certificate from the Victorian Inspector before I can admit them. The return gives full particulars of this class of traffic [*Vide Appendix.*]
2670. *Mr. Ewing.*] You use the term re-introduced? Yes. Say, Mr. O'Shaughnessy sends over a lot of sheep to Madowla Park, Victoria, and they are sold to graziers in this district; those sheep are re-introduced into New South Wales without a clean certificate if sheep have been bred in New South Wales; with—if sheep have been bred in Victoria; but they still require a permit to re-enter the Colony.
2671. Do you regard those sheep as being practically sold in New South Wales? Yes; I give the same permit; they do not add to the stock of the Colony.
2672. Under the stock tax lately proposed by the New South Wales Government, would those sheep have been taxed on their return? I could not say. They were the produce of New South Wales, and were sent over to be sold and came back again.
2673. Suppose they were kept in Victoria for a month? They become Victorian sheep after seven days.
2674. Suppose Mr. O'Shaughnessy had a station in Victoria, and sent Victorian sheep into New South Wales, and took them back as fats? He could not bring those Victorian sheep back here without their being branded with a "V," and he would have to get a clean certificate from the Victorian Inspector of Stock.
2675. Would they be charged for on their return to Victoria? If he brought them over here and put them under the Grazing Regulations, they would be let in free, but otherwise they would be charged 6d. a head under the old rate, and 2s. a head under the new rate.
2676. Suppose he breeds those sheep in Victoria and sends them over to his Moira station to be fattened, does he pay duty on those Victorian sheep returning to Victoria? No.
2677. *Chairman.*] If a person in New South Wales bought those sheep and they were returned across the border within seven days, the duty would be refunded to the purchaser in New South Wales? If the sheep were bred in Victoria, no duty would have been charged, and could not be refunded; but if bred at Moira, and brought back within seven days, the duty charged would be refunded after seven days retained.
2678. *Mr. Ewing.*] If there were sale-yards in Moama, and sheep were to be sent over from Echuca to be sold in Moama, would those sheep come over in bond? They would.
2679. Would they become New South Wales sheep after seven days? No; it is only Victoria that insists that all sheep become Victorian sheep after seven days.
2680. There is no bond in Victoria; you could not send New South Wales sheep to Victoria in bond and get repaid when they came back? No; you must pay the duty.
2681, *Mr. Wall.*] Then, practically, Victoria can make New South Wales a feeding-ground? She can, and she does.
2682. *Mr. Ewing.*] According to your return, the number of sheep going into Victoria appears to be decreasing? Yes; the number is falling off very much.
2683. In 1890, the number of sheep exported to Victoria by road and rail at Moama, was 972,000; in 1891, 605,000; and at the rate of export so far, the number for 1892, would be 300,000; how do you account for this decrease? I should say it was owing to bad seasons; to there being no grass.
2684. They have not been bad seasons in Riverina during the last two or three years? No; I referred to the decrease this year.
2685. What is going to be the result of the stock tax lately imposed? I do not think Victoria will get supplied at all with either sheep or cattle for some time.
2686. You mean you do not think Victoria can supply her own market? I am quite certain she cannot.
2687. They will get meat somewhere? They are bound to.

2688. And, therefore, they will get it from New South Wales? Well, it might pay to send very prime stock to Melbourne, but the tax will stop the introduction of store sheep and ewes. Mr. J. Weir. 11 June, 1892.
2689. *Mr. Wall.*] Are there any means of identification with regard to sheep sent here in bond? Yes; by means of ear-marks and brands.
2690. Is there any limitation as to number or the period for which they can be kept in bond? Twelve months is the period. Under certain circumstances a renewal is obtained for an additional six months.
2691. Then, if 1,000 head of stock are sent here as store stock and fattened, the description of each head will be entered, and identification will have to take place? That identification is required by the Victorian Inspector before the sheep are re-admitted.
2692. What are our arrangements on this side for identification if the stock are sent from here as store stock and fattened? Simply the owner of the stock makes an application to me, and I give him a permit to take the cattle or sheep to whatever destination he requires. I take the ear-marks and the brands. He signs an application, and I give him a permit.
2693. Then Mr. O'Shaughnessy, owning a station in New South Wales and also a station in Victoria, with the same brands, could send over a quantity of sheep here, and exchange them for a quantity of fat stock and the ear-marks and brands would be a sufficient identification for you to allow them to pass? No; I must know that they are the same sheep. I know them from the ear-marks.
2694. But take the case of several station-owners in Victoria owning stock using the same ear-marks and brands on this side of the border as they do on the other;—what are the means of identification apart from ear-marks and brands by which those cattle can be distinguished when they return? The declaration has to be made in Victoria.
2695. And it is only the declaration? Yes.
2696. Then, practically, the owners of stock in Victoria may use New South Wales as a feeding-ground, and return their stock fattened without paying for it at all? Yes; under bond.
2697. You are Inspector of Stock for the New South Wales Government? Yes; stationed at Moama.
2698. Do you think that has not had some weight in the imposition of the new duties;—are they not virtually a tax on the Victorian owners of stock in New South Wales? No; I think the duty has resulted from an outcry by the farmers of Victoria against so many stock going over there.
2699. Have you brought under the notice of the head of your department the peculiar conditions under which stock are sent from here as compared with the way they are treated on the other side of the border? No.
2700. Not specially? Not specially. The rules and regulations have been the same here for many years, and I have never reported with regard to any alteration.
2701. Now that a heavy stock tax is imposed the matter will have a different aspect altogether? Yes; particularly if a duty is imposed on this side.
2702. Stock-owners in Victoria who own properties in both colonies—take for instance, Dr. Mein, owning Mulpa, in Victoria, and Boorama, in New South Wales, and also the Wilsons and others—can send their stock across here, fatten them, and take them back again without paying duty? Certainly.
2703. If they use the same brand on their stations on both sides of the Murray they can return their stock to Victoria, and the only guarantee required is the simple declaration? Yes; a declaration before the Inspector of Stock that the sheep crossing are the identical sheep that were bonded.
2704. *Mr. Dawson.*] Would all the stock going by the Moama and Deniliquin line travel by the proposed railway—some of them for a few miles, some of them for the whole distance? It would be a question as to whether or not they would be sent to Sydney, and that would depend on the market.
2705. And if they are sent from Jerilderie to Melbourne, they would form traffic on the railway? Certainly.
2706. It is a question of price between the producer and the consumer? Yes.
2707. I suppose, as a matter of fact, there is a large output of fat stock? Very large; in fact, a lot of stock now are sent down by road. Eight hundred came by train the other day, and 8,000 by road to be boiled down.
2708. Would stock going from Togalmain travel by the proposed railway? They would not get on to the Jerilderie and Deniliquin line. They would come by the stock route from Hay by Conargo. They might strike the line at Conargo.*

Mr. Thomas Thompson, farmer, near Moama, sworn, and examined:—

2709. *Chairman.*] What are you? I am a farmer.
2710. Where do you reside? On Perricoota, 15 miles from Moama. Mr. T. Thompson.
2711. What operations do you carry on there? I have been cultivating and growing cattle.
2712. What is the size of your holding? Four hundred and eighty-five acres on the New South Wales side. 11 June, 1892.
2713. How much of that is under crop? About 112 acres, and the remainder is under grass.
2714. What do you grow on the cultivated land? I have not cultivated any for two years, because I have been unable to get the produce satisfactorily to market. I used to grow wheat and hay.
2715. What used you to do with your wheat and hay? I sold it nearly all locally. I sent 200 or 300 tons to Melbourne.
2716. What was your average crop of both? About 26 cwt. per acre of hay, and not more than 11 bushels of wheat.
2717. Your land was not very rich land, I suppose, or it would have grown more? That was about the average years ago. I might have had as high as 20 bushels; but taking one year with another the average was not more than 11 bushels. There is too much potash in the land. 2718.

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* NOTE (*on revision*):—As a little confusion exists *re* sheep bred by Mr. O'Shaughnessy on his Madowla Park Station, in Victoria, and those bred on Moira Station, in New South Wales, all sheep bred in Victoria, when sent to Moira, are bonded or placed under the Regulations for twelve months, and, on their return to Victoria, pay no duty. A declaration has to be made before the Victorian Inspector of Stock that they are the identical sheep that had been sent over. These sheep, before being allowed to enter New South Wales, have to be inspected by me, a V brand in red put on, and a clean certificate procured from the Victorian Inspector of Stock. Then I grant my permit, and allow them to enter New South Wales. Sheep bred by Mr. O'Shaunessy on his Moira Station, New South Wales, must pay duty on crossing to Victoria. Supposing he offers these sheep for sale at the Echuca yards, and is not satisfied with the price offered, he can bring his sheep back, and have the duty refunded to him if within seven days. After that date the Victorian Customs refuse to pay back. Sheep of this class I termed "re-introduced." They require my permit to come back, but no clean certificate; and I do not include them in my weekly returns, as they do not add to the stock of the Colony of New South Wales. These sheep, if sent over again, have to pay duty. Only Victorian *bred* stock have the privilege now of being placed under Grazing or Bond Regulations.

Mr. T. Thompson. 11 June, 1892.

2718. *Mr. Ewing.*] You have land on both sides of the river? Yes.
2719. Is the land similar in quality? I think the land on the New South Wales side is better.
2720. Which is the more valuable land? That on the Victorian side. That is owing to the tariff.
2721. How much is your New South Wales land worth? About £5 an acre.
2722. What is your Victorian land worth? The Victorian land is all fronting the river, and I think very likely it would fetch £6.
2723. Is the land similar in quality? I think the New South Wales is the better land, carrying more stock and producing finer wheat.
2724. Do you think there is a difference of £2 an acre between the north and the south side of the Murray in the same class of farming land? I think so. I think land of the same quality in the Victorian side will fetch nearly £2 an acre while the present tariff is on.
2725. How will the proposed railway benefit you? I should be able to put a greater area under wheat, and should be able to get the produce to market—to send it to Sydney. We are completely shut out now; the duty is prohibitive. We are quite unable to deal with Victoria. The duty now, at the smallest calculation, amounts to 30 per cent. on beef, from 25 to 28 per cent. on mutton, and nearly 40 per cent. on wheat. Under these circumstances we are virtually shut out from the market of Victoria.
2726. And so you must sell in New South Wales? Yes; or keep our produce. There is not enough at present for local consumption. If we had a railway it would take away our surplus supply, and we should get on much better.
2727. You say, like other producers, that you are shut out from your natural market by the border duties, and you are shut out from the New South Wales market because you have no means of communication? Yes; we have no direct means of transit between this and Sydney.
2728. Suppose you grew wheat, how would you get it to Moama? I should have to carry the wheat on waggons to Moama.
2729. How far are you from Moama? Fifteen miles.
2730. It would be better to go 15 miles than use the river? By the river, Moama is about 29 miles from my place.
2731. Would 15 miles by land be easier than 29 miles by river? I am about 1 mile from the river, where my house is. I should have to load the waggon and take it to the river, and having loaded it I might just as well fetch it to Moama as pay freight by the river.
2732. *Mr. Dawson.*] You have the river running between your property? Yes.
2733. How does the stock tax affect you? I have to make a journey of 32 miles to take the stock from one paddock to the other.
2734. You do not swim them over at night? No.

Mr. Henry Holschier, farmer, near Moama, sworn, and examined:—

Mr. H. Holschier. 11 June, 1892.

2735. *Chairman.*] What are you? A farmer and grazier.
2736. Where do you reside? On the Perricoota Run, 23 miles from Moama.
2737. What is the size of your holding? Sixteen hundred odd acres.
2738. What operations do you carry on? Principally wheat-growing and grazing.
2739. How much have you under wheat? At the present time I have 210 acres.
2740. What is your average crop? Four bags to the acre—17 bushels.
2741. What is the cost per acre of putting in your crop, harvesting it, and bringing it to the nearest railway? About 30s. an acre.
2742. Does that include bags, harvesting, and everything? No; the putting in, harvesting, and carting into the town of Moama would come to 35s. per acre in round figures, and that would include everything.
2743. Do you graze sheep? Yes.
2744. Do you send your wool to Melbourne? Unfortunately I am obliged to.
2745. Do you sell it there? Yes.
2746. *Mr. McCourt.*] It costs you 35s. an acre to produce wheat? Yes.
2747. If you grew it over a larger area would it still cost you 35s.? No; I could produce it cheaper.
2748. Supposing you put 500 acres under wheat, what could you produce it for? I think I could do it for 27s. 6d.
2749. Are you now using the latest machinery? Yes.
2750. What would you expect per acre as a good return from agricultural land—10s. per annum? No; I would expect more than that.
2751. You would not farm at that? No; I could not.
2752. You would not think of farming at a net return of 10s. per acre clear of everything? No; I should want more than that.
2753. Can you get more than 10s. per acre from grazing? No.
2754. How many acres have you now under cultivation? Two hundred and ten acres.
2755. How much land is under cultivation within 5 miles from where you reside? Four thousand five hundred acres. Besides that quantity perhaps 1,500 acres would lie fallow for the approaching year.
2756. If you had 200 acres of wheat, and cleared £100, after paying everything, you do not think that would be enough? No.
2757. You would not cultivate under those circumstances? I can clear £300.
2758. But the time may come when you cannot get these high prices? I keep my accounts in a ledger, and during the thirty years that I have been cultivating the lowest return I have had has been £80 from 160 acres. Last year I had to sell my wheat at 3s. 1d., and even then, from 175 acres I could show a clear net return of £305 after all expenses had been deducted, not allowing for my own personal labour—I am a working man myself.
2759. Have you any children to help you on the farm? No.
2760. Do you employ labour? Yes.
2761. And you can employ labour and grow wheat profitably? Yes.
2762. You say you have an average of 16 bushels to the acre;—what is the lowest price at which you could produce wheat? I have produced wheat at 3s., and if I were compelled to sell it at 2s. 6d. I could do so. I do not say it would be a payable game; but still I would not lose money at 2s. 6d.
2763. That would give you about 13s. an acre profit? Yes.

Mr. H. Holschier. 11 June, 1892.

2764. Would you continue to farm under those conditions? I do not know. Considering the trouble attaching to wheat cultivation, I think I would rather go in for grazing, if I had to take much below that.
2765. *Mr. Wall.*] What do you think is the average expenditure in commercial circles in this district represented by a farmer? Speaking for myself, my expenditure is a little above that of the average farmer, as I have a family of ten; but I am well within the mark when I say that my direct commercial expenditure amounts to at least £400 a year.
2766. Does that include wages paid? No; it is exclusive of wages.
2767. Then you think that the establishment in a district of ten farmers like yourself would represent an expenditure in commercial circles of £4,000 a year? I do; that is, to provide all the necessaries on the farm in the shape of implements.
2768. If the proposed railway were constructed and the present border duties continued in existence, do you think this commercial expenditure would be directed towards Sydney? Undoubtedly, I do. It might be thought that having been so long connected with Melbourne it would be difficult to attract our trade to Sydney; but I can assure the Committee that the feeling against Victoria is most intense and keen.
2769. With regard to the facilities for settlement here, is there any difficulty in obtaining land for agricultural purposes at a price that would pay? There are no Crown lands within the immediate district fit for cultivation available for settlement. What land there is, is locked up in the leasehold areas.
2770. What would be the total cost per acre of clearing land and bringing it under cultivation. What would be the amount of capital required per acre? In the immediate district where I am living the land most recently disposed of has been sold at £4 2s. We might put the price at £4. The cost of bringing forest land under cultivation would amount to 30s., which would bring the cost of the land up to £5 10s. per acre.
2771. And that land, when so brought under cultivation, would give a yield equal to the average yield of which you have spoken? Yes.
2772. That is about 16 bushels per acre? Yes; that is the average extending over my experience of twenty-eight years.
2773. You say you cultivate 200 acres. At £5 10s. that would represent a capital value of £1,100;—what is your return from that £1,100? I should say a clear net return of £350.
2774. Do you think there is an opening in this district for the settlement of a large number of farmers who, by a similar investment, could obtain a similar return? There is, undoubtedly, if they can secure the land by private purchase.
2775. Do the private owners of the district evince a desire to sell? Yes; there is one large run, for instance, Mathoura, where they have started. I believe the whole of that property is for sale in lots to suit purchasers, at prices varying from £3 to £7 per acre.
2776. Have you any knowledge of the value of farm lands in the western districts of Victoria? Yes.
2777. What is the value of farm land there, equal in quality to the land you are cultivating? Immediately round Echuca the land is almost valueless for farming, because there are a lot of open clay plains; but land on the Goulburn Valley, not nearly as good as the land I am cultivating, is worth about £7 or £8 an acre. I would not give within £2 an acre of the value of my own land for the land in the Goulburn Valley.
2778. Having a knowledge of the Victorian farmers, do you think that if the land in this district were available, a large number of farmers possessed of sufficient money would come here and settle? Certainly; a great number of them. The fact is that the Victorian farmers look upon us with envy, because year after year we beat them in the quantity and quality of our crops.
2779. Then, summarising your evidence, you think there is a large amount of land here available for settlement, which would return a large return on the capital invested, and that if facilities were afforded to get their produce to market, a population would settle on these lands? Yes; I think that would certainly be the case.
2780. And you think the general trend of trade would be towards Sydney? Certainly.
2781. *Mr. McCourt.*] Will the wheat produced in this district bring a higher price in the market than Victorian or other New South Wales wheat? Yes, if it has fair play, and if it goes to an open, legitimate market.
2782. How much more do you think it would bring? From 3d. to 6d. per bushel more.
2783. It is worth from 3d. to 6d. per bushel more than any other wheat grown in Victoria or New South Wales? Yes.
2784. *Mr. Dawson.*] In the event of the proposed railway being constructed, do you think there will be much more land broken up here? I do.
2785. That will necessitate the employment of a large quantity of farming implements and machinery? Yes.
2786. Do you know the duty on machinery in Victoria, and the prices there? I do.
2787. Do you know the Sydney prices? I do.
2788. Which is the cheapest market, if you wanted to buy agricultural machinery—Sydney or Melbourne? Unfortunately if I go to Sydney, I find that the implements for sale there are imported from England and America, and are not suitable for this country. We require the strongest and most durable machinery it is possible to get, and hence we are unfortunately forced to Victoria. Hitherto, we imported our strippers, winnowers, and so forth, but now we are bound to go to Victoria.
2789. They do not make them in New South Wales? Not that I am aware of.
2790. *Mr. Ewing.*] Is the machinery manufactured in Victoria the best to be obtained in the world for your purposes? It is more adapted to the climate, and far before imported machinery. Every district has its peculiar requirements, and the Victorian manufacturer has adapted the machinery to our particular requirements, and the implements we get from Victoria are the best for our use.
2791. The Victorian manufacturer knows what you want, and makes the article you want for the purpose you require? Yes.
2792. *Chairman.*] Is there anything you would like to add to the evidence you have given? I should like to impress upon the Committee the disadvantages under which we, in this district, at present labour. God has given us as fine a country as you can find in the Australian Colonies, but unfortunately we are unable to use it to the best advantage. Owing to the protective tariff of Victoria, we are completely shut off from trading with that colony, and on the other hand we are far removed from New South Wales, which, so far, in its relations towards us, has proved a step-mother. The wheat we produce is as good as

Mr. H. Holschier. 11 June, 1892.

any that can be grown in the world, but we cannot take it to our own market where it is required. For the last three years, the only way in which we have been able to get rid of our wheat, has been to send it to the Victorian miller in bond, there to be manufactured into flour and returned into New South Wales. The produce of our wheat was exported from Victoria into New South Wales. Three years ago, when the pinch really began, I had to sell my wheat at the then highest market price, and I got 4s. 9d. for it. A friend of mine sent wheat to the mill on the same day that I delivered mine. We stored our wheat, and when the time suited, we sold it. We happened to meet, and I found that my friend had sold his wheat, which was admittedly below mine in value, for 5s. 6d., as compared with 4s. 9d. which I obtained for mine. That year I had 850 bags, so that the difference was pretty considerable, and I lost over £135 through having my wheat taken to Victoria. The following year, two years ago, I had to submit to a reduction of 4d., and last year I had to sell in the early part of the season, at 3s. 1d. My friend, who came after me, got caught in the same way, and had to submit to a loss of 8d. You might naturally say that there must be something wrong, and ask why we could not send our wheat to Sydney. Unfortunately, that is more than I can explain, but of one thing I am certain—that whether I have to sell my wheat now and go to Melbourne, it is beyond my power to go to Sydney and sell my wheat direct to the miller. In that trade there are rings, and if I were to go to the miller direct with a sample of wheat to be shipped round by Melbourne, the Sydney miller would not look at me, but would refer me to an agent. In this way a monopoly is created, and the middleman steps in and robs us of our profit. In fact the evil has become so great that we have combined together, and have erected a fine grain store at Moama, a step which has been forced upon us by the obstructions in our trade. If there was through railway communication we could load our wheat in the trucks here, and sell it in Sydney to the miller direct, without any handling, and without the intervention of a middleman. But at present the wheat has to go in bond to Melbourne, there to be transhipped at great expense, and sent by sea to Sydney.

2793. *Mr. McCourt.*] You know that there is now a duty of 10s. per ton on flour; since the imposition of that duty can wheat be gristed in Victoria, and the flour be returned here free? No; it would have to pay the duty of 10s.

2794. *Mr. Ewing.*] Why could you not send your wheat round by sea to Sydney, and then go round and interview the miller in Sydney, just as well as if you were to send the wheat by train? The Sydney miller would not look at me. I cannot deal direct with the purchaser, but must sell my wheat through the middleman, who acts as agent, and who absorbs a great portion of the profit. If I attempt to dispose of my wheat myself, I am met with all sorts of difficulties, and to a great extent I am at the mercy of the purchaser. An agent coming here and buying from the farmers, is able to get a special train, because he has a large quantity of wheat to be carried; but if I wish to send my wheat to Melbourne, it has to wait until there is sufficient for a load, and in that way I may lose the market.

Mr. Charles Mapperson, gardener and orchardist, near Moama, sworn, and examined:—

Mr. C. Mapperson. 11 June, 1892.

2795. *Chairman.*] What are you? I have a market garden and an orchard about 2½ miles from Moama, towards Deniliquin, and about a mile and a half from the railway line.

2796. What is the size of your market garden and orchard? Eleven acres.

2797. What is the size of your farm altogether? I am the owner of about 270 acres.

2798. Do you devote any part specially to vegetables and fruit? All my energies are devoted to the production of vegetables and fruit. I have about 4 acres which I set apart for vegetables and 7 acres for fruit.

2799. Where is your market for the fruit? Wherever I can make it. I am at present prevented from going to Victoria by the border duties. I have to pay 1s. 6d. a case on fruit.

2800. Do you find a market in Moama and Deniliquin? Yes; and in the adjoining districts, extending about 25 miles down the river.

2801. Do you cart the fruit round and sell it to the settlers? Yes.

2802. What is the average price you get for your fruit? From 2d. to 4d. per lb.

2803. Does that apply to all kinds of fruit? Yes.

2804. What do you sell your apples at per lb.? Twopence, and pears at 2d. and 3d., according to the quality.

2805. Do you grow any other kind of fruit? Yes—apricots, peaches, cherries, and plums.

2806. What do you get for apricots? On an average, from 3d. to 4d. per lb.

2807. And peaches? Latterly, peaches have been a complete failure, as far as this district is concerned, on account of the blight from which we have suffered. I have partly given over the production of peaches, because it takes so much more time to grow a peach than an apricot.

2808. How many bushels of apples do you get to the acre on the average? I could not say, because the trees are so mixed.

2809. What vegetables do you grow? Cabbages, cauliflowers, all kinds of salads, turnips, carrots, and parsnips.

2810. Can you give us any idea what the return is per acre from your vegetable garden? £300 per acre every year.

2811. And what would be the cost of cultivating? From £150 to £200 per acre.

2812. Then I suppose you have to go in for irrigation? Yes; I irrigate by means of a well.

2813. How do you raise the water from the well? With a horse and the whip.

2814. Then you get a very good return for your vegetables? Yes; considering the limited facilities I have for watering. If I had better facilities in the way of irrigation I could produce far more.

2815. According to your figures, the return is nearly £100 an acre profit? Yes; and I could do better with more intense cultivation.

2816. *Mr. McCourt.*] Would the construction of the proposed railway benefit you? Materially.

2817. Would you give it any traffic? I would give it traffic by sending the produce of my garden into the interior, instead of having to cart it as at present.

2818. What do you call the interior? I call this the border, and anywhere between this and Jerilderie or Tocumwal and the Darling I call the interior.

2819. If you can produce fruit and vegetables here, can they not also produce them at Jerilderie? I send a great deal of my produce to Deniliquin at present, and they think they are before us in producing.

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2820. And you think if the railway were constructed you would send it further on? Yes; I am sure I would.
2821. You would give traffic to the railway from your garden? Yes; not only from the garden, but from the farm as well.
2822. How many people about here are engaged in the same pursuit as yourself? I am single-handed at the present time, with the exception of Mr. Redman, who does not cultivate commercially, but merely as a hobby. I am the only one here who gets a living from a garden.
2823. The trade that you would furnish from your garden would be very small? Yes; very small.
2824. Is the country here, generally speaking, suitable for growing fruit? The country about here is better adapted for growing fruit than any other part with which I am acquainted. This applies to the country from here to Jerilderie including Deniliquin, where there is some land equally as good as the land here. Some portions of the land below Perricoota are as good as mine, but the land there is very patchy.
2825. If there were half a dozen gardens the same as yours they would glut the market? At present I can glut the market, because I have no outlet. What is wanted is population.
2826. *Chairman.*] Can you give us any idea how many dozen apples your trees will bear? Last year I had 20 half-bushel cases off one tree.
2827. Would that be the average? No; that was an exception
2828. What would be the average of the whole orchard? About 1½ bushel to the tree. I also grow almonds, of which at the present time I have six or seven sacks. I sent some to Sydney to test the market, but experienced great difficulties through having to send them through Victoria. If I could send direct to Sydney I could make it remunerative.
2829. *Mr. Ewing.*] Is this a good district for grapes? Yes.
2830. If there were railway communication could grapes be sent 500 miles to Sydney? Yes; you could pack them quite easily, and there would be no difficulty in the transit by railway.
2831. If you had a railway to Sydney, and had good fruit, could you sell it in Sydney? Yes; at a profit.
2832. As it is your are limited solely to the local market? Yes; because there are no means of transit.
2833. And what you do with fruit plenty of others could do with fruit? Plenty of others.
2834. *Mr. Dawson.*] You say you get 2d. a lb. for your apples? Yes.
2835. You do not pretend to say you can grow good apples here? I believe that the apples produced here, though not quite so large and not partaking so much of the quality of the turnip, are better than those grown around Sydney.
2836. Do you know that apples are sold in Sydney at the rate of ½d. per lb., or 3s. a case—the very best Hobart apples? Yes. My quotations are for the local market where the trade is retail; I have no wholesale market here.

Mr. John Lewis, general storekeeper, Moama, sworn, and examined:—

Mr. J. Lewis. 11 June, 1892.

2837. *Chairman,*] What are you? A general storekeeper.
2838. Where is your place of business? In Moama.
2839. Have you taken into consideration the question of the proposed railway? Yes.
2840. What is your opinion with reference to it? My opinion is, considering the fertile character of the country between Jerilderie and Deniliquin, and the effect the line will have in inducing settlement and increasing the population, that it will be a paying line.
2841. Have you any knowledge of the settlement existing along the line from here to Jerilderie? I have a knowledge of the settlement between here and Deniliquin, and taking the magnitude of Deniliquin into consideration, and also the character of the country lying between Moama and Deniliquin, I am led to the conclusion that the line will pay.
2842. Can you give us any idea of the number of settlers within a reasonable distance of the line between here and Deniliquin—say within 20 miles? There are a great many, but it is not easy to state the exact number. I have perhaps fifteen or twenty customers in that direction.
2843. Have you any knowledge of the capabilities of the country from an agricultural and stock-raising point of view? Yes; the general average yield of wheat in this district in 1891 was 18 bushels to the acre.
2844. And is it a good stock producing district—sheep and cattle? Those engaged in that pursuit have prospered. I know that the settlers who own land in the district affected by the railway have all prospered very much, and combine grazing with agriculture.
2845. Have you any idea of the quantity of land your customers have under crop? Some of them cultivate as much as 500 acres.
2846. *Mr. Wall.*] How long have you been in business? Seventeen years.
2847. Have you had any commercial dealings with Sydney during the time you have been in business here? Yes; I occasionally have lines from Sydney.
2848. To any extent? Not very great.
2849. Your principal trade is with Melbourne? Yes.
2850. Have you had any occasion to alter your trade in any way since the imposition of the border duties? We had a little pressure previous to the existence of the duties, but since the border duties (by New South Wales adopting Protection) have been imposed that pressure has increased, and has had a tendency to draw us for special lines to Sydney, where possibly we would not otherwise have gone—we should have submitted to the lesser pressure that existed previously.
2851. In the event of this railway being constructed will it have the effect of inducing a larger trade with Sydney? Under the present circumstances it will.
2852. Speaking for yourself, in the event of this line being constructed, are you likely to get your supplies from Sydney? The greater portion I would get from Sydney. No doubt there might be some lines which I should still be offered inducements to get from Victoria.
2853. Do you not think considering the distance of Moama from Melbourne that it is almost impossible to divert that trade? Not under present circumstances.
2854. What are the present circumstances to which you allude which will overcome natural obstacles? There are at present many barriers. For instance, in dealing with Melbourne, we have to buy goods

which

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which have already borne the Victorian duty—that is, when we don't buy original packages and we buy broken packages then we have to pay also the New South Wales duty on their importation into this Colony.

2855. That is a double tariff on the goods? Yes; if we buy in Sydney then we have only the one tariff.

2856. Have you ever obtained any goods from Sydney in bond through Melbourne? Yes, often. I am getting some through now—they are in transit at the present time.

2857. Can you tell us what is the cost per ton of getting goods by steamer? The Sydney merchants land the goods free in Melbourne; that is how they do in regard to general parcels.

2858. And then what is the railway freight? We get them from Melbourne by train. We are in the same position under those circumstances as if we bought in Melbourne so far as the cost of transit is concerned.

2859. Do you know whether that is a general custom prevailing among Sydney merchants—to land their goods free in Melbourne? Small parcels; they could not do it in the case of heavy goods, bare of profit.

2860. Can you tell the committee what is the actual cost of freight on large parcels sent by steamer from Sydney to Melbourne, and then either by the rail or by the river? The extra cost if the consignee paid his own freight from Sydney would amount to £1 per ton, and agents charges in Melbourne, which would probably run into £1. That would be extra; and then he would be in the same position as if he were buying in Melbourne.

2861. Then the difference in getting goods from Sydney and Melbourne only amounts to the £1 per ton to which you refer and the agents charges? As regards the transit, but there are elements in the market which have a considerable effect.

2862. You get your goods in the ordinary course by rail? Yes.

2863. In purchasing goods in Sydney and getting them by rail—that is, in the event of this line being constructed—you would avoid the double duty? Yes, we would also avoid the double stamp duty which we have to pay now for exchanges.

2864. Of course you would pay the single duty in Sydney? Yes.

2865. And in the case of ordinary merchandise the duty on a ton of goods might amount to something enormous? Yes. There is one advantage a buyer would have in purchasing in Sydney as against Melbourne. When we buy in bond we have to pay the duties ourselves when the goods are landed here, and that is a very considerable item. For instance, on sugar there is a duty of £5 per ton; on jams the duty amounts to 50 per cent.; on dried fruits 50 per cent.; on confectionery 50 per cent.; on kerosene 6d. a gallon—the original cost being 9d. The average would amount to 20 per cent., and if we got £100 worth of goods in bond from Victoria, we should have to pay £20 cash for duty; whereas, buyers in Sydney of duty paid goods would get terms to the whole amount including the duty, and then when they were paying for goods they would get a discount on the whole amount. A keen buyer would take all these matters into consideration, and he would be drawn towards a market where he would obtain those advantages.

2866. But has not Victoria got a bonded warehouse on the other side of the river? Yes.

2867. Could you not get your goods in bond from Victoria to Echuca, and take them out when you required them? No; we could not do that.

2868. Why? Our trade is not large enough for that, and it is too miscellaneous; we could not keep everything in bond. It is only large lots of goods that it is practicable to keep in bond.

2869. But there is nothing to prevent merchants here from getting their goods in bond from Victoria to Echuca and keeping them there, only taking them out of bond as they required them? Not in the case of general goods; it might apply to wines and spirits and tobacco.

2870. Why not to general goods? It would become too expensive. The Customs' charges would be too expensive; and, owing to the loss of time in taking delivery in bond, the system would be too troublesome. In fact, it would be impracticable.

2871. But that loss and trouble is applicable to all goods kept in bond, in any case? Yes; and for that reason there are only special lines kept in bond.

2872. *Mr. Ewing.*] You say it suits you better to deal in Sydney, as things are cheaper there than in Melbourne? Yes; principally. There might be some lines—heavy lines—that might be purchased just as well in Melbourne.

2873. But since you are 140 miles from Melbourne and 500 miles from Sydney, the reasons why it suits you to deal in Sydney rather than Melbourne are artificial reasons—they are reasons that the Colony of Victoria has created for you? The reasons are artificial, owing to the tariff.

2874. And as long as the tariff is in existence, you believe it will pay you to pay the longer carriage from Sydney? Yes; on those lines that will still leave a margin.

2875. But if it pays you to go to Melbourne for any other lines you will go to Melbourne? Yes; if it pays.

2876. That is what you say a "keen buyer" would do? Yes.

2877. Your customers find the Melbourne market shut against their produce, and therefore look towards New South Wales to sell their produce? Yes.

2878. *Mr. Dawson.*] What is the difference in the freight between here and Melbourne and between here and Sydney? The difference is the freight from Sydney to Melbourne and the agents' charges.

2879. Do you know what the difference is in money? £1 per ton, more or less, which would be 4 or 5 per cent. on an average line of goods.

2880. The wool traffic in Riverina is a very large one, is it not? Yes.

2881. What do they charge per bale from Echuca to Melbourne;—they have differential rates? I believe it is 8s. a bale.

2882. Is there a difference in the charges on Victorian wool? There is a considerable differential rate. They carry New South Wales wool, if it comes within a given line, for about one-third of the charge on Victorian wool. The Echuca people would pay nearly three times as much for getting a bale of wool to Melbourne from Echuca as would be paid on wool coming from given distances.

2883. With those rates, do you think the people would ever be likely to send their wool to Sydney? No; they will send wherever it is cheapest.

2884. It would be simply impossible for the New South Wales Government to carry wool about three times the distance at the same charge? The two colonies will try to cut each other's throat as much as they can, and it is very hard to say what may not be done in that respect.

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2885. But even supposing they did that, the person with three times the distance to carry, could not possibly compete with the person with only third of the distance to carry—that is to say, Sydney, with 500 miles, could not compete with Victoria, with only 200 miles? In a reasonable way, of course they could not, but they are taking such unreasonable ways that we cannot tell how far they will allow that unreason to carry them.
2886. What do you call unreasonable ways? If they charge three times as much for 150 miles of carriage for Victorian produce as they charge for New South Wales; surely that is unreasonable.
2887. But that is to our disadvantage, not to theirs? It cuts both ways; New South Wales has adopted differential rates, and so has Victoria.
2888. So much so that the people living about 200 miles from Sydney, with a line, without competition from Victoria, or by water, are compelled to pay the piper for every other line, no matter what distance it may be? Yes.

Mr. George Dorward, grazier and farmer, Moama, sworn, and examined:—

Mr. G. Dorward. 11 June, 1892.

2889. *Chairman.*] What are you? Grazier and farmer.
2890. Were you one of the early navigators of the Murray River? Yes; I am the only pioneer at present alive.
2891. How long is it since you first navigated the Murray? Thirty-eight years.
2892. Where are you farming and grazing? I live in the township, but my property is 4 or 5 miles out.
2893. What is the size of your property? Nearly 4,000 acres.
2894. What operations do you carry on? Stock-grazing and wheat-growing.
2895. How much land have you under cultivation? Three hundred and sixty acres.
2896. Can you give us any idea of the average crop? We have averaged 12 bushels to the acre one year with another.
2897. What would be the extreme crop? The land I have been cultivating is not the best I have got; it is the most available—plains land which does not return as much as the timbered land. My extreme yield would be about 16 bushels.
2898. What stock have you on your land;—I suppose you are in the forest? Yes; partly in the forest.
2899. Fairly good land, I suppose, for stock-grazing? Very good land; or for cultivation either.
2900. When it is ring-barked? Yes.
2901. What do you do with your stock? I have disposed of it in Victoria.
2902. Do you raise fat stock? Yes.
2903. What have you done with your wool? It is sold in Melbourne.
2904. Have you considered the question of the proposed railway line from Jerilderie to Deniliquin? Yes; I have thought about it a good deal.
2905. Do you know anything of the country round Deniliquin towards the railway line? Yes; I have travelled all over the Colony, from Queensland right to the border.
2906. What is your opinion of the land through which the railway would pass? There is as good land for wheat-growing up in that district as there is in any country in the world. There are parts of the land, of course, not as good as others, but, as a rule, it is of the character I have described.
2907. Can you specify the particular parts which you think are the best for wheat-growing in that district? More away up towards Jerilderie—Murray Hut way—there is good land about there. I do not exactly know the route proposed to be taken by the railway but to the south of the route there is the Murray Hut district, which is a very large wheat-producing country, and there is good land about the Billabong—very good land.
2908. *Mr. Ewing.*] You are one of the pioneers of the Murray? Yes.
2909. I suppose you still take an interest in the traffic on the river? Yes.
2910. Have you been up the Murrumbidgee? Yes.
2911. Did you trade up the Murray and Murrumbidgee before the railway was extended to Hay? Yes.
2912. Where did the wool go before the railway was extended to Hay? Well, I have taken it down to Adelaide at times, and it has been shipped home from there. That was before the railway came to Echuca.
2913. When the railway came to Echuca where did the wool go? It came this way—the most of it.
2914. And when New South Wales took the railway as far as Hay, what happened then? A great deal of the wool was then sent towards Sydney—some went to Sydney, and some came this way.
2915. Does the wool from as far as Narrandera come down the river to Echuca? I do not know that it comes from as far as that. From above Hay the wool comes down the Murrumbidgee to the Murray, and then from the Murray to Echuca, and from there to Melbourne.
2916. Do you know what is the freight on the river to Hay? About £1 per ton.
2917. How far up the river from Echuca do you consider the river navigable;—up as far as Cobram? I have been to Albury.
2918. But I mean for ordinary traffic;—could you get generally as far as Corowa? I have run up to Albury weekly.
2919. Could you do it now? I believe I could.
2920. What sort of trade could you carry on from Echuca to Corowa—could you usually get there? Yes, in the seasons we always used to get there.
2921. You could work the river from Echuca to Corowa as easily as you could from Echuca to Koondrook? Yes, I have done so for six consecutive weeks without intermission.
2922. And you could do the same now? Yes.
2923. You do not consider the river any worse for navigation up as far as Corowa than it is down at Koondrook? Well, it is not as good a river, but it is quite as easily navigated.
2924. You can do it? Yes; you cannot go as late, but the river is quite as easy navigated in one case as in the other. I have done it for years.
2925. And you say that the Hay wool still comes round to Echuca for shipment to Melbourne? Some of it does.
2926. Do you know whether there are any gum forests on the Murrumbidgee? There is not much about Hay.

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2927. But down from Hay is there much red-gum? Yes, there is a good deal round about the junction.
2928. Do you know if it is on Crown land or private land? I would not like to say, but I presume the land is Crown land.
2929. What authorities control the navigation of the Murray? Victoria takes the control of it pretty well.
2930. Does a captain on one of the Murray boats trade under Victorian regulations? His vessel is classified under the Victorian regulations, and passed by the Victorian surveyors.
2931. And does New South Wales take no steps at all with regard to it? No.
2932. Then before a boat can trade on the Murray she must have a Victorian certificate? There is no compulsion as to where you should register your vessel. Most of mine were registered in Sydney. I had some registered in Victoria as well, but they were vessels that I purchased, and I did not alter their certificates. There was no oversight by the Sydney Government; they never interfered with us.
2933. If an accident takes places on the Murray, who deals with it? The Victorian people generally do.
2934. You have never known New South Wales endeavour to exercise any control at all on the Murray? No.
2935. And any authority you have recognised has been Victorian authority? All Victorian authority, as far as the vessels are concerned. We have to clear the customs in New South Wales the same as in Victoria.
2936. But that does not deal with the navigation of the river? The New South Wales people do not take much interest in it apparently: they never did.
2937. *Chairman.*] Would you like to make a statement to the Committee with reference to the proposed railway? As an old identity in this part, I have seen the country rise to what it is at present from the time when there were only as many inhabitants as you could count upon your fingers, and I speak with some knowledge when I say that it is almost impossible to estimate the extent of trade likely to arise if the proposed railway were constructed. I look upon it as a national work. The line is one that would open up traffic with various parts of New South Wales to an extent of which no one who has not travelled about the Colony as I have done, can have any idea. For instance, we have now a large population at Broken Hill. In the river we have a highway from here to Menindie, and a tramway will, I presume, some time be constructed from Menindie to Broken Hill, a distance of only 60 miles. I believe in this way a great deal of trade will be done between Sydney and Broken Hill. At present we suffer from the disadvantage that the Adelaide Government imposes duties on our goods going round to Broken Hill from South Australia; whereas if the goods came this way direct through our own country they would be carried in bond the whole way without being subject to the interference of any officials but our own. I am certain that a great trade would arise if that connection were established. There is also a large extent of country lying immediately to the west, within a reasonable distance, and which, if facilities were provided, would be largely populated.
2938. *Mr. Wall.*] Do you not think that the same difficulty that arises here—the difficulty of distance—would be found to exist in establishing a trade, as you suggest, between Sydney and Broken Hill? I do not think so.
2939. Do you think we should be able to compete with South Australia in supplying Broken Hill with grain and breadstuffs? Yes; because there is at present a duty on our products of £1 per ton, and the cost of conveyance from here to Menindie or Wilcannia would be less than £1; it would be less than the cost from Adelaide.
2940. You could not send direct to Broken Hill along this way? No; but it is probable that a tramway would be constructed from Menindie, and then there would be direct communication to Broken Hill. You could go down the Murray and up the Darling to Menindie for from £1 to 25s. per ton.
2941. The merchandise would not go that way, but you think the conveyance of breadstuffs along that route would be sufficient to warrant the construction of a tramway from Menindie to Broken Hill? The tramway would create a large trade in itself. There would be a local trade. Smelters would probably be erected on the Darling.
2942. What do you estimate would be the cost of conveyance along the tramway from Menindie to Broken Hill? I fancy the traffic could be done for about 15s. a ton. They are now doing it on a line of 40 odd miles at 12s. 6d., and they are prepared to make concessions upon that.
2943. And you are prepared to deliver goods from here to Menindie at £1 a ton? Yes.
2944. Then the freight from Moama to Broken Hill would be £1 15s.? Yes; in round figures. It would be under £2, I am certain. By this route there would be no interference by various customs' officers. At present there is great delay in having to stop at so many small places to have your manifest overhauled, and sometimes you have to discharge some of your stuff to convince them that everything is right. If you were going through under the one tariff that would all be done away with.
2945. *Mr. McCourt.*] Would the construction of the proposed line increase the value of land in this district? I believe it would.
2946. Would it add £1 an acre to the value of farm land? It might in the case of some land.
2947. Say within 5 miles of the line? Of course, it would give a little more value to that land than it would give to the land further back. Taking the district generally, it would not add £1 to the value. Probably 10s. an acre would be the rise in value as a general rule.
2948. Would you be in favour of the Government taking a portion of the increased value from each landowner to be applied to the construction of the line? No; I do not think that should be done. The lands belonging to the Crown would be increased in value by the construction of the railway, and also by our settlement and our industry, and I think this increase in the value of the Crown lands would itself enable the Government to construct the railway. I am certain there are hundreds of thousands of acres between here and Jerilderie belonging to the Crown.
2949. *Mr. Wall.*] Would you be surprised if you were told that there are not more than 9,000 acres along the proposed line available for settlement? I am not alluding to what is locked up in pastoral leases.
2950. *Mr. McCourt.*] You are not in favour, then, of the private owners, whose lands would be benefited by the construction of this railway, contributing towards its cost? No; I do not think we are entitled to do it.
2951. You own 4,000 acres here? Yes.

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2952. Would that land not be increased in value if this line were constructed? Not so much.
2953. Would it not be increased in value? Probably it would; I expect it will increase in value as it is.
2954. And you do not think it is a fair thing that the Government should ask you to contribute a portion of the increased value given by the construction of the railway towards the cost of the work? No; we have got our taxes to pay, and with one thing and another we have quite sufficient to bear.
2955. *Mr. Wall.*] Under the peculiar circumstances connected with this line, in your opinion, would the imposition of higher rates divert the traffic to Melbourne? No; I do not think so.
2956. If an increased rate were charged on this line when it was constructed, do you think the people would be likely to use it? It would be used very largely. I look upon it as one of the national lines of the Colony.
2957. But you said something about differential rates. That is one of the reasons why at the present time the trade is taken in the direction of Sydney—there is a private line running to Moama now charging special rates;—if the proposed connection were made with Deniliquin under a system of special rates, do you think the public would use it? If it were brought within the public reach there is no doubt they would. The Deniliquin and Moama line has a pretty stiff tariff, and if the Government were to keep that going right through I am afraid they would not get what they expect.
2958. Is there any business done between Moama and Deniliquin at the present time? There is a very large population between here and Mathoura, immediately back from the line.
2959. Have they large dealings with Jerilderie? No; I do not think so. The cost of cartage prevents us from dealing with Jerilderie. If the line were connected, I believe there would be a large trade with Jerilderie right through to Sydney.
2960. But, do you think that if it were connected and it was found necessary to impose special rates for a time till the trade was developed, the people would be likely to use it? My experience of carriage is this—that we try to get as much trade as we possibly can and try to charge as much as we can for it, but we do not want to crush the trade out by charging too much, and my experience as an old carrier is that the greater the distance the lower I could carry the goods.
2961. I suppose you know that this line goes through private property the whole way—that there are no Crown lands whose increase in value would recoup the State for the expenditure? I was very much mistaken in my estimate with regard to the quantity of Crown lands affected. The construction of the line would create a good deal of settlement.
2962. *Mr. Ewing.*] Did the line from Moama to Deniliquin cause additional settlement? No; I do not think it did, because it went right through. No doubt a good deal of settlement went on about Mathoura, but the land was all taken up before the line was constructed.

Mr. David McLaren, Mayor of Moama, sworn, and examined:—

Mr. D. McLaren. 11 June, 1892.

2963. *Chairman.*] What are you? I am a blacksmith, and I am also Mayor of Moama.
2964. Have you an interest in any land outside of Moama? I have an irrigation farm of 48 acres on the banks of the river.
2965. What do you irrigate? Fruit trees. I have experimented with maize and sorghum and a good many things. They were only experiments, but if I were driven to making a living from such operations I know they would be a grand success. Fruit growing will be a grand success here.
2966. Have you considered the question of the proposed railway from Jerilderie to Deniliquin? Yes; I was one of the first to agitate for the line ten or twelve years ago. Considering the treatment we got from Victoria, I thought it was absolutely necessary, if we wished to be prosperous, that we should be connected with our own metropolis.
2967. Have you any knowledge of the country lying between Jerilderie and Deniliquin? Yes; I have been here for twenty-eight years, and I have been connected with farming in the district from its infancy, and I know pretty well everything in the district as far as my observation enables me. I never did farm much, but I have been mixed up with the farmers in business and everything else.
2968. Have you any knowledge of the agricultural value of the country? Yes.
2969. Have you travelled over the country at all? I have been to Deniliquin and the surrounding districts. I was never much north of Deniliquin, but I know the character of the land from carriers and others just as if I had travelled over it myself. With regard to the quality of the land, I believe that eventually, under the improved methods of farming, this part of the country will be the granary and garden of New South Wales. Farming is becoming a science. Everything will soon be done by machinery; in fact, for the last five years farming has been done by machinery. The level plains in this part of the country make agriculture easy. You can go over 3 or 4 acres with the same labour as is required for 1 acre in mountainous districts. The great bulk of the land is ready for the plough. The improved strippers, and reapers, and binders now coming into use make ploughing and harvesting not only half the expense, but a pleasure to the farmer compared with the laborious single plough on a mountain side. You cannot work strippers or reapers up the sides of hills. Such country is better adapted for grazing and small farms. As population increases, and a greater number of people go into farming, these plains will become the granary of the Colonies. I believe the proposed railway, if constructed, would bring population. I think if there were more land available now there would be a larger population even without the railway. But in the meantime we are driven out of the Victorian market, and are hampered to a considerable extent. If we had railway communication with Sydney, we should have a market in all the intermediate towns, and facilities of communication would bring us additional population. Still I think population will come without the railway, though the railway would certainly promote settlement.
2970. Are you aware that an immense extent of the country between here and Deniliquin, and here and Jerilderie and Deniliquin, is held in large freehold properties? Yes; but in the Moama district I could pick out 14,000 or 15,000 acres of really good land which, if the railway were constructed, would bring a considerably enhanced value if sold in special areas. There is any amount of land in this district.
2971. We have had it in evidence that these large holders would not part with their land unless they got £4 an acre for it? If they would sell good slices of the land on the deferred payment system, I do not think that price would be much too high for good land. I think it is a high price, but I think the people would take it. I know many people here would.

Mr. D. McLaren. 11 June, 1892.

2972. *Mr. Wall.*] What do you think is the extent of land required to farm profitably in this part of the country? I think that back from the town—ten miles outside the town—640 acres would be the smallest area that could be successfully and profitably worked.
2973. Do you think private owners here would be likely to make satisfactory arrangements with persons desirous of obtaining land for agricultural purposes? I think they would. I know there has been a great want of practical and useful farmers, but they are becoming more numerous, and no doubt the landowners will break up their estates when they find it will pay them better to rent the land than to graze sheep upon it.
2974. How long has the private line from Moama to Deniliquin been in existence? Since 1875.
2975. Can you assign a reason why settlement has not followed? Settlement has followed to a considerable extent. When this line came here we could pretty well count the farmers on our fingers, but now about Perricoota and other places we have a numerous and healthy class of yeomanry.
2976. Has the settlement in this district been greater than the ordinary settlement that has taken place in other parts of the country? I think that without the railway, settlement would have forced itself in. The value of the land and other natural advantages are such that people have a better chance of living successfully.
2977. But you know that during the last seventeen years settlement has increased in most parts of the country? Yes.
2978. In view of the accumulation of large holdings which has taken place here, the evidence goes to show that a number of people have settled here, but their holdings have been purchased from them, and that virtually *bonâ-fide* settlement has decreased? I know that a large number of people who selected land have sold out, and that practice has been the ruin of the farmers and everybody else.
2979. Have you any idea as to the price at which they sold? Some of them sold at a very low price ten or twelve years ago. Twelve years ago land was very low here. I have known men to take up land, and after improving it considerably they have sold it for £2 an acre.
2980. What has been the price latterly? Double and treble that sum—from £3 to £5 on an average.
2981. What reason have you to suppose that when agriculturists came and settled in the district, and after testing the quality of the land—the railway having been constructed—sold out for £4 an acre, they would be likely now to give £5 an acre for the land and hold it? I will give you one reason. Farming, when we started here, was a hard, laborious job, the single-furrow plough being in use. The farmers are now getting double, treble, and four-furrow ploughs, and with the improved machinery, they are able to do a lot more work. They are not so dependent on precarious labour. Farming is becoming more a science. People are beginning to understand it and like it better, and the farmers are beginning to get a better market. Since they have commenced to export wheat in large quantities to England the demand has become greater.
2982. I suppose it is only recently that this has become a wheat-producing district? Yes; only lately.
2983. And you think that, now the capabilities of the district are discovered, settlement is likely to be promoted? I feel convinced that settlement is increasing, and I believe that, with the temper of the people inclined to a protective tariff, we shall have agricultural implement makers on this side of the river. From conversations I have had, and letters from Melbourne, I believe that after the next meeting of Parliament, when protection is fixed as the policy of the country, we shall have agricultural implement makers here making everything, and our traffic will be increased with Sydney.
2984. You said you had known settlers here to sell their land at from £4 to £6 an acre after having improved it? I knew them to sell, fifteen years ago, at from £1 to 25s. or 27s.
2985. But latterly you said they sold at from £3 to £5? Yes.
2986. We have evidence before us to show that in the event of the proposed railway being constructed any quantity of private land will be available for purchase at from £4 to £5 an acre; if the private owners have given £5 an acre for the land improved, do you think they are likely to sell it again at that price? I am not aware of their wanting to sell. There is always buying and selling going on. Some people want to leave; but the great bulk of the people, unless they get a tempting price, are inclined to graze or cultivate the land.
2987. What do you think would be a tempting price to induce the owners of private land to dispose of it for settlement? What do you think people could come into the district and obtain land for? Probably at 4s. an acre rent, with the option of purchase. I could not say. It is very hard to get squatters to part with their land. I really could not tell. But there is any amount of land here; at 4s. an acre rent we would get any number of settlers. The land in Victoria is all taken up, and farmers would come here and rent land in this district.
2988. *Mr. McCourt.*] The Railway Commissioners have estimated that the annual cost of the proposed railway if constructed, would be over £14,000; do you think there would be a chance of getting anything like that amount of revenue from it? I really would not say, but there is one thing of which I am certain, and that is, that it is nearly impossible for us to deal with Sydney in the meantime, and it is impossible to convey wool from Deniliquin to Jerilderie. A heavy rain will delay a carrier on the road a fortnight. People are uncertain as to employing carriers, and it would cost a considerable sum even to keep the road between Jerilderie and Deniliquin in repair.
2989. Do you think there would be anything like £14,000 per annum received as revenue from the proposed railway in the shape of passenger and goods traffic? I could not tell you.
2990. Do you think we should be justified in constructing the line without any definite knowledge of what revenue would be received from it? I have no doubt that as business men you have a right to go into that question.
2991. What is your opinion about it as a resident here? As a resident here, I consider the railway is an absolute necessity for the district in order to provide communication with the metropolis.
2992. Do you think we should be justified, in order to give you access to the metropolis, to lose £14,000 per annum on this line? But I do not think you would lose it. My opinion is that it would pay, if not for the first year or two, at any rate eventually. If the Government would not construct the line, and if it could be undertaken by a private company, I would risk a few shares in the concern. I have so much faith in its success. I would take shares in a company if the Government refused to build the railway, but I believe that as the Government have all the other railways they ought to have this one too, because it is not desirable that there should be private lines as well as Government lines.

Mr. D. McLaren. 11 June, 1892.

2993. If the line were constructed, do you think sufficient traffic would arise to make it pay within five or ten years? Yes, in less time than that; I believe within two or three years it would increase the value of the Narrandera to Jerilderie railway. I am sure it would be a success, and I have agitated for it for fourteen or fifteen years.
2994. Do you think that within five years the line would pay? Yes; I believe within that time it would be a success, and become payable.
2995. *Mr. Dawson.*] You say that by irrigation you could grow fruit here—what sort of fruit? Anything—grapes; I speak from practical experience.
2996. If you grew grapes where would you find a market? We should very likely send them along the Jerilderie line to Sydney, and the intermediate stations.
2997. But they grow plenty of beautiful grapes at Jerilderie, Narrandera and Deniliquin? Well, we could send them on to Sydney.
2998. In Sydney you can buy them at a half-penny a lb.? But eventually we would make raisins of them and send them to Sydney.
2999. What other fruit can you grow; you cannot grow apples here? Yes, beautiful apples.
3000. In a climate like this? Last year we grew Cox's orange pippins, and they had a beautiful flavour. We can grow pears here equal to any in the world. I know this from practical experience.
3001. *Mr. Ewing.*] You say that the protective duty in Victoria prevents you from dealing with that Colony? I said that it hampered our dealings with Victoria to a considerable extent; eventually it will prevent us.
3002. And you are looking to the markets of New South Wales and to the railway system of New South Wales for the possibilities of trade? Yes.
3003. And the gap between Deniliquin and Jerilderie prevents your getting there? Yes.
3004. And you believe if this gap were filled up, the isolation, from which you feel you are suffering at present, would be removed? I believe so. That is, briefly, your case? Yes.

Mr. Henry Layfield, farmer and grazier, near Moama, sworn, and examined:—

Mr. H. Layfield. 11 June, 1892.

3005. *Chairman.*] What are you? A farmer and grazier.
3006. Where is your holding? About 3 miles from here, in a northerly direction, adjacent to the railway.
3007. What is its size? I have about 1,000 acres altogether—not all in one block.
3008. What operations do you carry on? I have retired from active agricultural pursuits, and at present I am interested in hay and chaff.
3009. Then you do not use your land for any purpose? It is leased at the present time.
3010. And you are carrying on business in the town of Moama as a produce merchant? I live about a couple of miles out of the town. I speculate a little in hay and chaff.
3011. Have you considered the question of the proposed line from Deniliquin to Jerilderie? I consider that it would be a great acquisition to this district.
3012. In what way? In regard specially to carrying hay and chaff north. There is a large amount of produce here, and we are entirely dependent on the river, and we only send it north when the river is not navigable.
3013. Where could you find a market for hay and chaff? From Deniliquin to Wilcannia. Hay is a large consuming district.
3014. Who would be likely to purchase your hay and chaff sent in that direction? The squatters and the townspeople. I have a statement of particulars of hay and chaff cut up since December, and also the quantity in the yard not cut up. Mr. Eddie has 50 tons in his yard waiting a market; he lives about 2 miles from the town. He has cut up and disposed of 100 tons which has been sent to Hay, and intermediate stations since December, while the river was navigable, and this, of course, has been sold. While the river is navigable the price is pretty low. As soon as the river is not navigable the price goes up immediately, and then there is no access to these markets.
3015. What is the freight from here to Hay when the river is navigable? Prices vary according to the number of boats; but as a general rule the freight is 15s. to 25s. a ton.
3016. Is that the highest or lowest? I have paid 25s. Mr. Tomlinson who gave evidence on Saturday is a large hay producer, and he omitted to mention that since December last he has cut up 130 tons; he has in his yard at the present time, waiting for a market, 120 tons. Messrs. M'Kinlay Bros. have 200 tons in their yard, and they sold since December 100 tons.
3017. Where are these farms situated? Between here and Mathoura adjacent to the Moama and Deniliquin line. Mr. Beere has 240 tons in his yard unable to find a market. Mr. Allez has 100 tons in his yard; he lives within 3 miles of the town; Mr. Nolan has 50 tons in his yard, and has sold 90 tons. Mr. Knight another neighbour has 30 tons in his yard; Mr. Quilliams has 50 tons in his yard. These are all neighbours within a short distance from the town, and there are twenty-five others ranging from 10 to 20 tons. These gentlemen have sold since December from 500 to 600 tons which has all been taken by the boats when the river was navigable to stations between here and Hay, and between here and Wilcannia. When the river is low those markets are shut out; whereas if we had the proposed railway connection we could deliver our produce at Hay, which is like a central depot, without much extra cost of carriage beyond what is sometimes charged by river.
3018. How often is the river not navigable? For fully four or five months. Within the last fortnight or three weeks the boats have been able to get to Hay. While the river was navigable the prices were low. Between 500 and 600 tons have been sold at prices varying from £2 5s. to £2 7s. 6d. If we could have reached Hay when the river was not navigable we would have got much higher prices, as hay and chaff have been selling there at from £10 to £12 and as high as £15 per ton. That, of course, would have been a grand market, if this railway connection had been made, for we could have gone through Jerilderie to Narrandera and thence to Hay.
3019. Are you aware of the distance from Moama to Hay;—are you aware that it is about 260 miles from Deniliquin to Hay by rail? I am not aware of the exact distance.
3020. Do you think the Government could carry your stuff for that distance on the railway at as cheap a rate as that for which you could get it carried on the river, viz., 15s. per ton? No; but I believe the Government could carry it by rail as cheaply as it is carried from Deniliquin to Hay by team.

Mr. H. Layfield. 11 June, 1892.

3021. But you do not use the teams to carry your stuff to Hay, do you? Yes, hundreds of tons are sometimes sent from Deniliquin to Hay. In fact, the teams are continually carrying when the river is not navigable.
3022. What is the rate of carriage from Deniliquin to Hay? It varies. In a dry season, when they have to carry stuff the whole distance to feed the stock the rate is very high.
3023. What rates have you known to be paid—the highest and the lowest? From £3 to £7 per ton.
3024. *Mr. Ewing.*] You believe that the district is pretty well capable of growing every cereal? I believe it is second to none for growing cereals.
3025. And as things are you look to the New South Wales railways as being the real distributors of your produce? Yes.
3026. And, therefore, you want this gap connected so that you can get on to the railways of New South Wales? Yes, I believe an inducement would be held out to the farmers already settled here to produce hay and chaff, of which there is a large consumption in the back country to which I have referred.
3027. And it would enable you more satisfactorily to carry on your farming operations? Undoubtedly so. It would open the market to us at a time when the river was down and the prices were high. We could avail ourselves of a market at a time when the prices were at a payable rate. Between 400 and 500 tons have been sold at a nonpaying price, while the river was navigable, simply for the purpose of getting it out of the way to make room for fresh supplies. There can be no doubt that if the market is opened—if this link is made—the farmers must produce a large amount of hay where there is such a large quantity of grain grown, in order to keep the ground clean.

Mr. Albert Clayton Palmer, owner of a flour mill, Moama, sworn, and examined:—

Mr. A. C. Palmer. 11 June, 1892.

3028. *Chairman.*] What are you? A flour-mill owner.
3029. Where is your mill? In the township of Moama.
3030. I suppose you purchase wheat largely from the farmers around? Yes.
3031. What do you do with your flour? We export most of it to Sydney.
3032. Which way does it go to Sydney? It goes by rail to Melbourne and from there by seaboard to Sydney.
3033. What are the charges on the flour from the time it leaves here till it reaches Sydney—railway charges and everything? The cost of conveyance varies to some extent. Sometimes the steamer freights are higher than at other times, and the other charges vary, but they range from £1 to £1 5s. per ton. We pass the customs entries, and do that kind of work ourselves. In the case of small consignments the expense would be greater.
3034. Then, of course, the flour is sold in Sydney? Yes.
3035. What is done with the other products of the mill—bran, pollard, &c.? While New South Wales was a freetrade Colony the bulk of the bran and pollard was sent to Melbourne, and sold there in bond, the greater part of the bran being sold to the shippers of horses to India. That was almost the only market we had for it.
3036. Have you any idea of the average yield of wheat per acre in this district? Taking one year with another I suppose the average would be from 12 to 16 bushels.
3037. Do you know what the extreme crop would be? We have had crops as high as five and a half bags, sometimes six. I have heard of a crop of six bags, but it would only be a small quantity. I should say that the average crop would be from 12 to 16 bushels
3038. *Mr. Wall.*] Have you any idea of the annual wheat production of this district? Taking the district immediately around Moama, I suppose the production would not fall short of 50,000 bags of wheat. I regard this as being capable of a very large increase, and the quantity will be undoubtedly increased under the protective tariff of New South Wales.
3039. Then it is only a question of carriage whether you send your wheat by rail to Melbourne or Sydney? Undoubtedly we shall take the cheapest route, whichever that may be.
3040. Do you know the rates for the carriage of flour on the New South Wales railways? According to the New South Wales timetable, published in February last, the rate for a distance of 400 miles is 18s. 10d. for nine months and 16s. 2d. for the remaining three months of the year—that is from the 1st October to the 31st December; during those three months flour is carried at a reduced scale. Above that distance—and we are 510 miles from Sydney here—it is conveyed at the rate of 1d. per ton for 5 miles, which worked out will give a cost of 20s. 8d. per ton for nine months, and 18s. per ton for the remaining three months. This, also, is subject to a reduction of 5 per cent. on 24 ton lots.
3041. I suppose if you could get your wheat to Sydney by rail at the same cost as you can by Melbourne you would prefer to send it direct? The advantages of sending it by rail as compared with seaboard carriage are very many.
3042. In the event of this line being constructed do you think you would be likely to use it to any great extent? At the present time I use the Victorian railways to the extent, on an average, of 30 tons per week.
3043. Comparing the New South Wales rates with the cost of carriage by Melbourne do you think you would be likely to utilise this line? Yes, because the rates I have quoted are lower than the present rates by Victoria.
3044. *Mr. McCourt.*] What amount of tonnage would you be likely to send by this line in a year if it were constructed? Roughly speaking from 1,800 to 2,000 tons.
3045. You send away that quantity now pretty well, I suppose? Yes. We send approximately 20,000 bags a year.
3046. That trade is likely to increase? It would probably increase.
3047. Would there be much profit to the railway in carrying a ton of flour 500 miles for 18s. 10d.? I have no means of knowing what profit there is, but the Railway Department have adopted the tariff of charges and I presume they would not carry goods at a loss.
3048. In case there was no return loading from Sydney, do you think it would pay them to send empty trucks up here to take flour to Sydney at 18s. 10d. per ton? I cannot speak as an expert with reference to that matter. I do not know what their charges and expenses are; I have no data to go upon.

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3049. If you sent your flour to Sydney would you have any dealings with Sydney which would furnish a return traffic in the shape of heavy goods or anything of that kind? In the matter of corn-sacks, and bran-bags, and oils and a few other sundry stores, which are about the only things we require, we should undoubtedly patronise the Sydney merchant in preference to the Melbourne merchant. We frequently receive quotations from the Sydney merchants, at the present time, at a lower rate than the Melbourne men quote, but owing to the difficulty in getting goods round, the incidental expenses, the passing of customs entries, and so on, we have never yet done any business with the Sydney houses in the matter of purchasing.
3050. But if this line were constructed, and direct communication were established, you would be likely to deal with the Sydney merchants? Undoubtedly.
3051. Would there be any passenger traffic created along the line between here and Sydney? I think there would be a considerable passenger traffic, though I have no data to go upon for such a statement.
3052. Speaking for yourself, I suppose you would visit Sydney once or twice a year? I should probably visit it at least once a year.
3053. Do you go there now once a year? No; I do not. I have been there twice within the last five years.
3054. *Mr. Ewing.*] Do you get rebate on the New South Wales flour? No.
3055. What is the freight from Moama to Melbourne? 13s. per ton.
3056. And from Melbourne to Sydney? 5s. at the present time.
3057. And the incidental expenses amount to 2s.? Rather more than 2s. I said the total cost was from £1 to 25s.
3058. What expenses do you consider incidental? There is 1s. 6d. for cartage in Melbourne, and there are wharfage charges at the other end. It depends to some extent on the length of time and the volume of trade. There is also something for insurance.
3059. How is it that the rate from Melbourne to Moama is 13s.;—is not that pretty heavy for a distance of 145 miles? The rate is 12s. from Echuca; it is an extra 1s. from Moama.
3060. The price being practically the same as that for which New South Wales carries produce, you think you could send your goods more expeditiously if they went direct? Yes.
3061. *Mr. McCourt.*] Have you any knowledge of the cheapest rate at which farmers can produce wheat with profit to themselves? Opinions vary very much on that question. One farmer will tell you he can produce wheat profitably for 4s., and another one will say he can grow it for 3s. I am inclined to think that if they can get 3s. 6d. they are in a position to make money.
3062. But not below 3s. 6d.? I do not consider that wheat can be grown profitably for less than 3s. 6d.
3063. Have you bought wheat in this district at less than 3s. 6d.? Yes; very frequently.
3064. That would be at a loss to the farmer, you think? Well, at a loss in one way. If the farmer had to pay wages for all the work incidental to the production of the wheat it would be a loss, but inasmuch as he does the work himself, and with his own family, it is not an absolute loss in money.
3065. But suppose he employs labour? I look upon it as not a profitable business at less than 3s. 6d.
3066. *Mr. Ewing.*] Is not 5s. from Melbourne to Sydney rather a low rate for water-carriage? Yes; it frequently goes as high as 7s. 6d., and it has been as high as 8s.
3067. But at present it is 5s.? Yes.
3068. Do you know to what that low price of freight is attributable? I attribute it to the competition between the ship-owners.
3069. That is not likely to get any less? No.
3070. You think, then, that at 5s. as the freight between Melbourne and Sydney, a pretty fair volume of trade can be depended upon for the through line to Sydney? Well, there is a matter which has a bearing upon that, and that is the development of the Victorian coal-fields, which I look upon as a certainty within a very short time; and, should the coal trade with Newcastle diminish, the probability is that vessels will not take flour at anything like as cheap a rate as that at which it is carried at present. It is taken at the present time as back loading.
3071. Do you know the freight from England to Melbourne? No.
3072. Do you know what it costs you to send wheat from here and land it in the London market? No; I have not gone into that question.
3073. Why would it not suit better to send flour home than to send wheat—what is the objection to sending flour home? It can be manufactured for less money in the old country than it can here. Wheat is always regarded more favourably there than is the manufactured article.
3074. What is the waste in the manufacture of flour? We reckon 3 lb. waste—clear waste—in 60 lb. to the bushel; 42 lb. is reckoned as flour, and the rest is made up of bran and pollard.
3075. Do you know what are the rates for wheat within the rebate area from Echuca to Melbourne? I think the rebate only applies to wool, and not to wheat.
3076. What is the freight of wheat from Echuca to Melbourne? Twelve shillings per ton.
3077. *Mr. Dawson.*] What is the amount of wheat production in this district? About 50,000 bags a year.
3078. Could a man buy 5,000 bags to-day if he wanted to? I question very much whether you could find enough farmers to sell you 5,000 bags to-day.
3079. I mean within a week? That depends on the market.
3080. If a buyer came and asked for 5,000 bags of wheat, could he get them in the district? Yes, if he were prepared to pay the price the farmers wanted for it.
3081. Is there any wheat in the district to be carried away? There is.
3082. Then a man could get some wheat here at a fair price;—there is more than sufficient for the local demand? Yes.
3083. *Chairman.*] Is there anything you would like to add to the evidence you have given in connection with the proposed railway? I should like to say that since the establishment of the protective tariff which New South Wales has adopted, this railway appears to me to be almost a necessity, in order to connect us commercially with the metropolis to which we belong. The Victorian duty on wheat is 2s. 11d. per cental, and the duty on flour is 5s. per cental. These duties are quite prohibitive. Nothing can go into Victoria from here. New South Wales produce is completely shut out of the Victorian market. With the establishment of a protective policy, wheat-growing will become a more profitable industry, and I have not the least doubt that production throughout the Colony will be more than doubled within the course of a few years. As far as this district is concerned, the conditions are favourable to the speedy development of agriculture. It is plains country, and where it is timbered, the land is not heavily timbered,

Mr. A. C. Palmer. 11 June, 1892.

timbered, and can be brought under cultivation much more quickly than hilly country in other parts of the Colony. There is nothing to prevent the plough being applied, and the crop being taken off almost immediately. Under the old system the Victorian Government allowed a large percentage of the wheat grown in this district to be gristed in bond. The wheat was taken over the border, gristed there, and brought back into this Colony free of charge, as far as Victoria was concerned. Since New South Wales has adopted a protective tariff, the millers naturally claim the same protection that the farmers have, and the result is that, if wheat goes over to Victoria and is manufactured into flour there, the New South Wales tariff will not allow it to come back again free, and every bushel of wheat grown on this side of the river, and not consumed here, has to go to either Sydney or Newcastle for a market. So that you will see that, with the large area we have, there is a possibility of great production, while at the same time there is staring us in the face the fact that we have to take the produce either to Sydney or Newcastle.

3084. *Mr. McCourt.*] You have an advantage of 10s. per ton over the Victorian miller in sending your flour to Sydney? We have an advantage of £1 a ton. The duty is £1.

3085. You yourself have? That is only a fancy advantage, inasmuch as at the present time we are paying 4d. a bushel more than they are paying in Victoria. The duty upon wheat being 6d., the result is that the farmer is getting the bulk of the advantage from the protective tariff at the present time.

3086. And the miller nothing? The miller is certainly reaping an advantage in connection with the sale of offal, to which I previously referred.

3087. *Chairman.*] Holding the views you do with reference to the probably increased production in wheat, how long do you think it will take to grow more than we want for our own consumption? Seeing that we have a very favourable start up to the present time, I should say that it would not be more than ten years before the production would be equal to the demand.

3088. *Mr. Ewing.*] You say the freight on wheat from here to Echuca is 1s.—is not that a very heavy freight? Yes; but it is the only advantage the company derive. We have an additional 6d. to pay for loading, but we also have that to pay on the other side.

3089. You say it is a special rate levied by the company at the junction of the private line with the Victorian line? Yes; they only take large quantities for 1s.; for smaller quantities, their recognised charge is 2s.

Mr. Frederick Edward Callaway, coachbuilder, Moama, sworn, and examined:—

Mr. F. E. Callaway. 11 June, 1892.

3090. *Chairman.*] What are you? I am a coachbuilder, wheelwright, and general blacksmith, carrying on business in Moama.

3091. Have you considered the question of the proposed railway from Jerilderie to Deniliquin? Yes.

3092. How would it affect your trade? If the line were constructed, and there was direct railway communication with Sydney, I should be able to get my goods cheaper from Sydney than from Melbourne. At the present time we are receiving a drawback on the goods, but the Victorian Government have put on an increased stock tax, and I believe that in a short time they will not allow the drawback, and then the people carrying on business in this town will have to deal with Sydney.

3093. You cannot get to Sydney until this piece of line is constructed? I hardly think so. If anyone wanted goods in a hurry he would not be able to get them round by steamer as quickly as they would come by rail from Sydney. At the present time commercial travellers do not come here from Sydney to let us see their samples, and tell us their prices; whereas, if the railway were constructed we should have travellers from firms in different classes of trade trying to take the trade away from Victoria to New South Wales. The majority of the people about here feel very strongly in reference to the imposition of the stock tax, and would prefer to deal with Sydney. They consider they have a right to deal with Sydney, and pay the revenue to the country in which they live.

3094. They considered they had no right so long as it was to their profit to deal with Melbourne? Of course, the people here are like the people anywhere else—they believe in retaliation.

3095. You spoke just now of drawback—was that on goods coming here from Melbourne? There is a duty on goods imported into Victoria up to 15 and 25 per cent. When we get our things from Melbourne in bond the merchant gets the Customs' officers to look over the goods, for which so much an hour is charged. We receive a certain amount of that as drawback. When we are only getting a small quantity of things through it is hardly worth while to get the Customs' officer to look over them; then of course, the Victorian Customs gets the drawback.

3096. You refer to the raw material used in your business? Yes.

Mr. Thomas Foster Robinson, farmer, Echuca, sworn, and examined:—

Mr. T. F. Robinson. 11 June, 1892.

3097. *Chairman.*] What are you? A farmer, at present residing in Echuca. My principal holding is on the New South Wales side of the river.

3098. How much land have you? Together with my son, I have 2,400 acres. I am cultivating and grazing. I have two farms let besides.

3099. What do you do on the land? I cart my wheat to Deniliquin, but I have been connected with farming since 1848.

3100. Whereabouts is your holding? Thirty miles down the river.

3101. *Mr. Ewing.*] How far from Deniliquin? Thirty-two miles.

3102. And from Mathoura? Twenty miles.

3103. *Chairman.*] Do you grow any wheat? Yes.

3104. How much land have you under cultivation? We have had 300 or 400 acres, but we are not growing that quantity now. We have been growing a lot of hay for the saw-mills and Cobram Station.

3105. *Mr. Wall.*] Where is the market for hay grown here? Back into New South Wales, down the river. We have also been supplying the saw-mill camps.

3106. What is your opinion with regard to the proposed railway from Jerilderie to Deniliquin? From what I have seen of Riverina, it should be the granary of the colonies. I have been over the greater part of South Australia. I was farming there in 1848, and I have never seen any country equal to this for farming.

Mr. T. F. Robinson. 11 June, 1892.

3107. Since the imposition of the border duties there seems to be a disposition on the part of the people of Riverina to trade with Sydney? Yes, if we lost money trading with Sydney we would sooner do it. In my opinion, those people through whose land the railway goes, within 10 miles on each side, should be made to pay for the railway on the betterment principle, and those who charge the most for their land should be taxed the highest. The squatters have picked the eyes out of the country, and their land would be improved. I would not tax the wheat-growing land, because that would support the railway. A man with 2,000 acres can grow 500 acres of wheat, and keep more stock, than the man who does not cultivate at all.

3108. *Mr. McCourt.*] You only mean to apply the betterment principle to the squatter? And the selector, too, in respect to the land he does not cultivate; but I would not tax his labour, or the land he cultivates, for that would support the railway.

3109. *Mr. Wall.*] Do you think, if there were facilities for conveying the produce to Sydney, the productiveness of the district would be increased? Yes; Riverina would become the granary of the Colony.

3110. If this line were constructed, do you think it would afford better facilities here for people to send their produce to market than those which already exist? Yes, if their produce could be conveyed to Sydney for £1 a ton. It costs me 10s. a ton for my wheat from my farm to Moama. If railway communication existed, I should send my wheat to Mathoura, and the distance would be only 20 miles instead of 30, so that I could cart the wheat with my own horses and be back the same night, which would save a great deal of expense, as at present I have to come here and stay one night at Moama.

3111. I presume there are many obstacles in the way of sending wheat by steamer to Sydney, and by sending it by rail you would catch the market more readily? Yes. Even if it cost 5s. a ton more it would pay us to send our wheat direct.

3112. Then with regard to live stock. If you desired to avail yourself of the Sydney market the stock would have to go by rail? I do not think we shall ever be able to utilise the Sydney market for live stock. I think the stock will go across the river.

Mr. William Bollithe Pollard, storekeeper, Moama, sworn, and examined:—

Mr. W. B. Pollard. 11 June, 1892.

3113. *Chairman.*] What are? A general storekeeper.

3114. Where is your place of business? At Moama.

3115. Have you given any consideration to the proposed railway from Jerilderie to Deniliquin? I am only a new arrival in this place, and have only considered the question in regard to the purchasing of goods. I consider I can buy as cheaply in Sydney as in Melbourne.

3116. Have you done any business with Sydney since you have been here? Yes.

3117. If you did business with Sydney which way would your goods be sent to Moama? Most of the goods would come by railway. It would pay better to bring them by rail than by boat.

3118. Have you had goods sent from Sydney since you have been here? Yes.

3119. Which way have they come? They have had to come round by the boat. They could come no other way.

3120. What has been the cost of the transit of those goods? It has cost half as much again to bring them from Sydney to Spencer-street as it has cost from Spencer-street here.

3121. What goods do you principally deal in? Groceries.

3122. What would be the charge on your groceries? It would average from Sydney here ¾d. per lb., or £6 a ton, and from Melbourne here it averages ¾d. £6 a ton is the total cost from Sydney here. There are many things we have to get from Sydney on account of the protective duty. There is very much more handling when the goods come by Melbourne.

3123. *Mr. McCourt.*] Do the people on this side of the river deal with Echuca for their goods? No; I think we get a fair share of the business at Moama.

3124. You get the principal portion of the trade on this side? I will not say the principal portion, but a fair share. Echuca has the advantage of having a market there. The farmers go into the market there to sell their produce, and they buy their goods there.*

Mr. James Malone, storekeeper, Moama, sworn, and examined:—

Mr. J. Malone. 11 June, 1892

3125. *Chairman.*] What are you? A storekeeper, carrying on business in Moama.

3126. How long have you been in Moama? Fifteen years.

3127. Then you are pretty well acquainted with the district? Yes.

3128. Have you considered the question of the proposed railway? Yes.

3129. What is your opinion with reference to it—how will it affect the district? I feel certain it will be of very great advantage to the district.

3130. In what way? From my position, having been able to gather the feelings and remarks of the people for a number of years, I feel certain it will be an advantage, and turn out a payable undertaking.

3131. Have you dealt with Sydney? Very little. There have been so many obstacles in the way.

3132. Most of your purchases are made in Melbourne? Yes.

3133. *Mr. Wall.*] You say you judge from the opinions you have heard expressed; does there appear to be a general desire on the part of the people to trade with Sydney? Yes.

3134. How long has such a desire been expressed? For a number of years.

3135. You think the only thing that has prevented trade with Sydney has been the want of facilities for the transit of goods? Yes; nothing but that.

3136. Do you think the cheapness of prices in Sydney would compensate for the extra distance? Yes.

3137. From evidence taken this morning, it would appear that the carriage of groceries from Sydney to Moama is £7 a ton? Yes.

3138. Those goods would be subject to an *ad valorem* duty of 10 per cent.? Yes.

3139. I suppose in dealing with Sydney you would avoid the *ad valorem* duties and get the goods cheaper? Yes, you would get them cheaper; the duty would be done away with. In purchasing the goods in Sydney you purchase the duty as well, if there should be any; but in purchasing broken parcels in Melbourne you do not avoid the duty.

3140. You have to pay the duty as well? Yes, on broken parcels. 3141.

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* NOTE *(on revision)*:—Since the stock tax has been put on in Victoria, the Echuca market is closed to our farmers and more of their trade is left in this town.

Mr. J. Malone. 11 June, 1892.

3141. The evidence goes to show that there are very few parcels of goods that you can keep in bond profitably, and in purchasing small parcels of goods in Melbourne, you would have not only to pay the Victorian specific duty, but you would also have to pay the New South Wales *ad valorem* duty? Just so.
3142. On those goods you would have to pay two duties as well as one? Yes.
3143. In purchasing goods in Sydney, in broken parcels, you would only have to pay one duty? Yes.
3144. Since the imposition of those duties has business between this part of the country and Sydney increased? No, I do not think it has.
3145. How long have you been here? About fifteen years.
3146. Do you know whether there are difficulties in obtaining land here, fit for agricultural settlement? There is no such land to be obtained at present, so far as I know, unless it is purchased from private owners. If there was any land available it would not remain long before being taken up, as there are plenty waiting for the chance of getting land.
3147. That has been the case for the last fifteen years. There have been people waiting, and yet, having secured the land, they have sold out to the owners of private estates? Yes, unfortunately, that has been the curse of the place.
3148. Do you think the land could be purchased from the private holders? I could not say. There are chances offering now and again, when people are desirous of parting with their land; that is the only means of obtaining land.
3149. We have received evidence to the effect that the owners of stations are making arrangements with farmers from Tasmania to come here and settle, and are selling the land on deferred payment; has there been any intimation of a desire on the part of the pastoralists in the district of Moama to deal with the land in that way? Not that I am aware of.
3150. *Mr. McCourt.*] In case we have intercolonial freetrade, where would the storekeepers of Moama deal for their goods? It is my desire at this moment to trade with Sydney.
3151. Suppose the tariff on the Border were done away with, where would be your market? I should say Sydney.
3152. Why should you go to Sydney. How could you get goods delivered 500 miles, as against 200 miles, if there were no duties? The carriage for 200 miles would certainly be cheaper.
3153. Therefore, if there were no duties on the Border, you would deal with Melbourne? I think so.
3154. And the other storekeepers would do the same? I think so.
3155. Then if there was intercolonial freetrade, neither you nor the other storekeepers in Moama would furnish any traffic to the new line—is that so? Yes.
3156. What would justify the construction of the line? The position in which we stand at present.
3157. But suppose the duties were done away with, what would justify its construction? Notwithstanding that, I think it would pay.
3158. I suppose you believe that, in a few years, we should have intercolonial freetrade between the Colonies? Yes, I think so.
3159. If the line would entail an annual loss upon New South Wales of £14,000, do you think we ought to construct it? I do.
3160. Where would the revenue come from? I could not tell you; it would come, I believe.
3161. Would the line bring increased trade to your store? No, I do not think it would. It would increase the population about the town, and perhaps in that way, it would improve my business.
3162. Do you think that the people whose lands would be benefitted by the railway should contribute towards the cost of its construction? I think they ought to contribute a little.
3163. *Mr. Wall.*] Taking Moama, Deniliquin, and Jerilderie, and even assuming that all these townships would deal with Victoria, do you think that the interchange of commodities between them, irrespective of their connection with Sydney, would furnish sufficient traffic to pay the interest and working expenses of the line;—do you think that the population in and around these towns is sufficient to create such an interchange of traffic as would cover the annual cost of the railway? I believe so; and I feel certain the traffic would always increase.
3164. Then you think we should be justified in constructing the line, in order to command that traffic, because you think it would pay? Yes.
3165. *Mr. Dawson.*] You think that although the Railway Commissioners show clearly that the cost of the line would be £14,000 per annum, there would be sufficient traffic to return a portion of that amount? I do.
3166. Why do you think so? A traffic would arise from the large quantity of grain that would be carried.
3167. But everyone expects grain to be carried at a loss? There is not only grain, but wool and other productions of the district; besides, as I said before, it is the general desire of the people of the district to trade with Sydney.

Mr. Edward Berryman, storekeeper, Moama, sworn, and examined:—

Mr. E. Berryman. 11 June, 1892.

3168. *Chairman.*] What are you? Storekeeper.
3169. Where is your place of business? In Moama.
3170. What lines do you deal in? Drapery, and boots and shoes.
3171. Have you any commercial relations with Sydney? Yes, to a small extent.
3172. Lately? I have had some goods through this month from Sydney.
3173. Any great quantity? About £400 worth.
3174. What is your opinion with reference to the proposed line—do you think the people would use the line to any great extent? At the present time, with the protective tariff, there is no doubt it would be used.
3175. Do you think any large amount of trade would be done between this part of the country and Sydney? The storekeeps and settlers would deal with Sydney; they would send their produce to Sydney and purchase their goods there.
3176. *Mr. McCourt.*] If we had freetrade on the Border would the storekeepers and others use this line? That would depend largely on the rates of freight.
3177. But do you think we could have the same rates on 500 miles of railway as the Victorians could have on 200 miles? There are differential rates at the present time.

Mr. E. Berryman. 11 June, 1892.

3178. What would make this line pay? That is for the Commissioners to decide. The line would be used so long as the rates were no higher than the rates to Melbourne.
3179. Would you use this line? Certainly.
3180. Quite regardless of whether it would pay you to do so? If the freights were the same I should use the line, provided Sydney gave the same facilities for purchasing goods as it does at the present time.
3181. As a business man, do you think it is possible to carry goods 500 miles as against 200 miles? No, I do not think it is possible, unless they have better Commissioners in New South Wales than in Victoria.
3182. *Mr. Wall.*] With regard to the local trade between these intermediate towns, do you think if there was a local trade between Moama, Jerilderie, and Deniliquin, it would give a reasonable return to the railway;—is there any business between these towns? No doubt there would be an interchange of products between those places.
3183. You think then, that if you had the same differential system that is in operation in other parts of the country, you would be able to get your goods from Sydney? Certainly.
3184. You would ask nothing else but the ordinary differential rates? With the same chance of purchasing in Sydney as we have at the present time.
3185. *Mr. Dawson.*] What quantity of goods would you be likely to get up from Sydney in the year? From 16 to 20 tons.
3186. Those 16 or 20 tons would be altogether new traffic to the railway; you get none at all by the railway as far as Jerilderie? No, the goods from Sydney are sent by sea to Melbourne.
3187. What do you pay now for carriage of your goods? From 60s. to 80s. a ton from Melbourne to Moama.
3188. But how much from Sydney? At the present time the Sydney merchants pay the freight by boat; they pay freight and insurance to Melbourne.
3189. They land the goods in Melbourne for you? Yes.
3190. *Mr. Ewing.*] How many flour mills are there in the district, including Deniliquin, Moama, and Mathoura? There is one at Moama, one at Mathoura, and I am not sure how many at Deniliquin. Before these duties were imposed a great deal of the wheat here was gristed in bond in Echuca and brought back into New South Wales.

Mr. Charles Chatfield Pope, Sub-Collector of Customs at Moama, sworn, and examined:—

Mr. C. C. Pope. 11 June, 1892.

3191. *Chairman.*] What are you? Sub-Collector of Customs at Moama.
3192. Can you give the Committee any information with reference to the trade between the two Colonies? I have prepared a return showing the total value of imports and exports, and giving the principal items; also a return showing the quantity of wheat, flour, and pollard exported to Melbourne for re-introduction to Sydney. I also have a shipping return showing the departures for the Murrumbidgee and Edward Rivers for the year 1891; also particulars in reference to wool from those rivers, landed at Echuca wharf, as well as the number of bales of wool exported to Melbourne over the bridge at Moama (*Vide* Appendix).
3193. Can you give us any idea as to who are the proprietors of the steam-boats trading on the Murray—where do they reside? They live in Victoria.
3194. Are there any New South Wales boats trading on the Murray? Yes; there are a few registered in Victoria, not very many.
3195. The great majority of the steam-boat proprietors live in Victoria? Yes.
3196. *Mr. Ewing.*] How far can vessels get up the Edwards? About 10 miles beyond Moulamein.
3197. And all the wool goes down the Edwards into the Murray, and down to Echuca? Yes.
3198. How far can boats get up the Murrumbidgee? A long way; I could not say exactly.
3199. They get easily to Hay? Yes, they go beyond Hay.
3200. And they bring wool here from beyond Hay? Yes.
3201. And the goods you mentioned in your return as going in these boats up the Murrumbidgee and Edwards are all Victorian goods? Yes; we collect the duty on those goods.
3202. They are ordinary goods for the consumption of the people up there? Yes.
3203. If an accident takes place on the Murray, in connection with a vessel, what authority adjudicates in the matter? The Marine Board of Victoria.
3204. Do you know how it is that the Marine Board of Victoria adjudicates? I do not.
3205. They practically control the Murray trade? Yes, the steam-boat trade, with regard to the issue of certificates for the hull and engine, and also with respect to inquiries in case of a collision.
3206. You say they issue the certificates? Yes.
3207. Although you can get a certificate in Sydney? Yes; they issue certificates for all boats on the Murray, although the boats are registered in New South Wales.
3208. All certificates come from Victoria, and any accident occurring is adjudicated in Victoria by the Marine Board of that colony? Yes.

Mr. John Moore Chanter, M.P., sworn, and examined:—

Mr. J. M. Chanter, M.P. 11 July, 1892.

3209. *Chairman.*] What are you? Auctioneer and commission agent, and Director of the Murray River Stock Company.
3210. You are also one of the Members of the Legislative Assembly for the Murray electorate? Yes.
3211. Have you considered the question of the proposed railway from Jerilderie to Deniliquin? Yes.
3212. The Committee would be glad if you would make a statement to them on the subject? I shall deal first with the question of distance. The line from Sydney to Jerilderie is 412 miles in length. The distance from Jerilderie to Deniliquin by the surveyed route is 44½ miles; the distance from Deniliquin to Moama is 45 miles, making the total distance from Sydney to Moama, 502 miles. The line between Jerilderie and Deniliquin, if constructed, will form part of a national line connecting Sydney with Adelaide. This line would go on the Victorian side from Echuca across to Murtoa, on the main line from Melbourne to Adelaide. The distance saved by this route would be 115 miles as compared with the present route to Adelaide, *via* Melbourne.

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3213. That is provided a direct line were made from Echuca to Murtoa? Yes; and that proposal is now before the Victorian Government. I believe the people in the west and north-west parts of Victoria are very favourable to the construction of that line. The distance from Echuca to Murtoa is about 140 miles; and from Murtoa to Adelaide, 297 miles; making the total distance from Sydney to Adelaide, by that route, 944 miles, as against a distance of 1,059 miles from Sydney to Adelaide, *via* Melbourne. This connection between Jerilderie and Deniliquin, if made, would open up a very large field for graziers in the north and north-west portions of Victoria. At present, the greater portion of the store stock of New South Wales is sold at the Wodonga markets, opposite the town of Albury, necessitating a very great increase of rail conveyance by purchasers to a point either at Seymour, or lower down the line in connection with the city of Bendigo, and from there along the various lines into the western portions of Victoria. If this proposed railway were constructed, however, a depot would be created here. The stock would be sent along the line to the terminal point at Moama, in preference to being sent to Albury and Wodonga, in consequence of the increased price the stock would realise here by being nearer to the points where the purchasers would desire to take them. I calculate that the distance that would be saved to all purchasers in that portion of Victoria would be nearly 150 miles. Another reason why I think this line would be a valuable one to the Colony is, that it would be an alternative route to Melbourne, opening up also a large and valuable passenger traffic from the northern and western portions of Victoria. The traffic along the line from Sydney to Melbourne is very great at present, and for the greater portion of the distance there is a single line, necessitating many stoppages; and unless an alternative line is opened up there is no doubt that line will have to be duplicated. The difference in distance is not so great when worked out by actual figures, as might be supposed. For instance, from Sydney to Melbourne, *via* Moama, the distance is 654 miles, being 502 miles from Sydney to Moama, and 152 miles from Moama to Melbourne; whereas by the present route, *via* Albury, the total distance is 576 miles, being made up as follows:—From Sydney to Albury, 386 miles; from Albury to Melbourne, 190 miles. So that the alternative route *via* Moama would only be 70 miles longer than the present route. This route would be largely availed of by passengers. At the present time our own people residing in Deniliquin, Mathoura, or Moama, desirous of doing business in Sydney are compelled to travel along the Victorian railway line for some hundreds of miles. To get a through railway journey without any coaching it is necessary for them to go to Albury by rail; and that can only be done by travelling along the Victorian lines as far as Seymour. The distance from Deniliquin to Albury, *via* Seymour, is 259 miles; from Mathoura to Albury, *via* Seymour, 236 miles; from Moama to Albury, *via* Seymour, 213 miles. Passengers from the townships named and the surrounding and intermediate districts going to Sydney by rail are compelled to travel over the Victorian railways the distances just quoted, before they can reach the terminal point on our own railway lines. The distances just quoted, added to the mileage from Albury to Sydney, make the total distance to be travelled to Sydney, *via* Albury, 645 miles from Deniliquin, 622 miles from Mathoura, and 599 miles from Moama. If the railway is connected between Jerilderie and Deniliquin, the distance from Moama to Sydney would be only 502 miles, as against 599 miles, *via* Albury, as at present; from Mathoura to Sydney it would only be 479 miles, and from Deniliquin to Sydney, 456 miles. The route, *via* Jerilderie, would not only be used by our people in these districts, but it would also be largely availed of by residents of the north and north-western portions of Victoria desirous of doing business with Sydney. I should like to furnish the Committee with a little information with regard to the freight on grain. At present, the freight on wheat from Jerilderie to Sydney, a distance of 412 miles—and Jerilderie is the nearest terminal point which the residents of this district can reach—is 18s. per ton; there are 38 bushels to the ton, and the carriage would therefore be 5¾d. per bushel. If the line were continued from Jerilderie right on to Moama, and exactly the same rates charged as at present, the total charge from Moama to Sydney, *via* Jerilderie, would be 7d. per bushel. The only route at present open to the wheat-growers of this district is *via* Melbourne, and the freight from Moama to Melbourne is 4½d. per bushel, or 13s. 6d. per ton. The charge is 12s. 6d. from Echuca to Melbourne, and 1s. 6d, from Moama to Echuca. The freight to Melbourne from Sydney by water amounts, on an average, to 9s. 6d. per ton, equal to 3d. per bushel. I may explain that sometimes this freight is a little less, and sometimes a little more, but that is a fair average rate to get the wheat round in anything like reasonable time. The only reduction, as far as water carriage is concerned, occurs when colliers coming to Melbourne take back wheat and flour as ballast, and charge lower freights. In such cases rapidity in reaching the markets is not a consideration. The other charges by this route, consisting of wharf dues, insurance, weighing, commission, and other incidental expenses, would amount to 1½d. per bushel. This gives a total cost of 9d. per bushel by using the Victorian lines, and sending the wheat thence to Sydney by sea, as against 5¾d. per bushel from Jerilderie to Sydney, and, calculating exactly the same railway rates as from Sydney to Jerilderie for the extra distance of 90 miles, this would give the wheat-growers of Moama an opportunity of sending their wheat direct to Sydney at 7d. per bushel, as against a present cost of 9d.

3214. *Mr. Wall.*] I take it that a consignment of wheat going by rail to Sydney would be subject to cartage, and other expenses, the same as a consignment going through Melbourne;—could you give us details of these intermediate charges at Melbourne? There is a slight difference between the charges at Sydney and Melbourne.

3215. Will you explain the difference? Wheat consigned direct from Moama to Sydney by rail would only have to be handled twice—once when it was put on the truck here, and again when it was taken off the truck at Sydney to go to its destination. On the other hand, wheat going to Melbourne is first placed on the truck at Echuca or Moama. It is then taken to Melbourne, where it is unloaded from the trucks and placed in the Government stores. It is reloaded from those stores into other trucks, taken down to Williamstown, unloaded from the trucks again, and placed on board the vessel. When the vessel reaches Sydney, the wheat has to be again unloaded, and placed on the wharf, where further handling is required to place it on drays to be carted to the various stores. The handling by the sea route, as compared with that by the direct route, is in the proportion of about 6 to 2.

3216. Can you give us the intermediate charges at Melbourne, without reference to the handling when the wheat arrives in Sydney? The intermediate charges amount to ½d. per bushel—the extra handling.

3217. *Mr. Ewing.*] You allowed 1½d. per bushel, did you not, in the figures you quoted? Yes; that would go for commission, insurance, and other incidental charges. I estimate the cost of the extra handling at Melbourne at ½d. per bushel.

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3218. *Mr. Wall.*] That would be an additional charge beyond the freight? Yes.
3219. And assuming that the cost of handling from the ship's side to the stores in Sydney was equal to the cost of handling from the railway into the stores? Yes. In this connection I should like to point out that these are the minimum charges by sea, paid by persons in a large way of business. If a farmer himself were to attempt to consign wheat round in small parcels it would cost him at least 1d. a bushel more. Some twelve months ago, with a view of opening up a field for the farmers in this electorate, I interviewed one or two of the leading firms in Sydney—the New Zealand Loan and Mercantile Company, Messrs. John See & Co., and others—to see if they would undertake to receive the wheat upon the trucks here, paying the whole of the charges round from here to Sydney, and placing the wheat in their stores, so that it could be sold in Sydney. The lowest offer was that of the New Zealand Loan and Mercantile Company, who wanted 30s. per ton from Moama to Sydney, which would be equal to 10d. per bushel.
3220. Then you can take that as the average charge? Yes; because that would be the actual position of the farmer if he consigned his own grain. The charges I am giving you are the actual charges paid. The company with which I am connected is daily consigning grain from Moama and this district to Sydney, and these are the charges that are being paid.
3221. Does that charge per ton represent and include commission, or is it only the cost of conveying the wheat to Sydney and putting it into the stores? The simple cost; there is no commission included.
3222. And we may reckon that as the cost of freight? As the cost of freight only.
3223. *Chairman.*] Is there anything else you would like to mention? I observe that during the course of their inquiry the Committee appeared anxious to ascertain, as nearly as possible, the area of Crown lands on the pastoral holdings through which the proposed line would run, and also of the Crown lands adjacent to the line which would be served by the railway. I have taken some figures from an authority recognised by the Legislature—*Hanson's Pastoral Possessions.* The publication is of a recent date, 1889, and deals with Crown lands which have been little interfered with since. I find that the area of Crown lands on Moira pastoral holding, through which the line from Moama to Sydney would pass, and which would be largely benefited by the railway, amounts to 55,109 acres. The area of Crown lands on Mathoura, the next station, is 15,767 acres; Warbracken, 6,016 acres; Deniliquin, pastoral holding, 28,121 acres; Hartwood, 16,735 acres; Coree, 32,210 acres; Jerilderie, pastoral holding, 18,496 acres. This gives the total area of Crown lands through which the railway line would actually pass at 172,454 acres. The following are particulars of Crown lands upon the pastoral holdings which are near to the proposed railway, and would be largely served by it:—Perricoota, 43,278 acres; Cornalla, 45,197 acres; Tuppal, 19,459 acres; Puckawidgee, 29,710 acres; Aratula, 18,776 acres; Baratta, 35,402 acres; Boonoke, 27,507 acres; Calimo, 25,991 acres; Cohan, 31,833 acres; Morago, 24,408 acres; Morocco, 26,233 acres. Total, 327,794 acres. The gross total of Crown lands on and near the route is 500,248 acres. The whole of these Crown lands are on the runs, and the leases will fall due about the middle of the year 1895. From this total area of Crown lands it would be reasonable to deduct for timber reserves and other necessary reserves about one-half of the area, which would leave 250,000 acres of Crown lands from Moama to Jerilderie, a distance of 90 miles, which would be in reach of the railway.
3224. What would be the greatest distance of some of the lands from the railway? Twenty-five miles.
3225. That would be about Morago? Yes. I have a return signed by Mr. David Tennant, the secretary and manager of the Deniliquin and Moama Railway Company, giving the output of fat stock from this district to Victoria by the private railway. For the year ending 31st December, 1890, the output was 376,220 fat sheep and 7,830 cattle. For the year 1891, the output of fat sheep was 245,880, and cattle 7,060. These were actually trucked. From January to 31st May of the present year, the carriage of fat stock on the line was 44,880 sheep and 1,170 head of cattle. The total for the three years was 667,080 sheep and 16,050 cattle.
3226. *Mr. McCourt.*] What effect do you think the stock tax will have on the export of cattle to Victoria? With the exception of fat stock, as long as the tax is imposed by the Victorians there will be no crossings into Victoria; other markets must be found.
3227. Do you think it likely that the effect will be to establish the meat-freezing industry in these districts? Yes; already negotiations are pending for a company to freeze meat. Since the imposition of the tax another boiling-down establishment has been established; in fact, it is at work at present.
3228. Would that bring any trade to the proposed railway? Yes.
3229. In what way? Because of the facilities given. The greater facilities given for freezing and boiling-down in other parts of the Colony would make it pay stock-owners here to send their stock down near Sydney, where these better facilities existed.
3230. What do you mean by boiling-down? Boiling-down for the tallow. Pigs are fed on the waste meat, and the wool is scoured.
3231. Is that found to pay? It is paying now because it is the only thing that can be done with stock. For instance, last week 9,000 sheep were sent from Toganmain Station, consigned for sale at Echuca, but the tax had been imposed before they could reach here, and as they were store stock, and not fat stock, they have since, as I am credibly informed, been sold in Moama to be boiled down.
3232. If freezing works were established where would the centres be? The centres would be all along the railway line.
3233. In what part—Jerilderie and Deniliquin, or where? Yes; Deniliquin would be a centre, and so would Jerilderie, because the object would be to get the works as near the stock as possible.
3234. The establishment of these works would, I suppose, tend to increase the population about here? Immensely.
3235. And would that furnish a passenger traffic over the line? Yes; I think the passenger traffic over the line would be a very large one.
3236. Do you think the construction of this line would necessitate the resumption of the Moama line by the Government of New South Wales? I think it would be wise policy to resume that line.
3237. Do you not think it would be imperative to resume it? I do not think it would be imperative, because the term will expire in a few years, and it would take a considerable amount of time to build the proposed line.
3238. If we have no running powers over the private line, do you think it would be imperative for the Government to resume that railway? I think it would be wise policy.
3239. In order to give the Colony the control of the traffic? Yes.

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3240. Have you any idea of the quantity of wheat grown, say, within 20 miles of Moama, which would be available for export? Within 30 miles there are nearly 100,000 bags.
3241. Available at the present time for export? Yes; in fact, a great portion has been exported.
3242. Would the construction of this railway tend to increase that quantity, and if so, to what extent—say, within two or three years? It would increase it, in that time, by 100 per cent.
3243. Would that wheat go to Sydney for its market by this railway? Yes; every grain of it.
3244. That is provided the same cheap rates are maintained? Yes; in fact, I believe the growers would give 1d. a bushel more in order to get their wheat to market quickly.
3245. If the time should come when the differential rates on our railway are abolished, do you think the wheat will then go to Sydney? Yes; because if we did away with our differential rates Victoria would do away with hers.
3246. Could we carry 500 miles as against 200? Yes. The disadvantages connected with transhipping the wheat at Melbourne, and its having to be handled so many times, would more than counterbalance the advantage in regard to distance. The wheat market is a peculiar one, and farmers have to watch it very carefully. Lately in this town wheat was selling at 4s 3d. per bushel, and in consequence of a fall in the Sydney and other markets the price dropped here 3d. per bushel in one day. A fluctuation like that could not be controlled if the wheat had to be sent by sea, but it could be controlled by the railway line, because the distance would be travelled over so much quicker.
3247. Are you aware that goods can be landed at Jerilderie from Sydney as cheaply as they can be landed at Narrandera? Yes; that is owing to the differential rates.
3248. I suppose if this line were constructed they would have to be delivered at Deniliquin as cheaply as at Narrandera in order to compete with Victoria? I do not think so. Goods at the present time are being brought to Deniliquin and Moama from Sydney partly by water, and in order to give a fair and reasonable advantage the Sydney merchant is paying the freight from Sydney to Melbourne, so that he may be on an equal footing with the Melbourne merchants.
3249. Have you any idea whether the owners of the large estates through which the proposed line would pass would subdivide their properties, and sell or let the land? I sold for the owners of Mathoura Station, some years ago, leases to the extent of 32,000 acres, at an average rental of 4s. 1d. per acre, and a firm with whom I am connected have now instructions from the owner of Tuppal station to lease 30,000 acres with the right of purchase, and similar negotiations are being opened up with the owners of Perricoota. I have also heard, but not directly, that the owners of Moira, close to Moama, also intend to cut up their estate.
3250. Are you aware whether any of the owners of the large estates between Narrandera and Jerilderie have subdivided their properties on account of the railway being constructed there? No; I have not.
3251. The construction of the railway there, then, had not the effect of subdividing the estates? No; the estates there are not suitable for agriculture. They are very low, and in the winter season are covered by an inch or two of water.
3252. In your opinion that is the reason why they have not been divided? I think so; because they are not suitable for agriculture, or at least not so suitable as the lands here.
3253. Do you think the betterment principle ought to be applied to the construction of this line—that the owners of the estates through which the line would run, and who would receive a benefit from it, should contribute towards the construction of the line? As far as the principle is concerned, I agree with it; but I do not agree with its application, because it makes one man pay because the line passes actually through his land, and allows another man whose land is adjacent to escape.
3254. But the betterment principle fully extended would apply to land 10 miles on each side of the line? In that case I think the principle is a fair and just one.
3255. And you think an extension of the betterment principle should be applied to the construction of this line? Yes; applied in the same sense you have just explained.
3256. The Chief Engineer for Railways estimates the cost of this line at £3,300 per mile;—do you think it is a fair estimate? I think it is excessive.
3257. You have a thorough knowledge of the country and of railway construction,—at what cost do you think the line should be constructed? I think it could be constructed for at least £500 a mile less than the estimate. A line of railway was made from Echuca to a place called Toolamba, in the Goulburn Valley, and the roadway was made for £1,800 a mile, the Government finding the sleepers and rails.
3258. You think the same might be done here? Yes; the cost would certainly not be more; I believe in these depressed times it could be done for less.
3259. The Railway Commissioners estimate the annual cost of the line at £14,000, of which £8,000 will be for working expenses;—do you think that is a fair estimate? I would hardly like to give an opinion upon that.
3260. Are you aware that the engine-drivers and the engines at Jerilderie are idle three days a week? Yes.
3261. And if this line were constructed they could be engaged in running on the line to Deniliquin? Yes.
3262. Therefore, there would be no extra cost for running? No; the only extra cost would be the wear and tear of the engines; there would be no extra cost as regards the work.
3263. These men might be just as well working as remaining idle, and the engines might just as well be running? Yes.
3264. Therefore, there would be no extra charge for that? No.
3265. Taking the probability of traffic in passengers and goods, no matter which way—whether to Melbourne or Sydney—do you think there is a fair prospect of the line giving anything like a fair return for interest, say, within five years? I think it would pay interest within two years. The value which the land has now reached makes it imperative on the owners to apply it to some other purpose than grazing. The capital value of the land is such that nothing like the same results can be obtained from grazing as from agriculture, and the land is very largely going into agriculture. The stations themselves—Perricoota and Moira for instance—are growing wheat. About 2,000 acres are under cultivation this year on Perricoota, where they have an irrigation farm, and go in largely for wheat-growing. In fact, they have been growing hay for some time.
3266. Is Moama a Government town? Yes.
3267. Are there many unsold lots in the town? There are a good many.
3268. Would the construction of this railway give any extra value to them? It would increase their value very considerably.

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3269. *Mr. Wall.*] Do you think the public suffer any inconvenience from the manner in which the private line is worked—I mean with regard to delays, or anything of that sort? No; I cannot say that they suffer any inconvenience; in fact, the railway is a great convenience here.
3270. Then you think there is no undue economy in the working of the railway which affects the interests of the public? In comparison with the Government lines I should answer yes; but in comparison with what we had before the construction of the line I should answer no. Previous to the construction of the line, instead of having the goods conveyed by rail we had to convey them by bullock teams, and had to ride in coaches.
3271. Do you think that in working the line any undue saving has been effected such as to cause inconvenience to the public? No; I think the savings have been legitimate; the public are not inconvenienced.
3272. Have you any knowledge of a light line of railway that runs from Kerang, on the Murray, to Koondrook, in Victoria? Yes.
3273. Do you know if there is much traffic on that line? I have not inquired as to the traffic. The line is largely used, but I could not give the exact figures.
3274. Have you travelled on the line? Yes.
3275. Do you think a railway similar to that would meet the requirements of this district? It would not, taking into consideration the view I hold of the national character of this line.
3276. The cost of working the line from Kerang to Koondrook is £4,368 per annum—that is, assuming it to be the same in length as the proposed railway from Jerilderie to Deniliquin—as against £8,587, the annual cost of the proposed line estimated by the Railway Commissioners;—do you think a line of that character would satisfy the requirements of the district until such time as the development you speak of takes place? It would in the interim, no doubt, but I think it would be unwise policy to use it for such a purpose. I think it would be better to accommodate the through traffic at once. The line from Koondrook to Kerang is a special one with special rolling stock, whereas if this line were extended to Deniliquin I presume it would have to be carried on by the Narrandera service.
3277. You said you would recommend the Government to take over the private line in the event of their constructing the railway from Jerilderie to Deniliquin? Yes.
3278. That being so, do you think it would be advisable, in making that connecting link between Deniliquin and Jerilderie, to construct a line of the same character as the private line, so that they would both be similar in regard to expense? Yes; I think so. This private line carries very heavy loads, and travels at a high rate of speed, and I think would be sufficiently strong for a main line.
3279. We have evidence from Mr. Tennant that this line could be constructed at a cost of £2,000 a mile, and if the Government were to take over the private line do you not think it would be advisable that the line from Jerilderie should be of a similar character, so that it could be treated as a branch line, and there would be no difference in the character of the rails and ballast? Yes; I think a line similar to the private line would suit the traffic.
3280. Continued as a connection, with the same gauge? Yes.
3281. You think that would be ample to meet the requirements of the district? Yes; a line made on the same principle.
3282. *Mr. Ewing.*] You made reference to the construction of a railway from Echuca to Murtoa, on the main line to Adelaide. Would the route to be taken be something like this—first of all, it would cross the Campaspe; then, crossing Hope Creek, it would reach the main line from Swan Hill to Bendigo; then it would pass Bullock Creek, then cross one or two branches of the Loddon, then the line from Korong to Bendigo; then it would cross the Avoca River, then the line from Donald to Maryborough, then a branch of the Richardson River, then, possibly, a branch of the Wimmera River, and then it would reach Murtoa. Is that approximately the route? Yes.
3283. It would be a pretty heavy piece of work? You would have to cross those places under any circumstances. The original proposal was that the line should go from Echuca to Boort, but it has been found that some distance would be saved by going more direct.
3284. The proposal was to go further north, through Boort, in the first instance? Yes; that was the original proposal.
3285. And there is an agitation, which you think likely to be successful, to take the line through the route described? Yes; there is an agitation now.
3286. *Chairman.*] Have you any knowledge of the rates of freight charged on the Murrumbidgee, from Hay to Echuca? No; I have no knowledge of the river freights.
3287. I find, in a return furnished by Mr. Alexander, Public Works Examiner, that the rates charged for wool from Hay to Sydney are 71s. 7d. dumped, 83s. 9d. undumped, and 64s. 9d. greasy, per ton, the average, undumped greasy, being 74s. 3d.; and I find that the cost of 4-cwt. bales of wool, river-borne from Murrumbidgee and tributaries, and by rail and river from Murrumbidgee, is 22s. 6d., and 29s. 10d. for 3-cwt. bales. Then I find, in the same return, that the steamer freight on wool from Hay to Echuca is 20s. per ton, and insurance for river transit 14s. per ton, and that the average freight per ton for undumped and greasy wool from Hay to Sydney is 74s. 3d.; from Echuca to Melbourne, 63s. 10d. and 56s. 6d.? I think that is made up by the system of rebate. I am informed that the freight on first-class goods from Echuca to Melbourne is £4 10s. per ton. The differential rate system is carried to a far greater extent in Victoria than in New South Wales. I am informed that it takes more to take a bale of wool from Echuca to Melbourne than it does from Hay to Melbourne. If the farmer and small settler in this district desires to send his wool to Melbourne it costs him more than it costs the grazier at Hay to send his wool to Melbourne, because, in the case of the wool that goes from Echuca, the Victorian authorities know that it must go to Melbourne, and in regard to the wool from Hay, they know that unless they carry it cheaply it will go to Sydney.
3288. Do you think it likely that the present cut-throat business will be carried on in the future, and that the Victorian railways are sure to carry wool at a lower rate than it is carried on our own railways? I can hardly answer that question; but I believe that, as long as the colonies are colonies, having their own railways to look after, there will be such a rivalry for the trade that they will continue the differential system.

Mr. Robert Barbour, M.P., sworn, and examined :—

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3289. *Chairman.*] What are you? Commission and land agent.
3290. And you are also one of the Members of the Legislative Assembly for the Murray electorate? Yes.
3291. Where do you reside? In Sydney.
3292. Do you desire to make any statement with reference to the proposed railway from Jerilderie to Deniliquin? I should like to give you my opinion on the matter. I think the railway should be made in justice to the inhabitants of this part of New South Wales, because they are now, and have always been isolated. They feel that they are aliens, when they would like to be otherwise There is a very strong desire on the part of the inhabitants here to become more intimately connected with Sydney. That feeling has been growing of late, and the recent action of the Victorian Parliament in imposing increased duties on stock has greatly increased the feeling. I think this railway should be made, looking at the matter from a national point of view. It is, in fact, a trunk line. It has hitherto been treated as a branch line, not ending at any important centre. The line to Jerilderie has never yet paid, but if the gap between that place and Deniliquin were filled up, I believe the traffic would be greatly increased, and not only would the proposed line of 45 miles be a payable line, but the traffic upon it would greatly add to the traffic on the other line, which has not paid hitherto, and thus tend to make all these lines profitable. Regarding the railway as a national line, when it reaches the river at Moama, it will tap a great highway, viz., the Murray. It will enable the goods that are brought from Sydney to be put into steamers here, and carried to Menindie on the Darling, and if a short line of about 50 miles were made from Menindie to Broken Hill a great trade with Broken Hill might be done with Sydney, and at the lowest possible rates. Water carriage on the Murray is about the cheapest kind of carriage, being in some instances even cheaper than ocean carriage. Goods can be carried at a very low rate indeed. The principal expenses are at the terminal points—the taking in and discharging of the cargo, and incidental expenses connected therewith. But when once the goods are on board a big powerful steamer that can carry 300 or 400 tons, the carriage on the river can be done at a very low rate indeed. This, of course, applies only when the river is navigable; but by making a few locks the water could be retained, and the river would be navigable during the greater part of the year. This would be the cheapest highway we could get by which to go to Broken Hill from Sydney. Then, again, this line when completed would afford facilities to the public to reach Sydney with the least expense and the greatest amount of convenience. People this side of Jerilderie, or at all events this side of Deniliquin, if they wish to visit Sydney, have to go round by Melbourne *via* Tatura, which involves the loss of a day in travelling, and nearly double the expense than would be the case if Sydney could be reached direct by the proposed line. In this respect alone, affording as it would, a route for the people of Echuca, Bendigo, and even as far as Ballarat and Castlemaine, by which to get to Sydney, the proposed connection would be a great convenience to the public, and would create an increased passenger traffic on these lines. I think the time has now come when New South Wales should as quickly as possible impose a toll on wool and stock at the border. After the example set us by the Victorian Government, we should put a toll of 10s. a head on cattle and 1s. a head on sheep. This would tend greatly to divert the traffic to Sydney. It has been stated in evidence to-day by the sub-collector of Customs that 75,000 bales of New South Wales wool leave the Colony and are carried over the Victorian lines to Melbourne. Our own lines, which we have constructed for the convenience of the inhabitants, are deprived of the carriage of the wool that ought to go to Sydney to the extent of 75,000 bales of wool in the year. I believe the quantity is even greater than that, and that nearly 100,000 bales of wool are carried along the Victorian lines which should be diverted if possible to our own lines. If this were done our railways extending into these distant places would pay very much better than they do at present. The same remarks apply to stock; and I know a Bill will shortly be introduced to impose a toll on stock. I should like also to see a toll upon wool.
3293. You mean a toll on the river? A toll on the river—a toll on the steamers and trading public.
3294. *Mr. McCourt.*] Practically, river dues? Yes. New South Wales has expended a good many thousands of pounds in snagging the Murray, and Victoria has reaped all the benefit derived from making that river navigable.
3295. *Mr. Ewing.*] How much has New South Wales spent? A good many thousands of pounds. For some years a large party has been snagging on the Murray.
3296. Has Victoria done none of this work? Lately, since we have withdrawn from it, she has been doing a little for her own convenience. She has done some at Goulburn, and other places in her own territory, but for many years the great bulk of the money spent in snagging the Murray to make it navigable has been spent by New South Wales. There was one vote taken of £40,000. I strongly opposed it in Parliament, but it was carried against me; it was said to be necessary and it was carried. That was £40,000 in one year. That expenditure was continued for many years, and I think it will be found that we have expended in the aggregate several hundreds of thousands of pounds in snagging this river, while we have not received anything in return from the traffic upon it. All the dues and revenue of that kind have been absorbed by Victoria. The river is managed by a Marine Board that sits at Echuca, and all the benefits are derived by that side of the river. Therefore, I think the time has come when we ought to have those dues and have some return for the large expenditure we have incurred.
3297. *Mr. McCourt.*] Would the imposition of those dues bring traffic to this railway? I believe that would be the result, and we are in justice entitled to the dues. And a great deal of traffic would be brought to the New South Wales railways if the gap between Jerilderie and Deniliquin were filled up. I have a strong and settled opinion on this subject, based on many years experience. I came to the Murray in 1868, and I have a strong conviction that the construction of the proposed railway would add greatly to the population. The people here are enterprising and good colonists, and the only thing that New South Wales wants is an increase of population of the right sort. I believe this railway would be one of the greatest inducements for increasing our population that we could possibly adopt; and the population would be the real cream of the country—the yeomanry of our country, the best men we could have. Generally speaking, they are enterprising and self reliant men. They have large families whom they bring up fixed to the soil, and they would be the best and most permanent settlers we could have. It is within our power to attract this class of men. Assisted immigration would be nothing to it, because these men would come with money as a rule. I find that the Victorian settlers who are looking for land in New South Wales are men of means. They have acquired means in the adjoining Colony. They are enterprising; they have made good use of their time in Victoria; they have amassed sums varying from

£500 to £5,000. They come here full handed ready to pay whatever demands are made upon them. They come to work with an earnestness and good will, and they make the most of the land. In no other part of New South Wales have I been so favourably impressed with the superior character of the settlers as I have been on this side of the Murrumbidgee, and right on to the border of Victoria. One of the best things we could do would be to give a chance to such people to come here. They are ready to come. All that is wanted is connection with Sydney. Open up that market, and in a short time we should have a large accession to our population in the shape of the best colonists we could have. So that in that respect I think the line would be a great benefit to New South Wales. The whole of this country is first-class wheat-growing country. Wheat grown here is equal to almost any wheat in the world. Wheat grows in almost every part of this country, the average yield being 16 or 17 bushels to the acre, and in favourable seasons from 20 to 24 bushels. All the men I know who have settled down, and given their heart to the work, have made money. The witness, Holschier, is a pattern man in that way. They are all pretty well to do. If they have anything to pay they have always the means with which to pay it, and they are very different from the colonists in most part of New South Wales in that respect. The land is good, and they make the most of it, and as a duty I think New South Wales should assist to open up this great field for settlement. In the very near future our exports of breadstuffs alone will tend largely to increase our returns. Then again, this is a fine district for dairying. We would have butter factories established here, and this part of the country would help New South Wales to export butter, as Victoria has been doing for the last year or two. But without means of communication the place is at a standstill; there is no encouragement to enter into industries of that description. Another reason why I think this railway should be made is, that if settlement goes on there will be no means of access by road to the railways already constructed. The Committee must have seen in passing over the roads that there has been no making of roads in this district, and if the demand comes, there will have to be a large expenditure upon roads which will give no return; whereas the money expended upon a railway will yield a return, besides providing a highway. Another reason is that, by giving access to a market, by settling the people here and inducing others to come, you will create competition, and the effect of that competition will be to materially increase the value of land, and thereby add to the wealth of the Colony. We must have local taxation shortly, and by opening up this country to settlers we should give them the means of paying that taxation, and of providing for the expenditure themselves. There has been a feeling in the minds of some people that if federation should take place—and I believe we shall have federation, though it may be a good many years ahead, it might become a question whether the traffic on this piece of railway would be sufficient to justify its construction. But I am satisfied that the line will pay. Wherever the trend of traffic goes it must pay. The moment we established this railway connection we should ensure a large additional population. That population will grow different products, and those products must be carried to Melbourne or Sydney. If a large population surrounds Jerilderie, they must send their produce to market, and whether they chose the Sydney or the Melbourne market it must pass over this line of railway, and by doing so it will enable the line to pay interest on the cost of its construction. In a few years a business connection would be formed with Sydney that would not be easily broken off. My experience in trade has shown me that when business connections are formed they become too strong to be affected by such a thing as a slight difference in carriage. In commerce an additional rate of carriage is a very small item. A commercial traveller comes into this town and says, "I represent such and such a house and I want you to give me an order," and he shows his goods and quotes his prices, and the prices are so favourable, that the business man orders £500 worth of goods, and in doing so he is not influenced by any consideration as to whether the carriage is to cost 1d. or 2d. a ton more.

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3298. *Mr. Wall.*] Is there any reason to infer that goods would be cheaper in Sydney than Melbourne, under ordinary conditions of trade? There is no reason to infer it, except that it is likely to arise as the natural effect of competition. When competition occurs and men are put on their metal they offer inducements they would not do if they were allowed to go on in a humdrum style. But I think New South Wales is beginning to open it eyes to the importance of this trade, that the people will try to cultivate the trade, and that increased competition will have the result of goods being offered at prices which will induce trade. We know from experience that often after a country has adopted protection, and placed a duty upon, say, woollens, some people who have been in the habit of buying a certain class of woollens—Bliss' tweeds for instance—will continue to purchase those tweeds, even if it costs them more, unless the duty is altogether prohibitive. The goods still continue to come in, and that is the experience of every merchant. There are connections and associations formed, there are likes and dislikes, and connections, financial and otherwise, are established, which cause trade to go to a particular locality, altogether irrespective of any difference in the cost of carriage one way or the other. So that I do not look upon a little difference in the cost of freights as any great difficulty, or in the way. I can give no better instance than the carriage of goods from England. People order goods by steamships at three, four, and five times the price they could get them by sailing vessels, and it arises from this principle in human nature—that the moment you have made up your mind to have a particular thing you want to get it, and you will not enter into any question as to whether the cost of carriage is a little more one way or the other. Our railways will carry our goods quickly, and in that way I think the difference between going to Melbourne and going to Sydney will be a matter of very small importance. Another principle we know is this, that the longer the line the less per ton you can carry the goods. New South Wales possesses an advantage of 10s. per ton owing to the cheapness of her coal, and this places her in a position to charge lower rates than the adjoining colony. Then, again, we have the matter in our hands by the application of differential rates, of which an example has been set us by Victoria. There is no reason why we should charge the same rates all over our railways—on the suburban as well as the country lines. Rates should be charged on the different lines so as to give a fair return for the money invested. The rate for a second-class fare on the Deniliquin to Moama line is 9s; on the Government Railways it would be 4s. 9d. The first-class fare is 12s. 6d., and on the Government line it would be 7s. 6d. It is necessary that these prices should be charged in order to make the railway pay, and the people are only too glad to pay them, because in the old days they paid £1 as against 12s. 6d. I therefore think that on these branch lines extra rates should be charged—such extra rates as the necessities of the particular line require in order to make it payable—a sort of compensating rate. I am also in favour of the betterment principle, which, I think, should be made applicable to the proposed railway. But I would extend the area, because it is not fair to charge the men through whose

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whose land the line goes, while the man alongside, who gets as much benefit, is charged nothing at all. I think the area should include a distance from the line, of 10 miles. You might make the man immediately on the railway pay so much more, and go back on a graduated scale. The railway is a benefit to the people adjacent to it, and when they come to understand fairly the betterment principle, and are charged in an equitable way, I believe it will be universally accepted.

3299. *Mr. McCourt.*] I think you said that if this railway were constructed, the effect would be to reduce the expenditure on roads in the district? Not the present annual expenditure. I said if they did not have the railways the people would cry out for money to be expended on roads, and that the existence of a railway would diminish the necessity for expenditure on roads.

3300. But would not the tendency of a railway be to open up roads? Yes; that applies to roads leading to the railway stations, but not to roads of an extensive nature.

3301. Do you think it would be fair to charge higher rates from Jerilderie towards Melbourne than from Deniliquin towards Sydney? I certainly do.

3302. Would you charge differential rates in that way? Yes.

3303. Because those travelling to Melbourne would have to pay the higher rates;—they would have no option? And it would be a great convenience to them. They pay far more now.

3304. You think they would have no objection to pay? No; they would rather pay than use the roads.

3305. In that way the line might be made to pay? There is nothing to prevent it. It is only a matter of a fair and proper adjustment of charges.

3306. Have you any idea how much the New South Wales Government has received in the Murray electorate from the sale of Crown lands? I could not give you the amount.

3307. At a rough estimate? Some hundreds of thousands of pounds.

3308. Have there been 1,000,000 acres sold in this district? There must have been more than that. There are seven properties within a short distance of Deniliquin, each of which contains 100,000 acres, and there is one containing 150,000 acres.

3309. Could you say, in round figures, how much the State has received from the districts that would be benefited by the railway;—would it be £1,500,000? I think it would be more like £3,000,000 from this district.

3310. That is actual money received? Yes; nothing less than £1 and £1 5s. an acre, has been paid.

3311. In addition to that, have you any idea of the annual interest now being paid on conditional purchases in this district? The amount is very large, but I could not tell exactly. This is the district where the greatest amount of selection took place at first. The great rush from Victoria came over here in 1871, 1872, and 1873, and immense quantities of land were taken up.

3312. I suppose it would be fair to assume that the State has already received from this district between £2,000,000 and £3,000,000, and is now receiving several thousand pounds per annum from conditional purchases? Yes; I should think several tens of thousands for conditional purchases.

3313. Has anything like that sum been expended on improvements within the district? No; not even a small percentage of it. You can see for yourself that there has been nothing spent on roads and bridges. There were no bridges to construct, nothing beyond a small culvert, except the great national work over the Murray, half the cost of which was paid by Victoria. No bridges have been required in Riverina, and very little has been expended on roads.

3314. There has been little or no Government expenditure? I am right in saying there has been very little Government expenditure on our public roads here, and very little on any other public work. In one or two cases we have got a courthouse and a matter of that kind, but they were isolated cases, and they do not amount to much when you put them together.

3315. Therefore, the Government having received so very much money from this district, and spent so little, you think it would be only fair to expend this small sum of £150,000, in giving the farmers and other settlers railway communication? I do, most distinctly, and I think further that in doing so they would be using one of the best means they could adopt, to enhance the prosperity of New South Wales.

3316. *Chairman.*] And increase the value of their own land? Yes, I am quite satisfied in my own mind that the land will be increased about double its present value.

3317. The Crown lands? Both Crown lands and private lands. You cannot expect to get any enhanced value from the Crown lands except as special areas. I am speaking of freehold land, and that would be in value to the extent of double. Some station properties have been recently sold. Tuppal was sold for £2 5s. per acre, and Warbracken, close to Deniliquin, brought £2 5s. per acre. When subdivided and sold, for agricultural purposes, the land on those stations was worth £4 per acre. No better proof as to the value of the land could be given than the evidence of Mr. Chanter, who said that he sold leases for 15,000 acres at 4s. 1d., and there is also the land on Tuppal, 15,000 acres of which have been leased to Tasmanian farmers at a rent of 5s. per acre, with the right of purchase at £4 per acre.

3318. Under most difficult conditions, all the farmers who are engaged in farming in your electorate have been fairly prosperous? They have been fairly prosperous.

3319. And they have made money? Yes, whether they sold out or whether they remained. I believe the men who remained have had the best of the bargain.

3320. And if increased facilities were given, are you of opinion that more settlers of the same class would come here and cultivate the land? I am, and I believe that is one of the best results that will accrue to the Colony from the construction of this small line. There are no better colonists. There is one man whose case I may instance. Thirty years ago he was a ploughman working for wages. He made good use of his wages, and he was able to take up 1,300 acres of land. By industry and perseverance, he was able to put 1,000 acres of that in crop, keeping 300 acres in grass to graze his sheep on. He had steadily added to his holding each year, until he carries as many sheep on the 300 acres, while cultivating the 1,000 acres, as he would if the whole of the 1,300 acres were in grass. That man offered to buy a property the other day, and the amount was £8,000, and to induce him to buy, the seller said, "you can have any terms you like," and his reply was "The terms I want are cash on the nail. There is my £8,000."

3321. You say the construction of this line would induce agricultural settlement here? I am sure of it. The land would be occupied by the sons of farmers, who have grown up.

3322. What has become of the sons of the farmers—have they also taken up farms in this electorate, or have they gone to other parts of the Colony? A good many of them are still working with their fathers, waiting for the chance to take up land.

Mr. R. Barbour, M.P. 11 June, 1892.

3323. They have not gone elsewhere? They have not, as a rule. Occasionally one may have gone off into the town, but it was only because he could not get anything to suit him. As a rule they are working with their parents, and waiting for a chance to take up land. I am continually being applied to by people who say "I want a bit of land, and I have two or three sons, and they want a piece also."
3324. The sons are anxious to settle on the land and follow the same pursuit as their fathers? Yes.
3325. *Mr. Wall.*] With regard to timber, have you been associated with the timber trade? Yes, nobody more so.
3326. When you were first engaged in the timber trade I believe a considerable portion of timber was cut up on this side of the river? Yes. I settled on this side, and one or two followed me, and one or two others settled on the Victorian side.
3327. With regard to the sending away of the timber in logs—do you think that has a tendency to promote the interests of this district. Do you not think it would be better if the timber were cut up? It would be far better if it were cut up on the ground.
3328. Do you think the people would derive very much more advantage from it? Yes. At one time I had six mills going on this side of the river. I used to send on an average, every two or three days—200 or 300 tons.
3329. When you first started here the export of timber was very large? When I first started it was nothing at all. There was only a small mill—Mackintosh's—and that was engaged principally cutting for the local trade. I started and began to ship sleepers to India, and several others followed, till we had twelve mills going. When I started, not a foot of timber went away from the Echuca station, and before two years had elapsed, we were sending away two train loads, of thirty trucks each, every day.
3330. That timber was all cut on this side of the river? Principally on this side.
3331. Now, there is very little cut on this side? Very little. There are one or two mills. I have no doubt that if the sending away of the logs were stopped the Victorians would have to come into New South Wales and erect mills and cut the timber here; but I would not approve of increasing the royalty at present. The price paid is a pretty severe one—1s. 3d. in the rough, which means nearly 2s. per 100 superficial feet, on the finished timber, which is a fifth of the price realised. One shilling and threepence royalty is about as high as the present trade would allow to be charged. They have been opening up some new country in Gippsland, and they have red-gum there.
3332. Is it large? A good deal of it. They have erected mills there and have been sending red-gum to the market, and so competing with the Murray, where the orders have been reduced very much. The Gippsland timber, being nearer to Melbourne, can be sold cheaper.
3333. Therefore you do not think it would be advisable to increase the present royalty? No.
3334. *Mr. Ewing.*] What is the population of Jerilderie? I should think about 300.
3335. What is the population of the whole of the Murray electorate? The number of registered electors is a little over 3,000, and the population, I should think, would be 10,000 or 12,000. But it has largely increased lately. Some reserves have recently been thrown open down the Wacool, and many came from the other side, and good men too, with plenty of means; and they have added to our population down that way.
3336. What is the nearest northern boundary of the Murray electorate? It is a little above Jerilderie, and on the Murray, a little above Tocumwal, between that place and Corowa.
3337. How many people are there in Moulamein? One hundred and fifty.

Mr. John Aitken Manton, Inspector of Forests, sworn, and examined:—

Mr. J. A. Manton. 11 June, 1892.

3338. *Chairman.*] What are you? Inspecting Forester.
3339. What forests do you inspect? A good number of forests—all south of Sydney; that is supposed to be my district.
3340. Including any of the coast? Yes.
3341. And all down the Murray River? Yes.
3342. Can you give us any information with reference specially to the timber reserves on the Murray? The Murray forest reserves comprise an area of 350,000 acres.
3343. How much of that area is under red-gum? Fully two-thirds.
3344. What operations have been carried on in these forests; can you give us any information as to the quantity of the timber taken out of them? The system under which we work the forests here is the system of royalty, the charge for which averages 1s. 3d. per 100 superficial feet, measured in the rough log. There is a loss of very nearly 50 per cent. in the sawn timber, as compared with the rough logs on which royalty is paid.
3345. Can you give us any idea of the amount of timber taken out of the forests every year? On an average, taking one year with another, I suppose the quantity is 16,000,000 feet per annum.
3346. Where does it go to principally? Nine-tenths of it, at the very least, goes to Victoria.
3347. Can you tell us what the receipts have been for the last four or five years; have you any account of the receipts and expenses? I cannot give you the whole of the receipts, because I have not had time to make them up; but I think you can put down £9,000 a year for royalty.
3348. *Mr. McCourt.*] Would you recommend that the export of red-gum to Victoria in logs should be prohibited? Provided we had facilities to get our red-gum to another market I should certainly prohibit the timber being cut, except in our own Colony.
3349. Would you prohibit the timber from being sent in logs to Victoria? Yes.
3350. Do you think it is possible that if this line were constructed, a market would grow up in our own Colony—have you made any inquiries as to that? Nothing has been definitely arranged, but I think it is in contemplation that the Forest Department should supply the Railway Department with sleepers.
3351. Have you made a proposal to the railway authorities to that effect? I believe the Director General of Forests has done so.
3352. And if the railway authorities fall in with your views? Then we could supply a very large quantity of sleepers indeed.
3353. Provided this line were constructed? Yes.
3354. If the line were not constructed, could you supply the sleepers? No; it would not pay unless we had railway carriage.

Mr. J. A. Manton. 11 June, 1892.

3355. And would there be any considerable traffic in sleepers? I should think there would be no difficulty in supplying 600,000 a year. It would depend on the number of mills.
3356. Would any other trade in sawn timber grow up in any of the inland towns—Narrandera, for instance? We could supply piles. There is no better timber in Australia for piles, than red-gum.
3357. I suppose that, although these magnificent forests belong to New South Wales, little or none of the timber is used in New South Wales? Just so, from the simple fact that there is want of communication.
3358. And if this line were constructed, the bulk of it would be used in New South Wales? Yes.
3359. With proper arrragements? Yes.
3360. *Chairman.*] The Director-General of Forests furnished a return of the expenditure and receipts, in which he said that for thirteen or fourteen years the receipts were £179,000 and the expenditure £184,000;—do you know anything about these figures? I have no doubt they were obtained from the books of the department, and are correct. I may say that the Murray forests return more than two-thirds of the revenue derived from the forests of New South Wales.
3361. *Mr. McCourt.*] Are you aware what the Railway Commissioners now pay for their sleepers? 4s. or 4s. 6d. in Sydney.
3362. Do you know what offer has been made to them by your department? We have not made a decided offer in regard to price; but I believe we could supply them at Moama at 3s., which of course would leave a profit to the Forest Department.
3363. In making this offer did you inquire what the Commissioners were already paying for the sleepers? I only got that information the other day. I was sending away some sleepers to Echuca, and I was told that the price generally paid for sleepers was 4s. 6d.
3364. If it had been stated in evidence by other witnesses that they can get an unlimited supply of railway sleepers at 2s. 6d., do you not think that your department also could deliver them at 2s. 6d.? Yes, if those men can deliver them at 2s. 6d. I think I know the witness to whom you refer. He is going upon the basis that if he were to cut sleepers to supply the New South Wales Government he would not be charged royalty.
3365. You mean to say that he based his estimate of cost on the supposition that the Government would forego the royalty? Yes.
3366. Then if he could supply them at 2s. 6d., you can also supply them at that price? Well, we should get them from these men, and charge the Railway Department our royalty.
3367. You would add the royalty? Certainly.
3368. That would merely be a matter of taking from one hand and putting in the other—a mere matter of account? That is all.
3369. *Mr. Ewing.*] Do you know anything of the red-gum forests on the Murrumbidgee, near Hay? I have only been there once. I do not know very much of them.
3370. Is it said to be good timber? There are some portions of it good; but not as good as the timber on the Murray.
3371. But there is good red-gum there? Yes.
3372. In touch with the railway at Hay? Some considerable distance from Hay.
3373. Up or down? Below Hay, between Balranald and Hay.
3374. How far? I should say that some good timber commences some 8 or 10 miles from Balranald.
3375. That is away down the Murrumbidgee, below the junction of the Lachlan? Yes; below the junction of the Lachlan.
3376. That would be 200 miles from Hay? Yes; that is where it commences.
3377. What is the nearest point to Hay where the red-gum timber exists? I could not tell you from memory; but there is not a very large quantity near Hay. It would be fully 50 or 60 miles from Hay where you would get any worth having.
3378. *Chairman.*] Is any money being expended now in thinning out the young timber in the Murray forests? Not now; but there was some money expended a few months ago.
3379. Do you think it desirable that further money should be spent in thinning out the young timber, which is growing up so thickly? Yes. It is the best investment of money I know of. The forests are so thick that they would come to nothing unless they were thinned.
3380. How much per acre has what you have done cost you? I should say 3s. 9d. or 3s. 10d.
3381. Over how many acres, in round numbers, have you carried out that operation? I should say 6,000 or 7,000 acres.
3382. Out of how many acres altogether? Three hundred and fifty thousand.
3383. Do you think it desirable that operations of that kind should be carried on in the future? Yes.
3384. For what purpose? To keep the supply of timber up.
3385. You think if that is not done the trees will choke? Yes; they will come to nothing.
3386. *Mr. Wall.*] Have you formed any approximate estimate of the number of trees per acre in the Murray forests? Taking young timber, I suppose the average would be 350 trees to the acre in a great many parts. In some parts of course they are open plains; but in thickly timbered parts I should say 350 trees to the acre.
3387. What is the average value per tree of the matured trees on which royalty is paid? About from 17s. to 18s. That is for saw-mill purposes. Piles fetch a higher price.
3388. Then the State royalty would amount to something like £300 an acre? Yes, provided all the trees grow; but you could not expect the whole of them to mature.
3389. *Mr. McCourt.*] If you engaged to supply the Railway Commissioners with sleepers, I suppose you would employ a large number of men? I suppose the Government would not go into competition with saw-mill owners.
3390. No matter who supplied them, the Railway Commissioners would take 100,000 railway sleepers from here? It would, of course, give employment to a great number of men.
3391. About how many? I suppose if the Forest Department had anything like an order of that sort six mills would start, and at least fifty hands would be employed in each mill.
3392. That would be 300 men? Yes; and their wives and families would have to be supported.
3393. And that would cause traffic on this railway in passenger fares, and so on? Yes.
3394. A double benefit would arise from obtaining the sleepers—there would be the carriage of the sleepers and the additional passenger traffic? Yes.

Mr.

Mr. George Brook, commission agent, Echuca, sworn, and examined:—

3395. *Chairman.*] What are you? A commission agent, residing at Echuca. Mr. G. Brook.
3396. Could you give the Committee any information with reference to the freight on wheat? The freight on wheat from Melbourne to London is 25s. per ton, which brings the cost of carriage from Moama to London up to 13½d. to 14½d. per bushel. From Echuca to Melbourne the freight is 4½d. per bushel. Fourteen thousand bags of wheat were sent this year to Sydney from Moama, *via* Melbourne. 11 June, 1892.
3397. *Mr. Wall.*] Do you know the average price of wheat in the London market for the last three years? I do not know the average. The price is 34s. 9d. per quarter at the present time, or 4s. 4½d. per bushel.
3398. *Mr. Ewing.*] What would that give you a bushel here? Three shillings and threepence.
3399. That is not a bad price—you could live at that? Yes. There are 13,000 bags of wheat in the store at Moama at the present time for consignment to Sydney or elsewhere, and there are 3,000 bags held by the farmers.

WEDNESDAY, 15 JUNE, 1892.

[*The Sectional Committee met at "Tattershall's Hotel," Tocumwal, at 8 p.m.*]

Present:—

THE HONORABLE WILLIAM HENRY SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

Mr. Murti Looney, farmer, near Tocumwal, sworn, and examined:—

3400. *Chairman.*] What are you? A farmer. Mr. M. Looney.
3401. Where is your farm? Four miles from Tocumwal, on the Jerilderie to Tocumwal Road.
3402. What operations do you carry on? Farming and grazing. 15 June, 1892.
3403. How much land do you farm? About 100 acres.
3404. What crops do you grow? Wheat, barley, and oats, and on the rest of the land I graze sheep and cattle.
3405. How much altogether? About 2,500 acres.
3406. What is the average yield of wheat per acre? About three or four bags—about 16 bushels.
3407. What is the heaviest crop you have had? Six bags—about 24 bushels.
3408. In what year was that? The year before last.
3409. Was that a specially good year all through the district? Yes; it was fairly good.
3410. What market have you for your wheat? Jerilderie.
3411. Do you sell any of your wheat here? It was sold here the year before last, but Jerilderie is our general market. I send to Mr. Wise, the miller.
3412. Do you ever have any fat stock? Yes.
3413. What have you done with them? Sent them to Melbourne.
3414. Do you think you will be able to send them to Melbourne now? No.
3415. What do you do with your wool? Send it to Melbourne.
3416. Is it sold in Melbourne? Yes.
3417. Can you give us any idea what is the cost of harvesting your wheat from start to finish—ploughing, sowing, and everything else? About 22s. per acre.
3418. How much does that leave per acre, profit? It depends on the season.
3419. What did you get for your wheat the year you sent it to Jerilderie—how much per bushel? I think it was 3s. 6d. That was three years ago, when I got the heavy crop.
3420. Have you made a calculation as to how much profit that would give you? I have made a calculation, but I could not tell you just now.
3421. *Mr. Wall.*] Have you any knowledge of the country between here and Jerilderie? Yes.
3422. What is its general character? Generally speaking, it is good agricultural country to within 6 or 7 miles of Jerilderie.
3423. Do you know where it is proposed to construct the line from Jerilderie to Tocumwal—have you ever heard of such a line being proposed? I never heard of the line being surveyed. There have been agitations for a line. We asked for a line, but I do not think there has ever been a survey.
3424. Would that line pass through much Crown land? There is Crown land along the route, which is nearly direct from here to Jerilderie; there is a stock route, a mile wide, the whole way.
3425. But outside of the stock route are there Crown lands? No; not bordering the stock route; there are small reserves here and there, but not of great extent.
3426. Can you say whether these are temporary or permanent reserves? I think they are temporary reserves.
3427. The travelling-stock route would be a permanent reserve? I could not exactly say.
3428. In the event of people desiring to travel stock from here to Jerilderie, I presume there is no other travelling-stock route? No.
3429. Are there many settlers between here and Jerilderie? Yes; there are a good few.
3430. Engaged in wheat-growing? Principally wheat-growing.
3431. Do you know whether the private owners abutting on the stock route are desirous of disposing of their land? I do not.
3432. Have you heard of any person purchasing from private owners along that route? Yes; Mr. Falkiner, of Tuppal, has recently leased 15,000 acres, with the option of purchase.
3433. In speaking of Crown lands, I refer to lands available for selection, not covered by reserve;—do you know of any land available for selection between here and Jerilderie? No; I do not. I do not think there is any. In fact, I am almost certain there is no land available for selection, between here and Jerilderie.
3434. I suppose all the farmers and settlers send their wool and stock to Melbourne? Yes; principally from this side of Jerilderie.
3435. Do you think the border duties will prevent their sending stock to Melbourne? Yes; I do.

Mr. M. Looney. 15 June, 1892.

3436. But they will still send their wool there? Yes; I expect they will still send their wool.
3437. Are they not offered special inducements by the Victorian Government to send their wool in tha direction? Yes.
3438. What is the cost of conveying wool from your place to Melbourne? About 8s. or 9s. a bale.
3439. Does that include land carriage to the railway? Yes. I should think that 9s. a bale would cove the whole of the conveyance to Melbourne.
3440. What size bale? From 3¼ to 4 cwt.
3441. What distance are you from Jerilderie? About 31 miles.
3442. Are there any creeks or rivers to cross between Tocumwal and Jerilderie? None; it is all leve country.
3443. What is the character of the timber,? The timber consists principally of grey-box and pine.
3444. Is there any pine timber available for commercial purposes? A little.
3445. Do you know of any trade that would be likely to be opened up between Jerilderie and Tocumwal in the event of a railway being constructed—anything that would bring traffic to the line? It would open up facilities for farming and wheat-growing. The great drawback here is that when we have produced the wheat, we have trouble in getting it to the railway station.
3446. But you are only 21 miles from a railway already? Thirty-one miles.
3447. Are there many farmers between Tocumwal and Jerilderie? Yes; a good few.
3448. How far are those people located from Jerilderie who have taken up the 15,000 acres on Tuppal? About 21 miles, I think; some of them, 25 miles.
3449. Where do the settlers living on that line principally get their supplies from? Some from Tocumwal and some from Jerilderie, and I believe some from Berrigan.
3450. *Mr. McCourt.*] Do you know the country between Jerilderie and Deniliquin? No; I have never travelled over the route of the proposed railway.
3451. Instead of making a line of railway between those two points, do you think it would be more in the public interest, and would pay the State better, to carry the line from Jerilderie to the Murray at Tocumwal? I should think it would be better in the public interest to construct a railway from Jerilderie to Tocumwal.
3452. For what reason? Because, in connecting one capital with another, you would save a great many miles of travelling by going through Tocumwal.
3453. The two capitals you mean are Sydney and Melbourne? Yes.
3454. Do the Victorian railways extend to the other side of this township? No; the Victorian Railway goes to Cobram.
3455. If the line were constructed from Jerilderie to Tocumwal, there would not be a continuous connection with Melbourne then? No; there would be 8 miles between Tocumwal and the Yarroweyah railway station.
3456. Do they propose to erect a bridge over the Murray at Tocumwal? Yes.
3457. Is it intended for ordinary traffic? It is to be an iron bridge for ordinary traffic.
3458. Not to carry a railway? I should think it would carry a railway.
3459. Do you know of your own knowledge? No.
3460. If a line were constructed between here and Jerilderie, would wheat be the only thing carried upon it? I should think there would also be sheep and cattle carried.
3461. *Mr. Dawson.*] You say, as a national line, you believe in the connection between the Murray River and Jerilderie *vid* Tocumwal, as against the proposed connection between Deniliquin and Jerilderie, the former being shorter? Yes.
3462. How far is it from Yarroweyah to Jerilderie? About 43 or 44 miles.
3463. Have you any idea what would be the distance that way between Melbourne and Sydney? About 465 miles.
3464. Would you be surprised to know that it is 605 miles that way? That might be by rail.
3465. So that it would be 150 miles further than going by Albury? My comparison referred to the line between Jerilderie and Yarroweyah, and the line between Jerilderie and Deniliquin. It is shorter this way by more than 100 miles, than it is by Jerilderie to Deniliquin.
3466. If this line were made you would lose all the traffic from the northern portion of Victoria, including Ballarat and Sandhurst, which would be secured if the other line were made? There are lines running from these parts to Kilmore and Tolambo which would bring Victorian traffic this way,
3467. But that would be a long way round; if they got to Toolambo they would go to Seymour, and up by Albury; you would not get Victorian traffic at all that way? It depends upon what their business was; a line opens up new business in every district.
3468. What is the lowest price at which you could grow wheat to pay? About 3s.
3469. If you had an unlimited market, and wheat was 3s., how much could you produce at Tocumwal? I could not give you the quantity. There could be any quantity produced. The land here is favourable for wheat-growing.
3470. What does it cost you per bushel to get your wheat to Jerilderie? From 4d. to 6d.
3471. And how much from there to Sydney? About 5d.
3472. Do you not think you are very well off to be able to send wheat that distance for 9d. per bushel? If we could guarantee to get a certain price for it when it got to Sydney.
3473. If the railway were at your door, you could not guarantee a certain price? Well, if it did not pay to grow wheat we should have to graze stock.
3474. You do not send your wool to Sydney—the markets in Sydney and Melbourne are about equal? Yes.
3475. You could not expect to get your wool taken 450 miles at the same price as you could get it taken 250 miles to Melbourne; if this railway were made you would still have to send your wool to Melbourne? Yes; I suppose I would go by the cheapest way.
3476. If a railway were made to Tocumwal, at what price would you expect to have your wheat taken to Sydney? I suppose about 6d. per bushel.
3477. That would be under £1 per ton? Yes.
3478. Do you think that would be a paying price for the railway? I could not form an idea with regard to that.
3479. Do you know that on other lines, where there is no competition, farmers have to pay that price for a carriage of 160 and 170 miles? Yes; I can quite understand that.

3480.

Mr. M. Looney. 5 June, 1892.

3480. You have not been over the route of the proposed line between Jerilderie and Deniliquin? No.
3481. Do you know how far it runs from the land on Tuppal taken up by the Tasmanian farmers? No, I could not say.
3482. Do you know anything about the betterment principle? No.
3483. Suppose a railway is taken through a person's property, and considerably enhances the value of that property, do you think it is fair that that person should pay a certain percentage to the State for benefiting his land? Yes; I think he ought to do so.
3484. *Mr. Ewing.*] Suppose you were sending wool from Tocumwal to Melbourne, which way would you send it? I would cross the river at Tocumwal, take it to Yarroweyah, and thence by rail to Melbourne.
3485. Do you know of any wheat going down the Murray to Echuca? Yes.
3486. Why did it go that way—was it for millers in Echuca? Yes; it belonged to millers in Echuca.
3487. Then I presume it went to Echuca to be made into flour? Yes, I think so.
3488. Wheat going from here, I suppose, would go up to Cobram, or straight across to Yarroweyah? I do not know of any having gone across.
3489. But what do you think you would do? Well, if I were going with wheat, I would certainly go to Yarroweyah, because it would be the most convenient for me.
3490. You said you got your wool from here to Melbourne for about 9s. a bale? Yes.
3491. Roughly speaking, about 45s. a ton to Melbourne? Yes.
3492. If you found that the freight from Jerilderie to Sydney was 74s. a ton, as against 45s. a ton from here to Melbourne, which way would you send it? To Melbourne.

Mr. Peter Augustus Dunne, Post and Telegraph Master, Tocumwal, sworn, and examined:—

Mr. P. A. Dunne. 15 June, 1892.

3493. *Chairman.*] What are you? Post and Telegraph Master at Tocumwal.
3494. Have you considered the question of the proposed railway from Jerilderie to Deniliquin, or any proposal to construct a railway line to Tocumwal? We have not considered the matter very much lately.
3495. I find from the report of Mr. Alexander that you furnished him with a certain statement signed by Mr. Manning and yourself with reference to a railway to Tocumwal; can you give us any idea of the reasons why you think the line should be made from Jerilderie to Deniliquin, or from Jerilderie to Tocumwal? The line we advocated was a line from Jerilderie, *via* the Murray Hut, to Deniliquin. One of the principal reasons why we advocated a railway from Jerilderie to Tocumwal was that the Government had the land there, and that it was level land, with no engineering obstacles.
3496. What land do you refer to? The reserve between here and Jerilderie, a mile away and a mile wide.
3497. What is it used for? It is a stock route. Portions of it are leased to squatters. About 8 miles of it are leased to Barooga Station, and 18 miles of it are leased to Wannamurra Station.
3498. Have you any idea of the quantity of wheat produced in the district? What I know about the wheat production is only from hearsay. When I came here twelve years ago, there was a very small quantity of wheat produced. At that time, Numurkah, over the river, was just starting into settlement The country over the river has since proved to be the granary of Victoria. Many of the people on that side have sold out to come here, and they say they find this land better than the land in the Goulburn Valley. The Berrigan people will tell you that the land is all the same. There is a strip which goes very nearly to Deniliquin, and it is the same kind of land. The land all round between here and Jerilderie is, if anything, better land for wheat-producing, than the land in the Goulburn Valley.
3499. In a statement signed by yourself as Secretary, and Mr. Manning as President, written on behalf of the Tocumwal-Jerilderie Railway League, and addressed to the Public Works Examiners, you state:—"That with the railway facilities for carrying our produce to market largely increased areas would be put under crop in addition to the land along the stock route, of which alone two-thirds, or 14,000 acres, would be cultivated, with an estimated yield of 280,000 bushels of grain";—How did you obtain that information? We were collecting statistics at that time. Mr. Murti Looney was one of the collectors, and he went from house to house, and other collectors went round, and from information thus obtained, we compiled statistics for the Public Works Examiners.
3500. In the same letter you also made this proposal:—"That a Crown reserve for travelling stock, one mile wide, extends over the whole of the proposed route, therefore no land would have to be purchased by the Government to construct the line. That the above stock route, which is 35 miles long, contains about 22,400 acres of land, which would readily sell in special areas of 320 acres each at £4 10s. per acre, yielding a sum total of £100,000"? Yes; that was proposed.
3501. Do you still adhere to the opinion that the land would bring that price? Well; land has gone back a little since then, but I have no doubt that with the prospect of a railway, the land would fetch more than that now. Land has been sold at as high a price as that at Berrigan, and about this district.
3502. Here is another statement:—"That your petitioners are the holders of 378,831½ acres of land, every acre of which is adaptable for cultivation, and of which we have this year cultivated 8,098 acres, leaving an area of 370,723½ acres fit for future cultivation";—Who were the petitioners referred to? The persons from whom we collected the statistics. We sent in the original signatures of the people who signed the petition with the area of land held by each and all particulars attached, including the number of persons resident on each estate, and the number of acres under cultivation.
3503. How far do the people who hold this land reside from the proposed line? A line was drawn north and south half-way between Murray Hut and Berrigan. The area lies easterly from Murray Hut to the north and south line, and then westerly to Tuppal, towards Deniliquin.
3504. Would that include Mr. Falkiner's Tuppal property? Yes; I think it would include most of it.
3505. Were there any small proprietors among the land owners? There were some small selectors. There were selectors, I think, with about 100 acres—a number of selectors 6 or 7 miles from here with small areas—special areas. I think they selected at £4 an acre. They are now doing well; they are making a living on these small areas. One of them, for two seasons in succession, took first prize for malting barley, exhibited at the Wagga Wagga show.
3506. Is it a fact that people on the other side of the river have been selling out their property and coming over and buying land in New South Wales? Yes.
3507. Can you tell us of your own knowledge, on a rough estimate, how many of these persons have done so? Berrigan is peopled principally by farmers from Victoria—farmers who have sold out there, and come over to live at Berrigan.

Mr. P. A. Dunne. 15 June, 1892.

3508. I suppose you have had some conversation with these men;—have you heard what they sold their lands in Victoria for? I heard a man from Berrigan to-day say he sold his land in Victoria, on the other side of the river, for £6 14s. an acre.
3509. Do you know what they purchased land in New South Wales for? Considerably less than that—probably £3 or £4.
3510. *Mr. McCourt.*] Is the railway league still in existence in Tocumwal? No; it is defunct.
3511. And you have given up agitating for the railway? Yes.
3512. Was there ever any attempt at a survey;—did the Minister ever reply to any recommendation? An application was made to the Minister about a month or six weeks ago, asking that the survey now being made from the Rock to Murray Hut should be continued on to Tocumwal. The only reply we received was that the question would be considered.
3513. The people here, then, want to join on to the Rock? That connection has been asked for lately. In view of the construction of a line from the Rock to Murray Hut, the people here thought it would be better to ask for a continuation of that line to Tocumwal.
3514. If the line is to be extended from Jerilderie towards the Murray, which way do you think it should go in the public interest? This is the shorter way to Melbourne from Jerilderie.
3515. For what other reasons? They have Crown land from here to the Murray.
3516. Do you know the country between Jerilderie and Deniliquin? No; not very well. I have been over a portion of it.
3517. Do you know in what areas it is held? No; I do not. Twelve or fourteen years ago, I often used to go half-way to Jerilderie, and I understood the country was all in squatters' runs.
3518. If the Jerilderie line is to be extended which way do you think it should go towards the Murray? I should certainly advocate its coming to Tocumwal.
3519. You have no interest in Tocumwal, I suppose, beyond a public interest? I have the same interest which every man ought to have in the place in which he lives.
3520. I mean you regard the matter from a public point of view? Yes; I think it would serve the public equally well to come here as to go to Deniliquin.
3521. It would be better if the line were constructed here instead of as proposed to Deniliquin? Well, it would be equally as good, I will say that.
3522. And would it pay as well? I could not answer that question. The construction of a line in this direction would certainly promote the growth of wheat, and people who know what wheat-growing is regard this as the best part of New South Wales for wheat-growing. With facilities for traffic, in a few years time, all this country will be under wheat, and some means will be required to carry it away. At the present time the carriage to Jerilderie is by road, and at the time when the farmer wants to get his wheat to market, the roads are very bad. The road to Jerilderie is very bad in wet weather. The road is fairly good now, but this is not the season for carrying wheat; when the farmer wants to get his wheat away, the road is very bad.
3523. How comes it that the railway league of Tocumwal has become defunct? Because we got no encouragement.
3524. You think it is hopeless—is that it? No; it lapsed through carelessness, I think. There does not appear to be any proposal before the country. We have not heard anything about a proposal to construct a line to Tocumwal. We read constantly that it is proposed to construct a line to Deniliquin, either direct, or by Conargo, but we never hear of any proposals to make a line to Tocumwal. We have heard nothing of that for a long time.
3525. *Mr. Ewing.*] Do you know the country here intimately? Yes; I know it pretty well.
3526. Is the country from Tocumwal up to Corowa generally reputed to be better country than that from Tocumwal down to Mathoura? Yes.
3527. There is immediately to the north of us a piece of country which is supposed to be better than the Riverina usually is? Yes; it is said by those who profess to know, that there is a strip of land running nearly from Deniliquin past Murray Hut, through Berrigan, and right up parallel with the Murray, almost past Corowa—it is said that this is all splendid land, than which there is no better in Australia.
3528. Suppose we start from Corowa and go in a curved line to six miles south of Jerilderie, then go west towards Deniliquin, and then down between Tuppal and the Murray Hut, towards Tocumwal—is that the area that is generally reputed to be better for agricultural settlement than most of the Riverina? Yes; I should say so. I do not know the country behind Corowa; I have not been beyond Berrigan.
3529. But the country I have indicated is that which is generally reputed to be specially suitable for farming settlement? Yes; taking in the Clear Hills, which is said to be good land.
3530. And that is where we have a right to expect rapid settlement? Yes.
3531. And not in such country as that between Jerilderie and Deniliquin, *via* Conargo—we have no right to expect the same class of settlement there? No; I think the country there is of a harder nature.
3532. Can you generally get up the river from Tocumwal to Cobram by water? No.
3533. During what portion of the year can you do so? There is no traffic on the river at all now; it is only at high water we can get from here to Cobram by the river.
3534. Generally speaking, you would say that it was an unreliable means of communication? Yes.
3535. And from here to Echuca, is it generally reliable? Only in certain seasons. I may say in this connection that the Tocumwal people were assured by the Victorian authorities—a Committee with the same powers as this Committee—that if a bridge were erected at Tocumwal a line of railway would certainly follow it from Strathmerton to Tocumwal, on the opposite bank of the river.
3536. *Mr. Ewing.*] Your proposal was really for a line from Jerilderie down through Berrigan, picking up the farming settlement there, and on to Deniliquin? When the line was proposed from Jerilderie to Deniliquin we asked for a deviation *via* the Murray Hut, which we thought would be a shorter and better way than going by Conargo.
3537. *Mr. Dawson.*] Are there any red-gum forests here? Yes.
3538. Are there many saw-mills about? Not on this side of the river.
3539. Can you give us any idea of the price at which sleepers could be produced here? No.
3540. *Mr. Wall.*] Taking a straight line from Tuppal to the Murray Hut and Berrigan, that would not be more than 16 miles from the proposed line from Jerilderie to Deniliquin? The point at the greatest distance—Tuppal—is only 16 miles from the proposed line.

3541. A line running parallel to the proposed line, and connecting Murray Hut, Tuppal, and Berrigan, would be at its furthest point only 18 miles from the proposed line; would that embrace the good country you have referred to, or any portion of it? It would not embrace it any more than the present line does, because the line from Jerilderie to Deniliquin would be further away from Berrigan township than the present line. The Berrigan township is, I think, east of a southerly line from Jerilderie. Mr. P. A. Dunne. 15 June, 1892.

3542. What is the distance from Berrigan to Jerilderie? About 24½ miles by the telegraph line.

3543. Then Tuppal is about 16 miles from the nearest point on a straight line from Jerilderie to Deniliquin, and as far as Berrigan is concerned it would be closer to Jerilderie than to any other portion of the proposed line? Yes.

3544. Have you any knowledge of the tramway line extending from Koondrook to Kerang? No.

3545. Have you travelled on the line between Deniliquin and Moama? Yes, often.

3546. Do you think a line similar to that in construction would meet all the requirements of a place like this? I should think so.

3547. *Chairman.*] What is the population within 3 miles of the township of Tocumwal? The population is now about 350 or getting on for 400.

3548. Mr. Alexander in his report puts the number down at 350;—do you think there is quite that number here? There are more now than there were then.

3549. *Mr. McCourt.*] On behalf of the Railway League of Tocumwal you and Mr. Manning sent Mr. Alexander a letter setting forth reasons why the line should be constructed to Tocumwal? Yes.

3550. In that letter you stated that an eminent engineer estimated that the cost of the proposed line would not exceed £1,200 per mile? Yes.

3551. Who was that eminent engineer? I believe it was Mr. Cronin, of the firm of Cronin and Kerr, Sydney? At that time he was Superintendent of Roads in this district.

3552. Has he any knowledge of railway construction? I do not know. He is an engineer, and is considered a very smart man.

3553. Would that estimated cost include rails and everything, and build the railway complete? I do not know.

3554. What was the use of stating it if you did not know whether it would make the railway complete? Well, we did not inquire so closely as that.

3555. The engineer merely stated that a line could be constructed for £1,200 per mile? Yes, I believe he stated that. He did not tell me so, but Mr. Manning said he told him.

3556. But you have made the statement to Mr. Alexander, and signed it? I took it from Mr. Manning; I signed the statement in perfect good faith.

3557. Did the Railway League make no inquiry as to whether or not the line could be so constructed? No.

3558. You took it for granted that it could be done? We took an eminent engineer's word for it.

3559. *Mr. Wall.*] Has the agricultural population increased during the last few years? The agricultural population is on the increase. There has been a large addition lately. People have come from Tasmania. There must be twenty odd new holdings taken up on Mr. Falkiner's land.

3560. How has the private property between here and Jerilderie been acquired—by purchase at auction, or selection? The land at Tuppal, I believe, was acquired by buying selectors out.

3561. The people who selected this land did not hold it? They did not all sell out. There are a lot of selectors still on the land.

3562. Those who signed the petition live within a radius of 20 miles from Tocumwal? I believe that is the distance.

3563. It is set forth in that petition that a certain amount of land could be put under cultivation. I presume the petitioners inferred that if this line were constructed they could occupy the land more profitably for agricultural purposes than for depasturing sheep? Yes. At that time Mr. Falkiner had not sold any of the Tuppal estate. In fact it did not belong to him, for he bought Tuppal since that was written. He has only been eighteen months in possession, and he has already cut up and sold a lot of the land.

3564. I presume the persons signing the petition combined agricultural with pastoral pursuits. They state that a large quantity of the land could be brought under cultivation. Was it their intention to bring the land under cultivation in the event of the line being constructed? It certainly was, and there is not a single man who signed that petition, who has not since, more or less, increased his area under cultivation.

3565. I presume that now a stock tax has been imposed, there will be much greater inducements for the people on this side of the border to turn their attention to agricultural settlement than to pastoral settlement? Yes, and they will certainly do so if the stock tax continues.

3566. Melbourne has been your market for stock for some time? Yes.

3567. And you think the imposition of these stock duties will check the trade which hitherto existed between this part of the country and Melbourne? It will check it considerably.

Mr. George Robinson Jeffries, store-manager, Tocumwal, sworn, and examined:—

3568. *Chairman.*] What are you? I am manager for Mr. Wilson, storekeeper, at Tocumwal.

3569. Have you taken into consideration the desirability of a railway line from Jerilderie to Deniliquin, or from Jerilderie to Tocumwal, or any other part of the country about here? From a storekeeper and tradesman's point of view, the line from Jerilderie to Deniliquin would be of little or no benefit to Tocumwal; but, from a national point of view, or from the point of view of the district itself, we consider the nearer the line comes to us the better we are off, and that is the reason we advocated a continuation of the line from Murray Hut, so that we might be brought nearer to Sydney in the event of our wanting to deal there. It would give us the benefit of an alternative route, whereas at present we can only send the one way—*via* Melbourne. Mr. G. R. Jeffries. 15 June, 1892.

3570. If a railway were constructed from Jerilderie to Tocumwal would the people of Tocumwal get their supplies from Sydney by that line? Yes; they would deal with Sydney to a greater extent than they have done hitherto, more especially since the imposition of protective duties in New South Wales. We have dealt very little with Sydney for very many years. When I first came here, twenty years ago, Sydney was an unknown country to us, as far as dealing was concerned, but gradually within the last five or six years we have been obliged to take some of our trade to Sydney.

Mr. G. R. Jeffries. 15 June, 1892.

3571. And how does that trade reach you now from Sydney? By steamer to Melbourne, and thence by rail to Yarrowoyah.

3572. Can you tell us what are the charges, including freight, of bringing goods by that way from Sydney to Tocumwal? I have a note of two items. We got fifteen cases of jam from Sydney yesterday. The cost from Sydney to Melbourne was 17s.; of this 7s. 6d. was for freight by steamer, and the balance was made up of commission and charges at the Spencer-street Railway Station. The cost from Melbourne to Yarroweyah was £1 3s. 11d., making in all £2 0s. 11d., or equal to about 1s. a dozen, or 2d. a lb. on the jam. We have a duty on this side of 2d. a lb. on jam, and, of course, it is impossible to buy the jam in Victoria and land it here, and we are driven to Sydney. I mention this item of jam because the consignment happened to come through yesterday.

3573. What was the weight of the consignment of jam? Eleven hundredweight and a quarter. Jams come through Victoria, in bond, free, with a re-introduction certificate. Another instance I should like to give is of some packages of drugs I got through from Sydney yesterday, the invoice of which amounted to £69 9s. 7d. The cost from Sydney to Melbourne was £1 9s. 11d., and of this 10s. was for steamer freight and the rest made up of charges in Melbourne. From Melbourne to Yarroweyah the carriage was £1 13s. 8d., bringing up the total cost to £3 3s 7d. I think I reckoned it roughly at 1s. per lb., the weight being 7¼ cwt.

3574. *Mr. Wall.*] I presume that if you had direct communication by rail with Sydney you would not keep up a very large stock? It would depend in a great measure on the frequency of the communication.

3575. If you had direct communication by rail you could limit your stock by purchasing in Sydney out of bond and getting your goods delivered here, but you could not adopt that system if you had to get your goods to Melbourne by water? It does not take very long; you can get them round within seven days.

3576. You can always rely in getting them in seven days? Yes; the jam, for instance, was delivered within seven days from when I ordered it.

3577. Do you do much wholesale business here? Our business varies from a pound to a ton.

3578. The rule in the case of country merchants dealing with station goods is, to obtain goods when they receive orders for them? Yes. Stations, of course, always buy at one particular period of the year, more largely than at other times.

3579. And you take in your supplies to meet that demand? Yes; we know, for instance, when the shearing season is coming, and we purchase accordingly.

3580. If you had direct communication with Sydney you would be able to get your supplies from there if they were ordered;—you get the order first and the supplies afterwards? Hardly; we keep a pretty good stock.

3581. You anticipate orders at particular seasons? Yes; at shearing seasons we buy wool packs.

3582. Have you a bond here? No.

3583. In adopting that system you would require to pay duty, and in the event of your not selling your goods they would remain on your hands? Certainly. We buy our goods in bond, in Melbourne, and pay duty; that is so much cash laid out, and we have to keep the goods till they are sold.

3584. That is when you are dealing with Melbourne? Yes. Dealing with Sydney we would buy the goods duty paid, and instead of having that amount of cash to lay out when the goods came in, we should get our four months terms.

3585. The commercial relation between this part of the country and Sydney, since you have been here, have not been very large? Our business with Sydney is increasing every day, and must continue to do so. We must get some of our goods from Sydney now, because, in the case of some lines, it is cheaper to do so. We have a duty of 10 per cent. on woollen stuff and men's wearing apparel, and if we buy in Melbourne that 10 per cent. is put on when the goods come here. We have tried the Sydney market for some of the same things this season, and we find that Sydney is cheaper, after allowing for the extra cost of bringing the goods round. Melbourne merchants, seeing this, are now making a bid for the trade; they are offering better terms and are selling cheaper.

3586. Is it not the custom of Sydney merchants to deliver their goods to Melbourne freight paid? Some of them do that for us now; some of them will deliver their goods at the Spencer-street Railway Station, and place us on the same footing as if we bought in Melbourne.

3587. In the event of your doing a large business with Sydney, and getting your goods delivered, carriage paid, to Melbourne, would it not be much cheaper to get your goods by Melbourne than by rail from Sydney? It is not the rule to deliver them carriage paid in Melbourne. There are only two firms in Sydney with whom we deal, who would do that.

3588. In the event of that becoming an established rule on the part of the Sydney merchants, it would be much cheaper to get your goods through Melbourne? One never knows how that would be under the circumstances. If we had railway connection from Sydney to Tocumwal, no doubt we should get a great deal more stuff from the Sydney market. We have to cart the stuff from Yarroweyah; and land carriage is always a considerable item.

3589. If you get your goods landed free in Melbourne, is it not reasonable to assume that you can get them cheaper from Melbourne than from Sydney direct? Probably. As I have said, we have always got this 8 miles of land carriage to contend with, which is a considerable item in the winter time.

3590. With regard to the country between here and Jerilderie, have you any knowledge of the canal system that has been proposed? I only know that surveys have been made. In regard to the line that we are asking for, for some time before Mr Alexander came here we were agitating for a line to Tocumwal from Jerilderie. About the same time the agitation was started for connection with Deniliquin, and we then advocated the line from Jerilderie to Murray Hut, and then on to Deniliquin along the stock route. When Mr. Alexander's report appeared we found that he advocated a line from the Rock down through Savernake and Berrigan, and on to Murray Hut, and being perfectly satisfied as long as we got a line, and not being very particular as to which way it came, we thought when Mr. Alexander recommended that line that it would not be asking a great deal to suggest that the Government should continue it from the Murray Hut to Tocumwal.

3591. A direct line from Jerilderie to Tocumwal passes about midway between Murray Hut and Berrigan? Not along the stock route. The Murray Hut is right on the stock route.

3592. Which line do you think would serve the greater population—a deviation by Berrigan or by Murray Hut,

Hut, from Jerilderie to Tocumwal? I do not think there would be much to choose between them as far as population is concerned. The settlement round about Murray Hut, and within a few miles of Jerilderie, is very thick. A great deal of the country there is taken up in small holdings. From the Murray Hut towards Deniliquin there is also settlement. Mr. G. R. Jeffries. 15 June, 1892.

3593. With the exception of the owner of Tuppal, do you know whether any private owners have intimated their willingness to dispose of the land? It is currently reported that all of them would be glad to get rid of their land on the same terms as the owner of Tuppal is getting rid of his.

3594. Do you not think that in the interests of this part of the country an accumulative land tax would serve to break up a large number of these estates? The owners are breaking them up now from some cause or other. I suppose it pays better than growing wool.

3595. How many stores are there in this place? Two.

3596. What do you think would be the annual tonnage in stores? I could not say without making a calculation.

3597. What is the cost of sending wool to Melbourne? Last year we took a contract to send wool from our store to Melbourne at 75s. per ton—scoured wool.

3598. What was the cost of taking the wool from the station to your store? It was greasy wool that was sent in from the station, and it was carried by the station team to a wool-scouring establishment about a mile and a-half from here, where it was scoured, and afterwards delivered at our store.

3599. Was it dumped? No.

3600. What was the cost of putting that wool in your store from the station? I believe the cost to the squatter of taking the wool from the station to the wool-scouring establishment was 12s. 6d. per ton.

3601. What do you think would be the cost of conveying the wool from the surrounding stations generally, to your store? The carriers would jump at it at £1 per ton; it would not average £1.

3602. What would be the average cost of conveying wool from the stations situated between here and Jerilderie to your store? The average cost would be about 25s. per ton to deliver it at the Yarroweyah railway station. The average cost of conveying wool from the Yarroweyah railway station to Melbourne is £2 15s. per ton, making in all £4 per ton from the squatter's station to Melbourne.

3603. *Mr. McCourt.*] In case the border duties were done away with, where would the trade between here and Jerilderie go to in its natural course? Unless special facilities were offered by the New South Wales Government, I daresay a good deal of it would flow to Melbourne.

3604. Would it not all go to Melbourne? I question it, because it did not all go to Melbourne when the border duties were very light.

3605. I think you said that twenty years ago you hardly knew anything about Sydney here? I was speaking about this particular place.

3606. Is it not natural that if we had intercolonial freetrade the whole of the trade of this part of the country would go to Melbourne? Hardly, in the face of what has happened. We got nothing from Sydney twenty years ago, because we had no communication with Sydney. Since communication has been opened up with Sydney, people have taken advantage of it.

3607. But you say the reason why you have been driven to Sydney is because of the imposition of the 10 per cent. duties? There were specific duties prior to that, which drove us to Sydney for some articles.

3608. But the 10 per cent. duties have driven you there still more? They have driven us this year to give a trial to Sydney for some particular articles, which we never did before, and we find that the Sydney market is better than the Melbourne market. The only question is, how shall we get the stuff from Sydney?

3609. The reason of that is that you have to pay the 10 per cent. on the goods entering here? Yes.

3610. That you have to pay in cash;—that is one of the reasons? Hardly. If we could buy cheaper in Melbourne by paying the 10 per cent. of course we should do so.

3611. Then, according to that, the Sydney merchant undersells the Melbourne merchant? So I find in almost every line. I find the Sydney merchant undersells the Melbourne merchant—even the same house having a branch in Melbourne.

3612. The Sydney house is the cheaper? Yes; I have quotations now to hand, to that effect.

3613. *Mr. Wall.*] The duties are higher in Melbourne, are they not? The duties do not affect us; we get the benefit of the drawback system.

3614. *Mr. McCourt.*] And very often these drawbacks are larger than the duty paid, are they not? I can hardly answer that question. That rests between the Melbourne merchant and the customers.

3615. *Mr. Ewing.*] Does a line 6 miles north of Berrigan, and going east and west for a distance of 18 miles—that is, 12 miles west of Berrigan and 6 miles east of Berrigan—and embracing the whole country lying immediately on the Sydney side of the Murray, include all the farming settlement? Yes; I think the area should be extended further to the west to embrace all the farming settlement.

3616. Do you know anything about the line from the Rock going through Savernake and Berrigan, and on to Murray Hut? I only know a flying survey has been made, and I have been told about the country by the residents along the route.

3617. You have not been along it yourself? No. A line from the Rock would serve Berrigan and Murray Hut as well as any other line, and, if continued from Murray Hut to Tocumwal, it would serve us just as well as a line from Jerilderie.

THURSDAY,

THURSDAY, 16 *JUNE*, 1892.

[*The Sectional Committee met at "Tattersall's Hotel," Tocumwal, at* 9·15 *a.m.*]

Present:—

THE HONORABLE WILLIAM HENRY SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

The Sectional Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Mr. John Foster, Sub-Collector of Customs, Tocumwal, sworn, and examined:—

Mr. J. Foster. 16 June, 1892.

3618. *Chairman.*] What are you? Sub-Collector of Customs, stationed at Tocumwal.
3619. Can you furnish the Committee with information concerning the traffic across the river at Tocumwal? The imports for the year 1891, consisting of general merchandise, amounted to £24,965 12s. 9d., and the exports for the same year amounted to £116,143, including grain, hides, cattle, horses, sheep, pigs, skins, tallow, wool, and personal effects. The total amount of duty paid for 1891 was £2,512 8s. 6d. This year the duty would be three times as much, on account of the *ad valorem*.
3620. *Mr. Ewing.*] Do you know of any traffic having come from Sydney *via* Cobram? Yes.
3621. Do you know who had the goods brought through? Harris Brothers, storekeepers.
3622. Was there any large quantity? I remember one re-introduction certificate for 125 cases going to Harris Brothers, of Jerilderie.
3623. The route by which these goods came from Sydney was by steamer to Melbourne; thence by rail to Cobram, and from there by team to Berrigan? Yes.
3624. And Harris Brothers got their stuff that way in preference to getting it by the direct line from Jerilderie to Sydney? Yes; I expect it was because the freight was cheaper.
3625. You know of no other reason? No.
3626. *Mr. Wall.*] Do you know what the cost of freight was? I think the cost by steamer to Melbourne, including customs entries, would be about 15s. a ton—that is, for average merchandise. From Melbourne to Cobram the freight would be about £3 5s. per ton, making in all £4.
3627. And what would be the cost by team from Cobram to Jerilderie? The goods were taken to Berrigan, and from there they might be shifted to Jerilderie.
3628. Do you know whether the goods were intended for Berrigan, and were shifted to Jerilderie as a matter of convenience, because the storekeepers had no stock in the other store? I could not say.
3629. You could not say whether it was a direct trading transaction, and that they actually get their supplies from Sydney to Melbourne, and through to Jerilderie? No; I could not say that.
3630. It may have been a matter of convenience, and they may have taken the stock to their store at Berrigan, because they did not have the stuff at Jerilderie? Just so.
3631. Therefore, you cannot say it was a direct transaction? No.
3632. *Mr. McCourt.*] Is this an isolated case, or do they do it regularly? They do it occasionally.
3633. How often? They might do it once a month.
3634. They get a consignment from Sydney this way once a month? Yes.
3635. How long have they been doing that? Since the new duties were imposed. About the time the new duties came into operation the Jerilderie store was burned down, and I think they did the greater part of their business at the Berrigan store, until they built a new one at Jerilderie.
3636. Since they built the new store have you known of any transaction direct from Sydney to Jerilderie, *via* Melbourne? No; they all go to Berrigan.
3637. *Mr. Ewing.*] The transaction, therefore, is likely to have been a direct transaction from Berrigan to Sydney, if not from Jerilderie to Sydney? Yes; there is no doubt some goods went to Jerilderie.
3638. *Mr. Wall.*] Do you know whether these goods were landed in Melbourne clear of cost, or whether freight was paid for them from Sydney to Melbourne? I do not know.
3639. *Mr. McCourt.*] Do other storekeepers do similar things? I think the other Berrigan storekeepers do, in the case of special lines, the same as the storekeeper here does—they get jams and such things from Sydney.
3640. This has been principally since the new duties have been imposed? Principally.
3641. Do you think the new duties have a tendency to divert the trade to Sydney from Melbourne? Yes; I believe that if the duties are kept on, a great deal of our buying trade will be taken to Sydney instead of Melbourne.

THURSDAY, 16 *JUNE*, 1892.

[*The Sectional Committee met at the "Federal Hotel," Berrigan, at* 3·15 *p.m.*]

Present:—

THE HONORABLE WILLIAM HENRY SUTTOR (CHAIRMAN).

THOMAS THOMSON EWING, Esq.	WILLIAM MCCOURT, Esq.
WILLIAM CHANDOS WALL, Esq.	HENRY DAWSON, Esq.

The Sectional Committee further considered the proposed Railway from Jerilderie to Deniliquin.

Mr. Emanuel James Gorman, auctioneer and farmer, Berrigan, sworn, and examined:—

Mr. E. J. Gorman. 16 June, 1892.

3642. *Chairman.*] What are you? An auctioneer and a farmer.
3643. Where do you reside? Principally in Berrigan.
3644. Where is your farm? About 10 miles east of Berrigan.
3645. How much land have you there? Two thousand five hundred acres.
3646. How much do you farm? I have not farmed any at all this year. I have 100 acres coming under crop now, and I propose to have 500 acres in next year. I have called for tenders for the clearing and ploughing.

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3647. What do you do with the remainder of your land? Run sheep upon it.
3648. Can you tell us anything about the market for wheat—I suppose you have not sent any away yet? I take an interest in the question.
3649. Have you lived here long? I have been living in the district for the last fifteen years.
3650. Can you give us any idea of the capabilities of the district for wheat-growing? Fifteen years ago, I think, my father was the first to grow wheat in the district. At that time he sowed about 50 acres, and we had to mow it with an old-fashioned mowing machine, and had to thresh it with horse-power. We got the wheat gristed in bond, and sold it to settlers in the district, who were then mostly sheep-farmers.
3651. Where was it gristed in bond? At Yarroweyah; it was carted there, and carted back as flour. That is about twelve years ago.
3652. What would be about the average crop of wheat in this district? I consider that with good tillage and good management a man ought to average five bags to the acre every year—that would be about 20 bushels.
3653. Where is the market for your wheat at present? Our only market at present is Jerilderie.
3654. What price do you get there? The price has been down to 2s. 9d., but this year, owing, I think, to protection, the ruling price at Jerilderie has been about 4s. 3d. I think it is quoted at that now.
3655. How far is it from here to Jerilderie? About 24 miles.
3656. Can you tell us what is about the average cost of putting in wheat and harvesting the crop on the ground? Where the farmer employs his own labour I could not exactly say, but with contract labour I estimate the cost at about 30s., including cartage and everything at the present rate.
3657. What is the cost of cartage from here to Jerilderie? In the summer months, when the roads are very good, it is about 1s. 6d. per bag. They are paying at present about 25s. a ton for goods.
3658. *Mr. McCourt.*] What connection would you have with the proposed railway from Jerilderie to Deniliquin? None whatever.
3659. Are the people here in favour of the construction of that line? Of course, it would be selfish for us to oppose it, but it is our opinion that it would not be a payable line.
3660. Has there been a survey of the line to Berrigan? There has been a survey from The Rock, past Berrigan, to Murray Hut.
3661. But not from Jerilderie? Not yet.
3662. At what point do the people of Berrigan desire to be connected with the railway? We think Jerilderie would be the quickest route and the one most likely to serve. There has been an agitation for a light line to Jerilderie for years.
3663. Has there ever been a survey or examination of the country? I believe there has been an examination of the country.
3664. Have you ever interviewed any Minister with regard to it? Yes; there have been three deputations to the Government in Sydney.
3665. What answer was given? In reply to the first deputation Sir Henry Parkes said that he would favourably consider the proposal, and that a survey would be made at once; but that has never been done. The second deputation interviewed Mr. Bruce Smith, the then Minister for Public Works, and I think the visit of Mr. Alexander to the district was the result. More recently Mr. Drummond and myself interviewed Mr. Lyne, and that gentleman said that if the line from The Rock was not proceeded with within a reasonable time, he would recommend the construction of a tramway from Jerilderie to Berrigan.
3666. If a line were made from The Rock to Berrigan, or from Jerilderie to Berrigan, would it then be necessary to make the line from Jerilderie to Deniliquin? My opinion is that if the line from The Rock were extended to Berrigan a continuation of the line to Deniliquin would meet all the requirements.
3667. Do you think it would be better in the public interest to construct a line from The Rock to Berrigan and on to Deniliquin than to construct a line from Jerilderie to Deniliquin? I think so.
3668. And you believe that to be the view held by the people of Berrigan? Yes.
3669. If such a line as that were constructed what amount of trade would be furnished to it by the people about here—anything considerable? I think so. We have taken a lot of trouble to prepare statistics, and I believe we should double the amount of cultivation in three years.
3670. Within a radius of 10 miles of Berrigan about how much wheat is produced annually at the present time? There are some statistics with reference to the wheat production, but I could not tell you exactly.
3671. But speaking roughly, as an auctioneer and farmer, having some knowledge of the district? I think the annual production of wheat must be fully 25,000 or 30,000 bags.
3672. That quantity is produced under the difficulties with which you have at present to contend? Yes.
3673. If a line of railway came here would that production be increased? Yes, considerably; in fact it is increasing already. I myself have never had any wheat in; but now that the Victorian stock tax has been imposed I propose to cultivate 400 acres next year.
3674. If a line came from Jerilderie to Berrigan, where should it be continued to—Tocumwal or Cobram? It would benefit the greatest number of small settlers if it were continued to Mulwala.
3675. That would be the best line? In my opinion.
3676. Is that opinion held here by the people to any extent? Well, I think so.
3677. Not to Tocumwal? We consider it would benefit more people if taken to Mulwala, and it would also join the Victorian line there.
3678. *Mr. Wall.*] Is there a greater quantity of agricultural land between here and Jerilderie than between here and Tocumwal or Mulwala? All the land between here and the river, running east and west, is good agricultural land.
3679. How far does the good agricultural land extend towards Jerilderie? I think about half-way.
3680. What distance would that be? It runs, I should say, about 11 miles. I know there is a farm 12 miles from here, which would be 11 miles from Jerilderie, the owner of which got the prize for wheat here this year—seven bags to the acre.
3681. What is the distance between here and Jerilderie? About 24 miles.
3682. Is the agricultural country held by private owners, in large blocks, or by settlers who would increase their production, in the event of a line being constructed? A large quantity is held by settlers. In the Berrigan district the squatters do not hold such large areas.

Mr. E. J. Gorman. 15 June, 1892.

3683. Can you give us an idea, approximately, of the number of persons within a radius of 10 miles of your proposed line, *via* Berrigan, to Mulwala, who would be likely to devote their attention to agriculture? According to the statistics we collected there were seventy-five persons, and I am satisfied that the special areas about here would also be embraced in the country affected by the proposed line, and, of course, they would be occupied by small holders.
3684. Were the seventy-five persons who signed the petition referred to *bona fide* farmers occupying small holdings, or were there any large holdings included? They were all farmers with small holdings.
3685. How far was the furthest of those holdings from the proposed line? About 12 miles.
3686. Then you can say that there are seventy-five farmers holding land within a radius of 12 miles of the proposed extension to Berrigan and Mulwala? I believe there are more now. That was the number, two years ago. As an auctioneer, I get letters every day from people desirous of coming here and purchasing small-sized blocks.
3687. In your position as an auctioneer, do you know if the owners of large holdings have evinced any desire to dispose of their land to agriculturists? Yes; Mr. McFarland has placed 12,000 acres in my hands to be sold in small blocks, between here and the river, on the road to Cobram.
3688. What is the price of that land? He is asking £4, but he is giving exceptional terms—10s. down, and eight instalments of 10s. each at 6 per cent. interest. Mr. Wilson, who lately bought a portion of Momalong, told me only last Saturday that he would be willing to cut up 20,000 acres immediately, if there was a demand for it.
3689. On similar terms? I believe so.
3690. He did not state the terms? He said he would give any terms, so long as he knew the men were *bona fide*, and could give a fair deposit to start with.
3691. Have you any knowledge of the character of the agricultural land in the Goulburn Valley, in Victoria? Yes; I was born there.
3692. Does the land adjacent to this proposed line bear favourable comparison with the land in the Goulburn Valley? Yes; there is more of it.
3693. Do you think it is as good in quality? For wheat-growing, I believe it is better.
3694. Have you any idea of the capital value of land in the Goulburn Valley at the present time? Near the irrigation works, I believe land is selling at as high a price as £20 an acre. Further down, good land averages from £8 to £12.
3695. What would be the value of the land in the Goulburn Valley, similar to this land? About from £8 to £10; it would depend on the situation.
3696. And with irrigation, you think the value of that land would be increased to a great extent? I am not a great believer in irrigation, which I think is more applicable to a system of intense cultivation and small holdings. I think the time for irrigation has not arrived in this part of the country. In the Goulburn Valley they have gone in for viticulture, and farms are selling for £20 an acre.
3697. Is farming a profitable occupation in the Goulburn Valley, where land is purchased at such a price as that? These purchases are made principally by men of capital—men who have made money, and who buy out other farmers.
3698. In the event of a railway being constructed here, do you think settlers from the Goulburn Valley would be induced to come here and purchase land at £4 an acre, in preference to giving the prices now demanded in the Goulburn Valley? Yes; most of the land in the Goulburn Valley, and on the other side, has been badly worked, and it is worked out; there is no proper system of tillage there; they allow wild oats and other things to grow, to the detriment of the crop.
3699. You said you had 12,000 acres of land placed in your hands for disposal. Have you had any offers for the purchase of that land? I took several gentlemen over the land, but they were the farmers who afterwards settled on Mr. Falkiner's land, and from whom they got terms which suited them better, as they had not to buy the land for so many years. Most of the people who come here like to lease land, with the option of purchase; they have not the money to put into the land at a first start.
3700. Then we are to infer from your evidence that there is land here equal to the land in the Goulburn Valley, which you value at £8 and £10 an acre, but you cannot at the present time find purchasers for it at £4 an acre on the terms you have stated, owing to want of railway communication? I believe want of railway communication is a big factor in it.
3701. If land is available for purchase at £4 an acre situated only 12 miles from Jerilderie, do you not think it would be sufficiently served with the existing railway communication? There has not been any land offered there.
3702. The settlers who located themselves here, I presume, were principally Victorian farmers? Principally.
3703. And they came over here and purchased land in preference to buying at the high prices ranging in the Goulburn Valley? Yes.
3704. *Mr. Dawson.*] If there were an unlimited demand for the wheat, what is the lowest price at which it could be produced with profit to the farmer? It could be produced for 3s. a bushel, the farmer using his own labour. It would pay them better than grazing on a small place, although perhaps a man would not get wealthy at that price.
3705. If a man could sell all the wheat he could grow here at 3s. it would pay him? Yes; I believe it would.
3706. Have you given any consideration to what is known as the betterment principle? Yes; I have considered it a little.
3707. Do you think that if a railway were constructed here, those whose land was thus enhanced in value should contribute a portion of that value to the State? At present, I believe it is only the man whose land the railway goes through who has to contribute; I do not think that outsiders have to pay anything.
3708. I mean within a certain distance on each side of the line? Yes; I believe they ought to pay.
3709. A man within 3 miles of a railway station might be benefited to the extent of £10,000, and a man 10 miles away might be benefited to the extent of only £5,000;—do you believe in the principle of making them pay in proportion? Yes; and I believe that if a man's property is cut up and injured the neighbours ought to pay some small proportion of the damage.
3710. If the State injures a man's land of course it pays? The State has not done so in the case of the Culcairn to Corowa line, where there were great complaints. If a man through whose land the railway goes, is injured, it is not fair that those immediately adjoining, and who get the full benefit, should come off scot free.

3711.

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3711. Do you know anything of the timber about here? Yes.
3712. Is there any timber on the line, suitable for sleepers? No; I think the nearest timber suitable for sleepers would be at the Murray. At present the timber is being taken into Victoria, and is cut in the mills there.
3713. Where does the wool go to from here? Principally to Melbourne; but a number of the pastoralists have been sending their wool to Sydney for years.
3714. In the event of this railway being constructed, do you think fat stock would go to Sydney? If chilling works were established I believe it would. At present the Sydney market would not justify fat stock being sent there; but I believe that stock would be sent to freezing works at Narrandera. Something must be done to find an outlet for the fat stock.
3715. Is the Victorian stock tax likely to make Melbourne a market? No; it has practically closed it.
3716. I suppose it is simply a matter as to which is the best market and where you would get the highest price? There is a movement here for the establishment of freezing works right through the country. I believe they talk of establishing one at Narrandera, and if that were done, I believe the stock would be sent through that way.
3717. There is also a proposal to establish one at Deniliquin, is there not? Probably; I know there is a proposal to establish one at Corowa, and at Albury.
3718. And you think a railway from Jerilderie to Deniliquin would not pay interest on the cost of construction? I have no knowledge of it after it goes past Deniliquin; but from what I hear of the country between Deniliquin and Jerilderie I should not think there is sufficient settlement to justify the construction of the railway.
3719. *Mr. Ewing.*] How far are you from Berrigan? Ten miles.
3720. You are, then, about 6 miles from Savernake—pretty well between the two? Yes.
3721. Therefore, a line going through Savernake and Berrigan, on to Murray Hut, would go right through your place? Yes.
3722. Do you know what the land is like between Savernake and the Rock? I know the country for about 25 miles.
3723. Does the land steadily get poor, or does it get better? It is about the same for some distance, but it then gets better, I think.
3724. Is it as good as the Clear Hills? Well, there is a difference of opinion. I do not consider the Clear Hills country as good as this.
3725. It commences to get better, then, a little to the west of the Clear Hills? And north-west.
3726. Right on to the Rock, what is it like—is there much settlement there? I could not say. I hear there is.
3727. At Berrigan you are 24 miles from Jerilderie. That would be your shortest distance from the Jerilderie to Deniliquin line. If this line were constructed would you still make Jerilderie your shipping place? Yes.
3728. Are there any difficulties on the route between here and Jerilderie? None whatever.
3729. Is there not one creek—Coreen Creek? Not between here and Jerilderie.
3730. What is the freight from Berrigan to Jerilderie? About 1s. 6d. a bag.
3731. Are there any selectors east of Savernake? Yes.
3732. How far east of Savernake—I mean thick settlement—towards Bull Plain? The population is not so thick as it is here, but there are some settlers there. Of the thick settlement, Berrigan is the centre.
3733. Where does it terminate—does it go as far as Savernake? Yes.
3734. How far towards Jerilderie? About 6 miles.
3735. Then how far towards the Murray? To the river.
3736. And then to the westward as far as Murray Hut? Yes.
3737. That terminates the thick settlement? Yes.
3738. You told Mr. Wall that some people to whom you had offered land, which you had for sale, had made terms with Mr. Falkiner? Yes.
3739. Are they this side of the Murray Hut? Yes.
3740. How far west of Berrigan? The nearest one is within 7 miles, and the furthest one about 13 miles.
3741. Then the seventy-five farmers who signed the petition are all within the area you have described? The settlers recently located on Tuppal were not included.
3742. There would be more, then? Yes; considerably more now.
3743. From information you have got from Mr. Falkiner and others, you say the land is available here as soon as there are farmers to take it up? Yes.
3744. The squatters here are prepared to sell? Yes; there is one landholder who has placed all his land with me to lease, with seven years' purchase.
3745. Some reserves between here and Jerilderie were thrown open as special areas, were they not—a little to the north of Berrigan? Yes; about 8 miles.
3746. What price did the Government put upon them? £3 an acre.
3747. Were they taken? Yes.
3748. And the purchaser had to do the residence? Yes.

Mr. John Jones, farmer, near Berrigan, sworn, and examined:—

Mr. J. Jones. 16 June, 1892.

3749. *Chairman.*] What are you? A farmer.
3750. Where is your holding? About 3 miles north-west of Berrigan.
3751. How much land have you under cultivation? I have 400 acres under crop this year.
3752. How long have you had the farm? Three years.
3753. What has been your average crop during that period? Quite 20 bushels to the acre. The first year I was late coming here, or it would have gone 25 bushels. We were late putting in the crop, and it rusted, but still I had an average of 18 bushels that year.
3754. What is the largest crop you have had? I have had 8 bags—36 bushels—off new land.
3755. Were you farming on the Victorian side? Yes. I was ten years in Yarroweyah.
3756. How do you think the land here compares with the land over there, with regard to wheat-growing? When I came here I had no idea of stopping in this place. I came over with the view of speculating; but, after seeing the capabilities of the land, I decided to sell my land in Victoria and come over here. I prefer this land to the other land.

Mr. J. Jones. 16 June, 1892.

3757. You think the land here is quite equal to, or better than, the land on the other side of the river? Yes; taking it right through, it is better.
3758. It produces better crops? I never had such heavy crops on the other side. I believe if the land here is farmed well it will produce heavier crops all round.
3759. *Mr. Ewing.*] You look to Jerilderie as your shipping place? Yes.
3760. Notwithstanding the fact that you have had to draw your wheat 25 miles to Jerilderie, you have chosen to send it there, rather than make use of the Victorian railway system? I could not make use of the Victorian railway system.
3761. Jerilderie has been your port? Yes.
3762. Do you know the land between here and Jerilderie? Yes.
3763. Have you seen those cheap lines in Victoria? Yes.
3764. A line could be constructed cheaply over this country? Yes; I think a line, similar to those in Victoria, would suit this country very well for ten years to come.
3765. You heard the evidence of Mr. Gorman in regard to the country in this district under settlement? Yes.
3766. Do you think that what he stated is correct? Yes; I believe it is.
3767. And the lines indicated by him embrace the agricultural settlement? Yes.
3768. Therefore, a line from here to Jerilderie would pass through the best farming settlement you know of here? It might not go through the best of it, but it would serve the best of it.
3769. And, therefore, a line from Berrigan to Jerilderie would be a feeder to the New South Wales lines? Yes; I am sure it would.
3770. Suppose it did not appear, at present, that the line would pay, would the people interested in the land here sign a guarantee to pay a special rate—say as much as 2d. a bushel—till it did pay? Yes; a number of people have already done so. Such a paper has been signed, and I believe will be handed to the Committee.
3771. They will pay special rates till the line pays? Yes.
3772. Is there any other traffic, besides wheat, which would make this line a revenue-producing line? We would get our supplies from Sydney. I believe the storekeepers would do so, and I am sure the farmers would. There is, also, considerable traffic half-way between here and Jerilderie. The Jerilderie people get their firewood from here.
3773. Is there any stone in the district? Yes, any amount.
3774. And you think that would be very valuable? Yes; I believe it will in the near future.
3775. And there would be other produce, such as barley and fruit? Yes; this district is splendidly adapted for fruit growing; there are a number of people going into the fruit industry.
3776. Can you give us any idea of the number of bushels of wheat that would be produced this year? I should think, speaking of the acreage, that there would be 25 per cent. more this year than last year. Mr. Wise, the miller, at Jerilderie, bought about 30,000 bags from here last year.
3777. Did he buy all the wheat? No.
3778. Were there 40,000 bags last year? Yes.
3779. And you think there will be 60,000 this year? Yes; I am sure there will.
3780. If there was a railway here, how much could the country 10 miles round Berrigan grow? It would grow 200,000 bags.
3781. Do you believe the people would be here to grow it? Not at present; but the land is capable of growing wheat, and that the people will come here there is not the slightest doubt.
3782. As you and others came here without a railway, you think that, if railway communication were established, people would come here. I am quite sure they would come here. I know a number of people across the river who are only waiting for people with a little money to buy them out, when they will come over here.
3783. If the direct line from Jerilderie to Deniliquin were made, would you use it? No.
3784. It would be of no use whatever to you? None whatever.
3785. The farming settlement here is the settlement south of Jerilderie, of which we have heard at Jerilderie, Conargo, and Deniliquin;—this is what they have all spoken of? Yes; when speaking of Berrigan, this is the centre.
3786. This is where the wheat is to be grown, and you would not use the Jerilderie to Deniliquin line? Not at all.
3787. *Mr. McCourt.*] If the line were made from Jerilderie here, do you think Berrigan should be the terminus? Berrigan is a very central place. It is 30 miles from Mulwala, 23 or 24 miles from Cobram, 23 or 24 miles from Tocumwal, and 23 or 24 miles from Jerilderie. You could not have a more central place.
3788. You think Berrigan ought to be the terminus? I believe that the terminus would suit at Berrigan for a number of years.
3789. Not to go on to the river at any point? No.
3790. If the border duties were taken off, and we had intercolonial free-trade, where would the natural market be for the wheat of this district? I should certainly say that Melbourne would then be the market, because, when we grew more than we could consume, we should have to get to the nearest point on the sea-board.
3791. In case of intercolonial free-trade, none of the wheat grown in this district would go to Sydney? I could not say that, because, at present rates, I think it would be just as cheap to send it to Sydney. The railway freight from Jerilderie to Sydney is 5d., and it would be (say) 2d. from here to Jerilderie, which would be 7d. per bushel to Sydney, and it would cost that to take it to Melbourne.
3792. If there was a railway from here to Cobram or Mulwala, the natural market would be Melbourne, would it not? I believe it would.
3793. And it would be the market from which you would get your supplies? Well, it might be; it would be just a matter of price, I suppose.
3794. Therefore, if we had intercolonial free-trade, and you sent your wheat to Melbourne, you would not use this line at all, if it were constructed? Very likely not.
3795. There would be no revenue from it then? There would be an indirect revenue that would give employment to a lot of people.

3796. But the people would not use the line between here and Jerilderie? If there were special inducements offered to go to Sydney they would go that way. Mr. J. Jones. 16 June, 1892.
3797. If special inducements were not offered, Melbourne would be the natural market for the wheat of this district, in the event of intercolonial free-trade being established? Only in case we were over-producing—only if we could not consume all we produced.
3798. You mean New South Wales? Yes.
3799. *Mr. Ewing.*] Before you could get to Melbourne you would require the construction of a line from Berrigan to Cobram? Yes; we could not go to Melbourne unless that line were made.
3800. You take it for granted that, with intercolonial free trade, that line would be made? It might be made; I could not say. In the event of a line not being made to Cobram or some other point on the river, we should certainly go to Sydney.
3801. Your whole trade would go to Sydney under present circumstances? Yes; and we do not expect a line from here to the river—I know I do not.
3802. *Mr. Wall.*] Viewing this district, apart from its connection with Melbourne or Sydney, do you think its agricultural resources will in time be the means of settling a population sufficient to support a railway—apart from Victorian or Sydney traffic? Yes; I am certain of that.
3803. You look forward to a very large population being settled on this district? Yes; the land is capable of sustaining a very large population.
3804. Do you think that population engaged in agricultural pursuits would be sufficient to make this line pay in itself—a line through this country between Jerilderie and Berrigan? I am quite sure of it—that is, a cheap line of railway.
3805. *Mr. Dawson.*] What is the lowest price at which wheat can be profitably grown? I put the ploughing down at 7s. an acre, the seed at 4s., harrowing 1s., bags 2s. 6d., and harvesting 5s., making altogether 19s. 6d. an acre. To this has to be added for the first year the cost of clearing, which I put down as 15s., which makes a total cost for the first year of 34s. 6d. I consider that anyone who farms well can grow 20 bushels to the acre, which, at 3s., would be £3 an acre, as against 34s. 6d. Therefore, I consider a farmer can grow wheat at a profit for 3s.
3806. *Mr. Wall.*] In your estimate of cost have you included the interest on the capital value of the land? No; but there would be ample margin between 19s. 6d. and £3, for the 15s. could be written off, as the expenditure is only incurred the first year. If we say that the cost of growing one acre would be 25s. that would leave 35s. an acre, which would pay, I think, for the interest on the capital invested.
3807. *Mr. Dawson.*] You agree with Mr. Gorman, that if you had unlimited demand, 3s. a bushel would pay you? Yes; I am sure it would. I heard a practical farmer across the river say he could grow wheat at 2s. 6d. a bushel with a profit.
3808. You say that, if there was a railway here, you think there would be 200,000 sacks of wheat sent away every year? Yes.
3809. That would be 22,000 tons? Yes.
3810. That would be 400 tons a week? Yes.
3811. *Mr. Ewing.*] You say that, you think, this year 60,000 bags will be grown? I am quite sure of that—provided something unforeseen does not turn up in the shape of rust.
3812. Taking it roughly at 4 bushels to the bag, that would be 240,000 bushels? Yes.
3813. You say that you and other farmers here will agree to give 2d. per bushel freight from here to Jerilderie till the line pays? Yes; all the farmers we have asked yet have agreed. I am quite agreeable to it myself, and I know a number of others are.
3814. Do you know that that means £2,000 for freight between here and Jerilderie this next year? I daresay, because I am paying £100 myself in a year.
3815. The length of the railway from here to Jerilderie being 24 miles, and the cost of construction, say, £1,500 per mile, that would be £36,000, which, at 4 per cent., would make the annual interest £1,440;—do you believe that the grain traffic from here to Jerilderie during the coming year would pay the interest and £600 to the good? I would not like to say that.
3816. It appears to work out that way? If the railway were available, and it suited a sufficient number of people, I am sure it would.
3817. And in addition to that, there would be the wool, the wood, and other things? Yes; and our own supplies from Sydney. Sevenpence per bushel would land the wheat in Sydney.
3818. That would pay you very well? Yes.
3819. *Mr. Wall.*] You say you think it would pay the interest and leave a margin of £600 the first year;—viewing the probable development of the place, do you feel quite sure that, if a light line of railway were constructed, it would pay within six years? Yes; I am quite sure it would.

Mr. Curtis Drummond, farmer, near Berrigan, sworn, and examined:—

3820. *Chairman.*] What are you? A farmer, residing within half a mile of Berrigan. Mr. C. Drummond. 16 June, 1892.
3821. What operations do you carry on? I grow wheat principally.
3822. What is the size of your farm? Seven hundred acres.
3823. How much have you under cultivation? This year I have 450 acres.
3824. Do you grow any crops besides wheat? We grow oats.
3825. How much wheat per bushel do you grow on your land? We have had up to 30 bushels per acre off fallow, but of course a man cannot have all fallow ground. We have only been here four years, and we have had up to 30 bushels off fallow land.
3826. Do you raise any stock on your land? No; only a few horses and a few calves.
3827. *Mr. Wall.*] With the ordinary mode of farming, what is the average yield here? Between four and five bags to the acre—about 18 bushels.
3828. You say you are cultivating 450 acres this year;—is that the greatest area you have cultivated? We have 100 acres more this year than formerly.
3829. Have there been any special inducements that have led you to put in an extra 100 acres this year? The only inducement was that, only having a small area, we thought we could not do anything else but cultivate, and we regarded it as certain that, when we put forward our energies in the way of cultivation, the Government would give us facilities for carrying our produce away. We were told that four years ago, when

Mr. C. Drummond. 16 June, 1892.

when we sent a deputation to Sydney—that if we went in for cultivation in the district a line would be built to take the wheat away. On the strength of that we went in for cultivation.
3830. That was four years ago? Yes.
3831. Then there have been no special inducements offered to you to put in wheat other than that you anticipated that a railway would be constructed? Well, it paid us to do it.
3832. You have increased your area this year by 100 acres? Yes.
3833. Has there been a similar increase amongst the farmers of the district? Yes.
3834. Your market has been Jerilderie? Yes.
3835. What has been the average price of wheat at Jerilderie? Since I came here it has been from 3s. 6d. to over 5s.; but it has always been bordering on 4s. since I came here.
3836. Do you think that wheat can be produced here at 3s. a bushel? Yes; for less than that.
3837. And if railway communication existed agricultural settlement would increase in the district, and larger areas would be brought under cultivation? Yes.
3838. Have you cultivated land in Victoria? Yes.
3839. In what part of Victoria were you? Just across the river. I was a neighbour of Mr. Jones, the last witness.
3840. How do you find the land here as compared with the land over there? The land here is better; it is more easily worked.
3841. You say you put your land under fallow; how long do you leave it under fallow? From August to April. We fallow in August, September, or October, and sow the wheat in March, April, or May.
3842. You do not leave it in fallow the whole year? No; four or five months at the outside.
3843. How long do you think the land here will stand cultivating without being manured or otherwise renovated? I have known land to be cultivated here for nine years and give a good crop. People have told me that they have had the land under cultivation for nine years.
3844. How long were you cultivating land on the other side of the river? For five years.
3845. During that period of five years you had no opportunity to test the lasting capabilities of the land? No; but I saw it long before I commenced to cultivate. I have seen land over there which, after being left for a year with sheep upon it, and the weeds being ploughed down, has given just as good a crop as ever.
3846. And how long had it been under cultivation? Some of it as long as twelve or fourteen years.
3847. And you think the land on this side is quite as good as the land on the other side? Yes; and as far as the working of the land is concerned, it is better.
3848. *Mr. Ewing.*] You heard a previous witness mention a certain piece of country where the settlement was? Yes.
3849. Do you agree with those boundaries? Yes. In some places the lines indicated are a long way inside the agricultural settlement. There are special areas, the traffic from which, if the line is not built here, will be taken by a bridge at Yarrawonga. On the other hand, if the railway were brought here, we would command that traffic for Riverina.
3850. Berrigan is fairly well the centre of the district where these farmers are? Yes.
3851. If a line were built from here to Jerilderie would you use it? Yes.
3852. Would you pay a special rate for wheat—say, 2d. a bushel? Yes.
3853. If a line were constructed direct from Jerilderie to Deniliquin, would it be any benefit to the farming community here? As far as that line is concerned, we are not directly interested in it.
3854. Would it give you an easier outlet for your produce? No. We look to New South Wales at the present time as an outlet for our produce.
3855. Would you still continue to cart your produce to Jerilderie? Yes; a line from Jerilderie to Deniliquin would make no difference as far as that was concerned.
3856. In other words, Berrigan is as near to Jerilderie as it is to any part of the proposed direct line? Yes.
3857. *Mr. McCourt.*] Do you regard the line from Jerilderie to Deniliquin as competing with the proposed line from Jerilderie to Berrigan—are they competing lines with regard to their claims for construction? No; not at all.
3858. You want a separate line here? Yes. I do not reckon that they clash at all.
3859. Suppose the Government were only prepared to make one line—to extend the line from Jerilderie, in order to make the Jerilderie line pay—then which line should be constructed in the public interest? The Berrigan line.
3860. In preference to the other? Certainly.
3861. *Mr. Dawson.*] Do you think both lines ought to be constructed to help the Jerilderie line to pay? As far as the Deniliquin line is concerned, it is a matter of opinion whether it would take traffic away from Jerilderie or bring traffic to Jerilderie. I consider, at the present time, that a line to Deniliquin would take the traffic away from Jerilderie. If I were living in Jerilderie I should be opposed to the extension to Deniliquin, because there are no farmers along that route to bring traffic to Jerilderie; whereas, if the line were to tap this district, there would be plenty of farmers whose produce would go to Jerilderie.
3862. *Mr. Wall.*] You state that the construction of the line from Jerilderie to Deniliquin would not in any way benefit the farmers of Berrigan, or offer facilities for the farmers of this district to convey their produce to market? No.
3863. You think that the importance of this district demands a line to itself? Yes.
3864. *Mr. McCourt.*] In case a line from Jerilderie to Deniliquin were constructed, would it not enable the Deniliquin and Moama millers to come here and compete with the millers of Jerilderie for your wheat. Would it not give you an extra outlet? Of course, we should have that extra outlet.
3865. At present, Jerilderie is your sole market? Yes.
3866. At present, you have no communication at all with Moama or Deniliquin? No.
3867. If the line were constructed from Jerilderie to Deniliquin would it not enable the Deniliquin millers to come here and compete with the Jerilderie millers for your wheat? Yes.
3868. Would it not be a benefit to you here? Yes.
3869. Therefore, you would get some benefit from that line? Then we would want a short line to Jerilderie besides the line from Jerilderie to Deniliquin.
3870. But at present, leaving the Sydney market out of the question, the only miller who buys from you is the Jerilderie miller? No.
3871. What other millers come to buy here? Millers from Goulburn and Albury. 3872.

3872. Would not the construction of the line to Deniliquin enable the Deniliquin miller to come here also? Yes. Mr. C. Drummond.

3873. In that way would you not get a benefit? We would get that benefit; but as far as we find, in regard to competition between the millers, they are all the same. Sydney rules our market, and the millers who come here tell us that London rules their prices; so that we want to alter the London market to gain any benefit. 16 June, 1892.

3874. You do not want to trade with Deniliquin at all then? No; we are not anxious that way. All we want to do is to get to the seaboard. We would sooner send our produce through our own country—through New South Wales.

3875. *Mr. Wall.*] Which would you prefer—a line constructed with its terminal point at Berrigan or a line constructed to Cobram, to give you the shorter distance to market. Which do you think would be used most by the farmers—a connection with Jerilderie, or a connection from Berrigan to Cobram and the Victorian lines? From my own experience, since I came here, I would sooner have the Jerilderie connection, for this reason, that it does not matter what I have to send I have the back country for a market. I have all up the line, and then I have the seaboard at the other end—at Sydney. So that Jerilderie suits me in every particular.

Mr. Arthur Hiddle, storekeeper, Berrigan, sworn, and examined:—

3876 *Chairman.*] What are you? I am a storekeeper carrying on business in Berrigan. Mr. A. Hiddle.

3877. Can you give us any information as to how the construction of the railway line would affect your business? As we are situated now, if we buy in Sydney we have to convey the goods by team from Jerilderie, 25 miles, and the same distance from Cobram if we buy in Melbourne. If we had a tramway or a railway we could get out goods from Sydney in a few days. At present it takes three weeks sometimes before goods arrive from either point. If there was a railway here we could purchase duty-paid goods in Sydney and have them delivered here within two or three days. When we buy in Melbourne we have to pay duty on the goods at the river. 16 June, 1892.

3877½. Have you any dealings at present with Sydney merchants? Very few. We only buy in Sydney, goods which we cannot buy in Melbourne owing to the heavy duty they bear.

3878. Then you cannot give us any information as to trade between here and Sydney? If we had a line here we could buy in Sydney to advantage. We could get the goods in a shorter time and could run on a smaller stock. We could turn our goods over twice as often, and therefore, it would pay us much better to give a higher rate of freight and get our goods in a shorter time.

3879. *Mr. McCourt.*] What is the freight on goods from Sydney to Jerilderie in 6-ton trucks? About £6 per ton.

3880. It has been raised lately, has it not? Yes. The carriage from Jerilderie to Berrigan by bullock team is 25s.

3881. How long has the freight from Sydney to Jerilderie been raised? About six months.

3882. Has that caused you to get goods from Sydney round by sea and through Melbourne in bond? Yes.

3883. While the rates were £24 for a 6-ton truck you got the goods *via* Jerilderie? Yes; the advantage of railway communication from Sydney to Berrigan would be that we should get our goods here in a short space of time.

3884. *Mr. Wall.*] Are you aware that a number of Sydney merchants are delivering their goods in Melbourne carriage paid? Yes.

3885. That tends to lessen the cost of bringing them here? Yes.

3886. Can you give us the cost of conveyance from Sydney to Melbourne, then by rail, and then the land carriage to Berrigan? We can land stuff from Sydney, *via* Melbourne, to Cobram for £5 a ton.

3887. And what is the cost from Cobram to Berrigan? Twenty-five shillings.

3888. Then, practically, the rate is the same? Yes; there is a little difference.

3889. And in trading with Sydney, at the present time, you would have the advantage that you would not be compelled to pay the Border duty? Yes.

3890. And by the construction of the line you would get your goods here with more expedition? Yes; and we could keep a smaller stock. If we had a line to Berrigan we could afford to pay £1 a ton more for our stuff from Sydney, because we could get them quicker.

3891. Assuming that you have an advantage of £1 a ton in dealing with Melbourne, would not the collection of the tariff on the Border increase the cost of the goods coming by Melbourne? We buy in bond from Sydney.

Mr. William Douglas Drummond, farmer, near Berrigan, sworn, and examined:—

3892. *Chairman.*] You are the brother of one of the previous witnesses? Yes. Mr. W. D. Drummond.

3893. How long have you been here? About four years.

3894. Are you partner with your brother in the farm? Yes.

3895. *Mr. Ewing.*] You heard the location of the area, in which the farmers are round Berrigan, explained? Yes. 16 June, 1892.

3896. Do you agree with that? Yes.

3897. What do you pay at present for the carriage of wheat from here to Jerilderie? About 4d. per bushel.

3898. If a railway were made from Jerilderie to here, would you pay a special rate? Yes.

3899. Would you pay 2d. a bushel? Yes.

3900. Have you anything to show that that is a genuine promise? I have been round amongst the farmers who are present in Berrigan, to-day, and have obtained their signatures to a document to that effect, which document also gives the different areas.

3901. This document gives the area under cultivation by the persons signing at 6,000 or 7,000 acres? Yes. [*Vide Appendix.*]

3902. What would the land about here yield an acre as a rule—17 bushels? Yes; that is about the average.

3903. Therefore, 6,000 acres would mean 100,000 bushels, roughly speaking? Yes.

3904. That quantity of wheat will be produced this year—this land is absolutely under cultivation? Yes.

3905. These farmers would guarantee 2d. a bushel freight from Berrigan to Jerilderie? Yes.

Mr. W. D. Drummond, 16 June, 1892.

3905½. That would give an income to the railway, if it were constructed, of about £800 for the coming year, for the carriage of wheat alone? Yes. These are only very few of the farmers—only those who happened to be here to-day.
3906. But these figures prove their genuineness with regard to the use of the railway? Yes.
3907. The line would then become a feeder, to that extent, to the lines of New South Wales? Exactly.
3908. If a line were made from Deniliquin to Jerilderie, would it be used at all? No.
3909. Would the area under cultivation be four times as much as that indicated in the document referred to? Yes.
3910. You believe that all that wheat would go along the railway to Jerilderie, and feed the New South Wales railway system? Yes; and a larger quantity from outlying districts.
3911. And if there are four times that amount of wheat, it means £3,200 a year? Yes.
3912. In addition to that, I suppose there will be some wool, besides the ordinary traffic? Yes.
3913. You believe that a connection to Berrigan would practically ensure this amount of traffic to the railway system of New South Wales? Certainly.
3914. And you do not believe that a line from Jerilderie to Deniliquin would have that effect? No; as regards this district it would have no effect.
3915. You are the band of farmers, of whom we have heard at Jerilderie, Deniliquin, and Conargo, are you not? Yes; they all claim us.
3916. There would also be a traffic in wood? Yes; and stone also. I wired to Mr. Wise, Mayor of Jerilderie, to find out the total quantity of wood consumed in Jerilderie in twelve months, and his reply is "ten to twelve hundred cords in winter; cost, 25s. per cord." The wood supplied to Jerilderie is obtained along the proposed route to Berrigan.
3917. *Mr. Wall.*] There is some granite country in the vicinity of Berrigan? Yes.
3918. How far would it be from a line extending from Berrigan to Jerilderie? About a mile.
3919. What could that granite be supplied at per cubic yard? I could not exactly say. I should think about 4s. 6d. at the outside.
3920. At what price could it be put on the line at Berrigan or at the nearest point to the quarry? At about 4s. 6d.
3921. Is there a large quantity of it? An unlimited quantity.
3922. *Chairman.*] Do you hand in the paper, containing the guarantee of the farmers present, respecting the payment of the special railway rate? Yes. [*Vide Appendix.*]

Mr. John Watt Robertson, farmer, near Berrigan, sworn, and examined:—

Mr. J. W. Robertson. 16 June, 1892.

3923. *Mr. Ewing.*] You heard the boundaries given with regard to the agricultural settlement of Berrigan? Yes.
3924. Are they correct? Yes.
3925. How far is it from Berrigan to Uphall's? It is considered about 30 miles.
3926. How far is Uphall's from Deniliquin? About 22 miles by the road.
3927. What road? There is a main Government Road from Deniliquin right across Landel's Run to Tuppal. It is considered the direct road to Uphall's.
3928. How far is Uphall's off the surveyed line from Jerilderie to Deniliquin? His house is about 5 miles south of the line.
3929. Is Doel's in there, too? Yes.
3930. Do you know the country between Deniliquin and Jerilderie? Yes; I have travelled it by road and across country.
3931. What kind of country is it when you get to within 4 miles of the railway line after passing Uphall's—is it the same kind of country? No.
3932. Is it the same as the Conargo country? Yes.
3933. Then the good agricultural area does not extend to the line from Jerilderie to Deniliquin? It does not cross the line.
3934. It just about gets to it? Yes.
3935. And then you get on to the open plains? Yes.
3936. How far is it from here to Jerilderie till you get on to the Jerilderie plains? About 14 miles.

Mr. Lazarus Harris, storekeeper, Berrigan, sworn, and examined:—

Mr. L. Harris. 16 June, 1892.

3937. *Chairman.*] You are a storekeeper in Berrigan? Yes; I am the manager for J. and H. Harris, of Jerilderie.
3938. Where do you get your supplies from, principally? From Sydney, Melbourne, and England.
3939. Have you had any stuff brought from Sydney lately? Every week.
3940. We were informed to day, by the Sub-collector of Customs at Tocumwal, that some goods were carried through for your firm from Sydney to Melbourne, *via* Cobram—some jams? I hardly think so We have had no jam for several years *via* Melbourne. We have had other goods from Sydney, *via* Melbourne.
3941. Have you had any consignments from Sydney lately? Yes; about eight weeks ago.
3942. What is the charge for freight from Melbourne to Cobram? It varies according to the class of goods. For instance, wire is about £2.
3943. Does it come to Cobram? We buy wire for this store. We purchase in Melbourne, and make a saving in the freight, and if we have a surplus here we send it on to Jerilderie by our own teams. We do not reckon the carriage from here to Jerilderie as anything, as we have our own team going back empty.
3944. Can you tell us the rates for different classes of merchandise from Melbourne to Cobram? Sugar, I think, is 52s. a ton.
3945. What is the highest? Within a few pence of 40s. for truck loads of wire.
3946. What is the carriage from Cobram to Berrigan by road? Twenty-five shillings.
3947. If a statement has been made to the Committee that your Jerilderie firm is in the habit of getting goods from Sydney to Melbourne, *via* Cobram, and then conveying them by team to Jerilderie, is that statement correct? By our own team only, yes. It would not pay us to get goods *via* Cobram, and pay for the cartage from Cobram to Jerilderie.
3948. It would be cheaper to get them direct by rail from Sydney? Certainly.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Railway from Jerilderie to Deniliquin.

SECTIONAL COMMITTEE.

APPENDIX.

A.

[To Evidence of Mr. J. Weir.]

STOCK EXPORTS AND IMPORTS AT MOAMA.

RETURN of all stock exported at Moama by road and rail to Victoria for the years 1890, 1891, to 31st May, 1892.

	Sheep.	Cattle.	Horses.	Pigs.
1890—1st January to 31st December	972,153	31,135	391	1,401
1891—1st January to 31st December	605,179	24,459	228	1,047
1892—1st January to 31st May	107,509	9,276	58	428
Totals	1,684,841	64,870	677	2,876

JOSEPH WEIR,
Inspector of Stock at Moama.

RETURN of all stock imported at Moama by road and rail from Victoria during the years 1890, 1891, and to 31st May, 1892.

	Sheep.	Cattle.	Horses	Pigs.
1890—1st January to 31st December	37,519	7,217	154	1,245
1891—1st January to 31st December	49,359	6,216	327	846
1892—1st January to 31st May	11,529	1,016	180	356
Totals	98,407	14,449	661	2,447

JOSEPH WEIR,
Inspector of Stock at Moama.

RETURN of all sheep imported at Moama by road and rail from Victoria during the years 1890, 1891, to 31st May, 1892, showing Victorian sheep and New South Wales sheep re-introduced.

1890—	Sheep (Victorian).		
1st January to 31st December—Bought by graziers		924 rams	
,, ,, ,, ,, ,,		11,173 mixed	
,, ,, ,, ,, butchers		2,706 ,,	
			14,803
1890—	Sheep (New South Wales).		
1st January to 31st December—Bought by graziers		21,377 mixed	
,, ,, ,, ,, butchers		1,339 ,,	
			22,716
	Total imported		37,519
1891—	Sheep (Victorian).		
1st January to 31st December—Bought by graziers		2,121 rams	
,, ,, ,, ,, ,,		20,053 mixed	
,, ,, ,, ,, butchers		365 ,,	
			23,019
1891—	Sheep (New South Wales).		
1st January to 31st December—Bought by graziers		25,721 mixed	
,, ,, ,, ,, butchers		619 ,,	
			26,340
	Total imports		49,359
1892—	Sheep (Victorian).		
1st January to 31st May—Bought by graziers		622 rams	
,, ,, ,, ,, ,,		6,417 mixed	
,, ,, ,, ,, butchers		602 ,,	
			7,641
1892—	Sheep (New South Wales).		
1st January to 31st May—Bought by graziers		3,357	
,, ,, ,, ,, butchers		531	
			3,888
	Total to 31st May		11,529

JOSEPH WEIR,
Inspector of Stock at Moama.

B.

[To Evidence of Mr. C. C. Pope.]

MOAMA CUSTOMS RETURNS.

RETURN showing total value of imports from Victoria for the year 1891.

	£	s.	d.
Imports value	390,239	0	0
Revenue received	24,340	9	3

RETURN showing total value of Exports to Victoria for the year 1891.

Exports value	719,657	0	0

Principal Items.

Grain, pulse value	24,113	0	0
Live stock—Cattle	165,486	0	0
,, ,, Sheep	112,311	0	0
27,122 bales wool	369,597	0	0
Timber, in log	885	0	0
,, ,, rough	13,411	0	0

C. C. POPE,
Sub-collector.

RETURN showing the quantity of wheat, flour, and pollard exported to Melbourne for re-introduction at Sydney and Newcastle, from the 1st of January to the 10th June, 1892.

FLOUR.

	Bags.	Centals.	Value.
			£
To Sydney	4,832	9,664	5,007
To Newcastle	3,627	7,254	3,696
Totals	8,459	16,918	£8,703

WHEAT.

	Bags.	Centals.	Value.
To Sydney	11,463	29,379	£9,986

POLLARD.

	Bags.	Centals	Value
To Sydney	160	320	£113

Custom House, Moama, 10th June, 1892.

C. C. POPE,
Sub-collector.

SHIPPING departures for the Murrumbidgee and Edwards Rivers for the year 1891.

	Murrumbidgee River.				Edwards River.			
Year.	Steamers.	Barges.	Aggregate tonnage.	Value of cargo.	Steamers.	Barges.	Aggregate tonnage.	Value of cargo.
1891	60	63	11,660	£112,349	15	13	1,483	£7,511

Number of bales of New South Wales wool from the Murrumbidgee and Edwards Rivers landed at Echuca Wharf for the year 1891.

Murrumbidgee River	50,000 bales.
Edwards River	6,000 ,,

Number of bales of wool exported to Melbourne *via* Bridge, Moama, for the year 1891 23,293 bales.
Number of bales of New South Wales wool landed at Echuca Wharf for the year 1891 77,399 ,,

C. C. POPE,
Sub-collector.

C.

[To Evidence of Mr. W. D. Drummond.]

OFFER BY BERRIGAN FARMERS TO PAY EXTRA RAILWAY FREIGHT.

Berrigan, 16 June, 1892.

WE, the under-mentioned farmers of Berrigan and district, hereby agree, in the event of a line being constructed from Jerilderie to Berrigan, to pay the Department of Railways the sum of 2d. (twopence) per bushel for all wheat or other cereals carried on the line from this place to Jerilderie until the line pays.

Name.	Area under cultivation.
Drummond Bros.	500 acres.
Wm. J. Greggery	400 ,,
E. J. Gorman	100 ,,
John Jones	400 ,,
John Jones	320 ,,
John W. Robertson	50 ,,
Alexr. Robertson	550 ,,
William Shand	250 ,,
James Pyh	590 ,,
Henry Westerdale	120 ,,
Robert Graham	225 ,,
John M'Lellan	300 ,,

I colle these signatures in Berrigan to-day.—DOUGLAS DRUMMOND, 16 June, 1892.

TO SYDNEY

WANCONILLA

CONARCO

COREE

JERILDERIE

TRIAL SURVEY

DENILIQUIN

MURRAY HUT
(ULUPNA)

TRIAL SURVEY FROM THE ROCK

BERICAN

TUPPAL

YALAMA

MATHOURA

TOCUMWAL

MULWALA

PRIVATE LINE 53 CAUCE

MOAMA

ECHUCA

FROM MELBOURNE

COLONY OF VICTORIA

N.S.W. RAILWAYS

JERILDERIE TO DENILIQUIN

PLAN

SCALE OF MILES

(Sig 28)

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLANS,

RELATING TO THE

PROPOSED RAILWAY

FROM

EDEN TO BEGA.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

[6s. 6d.] 86—a 1892.

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The Honorable JAMES HOSKINS.
The Honorable FREDERICK THOMAS HUMPHERY.
*The Honorable ANDREW GARRAN, LL.D.
The Honorable JOHN DAVIES, C.M.G.
*The Honorable WILLIAM JOSEPH TRICKETT.

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THOMAS THOMSON EWING, Esquire.
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WILLIAM MCCOURT, Esquire.
JOHN CASH NEILD, Esquire.
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MEMBERS OF THE SECTIONAL COMMITTEE.

JACOB GARRARD, Esquire, Chairman.
The Honorable WILLIAM HENRY SUTTOR.
THOMAS THOMSON EWING, Esquire.
WILLIAM MCCOURT, Esquire.

[*The Honorable ANDREW GARRAN, LL.D., on 5th October, 1892, resigned his seat as a member of the Committee, and on 12th October, 1892, the Honorable WILLIAM JOSEPH TRICKETT was appointed to fill the vacancy.]

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Mr. Patrick Heffernan, farmer, near Candelo	14-15
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Mr. Charles B. Myers, wharfinger, Tathra	17-18
Mr. Frederick Bland, Mayor of Bega	19-21
Mr. William Henry Braine, proprietor of the *Bega Gazette*	21-22
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Mr. Andrew Smith, farmer, Numbugga	28-30
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Mr. John Britten, farmer and grazier, Numbugga	31-32
Mr. George Ernest Ward, dairy farmer and grazier, Numbugga	32-33
Mr. William Ramsay, farmer and grazier, Double Creek, near Bega	33-34
Mr. George P. Kerrison, landowner, near Bega	34-35
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Mr. John Davy Postle, M. Inst. C.E., Resident Engineer at Bega	43-44
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PLANS.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

RAILWAY FROM EDEN TO BEGA.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing a line of Railway from Eden to Bega," have, after due inquiry, resolved that it is not expedient to construct the railway as referred to them by the Legislative Assembly, because the present resources of the district do not warrant the construction of such an expensive line, but are of opinion that a cheaply constructed line of railway might be favourably considered; and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Official description of the proposed railway.

1. The proposed railway is 36 miles 58 chains in length. Commencing at the foot of Yule-street, Eden, on a point jutting into Calle-Calle Bay, at the south side of the entrance to Yallungo Cove, it crosses the isthmus to the shore of Snug Cove, passing Robertson's Point and Cattle Bay, where it bends to the north and reaches the site for the principal passenger station for the town of Eden, near the Post Office. From this point it passes to the west of Lake Curabo, turning then eastward to Calle-Calle Bay, the shore of which it follows still on an easterly course to 3½ miles. Thence the line crosses the promontory called North Head, and proceeds upon a route having generally a northerly direction. Skirting the southern shore of Lake Pambula, it crosses the Pambula River at its entrance into the lake at a point 12¾ miles from the commencement of the line, and then keeping for 2¼ miles on the east bank of the river, passes through the north-east corner of the Pambula township. Continuing it traverses the western shore of Merimbula Lake, and then enters upon the severest part of the route from 19 to 27½ miles. Rising from the 19th mile, the line proceeds on an ascending gradient until it reaches the 24¼ mile, where having risen 585 feet it crosses the summit-level through a tunnel near the village of Wolumla, at an elevation of 605 feet above high-water spring-tide. From this tunnel the line falls 335 feet to 27½ miles, and reaching the eastern bank of the Bega River at about 33 miles, terminates in Bega at 36 miles 58 chains. The ruling grade is 1 in 40, but at an additional expense of £47,100 it can be reduced to 1 in 50, and this is recommended.

Estimated cost.

2. The estimated total cost of the line, with a grade of 1 in 40, excluding compensation for land, is £516,900, or £14,065 per mile. With a grade of 1 in 50 it is £564,000, or about £15,350 per mile. The details show earthworks, bridges, &c., and permanent way, exclusive of rails, £386,975; permanent way (rails), £39,500; watertanks and signals, and interlocking, £6,500; station buildings, including turntables, £26,700; contingent engineering expenses, 12½ per cent., £57,225; improvements in grade, £47,100.

Origin and development of the proposal to construct the railway.

3. A railway from Eden to Bega has for many years been under consideration, and it has been several times before Parliament. In 1881 a petition to the then Minister for Works, urging the construction of a line from Eden to the Bega district, and thence to Monaro, led to a trial survey being made, and an approximate estimate

estimate of cost based on this survey, amounting to £606,000, was in 1884 voted by Parliament for the construction of the line. In 1886 a permanent survey and staking of the line were completed, and in 1888 the survey was revised and cheapened, but with an addition of $2\frac{3}{4}$ miles to its length. In 1889 the Railway Commissioners, in accordance with section 13 of the Public Works Act, reported upon the line, their report showing an estimated annual loss of nearly £19,000. This estimated large loss was regarded as a difficulty in the way; but as the estimate was due principally to the circumstance that the line must be for some time isolated from the general railway system of the Colony, steps were taken to see whether the railway could not be connected with an extension of the main Southern line on the Monaro tableland, and it was thought it might also be considered as part of the South Coast Railway, at present authorised as far south as Nowra. Considerable attention, the Committee are informed, has been given to the idea of connecting the proposed line with Monaro, and surveys have been in operation for some months with the object of finding a practicable route. As many as six surveyors have recently been in the district engaged in this work; and, as stated to the Committee by the Under Secretary for Public Works, "the Minister for Works looks at this proposal in the light of the possibility of connecting the line with the proposed extension of railway from Cooma to the border." The proposed line was referred by the Legislative Assembly to the Committee on 29th March, 1892.

Railway Commissioners' Report.

4. The Railway Commissioners do not in their Report recommend the construction of the line, and their views as expressed in evidence given before the Committee by their Secretary are also unfavourable to the proposed work. The Report shows an estimated annual loss of £18,827. Interest on the capital expenditure is calculated at $3\frac{1}{2}$ per cent., making £19,740, and to this are added £624, interest on £17,850 worth of rolling-stock, which it would be necessary to provide independently of that on other railways, £8,121 for cost of working, and £1,785 for depreciation of rolling-stock—or a total annual cost of £30,270. The estimated revenue comprises £7,062 for goods and live-stock, £3,937 10s. for passenger traffic, and £443 10s. for mails—or in all £11,443. The most liberal allowance, the report states, has been made for traffic on the line. As regards goods traffic, it is assumed that the whole of the goods passing through the ports of Tathra and Merimbula, would be carried over the full extent of the line to and from Eden. The estimate of passenger traffic is based on the total population of the district liberally considered. The population is taken as 12,000, and it is assumed that every adult would make two double journeys each year, and each child one double journey. But "it will be seen," the report points out, "that even with this liberal estimate of traffic there would only be a sum of £1,537 above the bare working expenses to meet the annual interest that will have to be paid, viz., £20,364, showing a net annual loss of £18,827." Looking at this fact and the circumstances that the line being isolated will not contribute any traffic to the general railway system of the Colony, the Commissioners do not consider they would be justified in recommending its construction.

The Committee's inquiry.

5. The Committee have inquired very fully respecting this proposed work, examining a number of witnesses in Sydney, and by means of a Sectional Committee inspecting the route of the railway and taking evidence from residents in the several population centres of the districts of Bega and Eden. Every opportunity has been afforded witnesses or others to place before the Committee any information relevant and important to the inquiry. In Sydney, there were examined, among others,—Mr. J. Barling, Under-Secretary for Public Works, Mr. H. Deane, Engineer-in-Chief, Railway Construction Branch, Department of Public Works; Mr. J. B. Thompson, Land Valuer, Mr. H. McLachlan, Secretary to the Railway Commissioners; Mr. A. Crawford, Railway Superintendent, a railway officer who went through the districts of Eden and Bega in 1889 and collected information upon which the Railway Commissioners based their report; Mr. C. J. Saunders, Chief Draftsman, Department of Lands; Messrs. H. Clarke, M.P. and J. P. Garvan, M.P., members for the district; Captain A. C. Turner, Manager of the Illawarra Steam Navigation Co., and Captain W. J. Featherstone, Master of the Union Company's S.S. "Oonah"; Hon. John See, M.P., Colonial Treasurer, and Mr. J. Inglis, M.P.; and Mr. A. McFarland, ex-District Court Judge. In addition to these witnesses, inquiry was made in Sydney as to the advisableness of connecting Eden and

Bega

Bega by a lightly constructed cheap railway. Seeing that the proposed line was not only very expensive to construct but unlikely for a long time to be profitable, it was thought wise to ascertain whether a cheaply constructed railway could, with advantage, be made to meet the requirements of the district until the line could be connected with the general railway system. As a connection with the other lines of the colony cannot take place for many years, a cheaply made line might do all that is required in meeting present wants and in developing the resources of the district, and at the same time pay the cost of its construction and working, so that when connected with the general system it should not prove to have been a profitless expenditure. The Committee therefore did what they could to get before them the information available respecting cheap railways in the other colonies and in Europe. The Engineer-in-Chief was first examined as to the possibility of cheapening lines of railway in country similar to that through which the line under consideration would pass, whether upon the standard gauge of the Colony or with a narrower gauge; and his examination was followed by that of Mr. G. Fischer, Assistant Engineer for Tramway Construction; Mr. Clement Van de Velde, who was acquainted with the progress and latest developments of narrow-gauge railways in Europe; and Mr. H. McLachlan, Secretary to the Railway Commissioners, as to the opinion of the Commissioners of a cheaply constructed or a narrow-gauge railway between Eden and Bega. The Sectional Committee visited and took evidence at Bombala, Cathcart, Candelo, Bega, Tathra, Wolumla, Pambula, Merimbula, and Eden, examining in these places fifty-six witnesses.

Sectional Committee's report.

6. The Sectional Committee, whose report will be found published with the other proceedings in the inquiry, came to the conclusion, after a very careful consideration of all the circumstances, that the railway as submitted could not be recommended. Admitting the importance of the Bega and Eden districts, they point out that at present the population is not very great, the ports now communicating with the districts—Tathra and Merimbula—will always be competitors with Twofold Bay for the trade, and the loss on the construction and working of the railway would be heavier than it is reasonable to ask the general community to bear. But while they do not recommend the railway proposed, they think a line costing much less might be constructed, especially if, in addition to the reduction in cost, the betterment principle were applied. "It appears possible," the report of the Sectional Committee states, "that a further examination of the country would remove some of the engineering difficulties on the route—that a cheaper system of railway construction might meet all the requirements of this and similar districts for many years to come—and that a just application of the betterment principle would still further reduce the cost, and might render it possible to recommend the construction of a work by which the same result would be obtained as by the proposed expensive line."

Principal features of the evidence.

7. The evidence taken during the inquiry will be found to deal with every question entering into consideration in connection with the proposed line. The reasons in support of the construction of the railway, and the objections which appear against it, are set forth with equal distinctness.

Favourable to the railway are:

(1.) The importance of Twofold Bay as a harbour, which can only be properly utilised by making it, with the aid of a railway, the principal outlet for the districts west and north of it.

(2.) The present importance of the Bega district as a thriving centre of farming operations.

(3.) The opportunity, from the fertility of the district, for an increase of settlement and production.

(4.) The amount contributed by the district to the general revenue.

Unfavourable to the proposed line there appear:

(1.) The cost of construction, and the estimated large annual loss.

(2.) The comparatively limited area in the districts to be served by the railway for increasing the present amount of production.

(3.) The probability that the ports of Tathra and Merimbula will always attract a certain amount of trade, and thus correspondingly affect the trade of Twofold Bay and consequently the traffic on the railway.

(4.) The isolation of the line.

To these prominent features of the evidence may be added the effort which the Committee have made to ascertain whether the purpose in view in the proposal to construct the railway could not be met by carrying out a line much cheaper in cost, equally serviceable to the district, and capable of fitting in with the general railway system when the time shall come for connecting it with one or other of the main lines.

Reasons advanced favourable to the railway.

8. There is no question of the importance of the Eden and Bega districts. Twofold Bay, as the Sectional Committee say in their report, though not all that some assert it to be, is a harbour where a large and satisfactory trade could be carried on with advantage to the districts connected with it and to the Colony generally. It is open to weather which would make it inconvenient to be alongside the wharf, and a vessel there must be prepared to move away at an hour's notice; but, at the same time, it is a large and fairly well-sheltered port, capable of being utilised to a very material extent. Bega and the country in its vicinity are what is known as a dairying district, large quantities of butter, cheese, and bacon being produced and sent away constantly. Maize also is grown and some sent out of the district. Mr. H. Clarke, one of the Members for the electorate, estimates that from 1,500 to 2,000 tons of cheese, 1,000 tons of butter, from 400 to 500 tons of bacon, and from 400 to 500 tons of maize are sent away annually. If the railway were constructed, Mr. Clarke states that produce would come to it from about 30 miles to the west and 40 miles to the north and the south, and the quantity which would now reach it might be increased in a few years' time by one-half. Valuable timber is plentiful, and could be sent to market; and profitable fruit-growing might be carried on. Mr. J. P. Garvan, also a Member for the electorate, describes the district as "one of the most fertile in New South Wales, one of the oldest settled, and one of the cheapest governed." "It has contributed to the Treasury," he says, "in actual cash for the purchase of land upwards of £500,000, and it is now contributing annually for land alone fully £20,000." At the present time the produce of the district finds outlets at Tathra and Merimbula, but those ports are very unsatisfactory. Tathra is an open roadstead or more accurately described a mere indentation in the coast. It is convenient to Bega in respect of distance, being only 12 miles away by a good road, but occasionally the steamers calling there for loading cannot approach the wharf either on their downward or upward trips. Only in fine weather can produce or passengers be shipped. Merimbula, though more of the nature of a harbour, is worse for the carrying on of a shipping trade than Tathra. The steamers do not enter; they lie outside, and receive their cargo from lighters which bring it from the shore. Much inconvenience and loss are said to be occasioned to shippers through the want of a suitable shipping port, and with that a regular service and better class of steamers. On this point the Sectional Committee say in their report that "it must at once be granted—situated as these ports are, exposed to most weather—notwithstanding any efforts the steamship companies may make to give a good and competent service, the trade done, from them especially, with respect to passengers and the perishable produce of this district can never be very satisfactory."

Circumstances unfavourable to the railway.

9. Much as can be said in favour of a railway which would provide sufficient facilities for the regular despatch of produce from the district, and for its further development, the circumstances surrounding the proposal before the Committee unfavourable to the construction of the line are of a character that demands attention. First appear the cost of construction and the estimated annual loss. The Engineer-in-Chief for Railway Construction does not think it possible to improve the line in the way of cost. The country has been thoroughly explored, and he believes he has exhausted every natural feature that would help to decrease the estimate. In addition to this estimate, there is to be taken into account the cost of the land which would have to be resumed for the railway, and though with the application of the betterment principle this may not add very much to the cost of the line, it is a matter that must not be overlooked. The estimated annual loss upon the railway is more serious. The statements of the Railway Commissioners with regard to it have been mentioned in the reference already made to their report. Their Secretary, under examination before the Committee, expressed the opinion that the loss would be greater than the estimate given in the report.

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He did not think, he said, that "the revenue would be quite as great as it is put down, because the principal traffic on the line would be dairy produce, and since that time we have reduced the charge for dairy produce one half." If a higher rate were charged the traffic would go to the steamers—intercepted by them at Tathra and Merimbula. In any case, in his opinion, the railway would not command the whole of the trade, and the Railway Commissioners, he informed the Committee, opposed the construction of the line because they considered its unprofitableness would be a heavy drag upon them. In this connection it is interesting to note a return, produced by him and published with his evidence, giving a statement of the sectional earnings of ten of the branch lines of the Colony for last year, and showing a loss of £311,430. Respecting the area of land in the districts to be served by the railway which the line might open up for settlement and production, witnesses examined before the Committee differ somewhat in their statements. The best land in the district is already in occupation, and though a railway must lead to further settlement, an increase in that direction and in the general productiveness of the district could only be gradual. Taking a line 10 miles north of Bega, and another 10 miles south of Eden, and extending them to the edge of the tableland, the Chief Draftsman of the Department of Lands states that within that area there are 369,200 acres of alienated land, 446,000 acres of Crown land not including reserves, and 127,940 acres of reserves. The alienated land is the pick of the district; the unalienated is rough, mountainous, and heavily timbered. Parts of this, it is believed, might be suitable for agriculture, if cleared. As to the position Tathra and Merimbula would be in if the railway were constructed, it is clear from the evidence that they would always be used as shipping places for some portions of the trade of the district. The short distance from Bega to Tathra, and the good road between the two places, are certain to lead some producers to send their produce there rather than the longer and probably the more expensive distance to Eden. The evidence indicates this, and it is plain to those who are personally acquainted with the localities. Merimbula will always attract produce from land in its vicinity, or to which it is the nearest and cheapest outlet. The Sectional Committee consider that these two ports "furnish a sufficiently good outlet to provide some competition with the proposed railway, and will prohibit the imposition of high freights for carriage." The last point of importance unfavourable to the railway is the circumstance that it will be, and must be, for many years entirely separated from the general railway system. This is a matter of much weight in considering whether the line ought or ought not to be constructed. In all instances where a branch railway is proposed, the circumstance of its bringing traffic to the main lines is in its favour. While in itself it may or may not pay, the traffic it brings to the other lines improves the position of the railway system generally. In connection with the statement of unprofitable branch lines brought before the Committee by the Secretary for Railways, it is pointed out that these lines "may have helped the main line to some extent by feeding it"; and in their report the Railway Commissioners allude to the practice of letting the main lines bear for a few years the capital cost of the branch lines. But in the case of the proposed railway from Eden to Bega there is not this advantage. It cannot bring any traffic to the other lines. It cannot even be worked by the rolling-stock common to the railways generally, as independent rolling-stock will have to be provided, and the interest upon this, and the cost of depreciation, specially charged against the line. This is the first instance in which such a charge has appeared, and it is due to the necessity for a separate rolling-stock.

Whether a cheap railway would meet requirements, and the question of the narrow-gauge.

10. Looking at the difficulties in the way of constructing the railway as proposed, it appeared to the Committee, as already mentioned, wise to consider whether the chief objections to the line could be removed and the requirements of the district met for the present and for some years to come by the construction of a railway cheap in cost and fairly profitable in its working. They therefore set themselves to the duty of ascertaining whether it was possible to introduce, in country like that through which the proposed line would pass, railways very much less expensive than anything hitherto constructed in the Colony, either in accordance with the standard gauge or with a narrower gauge. They first examined the Engineer-in-Chief for Railway Construction on the subject, and though on broad grounds he expressed an opinion against the introduction of an altered gauge, he

 explained

explained that the cost of railways in hilly country like that between Eden and Bega could be materially lessened by sharpening the curves and adopting a style of locomotive more fitted to go round curves than are the ordinary locomotives with stiff wheel-bases. This new style of locomotive is known as the articulated locomotive; its power to deal with sharp curves being due to the circumstance of its being fitted with bogie-wheels. The rolling-stock generally would require to be fitted in the same way. Sharp curves mean a reduction in the number and extent of earthworks, and on the Eden to Bega railway the cost of the earthworks represents £4,952 per mile. By adopting this new plan many of the cuttings on the proposed line, which run from 30 to 50 feet in height, could, the Engineer-in-Chief states, be almost avoided, and the cost of the earthworks generally be reduced more than 50 per cent. Furthermore, the new style of locomotive required for the sharp curves could run with advantage on the other lines of the Colony. The standard gauge would suit it equally with the ordinary locomotive. The speed of travelling on a line with the sharp curves would, as a rule, be slower than it is on a railway with ordinary curves; but on some of the lines where these sharp curves are used a speed as high as 30 miles an hour is obtained without danger. With a gauge narrower than the standard the cost of construction would be generally less; but in the matter of bridges, it is probable they would have to be built of the ordinary size, in view of the possibility at some time or other of changing the narrow for the wider gauge. Adopting 6-chain curves, and a 3-ft. 6-in. gauge, the cost of the proposed railway might, the Engineer-in-Chief considers, be reduced by £6,000 per mile, and a 3-ft. 6-in. gauge is, in his opinion, the most suitable of narrow gauges that could be used. It would do all that is required, he says, and has a better relative capacity than any narrower gauge would have. This 3-ft. 6-in. gauge is in operation in Queensland, and has proved satisfactory. "While I do not consider the narrow gauge as good by a long way as the standard gauge," the Engineer-in-Chief states, "I think it is very satisfactory." On several of the Queensland lines he was very much struck with their convenience of working and comfort. The whole of the evidence given on the question of cheaper railways by this officer is of value, and some of it has an important bearing upon the proposal referred to the Committee. If a narrow-gauge line constructed between Eden and Bega proved so profitable as to cover the cost of the alteration of gauge to the standard when it should become necessary to connect the railway with the main lines and make it common to the general system, his objection to the introduction of the narrow gauge would be met; and by the narrow gauge equally with the other the people of the district would possess the railway facilities for which they are asking, while the cost need not exceed £8,000 per mile. The evidence of the Assistant Engineer for Tramway Construction and of Mr. C. Van de Velde, C.E., on this subject of cheap railways and the narrow gauge supports the idea that under certain circumstances narrow-gauge lines may be advantageous. But in eliciting the opinion of the Railway Commissioners on the question the Committee found them to be strongly opposed to either narrow-gauge railways or to any break of gauge. They would regard any alteration of gauge as "a national calamity." A change of gauge, they say, would be surrounded by many difficulties. It would necessitate the introduction of a totally new and distinct standard of rolling-stock, and in several ways would add to the cost of a railway. Hitherto, when branch lines have been constructed, the general practice has been to as far as possible make the rolling-stock of the parent line work the branch line. As the Eden to Bega railway must for a time at least be a separate railway, this policy could not in regard to it be followed, but as it is anticipated that sooner or later the line will be connected with the general railway system, although the rolling-stock upon it would at first be distinct from that on the other railways it would eventually be common to all. Under the present system the newest rolling-stock is used on the main trunk lines, where there is most traffic, and as it becomes old it is worked on the extensions, these not being charged with the cost of the stock necessary to equip them. In some degree the same thing has been done with rails. With an alteration of gauge an entirely distinct rolling-stock would have to be introduced, capable of being used only on the narrow-gauge lines. This would make these lines to that extent the more expensive, and the expense would be increased by the circumstance, as explained by the Commissioners, that while upon a narrow-gauge railway the ordinary working staff and system of

operations

operations for working a railway line would have to be employed the loads hauled would be much smaller, and consequently less remunerative than those drawn over a railway of the standard gauge. Upon this point the Secretary to the Railway Commissioners says that if the Eden to Bega railway were "made a restrictive line, such as the narrow-gauge line would be, you would have to haul light loads, and the men employed would only be able to do half as much work as they could do if the loads were heavier, and consequently the earnings per mile, or per man, would not give a fair return on the capital." It was also pointed out to the Committee that the question of introducing an alteration of gauge affected not only the railway from Eden to Bega, but practically the railway policy of the country, as if the line from Eden to Bega were made on a narrow gauge there would be applications for similar railways from all parts of the country where the estimated traffic may not be deemed sufficient to warrant the construction of ordinary lines. The Commissioners favour the construction of cheap railways so far as they can be consistently cheap and in accordance with the standard gauge, but they express entire disapproval of any different gauge. "They think that the Department should rather make efforts to cheapen the standard gauge than experiment with gauges which the experience of the world has proved to be misleading, and in a sense mischievous;" and say further that if a railway is at all justifiable it is "just as well to construct a decent line on the standard gauge, making it cheap in the first instance and improving it afterwards."

The Committees' recommendation.

11. The Committee commend the evidence on this subject of cheap railways and its relevancy to the proposed railway from Eden to Bega to the attention of the Legislative Assembly. Without distinctly recommending a cheap railway from Eden to Bega, they are of opinion that the construction of such a railway might be favourably considered. In this opinion they are influenced first by the fact that the estimated loss upon the line as proposed makes its construction inadvisable, and next by the conviction that the district is one that ought to be afforded railway facilities if they can be supplied at a moderate cost and with the prospect of a sufficient return upon the expenditure within a reasonable period. It appears to the Committee that it may be fifteen years or more before a railway from Eden to Bega is likely to be connected with either the Southern Railway at Cooma or the South Coast Railway at Nowra, and within that time a cheaply-constructed line through the district may give a return upon the expenditure amply sufficient to cover the cost of any alteration ultimately necessary to make the railway fit in with the general system. On the question of narrow-gauge railways, while not saying that the line from Eden to Bega should be of that description, the Committee would point out that the features of the country through which the route of this railway passes are exactly of that nature for which these narrow-gauge railways are suitable.

Resolution arrived at by the Committee.

12. The Committee's Minutes of Proceedings of Tuesday, 11th October, 1892, show the resolution arrived at by the Committee, as follows:—

Mr. McCourt having, with the consent of the Committee, amended his notice of motion by omitting from the end of it the words, "might be favourably considered," and inserting in their place the words "should be made," moved,—"That the Committee do not consider it expedient to recommend the construction of the railway from Eden to Bega as referred to them by the Legislative Assembly, because the present resources of the district do not warrant the construction of such an expensive line; but the Committee are of opinion that a cheaply-constructed line of railway should be made."

Mr. O'Sullivan seconded the motion.

Mr. Davies moved,—"That the motion be amended by the omission of the words, 'but the Committee are of opinion that a cheaply-constructed line of railway should be made.'"

The amendment was seconded by Mr. Humphery, and after having, with consent, been altered so that the words proposed to be omitted should be, "but the Committee are of opinion that a cheaply-constructed line of railway," was negatived on the following division upon the question,—"That the words proposed to be omitted stand part of the resolution."

Ayes, 9.	Noes, 3.
Mr. Garrard,	Mr. Humphery,
Mr. Suttor,	Mr. Davies,
Mr. Hoskins,	Mr. Dawson.
Mr. Ewing,	
Mr. Wall,	
Mr. McCourt,	
Mr. Neild,	
Mr. O'Sullivan,	
Mr. Collins.	

Mr.

Mr. Wall moved,—"That the motion be amended by omitting the words 'should be made,' with a view to insert in their place the words 'might be favourably considered.'"

The omission of the words "should be made" was agreed to.

On the question, "That the words proposed to be inserted be so inserted," the Committee divided as follows:—

Ayes, 11.	Noes, 1.
Mr. Garrard,	Mr. Davies.
Mr. Suttor,	
Mr. Hoskins,	
Mr. Humphery,	
Mr. Ewing,	
Mr. Wall,	
Mr. McCourt,	
Mr. Neild,	
Mr. O'Sullivan,	
Mr. Collins,	
Mr. Dawson.	

The amendment was therefore passed.

The motion, as amended, was passed on the following division:—

Ayes, 9.	Noes, 3.
Mr. Garrard,	Mr. Humphery,
Mr. Suttor,	Mr. Davies,
Mr. Hoskins,	Mr. Dawson.
Mr. Ewing,	
Mr. Wall,	
Mr. McCourt,	
Mr. Neild,	
Mr. O'Sullivan,	
Mr. Collins.	

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 26 October, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

RAILWAY FROM EDEN TO BEGA.

WEDNESDAY, 10 *JULY*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM McCOURT, Esq.
The Hon. ANDREW GARRAN, LL.D.	JOHN CASH NEILD, Esq.
The Hon. JOHN DAVIES, C.M.G.	EDWARD WILLIAM O'SULLIVAN, Esq.
THOMAS THOMSON EWING, Esq.	CHARLES COLLINS, Esq.

HENRY DAWSON, Esq.

The Committee proceeded to consider the proposed Railway from Eden to Bega.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 10 July, 1892.

1. *Chairman.*] Do you desire to make a statement to the Committee in connection with the proposed work before us? Yes. The proposal which I have to bring before the Committee, viz., the construction of a Railway from Eden to Bega, is one that has been for many years before both the Department and the public, and also, on more than one occasion, before Parliament. In October, 1881, a petition was presented to the then Minister for Works, the Hon. John Lackey, urging the construction of a line of railway from Eden to the Bega district, and thence to Monaro. The text of this petition will be found in the return which was laid before Parliament in March, 1892, in connection with the Eden-Bega line, so that, perhaps, I need not further refer to it. As a result of this petition a trial survey was ordered, which was undertaken by Surveyors Arnheim and Robertson, Mr. Arnheim beginning from the table-land and meeting Mr. Robertson, who commenced at Eden, somewhere near Wolumla. On the completion of this survey an approximate estimate was made by the then Engineer-in-Chief for Railways, Mr. Whitton, amounting to £606,000, which sum, in the latter part of 1884, was voted by Parliament for the construction of the line. Mr., now Sir George, Dibbs, on that occasion adverted to the proposal in the following terms:—

> My attention has been called to the fact that I have omitted to mention the line from Eden to Bega, a distance of 40 miles, at a cost of £606,000. The line will open up a rich country, which at the present time has no means of communication, except by small steamers and wretched harbours, while it will also be in close proximity to Twofold Bay, one of the finest harbours on the Eastern Coast of Australia, and which nature intended as an outlet for the rich country to the north of it.

The line was then permanently surveyed and staked, this work being finished in 1886, the surveyors being Messrs. Dyer, Thomas Kennedy, junr., and Wickham. The survey was again revised in 1888, by Messrs. Hardy and Wickham, and cheapened, with the result, however, that an addition of 2¾ miles was added to its length. The official description of the line is as follows:—

> The line commences in Eden, at the foot of Yule-street, on a point jutting into Calle-Calle Bay, at the south side of the entrance to Yallumgo Cove. It thence crosses the isthmus to the shore of Snug Cove, passing Robertson's Point and Cattle Bay. Here it bends to the north, and reaches the principal passenger station for the town of Eden, at a site near the Post-office. Thence it passes to the west of Lake Curabo, turning then to the east to Calle-Calle Bay. On reaching Calle-Calle Bay, the line follows the shore to 3½ miles on an easterly course. Here the line crosses the promontory called North Head, and enters upon a route having generally a northerly direction. It skirts the southern shore of Lake Pambula, crosses the Pambula River at its entrance into the lake at 12⅜ miles, and keeps on the east bank of that river as far as 15 miles. Between 15 miles and 15½ miles the line passes through the north-east corner of the Pambula township. The line traverses the western shore of Merimbula Lake, between 17 miles and 18½ miles. At 19 miles it enters upon the severest part of its route, extending as far as 27½ miles. At 24¼ miles the line crosses the summit-level through a tunnel near the village of Wolumla, at an elevation of 605 feet above high-water spring tide, having risen 585 feet since leaving the 19th mile, and from this tunnel it falls 335 feet to 27½ miles by similar gradients. The line reaches the eastern bank of the Bega River about 33 miles, and terminates in Bega at 36 miles 58 chains.
>
> The estimated cost of the line is £516,900, or £14,065 per mile, without including compensation for land, the length being 36 miles 58 chains, with a ruling grade of 1 in 40; but at an expense of £47,100 the ruling grade can be reduced to 1 in 56, thus making a total of £564,000, which is the proposal recommended.

J. Barling, Esq.

10 July, 1892

On this last-named sum the Commissioners base their report, which reads as follows :—

GENERAL REPORT ON PROPOSED RAILWAY FROM EDEN TO BEGA.

Office of the Railway Commissioners of New South Wales, Sydney, 11 June, 1889.

Proposed line of Railway from Bega to Eden—length 34 miles.*

IN accordance with the provisions of the "Public Works Act of 1888," section 13, we beg to report as under :—

Cost of construction—

The Engineer-in-Chief estimates the cost of construction (exclusive of land and compensation) at £564,000

Annual cost—

Capital expenditure at 3½ per cent.		£19,740
Rolling-stock		624
Total		£20,364

The estimated cost of working would be as under—

Locomotive expenses	£2,166	
Traffic	1,475	
Permanent-way	4,480	
	£8,121	
Depreciation of Rolling-stock	£1,785	
Total working expenses		£9,906
Total annual cost		£30,270

Estimated revenue—

Goods and live stock	£7,062 0 0	
Passenger traffic	3,937 10 0	
Mails	443 10 0	
		£11,443

As this extension would be isolated from the parent line, independent rolling-stock would have to be provided at an estimated cost of £17,850, and the annual interest payable would be £624.

The most liberal allowance for traffic has been made, as it has been assumed that the whole of the goods passing through the port of Tathra would be carried over the full extent of the line to and from Eden, and it has been assumed also that the whole of the traffic passing through Merimbula would be taken by the proposed line to and from Eden.

The passenger traffic has been based on the total population, and a liberal estimate has been allowed. The population of the district is 12,000, and it has been assumed that every adult in the district would make two double journeys each year, and each child one double journey.

It will be seen that, even with this liberal estimate of traffic, there would only be a sum of £1,537 above the bare working expenses to meet the annual interest that will have to be paid, viz., £20,364, showing a net annual loss of £18,827.

Seeing that the line is isolated, and will not contribute any traffic to the parent line, we do not consider that we would be justified in recommending the construction, as the principle we have laid down of leaving the parent line to bear the interest on the capital cost for a few years is not applicable in this instance.

The country to a large extent is a dairy-farming one, and this is not a class of industry that gives a large amount of traffic to be conveyed, as, generally speaking, a farm carrying 300 milking cows will only produce about 75 tons of cheese and 25 tons of butter per annum.

* Should be 38 miles 58 chains.

It will be seen that the Commissioners do not recommend the construction of the line, on the ground that the estimates of revenue and expenditure show a net annual loss of £18,827. The main reason for their reporting adversely to the proposal apparently being that the line is an isolated one, and will not contribute any traffic to the parent line, which in other cases, according to a principle they have laid down, they leave to bear the interest on the capital cost for a few years. There is no doubt, however, that the country which would be served by this railway is one of the finest in the Colony. I notice that Mr. Inspector Crawford, of the Railway Department, who was sent to report on the project, says that the country likely to be benefited by this line would be about 30 miles wide by 40 long, giving an area of 1,200 square miles, the greater portion of the land being alienated, and held by *bona-fide* selectors. The bulk of these settlers are engaged in dairying and raising stock; in fact, it is impossible to go anywhere in this district without finding a homestead within half-a-mile. Mr. Judge Backhouse, in writing to the Minister respecting this line, says:—"Bega is the largest town of a district as wealthy as any in the Colony. Truly it deserves its name of Bega, which I understand, in the language of the aboriginals, means 'beautiful,' for all around it is country charming to the eye, of which every acre gives a good return for every shilling expended. Travelling anywhere between Candelo, Wolumla, Bega, and Colombo, one sees what is so rare really in the country districts of New South Wales—population and all the signs of prosperity, good houses, well looked after farm buildings, and fences carefully attended to. The holdings are for the main part small, and are held by the people generally, not by one or two owners, and, consequently, the state of the population is a happy contrast to the population of many other districts." Mr. J. B. Thompson, the Land Valuer of the Public Works Department, in 1890, visited the district, and his report I would commend to the consideration of the Committee. Speaking of the Bega District, he says, it is unquestionably one of the best and most productive in the Colony; and goes on to remark, "I feel justified, however, in stating in general terms, that in view of the unmistakable evidence to be seen on every hand of a thriving and industrious population, and of a district, the productive powers of which can scarcely be overtaxed, the trade of the district must necessarily be very large and capable of enormous expansion with improved means of conveying produce to market, such as would, to a great extent, be afforded by making the excellent port of Eden easily accessible to the surrounding districts." The proposal has been several times before Parliament, and I should like to read an extract from a speech by Sir Henry Parkes, in 1888, in regard to this proposal. According to *Hansard*, on 23rd July, 1888, Sir Henry Parkes said :—

I now come to a line from the port of Eden to Bega. Personally, I attach much importance to this line. For many years past I have thought that we have been guilty of negligence little short of a national sin, in not utilising so fine a sheet of water as there is at the port of Eden. Having seen the district, knowing its prosperous condition, the large population settled on it, and its great resources, I think that this line is one which is not only justified, but will also be one of much interest, as being the first line made in what may be called an isolated district—that is, it does not, and may never, connect with the system of railways now in existence. The district of Eden is a small colony in itself, comparatively cut off from the rest of the Colony; and it is an extremely pleasant and interesting district—one which must grow in its prosperity. The experiment will be an interesting one in giving an isolated people railway communication connecting them with the ocean. When constructed, I trust that it will lead to this most desirable result: that vessels conveying the produce of the district to distant and foreign markets may sail direct from the port of Eden.

Later

J. Barling, Esq.

10 July, 1892.

Later still, in August, 1889, Sir Henry Parkes said:

My hon. friend, the member for Eden, Mr. H. Clarke, was present, and he will say that I have frankly admitted now what I said. I do not remember the exact words, but I did say, having seen the country, that, in my judgment, railway communication ought to be made, and that I trusted that if I remained in office it would be made.

The large fact, however, stares the Minister in the face, that the line is estimated to show a net annual loss of nearly £19,000, but this is principally due to the fact—from the Commissioners' view of the case—of its being an isolated line. The Minister, therefore, desires the Committee to consider the proposal in the light of the probability, at no distant date, of the railway being connected with an extension of the main Southern line, on the Monaro table-land, from Cooma to the Victorian border. Considerable attention has been directed to the solution of this problem, viz.:—The discovery of a practicable route which will accomplish this, and surveys have been in operation for some months with this object—in fact, six surveyors are now in the district. The Minister anticipates that in about two months the surveys will be completed, but sufficient is now known to show that a practicable route will be found, giving a ruling grade of not more than 1 in 50. The routes suggested for the purpose are shown on the plans now before you, and it may be stated that, from present appearances, that proposed by Mr. Postle promises the best results. I am also to ask the Committee to look at this line as a part of the South Coast line from Shoalhaven, which the Minister thinks must undoubtedly form part of the railway policy of the future. In this connection it will be interesting to the Committee to place before them a copy of a report by the Director-General of Forests, which shows that an immense area of valuable timber exists on the forest land between Bega and Kiama.

Timber in the South Coast Country.

I recently visited the South Coast country lying between Kiama and Bega, and was much impressed with the immense area and value of our forest lands there. The timbers comprise some of the most valuable in the Colony, but at present they are not utilised to any great extent, owing to the difficulty of transport to market. What the district requires is direct railway communication with Sydney, and I am certain that were this carried out the timber trade with the Metropolis would be very great indeed, and highly remunerative to the State.

J. EDNIE BROWN,
Director-General of Forests.

I now hand in statistics relating to the district, and a plan, compiled by the Chief Draftsman of the Lands Department, showing the land alienated, reserved, and still in the hands of the Government, between Jervis Bay and the border.

2. Are the Committee to understand that the project is not put before them merely as a line from Bega to Eden, but also in connection with the extension of the South Coast line from Nowra down to Eden, and also in connection with a proposed extension of the Cooma line? At some future date. I have pointed out that there are four or five proposals to join the Cooma line, and we are not able to say exactly which one will be selected, but if you look at the little plan, No. 3—Postle's line—you will see that that seems to show the best result at present.

3. Do we understand that the six surveyors now in the field are dealing with the proposal to reach Bega from Bombala, or with a continuation of the Cooma line? Yes.

4. Are they on the line from Cooma to the Victorian border? No; that is already done.

5. And in two months it is expected some decision will be arrived at as to route? Yes; but sufficient is known now to show that a grade of 1 in 50 can be obtained between the Bega and Eden line and the proposed extension of the line from Cooma to the border.

6. With regard to the various routes which have been marked, called No. 1, Bondi route; No. 2, Big Jack route; No. 3, Postle's route; No. 4, Darragh's route; No. 5, Arnheim's route; and No. 6, Kirby's route;—are these all surveyors who have put these proposals forward? Mr. Arnheim was our surveyor, and he was engaged in the early history of the proposal, but he is not now in the Department. There were several surveyors engaged on the Bondi route. The Big Jack route was proposed, I believe, by Mr. Burge. It has a grade of 1 in 66, but it suddenly comes to 1 in 12, with a view of concentrating the rise in one pinch, and getting over it in some such way as is done at the Righi.

7. Are the Committee to understand that the Government intend to push on with the proposal to connect Bega with a proposed southern extension? The Minister for Works looks at this proposal in the light of the possibility of connecting the line with the proposed extension of railway from Cooma to the border.

8. Are we to understand that the fact of six surveyors being engaged on this particular survey means the near possibility of that event? I think I may safely say it may be taken in that way.

9. In reference to the continuation of the Southern line—is that also proposed to be pushed on in the same way? No; I do not think that can be said to be so imminent as the other one.

10. There are no surveys in progress between Nowra and Jervis Bay? The survey from Nowra to Jervis Bay has already been made.

11. Then the most pressing matter for consideration is the possible connection with the Cooma line? That may be looked upon as the more imminent proposal, because we have surveyors at work, and in two months the survey will be completed.

12. Is it the intention of the Minister, when these six men have finished, to transfer them to the South Coast line? I cannot say.

13. Do you know where the traffic from Bega finds its outlet? At Tathra, 12 miles away; but it is a most wretched place. There is a jetty there, but from what I have heard, the accommodation for an extensive district is very bad.

14. There is no good harbour nearer than Twofold Bay? No; there is a little place at Merimbula, but it is but a poor apology for a shipping place also. Mr. Darley is preparing a report on Twofold Bay, and, with the permission of the Committee, I will put it in afterwards.

15. *Mr. Davies.*] What quantity of land will it be necessary to resume in connection with the construction of the railway? I am not able to say; but it is nearly all alienated land.

16. Small holdings? Yes.

17. Will most of these holdings be affected by resumptions? To a certain extent; but the betterment principle would undoubtedly come in to a large extent in a case of this kind.

18. Do you know the value of the land per acre? No.

19. The cost of resumptions will be a cost additional to construction? Yes. It would be very difficult to say at present how the betterment principle will affect the land. In fact, it would be rather dangerous to give any information on that matter at this particular stage.

20.

J. Barling, Esq. 10 July, 1892.

20. I gather there will be an annual loss on the railway of about £20,000? An annual direct loss.
21. That is taking into account the probable income? Yes. Of course we have to take into account the indirect advantages.
22. *Dr. Garran.*] You have been authorised to say that the extension of the railway from Cooma to Bombala, and from Bombala to Eden, may be looked upon as imminent? No; I said it was more imminent than the other.
23. The other is not imminent at all? It is not a proposal before the Committee at present.
24. I understood you to back up this line by saying that it must be considered in connection with the extension of the line from Cooma to Bombala, and Bombala to Eden? Of the probability, at no distant date.
25. The Committee have to look forward to the fact that the Government will before long propose that extension? To the possibility of that being done.
26. And it is that possibility which is intended to weigh with the Committee? Yes.
27. Do you know whether the extension to Jervis Bay is at all imminent? I have no instructions at all on the point.
28. Do you know whether crossing the river to Nowra to get to the town is at all imminent? The Committee, I suppose, are aware that they have already passed that.
29. But I am asking what the Government are going to do? I have no instructions on the point.
30. Because, if the crossing of the river into Nowra is not imminent, the further extension of the line towards Bega is not imminent? I should not think the extension of the line to Jervis Bay is to be considered as imminent at the present moment.
31. Then we may practically put the extension from Nowra to Bega outside of our consideration for the present? Excepting that the Minister authorises me to say:—"I must also ask the Committee to look at this line as a part of the South Coast line from Jervis Bay, which the Minister thinks must undoubtedly form part of the railway policy of the future."
32. Were you authorised to say whether the Minister looks upon the crossing of the Shoalhaven River as a thing of the present? I have no instructions.
33. It is clear to you that if the railway is not to cross the river it cannot go further south? Undoubtedly.
34. Then we have to throw that out of our consideration for the present? I should not like to say that.
35. Are we to consider the extension through Bombala to be within the range of practical politics? I think so.
36. And it is intended by the Minister that we should be influenced by that consideration in our treatment of this line? Undoubtedly.
37. *Mr. Wall.*] Is your Department responsible for the figures with regard to population? No; I got the figures from the Statistician's Office.
38. *Mr. Ewing.*] I suppose the end in view is to give the people of the district access to a good shipping port? Yes.
39. They find a difficulty in getting their stuff away, and the railway will give them a chance of getting it away? Yes. I may say that something like 500,000 acres have been sold.
40. The line is an isolated one, and you can form no opinion as to when that isolation will be removed by connection with the main line? If our surveyors are successful to the extent of being able to find a line of 1 in 50, which is not a very severe grade—in fact, it is the same grade as the grade of the proposed line from Eden to Bega, and this is looked upon as a certainty—the connection may not be long delayed.
41. The isolation will be removed then by the line being extended from Bomederry, or else by connection with the table-land? Yes.
42. How far is it from Kiama to Bega? One hundred and thirty miles by sea, *i. e.*, from Kiama to Tathra, the port of Bega.

Henry Deane, Esq., Engineer-in-Chief, Railway Construction Branch, Department of Public Works, sworn, and examined:—

H. Deane, Esq. 10 July, 1892.

43. *Chairman.*] Have you personally visited the proposed route of this railway? Yes.
44. How long is it since you were in the district? In January of this year.
45. Has there been any alteration of the surveys of the portion between Bega and Eden since you were there—have you had an officer in the field since your visit? Not on that line.
46. Your book of reference and plans show a grade of 1 in 40? Yes.
47. But the estimate before the Committee takes in a proposed increased expenditure which would decrease the grade to 1 in 50? Yes.
48. That means, of course, a lengthening of the line? Not very much; chiefly put the cutting down. I do not think there will be any appreciable lengthening of the line.
49. Are we to understand that you have taken 1 in 50 as your ruling grade on all railways in the future? No. I intend to adopt what grades seem most suitable for the class of country.
50. But have you not aimed at 1 in 40 of late years? That was the case once.
51. Are we to understand that you will not look with any favour on anything that will give a steeper grade than 1 in 50? No. If the country were more suitable for a grade of 1 in 40, I should prefer it.
52. But where you can get 1 in 50 at comparatively little expense, you will get it rather than get 1 in 40? Yes.
53. Are there any heavy costly bridges on the proposed line? None of any importance. The most costly bridge is over the Pambula River.
54. What is its estimated cost? £8,621.
55. Is there any other stream which will require that amount of money to bridge? No.
56. What will the total cost of the bridges on the line be? For culverts and bridges, £93,000.
57. Is that a large cost, or about the usual cost in a line of this length? It is more than usual; but it is not excessive for a coast line.
58. Is there much grade of 1 in 50? Yes; nearly 11 miles.
59. Does it occur altogether, or are there ups and downs? There are ups and downs. The worst part is the rise over Wolumla Gap.
60. There is a tunnel there? Yes.
61. You do not think it possible to improve the line in the way of better grades or cheaper construction, by adopting some alternative route? No.

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62. The country has been thoroughly explored? Yes.
63. And you think you have exhausted every natural feature which will help to decrease the cost of construction? I believe so.
64. So much so, that you have not since January had any officer trying to find any improvement in the line? No; the line was carefully examined in 1888, and it was then improved by some deviations.
65. Who examined it in 1888? Mr. Hardy, Mr. Kennedy, and Mr. Wickham.
66. They were young men? Mr. Hardy has been a long time in the service, and Mr. Kennedy was an experienced surveyor.
67. Was Mr. Hardy sent down to correct or improve previous surveys? To improve previous surveys. The great cost was objected to, and some important deviations were made, resulting in the lengthening of the line by about 3 miles, and a reduction of the total cost.
68. Then, this has not only been surveyed by the ordinary surveyor, but also by a man of larger experience, who improved the work? Yes.
69. And you do not think it is possible to decrease the cost, or the grades, of this particular line? When tenders come in the prices may come out lower than have been estimated, or they may come out higher.
70. What rails do you propose to use? Seventy-one and a half pounds.
71. Is it necessary to have as heavy a rail as that for light traffic? I do not see any object to be gained by putting in lighter rails. The Commissioners are using 80-lb. rails, and are anxious that I should use them in future extensions.
72. Then it is not possible to cheapen the line by having lighter rails, fewer sleepers, and so on? No. Lightening the rails would only make a difference of something between £100 and £200 a mile. The chief cost of the line is in the earthworks, culverts, and bridges.
73. Owing to the comparatively severe grades, you will require to have rather heavy rolling stock? Yes.
74. Therefore, you must have a good bed for it? Yes.
75. We have been informed that it is desirable to look at this work in view of a possible connection between Bega and an extension of the Cooma line. You have several surveyors engaged on a survey there? Yes.
76. Men of experience? Men of good experience.
77. Are they working independently of each other? There are three surveyors on one route, and three on three different routes in addition.
78. Are we to presume that the line on which the three surveyors are at work is the one which the Department favours, and thinks ought to be pushed on to a conclusion? No. During the time of the late Government it was asked that the line should be surveyed, and they are now completing it.
79. Up to the present what is the ruling grade on those lines? We can get 1 in 50 comfortably on them all. The country is suitable for grades of 1 in 50.
80. Is it likely that any continuation of the Cooma line south would be of less cost per mile than the Bega to Eden railway? Scarcely. I should think it would be about the same.
81. Can you give any idea as to the distance between Bega and the nearest point at which you would tap the extension of the Cooma line? The nearest point would be Bombala, whichever route is adopted. That is the only place you can conveniently get at, and it is about 53 miles from Bega.
82. According to the plan furnished the Committee, a survey known as No. 1 shows from Bombala to Twofold Bay direct, leaving out Bega altogether. What has been done with that? There are two surveyors still engaged upon it. There were six at one time. We expect to have their report within two months.
83. That line would not be of any use to Bega? No.
84. And No. 2 route, known as Big Jack route, would also be of no use to Bega? No; but the idea of that route was to concentrate the grades, to have some different mechanical means of getting up the range—condensing all the grades into a short length, and using some other means than the ordinary locomotive.
85. If the object of the inquiry is to give Bega communication with the coast, or with Bombala, the Committee may dismiss the two routes to which I have been referring? Yes.
86. Do all the other surveys tap Bega? They meet the line about Wolumla.
87. With regard to No. 3 route, which is from Bibbenluke or Cathcart to Wolumla—known as Postle's line—that would not go to Bega either. How near would No. 3 line go to Bega? Twelve miles south of Bega—that is, taking advantage of a leading spur on the main range, which runs almost at right angles to the coast.
88. Can you give any idea of the cost of a line between where Postle's line would tap the Bega-Eden line and Bega itself? I cannot; but it would be a costly line.
89. Will the Wolumla portion be the most costly portion of the Eden to Bega line? No.
90. Postle's line, with a short connection to Bega, would serve Bega? Yes.
91. That is to say, a line from Cathcart, *via* Wolumla to Eden, could be made to serve Bega by a branch line at Wolumla? Yes.
92. And the same may be said of No. 4—Darragh's route—which also joins your Bega-Eden survey at Wolumla? Yes.
93. And the same may be said also of Arnheim's No. 5 route, which runs from Cathcart to Wolumla? Arnheim's route is the first which was tried, and the others have been tried with a view to making an improvement upon it.
94. But either of these three lines, their starting point being the same, and the junction point at Wolumla being the same, could be made to serve Bega by a branch line? Yes.
95. A survey is being made a short distance west of Wolumla, from Postle's route to Bega;—is it an easier country that way than the country from Wolumla to Bega? No survey is being made; the route is impracticable.
96. That was called Kirby's suggested route? Yes.
97. And the Committee may, therefore, dismiss it from their consideration? I think so; although I have no doubt Mr. Kirby will meet the Sectional Committee when they visit Bega. In order that the matter might be properly investigated, I sent Mr. Paul, who is surveying in the district now, to examine the route very carefully, and to take what levels were necessary, and he has made a report which condemns the line.

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98. There is a dotted line on the plan from Eden, going north;—is that a survey which has been made and found impracticable? No; that is the original staked line, and it shows the principal deviation made in 1888, which lengthened the line.
99. The deviations which were made then were not at the summit or difficult part, but at the part near the coast? Yes.
100. Is the dotted line in the bend, close at the Bay, part of the original line? The inner dotted line was the one originally adopted, and the outer dotted line was the one which was adopted in 1888. When I was in Eden, last January, on looking into the matter of the railway location at the town of Eden, I came to the conclusion that in order to make a proper station in the town it was necessary to keep inland and round Lake Curabo.
101. For the purpose of giving a central railway station at Eden you altered your line? Yes. You require sloping ground to drop down afterwards to get near the sea-level.
102. Where does the shipping lie? The pier is on the southern side of Eden.
103. And does the line come close down to the jetty? Yes; the central station in Eden would be near where the Post Office is, on a kind of saddle which is there. The line would have to be continued past where the jetty is.
104. Is the jetty sufficiently strong to run your railways on? It is not intended to do that—it is not in the right direction.
105. Then any produce coming down by the line to be shipped at Eden or Twofold Bay, will have another handling;—out of the train trucks on to the jetty truck, and from the jetty truck into the vessel? No. Additional wharfs and jetties would be made to fit into the line.
106. Are they included in the estimate of £564,000? No. I have allowed a sum under the head of contingencies which will provide for some expense in this way, but not to any large amount.
107. Surely the item of contingencies would not include the cost of erecting jetties and wharfs? It would be unwise to include such a large contingency as that, because it is impossible to say at present what the requirements of Eden will be.
108. In going through the town of Eden you will cut into a large number of allotments? Yes.
109. Are there many improvements upon them? No. If the line was laid out, very little compensation will have to be paid for the land.
110. The line running near Galley Bay is the one which is discarded? Yes; because in getting the ground for a station the drop is too sudden.
111. *Dr. Garran.*] If this is an isolated line will you not require some sheds for the engines for repairing purposes? Yes.
112. Have you taken them into account? Yes.
113. And all the necessary carriage-sheds? All that would be necessary at first for a start.
114. And the necessary sidings for the main station? Yes.
115. Your principal engineering difficulties are between Eden and Wolumla, and not between Wolumla and Bega? The greatest difficulty is at Wolumla itself—rising up to Wolumla Gap and descending on the opposite side, but on that particular rise the southern portion is the worst.
116. If the line were to go to Wolumla and then up the mountain, and not to Bega, you would have the ascent, but not the descent? Yes.
117. So that, supposing the line could be made from Eden to Cathcart, and were not extended from Wolumla to Bega, you would get rid of part of that difficulty? Yes.
118. Why do you keep so far away from the coast as you pass Merimbula—why not go nearer to the port? The idea has been to make for the settled district.
119. Merimbula, for the present, is the port for that district? Yes; I believe wool goes there.
120. Does not cheese go through Merimbula? I am not sure.
121. Because you are cutting that part right out of your line as it runs now? Yes.
122. It is really a port for a pretty considerable district? A great deal of the table-land produce goes down there.
123. Steamers call there? Yes.
124. And you are making a line past it, and are really cutting it out altogether? Of course if this line is made, it is supposed that it will all come down to Eden.
125. Then the object of the line is to give Merimbula the go-by, and to force everything to Eden? Eden is the port, certainly.
126. And you have not considered the convenience of people who want to ship at Merimbula? I do not think many would want to ship there if they could get to Eden.
127. But there is no engineering difficulty in going nearer to the coast? If you went down to Merimbula you would have to get back again, and you would have an awkward crossing at the estuary.
128. Is it a navigable estuary? I think not.*
129. *Mr. Ewing.*] Have you any idea what the country is like from Bega to the Shoalhaven River? No; I have not been along the coast.
130. Bombala is well up on the table-land? Yes, it is over the range.
131. And I suppose the distance of the range from the sea coast is from 16 to 20 miles? About 30 miles.
132. I see that provision is made all along the line for water-courses—swift running little streams from the table-land? The Pambula River in flood time is not a little stream by any means.
133. I see the water-courses are to be constructed of wood? It is the cheapest and easiest material.
134. Are you going to use steel bridges? I may for the Pambula River. We have adopted wood for the water-courses, because iron-bark is obtainable in the country, and it is a strong, durable timber.
135. Supposing that iron is made in the country, will the work cost more? I think the estimate will stand it.
136. Where does the line end in Bega? On a bank. The continuation of the line would cross the Bega River, 15 chains further on.
137. It seems from the section to end in the flood-water approaching the bank of the Bega River? For the last 2 or 3 miles we run along the side of the river.
138. What surveyor is in the district? Mr. Hardy is not very far from Eden, and Mr. Paul is working on Mr. Postle's route.

139.

*NOTE (*on revision*): The steamers now running stand off, and are served by droghers; the smaller ones formerly used were in the habit, I am told, of going into Merimbula.

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139. *Mr. Hoskins.*] Which way did you go to Bega? I went to Eden by the steamer "Corrinna." I then went a part of the way up the Bondi line, through Sturt, to a point on the Wog Wog River. I then went through Eden, Pambula, Wolumla, to Bega, and crossed from Bega to Candelo.
140. Have you ever been to Tathra, the shipping port for the Bega district? No.
141. But you know, as a matter of fact, that that is a shipping port? Yes.
142. People residing in the Bega district do not now take their produce to Eden to be shipped? No.
143. What is the distance from Bega to Tathra? Ten or 12 miles.
144. Are there any serious difficulties in carrying goods between Tathra and Bega? I think not. The objection is the port.
145. Have you seen the port? No. The Illawarra Company's steamers always call there.
146. And they take all the produce away awaiting shipment? Yes.
147. When you received instructions to have the country for a proposed railway from Bega to Eden surveyed, were you instructed to make a survey with the view of that line joining, in any way, with the proposed line from Cooma to Bombala? The first line which was surveyed had for its object the connection of the lines on the table-land with the coast, and Mr. Arnheim and Mr. Robertson were the first surveyors who surveyed there. Mr. Arnheim started from the top, and Mr. Robertson from Eden, and they met somewhere near Wolumla, and when they finished that they had instructions to survey a line into Bega, as a branch line. After that the line from Eden to Bega came into prominence, and since then it has been looked upon as a distinct proposal altogether.
148. Then you have discarded the idea of so laying out the proposed line, as to make it easily junction with any lines which may be made from Cooma to Bombala; you have simply surveyed it with the view of making an isolated line from Eden to Bega? I never meant to imply that. The Eden to Bega line has certainly been laid out, as it were, as a separate line, but the possibility of connection with the table-land has always been borne in mind.
149. Supposing Parliament gave favourable consideration to the proposal to construct a line from Bega to Eden, would there be any great difficulty in branching from it on to the table-land of Monaro, near Bombala? No; it is only a matter of cost to connect with the table-land from Wolumla.
150. But you consider, at all events, that it would be a costly line? Yes; all mountain lines are.
151. What length of line would be required to branch from the proposed Bega to Eden line to any line—if it is ever made—between Cooma and Bombala? The shortest line will possibly be from Wolumla to Bombala—Postle's route—and it would, I think, be 41 miles.
152. I suppose that line would cost as much per mile as the proposed line from Bega to Eden? Yes.
153. Why does the average cost per mile of the proposed line from Bega to Eden reach so high as £14,000 per mile? An inspection of the district would show how difficult it is for railway construction. There is nothing but a series of spurs running down from the mountains and river valleys to cross.
154. Then there would be heavy cuttings, as well as a good deal of bridge work and culvert work? Yes.
155. Do you think the proposed estimate of £14,000 per mile might be reduced, whilst giving a grade of 1 in 50? I am afraid not. I put in the details of my estimate as follows:—

Earthworks—general		£182,000	
Do in stations, 80,000 cubic yards		9,500	
Culverts and bridges		93,000	
Over-bridges and level crossings		15,700	
Road diversions		6,000	
Tunnel		10,875	
Fencing		10,600	
Metalling, approaches to stations, platforms, &c.		14,800	
Permanent-way laying—sleepers and ballast (say)		43,000	
Tank stages, &c.		1,500	
			£386,975
Permanent-way		£39,500	
Water tanks		1,500	
Signals and interlocking		5,000	
			£46,000
Station buildings—			
Eden and Bega	£7,700		
Four stations	10,000		
Four platforms, &c.	2,000		
		19,700	
Additional at Eden		5,000	
Turntables		2,000	
			£26,700
Engineering expenses—contingencies—12½ per cent.			57,225
Total for 1 in 40 grade			£516,900
Add for improvements in grade			47,100
Total for 1 in 50 grade			£564,000

156. *Mr. Davies.*] The cost of constructing the proposed line is very heavy in consequence of the cuttings? That is the heaviest item.
157. And, as presented to the Committee, it is simply an isolated railway running from Twofold Bay to Bega? Yes.
158. As far as you are aware, there is no proposal to join or connect the railway with the table-land? It has often been indicated, and it is certainly a railway for the future.
159. But has it taken any practical shape in your Department as a surveyed line? Surveys have been made from Cooma southward, from Bombala down to the Victorian border, and the surveys are almost complete now, from Bombala to Eden. In fact, what is being done now is only an improvement upon what was started ten years ago.
160. It is practically the same line, with some improvements as to grades, as the one surveyed ten years ago? I could not say it is the same line. Arnheim's line was the first one, and it differs considerably in the matter of route. It goes through the same district.
161. Is there any wide deviation from the original survey ten years ago? Yes; there is not a bit of it in common.

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162. Is it an easier line for construction? Yes; and it will probably be less costly, more even in grades, and it crosses the range at a lower elevation.
163. Does it reach the population more readily than the originally-surveyed line? It does not go so close to Candelo.
164. The puce-coloured line on the plan indicates the original survey? Yes.
165. By going straight to Bega, you leave Candelo some distance from the railway? Again, Postle's line, if adopted, would probably serve the settlement about Wyndham.
166. But the settlement around Candelo is much larger, is it not? Candelo is a little place; but all the district coloured yellow is settled.
167. Nearly the whole of the land through which the proposed railway would pass is private property? The parts which are marked yellow are private property; but the reference book will show the Crown lands passed through.
168. Do you know what quantity of private land will have to be resumed for the purposes of the railway? No.
169. Whatever has to be paid will have to be added to the capital cost of construction? Yes.
170. And the capital cost of the railway, after deducting the probable income, shows a very large annual loss? I have not gone into the question of profit or loss.
171. Do you think a railway constructed from Bega to Twofold Bay would pay? That is not a question in my province.
172. But you have been through the district? Yes; it is a very fine district.
173. But, with all its great natural advantages, do you think a railway constructed at the cost you have estimated would pay in the near future? I am scarcely in a position to say.

James Banford Thompson, Esq., Land Valuer, Department of Public Works, sworn, and examined:—

J. B. Thompson, Esq. 10 July, 1892.

174. *Chairman.*] You are in charge of the Land Valuation Branch of the Public Works Department? Yes.
175. Acting temporarily as an Examiner of Public Works, in 1890, you visited Bega and Eden? Yes.
176. And furnished a report? Yes; in March, 1890.
177. Do you remember whether the report was favourable or unfavourable to the project under consideration? I think it was more favourable than otherwise.
178. Will you describe the steps you took to acquaint yourself with the nature of the country, and with the probable paying capabilities of the line, if constructed? I went from Nimitybelle, down the Brown Mountains, then to Bega.
179. Did you travel as nearly as possible, along the surveyed route? I did not take much notice of the surveyed route. My object was to report on the character of the district to be served by the railway.
180. How did you obtain your information? By conversations with the people to some extent, and from the Government Statistician's report; also from the Sydney Custom House and other sources. There were also my own personal observations.
181. You have a large acquaintance with the soils of various portions of the Colony? Yes.
182. You have been engaged in the field as a surveyor for many years? Yes.
183. Do you think the district proposed to be served by the railway, is superior to any other portion of the Colony you know of? I would not say that; but it is an exceptionally fine district. As a grazing district it is equal to anything I have seen, and some of the alluvial soil cannot be surpassed.
184. Is there much alluvial soil in the district? Yes.
185. What is the country which will be served by the line used for now principally? Dairying.
186. Very little in agriculture? Very little, except for pig-feeding. Maize is chiefly grown for the purpose of fattening pigs, and there is a lot of sorghum. Maize is also sown broadcast, for the use of dairy cattle.
187. Does Bega supply the metropolis with pigs, or is it concentrated in the form of bacon? Bacon chiefly. There are several large bacon-curing establishments there.
188. Do you remember what the output of bacon for the year was? When I was there I ascertained that 6,340 pigs had been slaughtered in the electorate of Eden.
189. You could not tell how many of these would probably be carried by railway? No.
190. Would the country west of Bermagui ship at Eden? Neither Bermagui, Tathra, nor Eden are reliable ports.
191. How far north of Bega do you think trade would be attracted to the railway? I presume Eden would be the chief port for exporting produce of all kinds. I think it would be drained for a distance of at least 20 miles.
192. Do you think the greater portion of the pigs slaughtered would be freight for the railway? I think so.
193. It is safe to assume that two-thirds of them would give freight for the railway? Yes.
194. What else is there? Butter, cheese, horned cattle, and wattle bark.
195. The Railway Commissioners in their report upon this matter state:—

> The country to a large extent is a dairy-farming one, and this is not a class of industry that gives a large amount of traffic to be conveyed, as, generally speaking, a farm carrying 300 milking cows will only produce 75 tons of cheese and 25 tons of butter per annum.

Do you think that that is a correct statement;—that would not feed a railway? No; I think it is very much under-estimated, but I would not like to say positively, without time to make some calculations.
196. Did you arrive at any conclusion yourself, as to what amount of these various products would be available for traffic over the railway? Yes; I estimated that there would be about 1,500 tons per month, inward and outward freight.
197. Did you come to the conclusion that the products of the district were increasing largely each year? I could not say that; but I saw there was a great probability of expansion, if increased facilities were given for getting the produce away.
198. I suppose you had some means of checking the local evidence you obtained? Only by comparing it with the Statistical Register, and other official documents.
199. Did the inhabitants draw on their imagination for their facts? They always do take a rather exaggerated view.

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200. Making allowance for a little exaggeration, did you find their estimates tally pretty correctly with those of the Government officers? Yes; fairly well.
201. Do you think the country is a difficult one, through which to make a railway? It is hilly; but I do not think it is particularly difficult.
202. Would the land to be taken be of great value? It is nearly all valuable land. Of course the application of the betterment principle would reduce the cost considerably.
203. You can give no idea of the amount which would be required for compensation? No; I do not know how much land would be required, but I do not think there is any of it worth less than £5 an acre on the Bega portion of the route. Towards Eden it is not so valuable.
204. Do you think £5 an acre, taking Bega with Eden, would be a fair average? Yes.
205. And these are nearly all small holdings? The average holdings have an area of 412 acres. The total holdings in the electorate number 1,263.
206. The average of £5 per acre is altogether irrespective of the working of the betterment principle? Yes.
207. So that if any of the holdings benefited to any large extent, there would be a large decrease in the cost? Yes; some of the land is worth considerably more than that, but I think that that would be a fair average.
208. Do you think this particular district, owing to its productiveness and so on, is entitled to railway communication as much as some of the other districts, which have had it of late? I think it is more; it is one of the finest districts I have ever been in.
209. Do you think, if the railway were constructed, it would lead to a very marked increase in the productiveness of the district? I think so. There are many articles of production which are entirely overlooked now, and which would be available if there were any regular, speedy means of communication with the big markets.
210. What articles? Poultry, fruit, agricultural produce.
211. In view of the railway and water carriage they would have to pay, could they compete with districts nearer to the metropolis? I think so. With regard to wheat, if it can be grown there, it can be conveyed as cheaply from Eden to Sydney if not cheaper, as it is from Goulburn to Sydney.
212. Where did you find the people of Bega were shipping their produce? From Tathra and Merimbula.
213. Both of these places are exposed? Very. Tathra is unapproachable in north-easterly weather.
214. And only small vessels can go there in the best of times? I would not say that; I think good-sized vessels could get up; Merimbula is exposed on the other side to the south-west.
215. *Mr. Neild.*] Have you made any recent investigation in regard to this matter? Not since December, 1889.
216. You are not aware what alteration has taken place in the population or productiveness of the district? No.
217. You are not aware of any development which has taken place, which would alter the opinions you have expressed? No.
218. Did you see the report of the Railway Commissioners, dated June, 1889, prior to your investigation? No; I have never seen it.
219. The Railway Commissioners assume that the whole of the traffic passing through Merimbula would be taken by the proposed line. Do your investigations lead you to confirm that idea? Yes.
220. And the same with regard to the traffic by the port of Tathra? I think it would take the whole of the traffic.
221. Are there any other portions besides Merimbula, Tathra, and Eden which would be likely to give traffic to the line? There might be some from Bermagui.
222. Generally speaking, you think these coastal ports are so inconvenient and uncertain, that they could not compete with the railway line to any extent? Tathra and Merimbula could not compete at all. If there was a railway to the good port of Eden there could be no competition by the others.
223. Are any harbour works in progress at Tathra and Merimbula? I do not think so.
224. Then this would not be a line constructed for the purpose of competing with expensive coastal ports? No; they are only makeshift ports, with the exception of Eden, which is an excellent port in any weather.
225. Do you think the position in which it is proposed to terminate the line is the most suitable portion of the Bay? Yes.
226. *Mr. Ewing.*] Do you know what is the freight to Tathra and Twofold Bay? No.
227. It is your opinion, based on your experience of the district, that people will be persuaded to go any distance to Eden, to get a better port than they will get at Merimbula and Tathra? They will not only get a better port available at all times, but a better class of vessel and a cheaper freight.
228. Is there any gold in the district? I have heard of it, but there was none discovered at the time I was there.
229. In taking a line through country properties how much do you resume? A width of about 2 chains, that will be 16 acres to the mile.
230. Therefore, 35 miles is about 500 acres? Yes.
231. Taking the betterment principle into consideration, do you think £3 an acre would pay for all resumptions—for severance and everything else? No.
232. Would £5,000 cover it all? Yes.
233. So that the resumptions will not materially affect the cost of the railway? I do not think so.
234. *Mr. Davies.*] You stated that about 1,500 tons of goods would be imported and exported? Yes.
235. You are aware of the distance between Bega and Eden? Thirty-four miles.
236. Do you think the cost of carrying some 1,500 tons of goods a month would pay the interest on the capital cost of the line? That is a question into which I have not entered.
237. Do you think it possible, if a railway were constructed from Eden to Bega at a cost of nearly £600,000, that it would pay? I could not say.
238. Do you think any trade or produce of the district, which would traverse the 36 miles, would go any way at all towards paying the cost of management and the capital cost of construction? I think it is doubtful.
239. *Dr. Garran.*] You have traversed this country? Yes.
240. As between Eden and Wolumla, do you think the railway will pick up much traffic? No.

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241. There would not be much traffic on that part? No; the whole of the traffic which could be looked for would be between Bega and Wolumla.
242. Is there much good land between Pambula and Wolumla? No; there is very good land to the left, near the coast at Merimbula.
243. But if the good land is so near to the coast, would not the produce be shipped at Merimbula? They are such unsheltered ports that I think any means of conveyance to a good port would be eagerly seized upon by the exporters.
244. If you had a farm within 2 miles of Merimbula, would you ship at the port or send your goods by train to Eden? I would send them by train to Eden.
245. Still there is no large quantity of good land near Eden? No; the good land lies to the north and north-west of Wolumla.
246. Supposing the railway went to Wolumla, and were opened to Eden from there, would it draw the Bega traffic? That would depend.
247. Would it draw the Candelo traffic? I think it would.
248. The traffic down the Tanlawange Mountains from the table-land passes through Candelo now? Yes.
249. And all the passengers coming down would get into the boat at Merimbula to go to Eden? Yes; if there was a better class of boats.
250. Do the boats which run along the coast now call at Tathra on their way to Eden? I do not think they do.
251. Is there a through steamer to Eden? No; but the idea is that the intercolonial steamers would make it a port of call.
252. And they would call nowhere between Eden and Sydney? No; I do not think so.
253. How far is it from Bega to Tathra? About 10 miles.
254. Is it a good road? Yes.
255. What does it cost people to send their produce from Bega to Tathra? It cannot cost much.
256. Are there any carriers' carts to pick up the produce? I think so; but a great many farmers carry their own.
257. Did you inquire the cost by carrier's cart between Bega and Tathra? I did; but I forget the amount.
258. Supposing the line were made to Bega, would it pay farmers better to send produce by train to Eden than to cart it down the road to Tathra? I think so.
259. Because the railway is so much cheaper? Not because of that, but because it is so much more reliable, and the produce is nearly all of a perishable character. I may mention there would be a large timber trade opened up, if inducements were given to intercolonial vessels to call. Eden is a well timbered district. Between Eden and Wolumla there is a large quantity of good timber.
260. If Eden is the better port of the three, how is it that more traffic is carried on at Merimbula than there? There is the distance, and there is no inducement for vessels to call.
261. Then it is more convenient at present? Yes.
262. Then is it not a pity to leave a convenient port outside railway communication? Merimbula is a most uncertain port—it is an open roadstead, and all produce has to be carried on to the steamer by droghers through the Merimbula Lake.
263. Does not a steamer go to the jetty? No; they anchor outside.
264. It is sheltered from the north? Yes; but open to the south-west.
265. In north-easterly weather, then, it is a quiet harbour? I do not know that it is quiet, but it is sheltered.
266. But from our account we should have to make the line from Eden to Wolumla through country which would not of itself pay, in order to get to the good country beyond? Yes; a line from Eden to Wolumla would not pay.
267. It would go through second-class country? Yes.
268. The good country lies beyond? Yes; in the Bega district.
269. So that we have to make two-thirds of the line through inferior country in order to get to the good country? I do not think it is quite two-thirds.
270. From what you saw, do you think there is produce enough likely to be collected on the line, to pay for the whole work? I cannot give an opinion.
271. Would the railway very much increase the quantity of produce? I think it would.
272. In what way? If there were regular means of sending it to the market, people would keep more cows per acre on the land than they do now.
273. They are not using the land to the utmost? I do not think so.
274. How much more do you think they could keep? More than double, if they provided winter food for their cattle.
275. *Mr. Wall.*] Did you investigate this country with a view to recommending the railway, or advising the Minister whether it would pay? No; my object was to report to the Minister on the character of the district, and he would draw his own conclusions.
276. You state in paragraph 17 of your report that, owing to the difficulty of obtaining information of railway statistics, you cannot venture to express an opinion as to whether the line will pay interest on the cost of construction;—did you get any statistics at all? Yes; I have a lot attached to my report.
277. What is the actual agricultural population within the radius you examined? Two thousand, in Bega.
278. I see that the radius which will be served by the line is 1,200 miles, and the village holdings are 432 acres—that would give a total of 638,000 acres;—allowing 432 acres to each agriculturist, it would give a population of 1,500, that is assuming that the whole of the land was utilised for agricultural purposes? Then there are the families and servants.
279. If the whole land is occupied there will be 1,500 farms;—are there that number of farmers holding separate holdings? I think so.
280. There cannot possibly be more if the estimate is correct? No.
281. Are there any other industries? The people are principally engaged in dairying.
282. You have not visited the district since the opening of the Pambula gold-fields? No.
283. And you cannot speak as to what it is likely to contribute in the way of population to the district? No.

THURSDAY,

THURSDAY, 11 *AUGUST*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Sutton.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Eden to Bega.

Angel Cooper Turner, Esq., Manager of the Illawarra Steam Navigation Company, sworn, and examined:—

A. C. Turner, Esq. 11 Aug., 1892.

284. *Chairman.*] You are manager of the Illawarra Steam Navigation Company? I am.
285. How long have you held that position? About seventeen years.
286. Before occupying that position you were in command of vessels running to the south coast? Yes.
287. You are intimately connected with the trade done on the southern coast? Yes.
288. How far south do your boats trade? To the port of Eden.
289. Is much trade done with that port? Not very much.
290. Where is it done? Principally with Merimbula, between Eden and Tathra.
291. Where does the Bega trade go to? To Tathra, solely.
292. How far is the port of Tathra from Bega? Six miles, as the crow flies, and about 8 miles by road.
293. The produce from the Bega district for the metropolis comes from Tathra by your boats? Yes.
294. Is there any other line of vessels running to Tathra? No. A small quantity of goods is taken to Eden by the Union Company, but it does not go on to Bega.
295. That is only for the country immediately tapped by Eden? Most of it goes up the Big Jack Road, and to Pambula.
296. Does any produce from Bega go down to Eden to be shipped by the other Companies' vessels? No.
297. Then we may take it that your Company are the carriers for the whole of the produce of the Bega district? Yes.
298. And it comes to you at Tathra? Yes.
299. Is there any other district which uses Tathra as a port, besides the Bega district? No.
300. Do you include Candelo in the Bega district? It is in the Bega district. A portion of the Candelo produce comes down to Merimbula. We can hardly call that the Bega district proper.
301. Very little of the Candelo products come to Tathra? Very little.
302. The same may be said of Wolumla? Some of it comes to Tathra.
303. What proportion do you think will go to Tathra and Merimbula? Fully half of it goes to Merimbula.
304. Then the trade returns which you are about to give us in regard to Tathra, not only include the trade of Bega, but, perhaps, half of Wolumla trade, and a portion of the Candelo trade? Yes. For the last twelve months—from April, 1891, to March, 1892—to amount of goods carried to, and from Tathra, was 6,474 tons, and the passengers carried both ways numbered 1,838.
305. Would the whole of that tonnage and passenger traffic go on to Bega? Yes; and between Bega and Tathra.
306. How much of it would be for Tathra itself? Very little. Tathra is simply a shipping port with not more than half a dozen houses.
307. Supposing a line were constructed, would a large portion of the trade to which you have referred not go to the line, would it still go to Tathra? A lot of it.
308. Then we cannot take the return you have given us as being traffic which would go over the line? No. I believe fully two-thirds of the trade would still go to the seaport.
309. You have been over the country? Yes.
310. Tathra is a very bad port? It is an open port. It is only once during the last five years that we have had to bring the cargo back to Sydney. If we have not landed one day we have landed on another day.
311. If you had to miss the port owing to bad weather going south, you could generally get in on your return? Yes.
312. Do your sea-going boats go alongside the wharf at Tathra? Yes.
313. There is no punting? No.
314. Do you drogher up the river at all? No. The mouth of the river is generally shut up.
315. The goods are taken delivery of by the consignees at the wharf? Yes.
316. If a large trade were developed in the future, Tathra of course would not be convenient for large foreign-going vessels? No.
317. Twofold Bay would then be the best, if not the only port, from which large vessels could take products? That is the only port suitable for large vessels.
318. Do you know sufficient of the country to be able to say whether it is possible, in the near future, that there will be such an extension of trade as will necessitate the finding of markets in other parts of the world, or is the area so limited that it will be only sufficient to supply the Colonies? In my opinion all the good ground is taken up already, and in good seasons we get the whole of that which the district is able to produce. It is a very fine district, provided it has weather to suit it.
319. Where do you land the cargo intended for Pambula? At Merimbula, within 5 miles of the place.
320. And the cargo required by Eden is landed in Twofold Bay? Yes, and the cargo which goes up the Big Jack Road, towards Rocky Hill and Wyndham.
321. How often do the Union Company's boats run to Twofold Bay? Once a week.
322. What is the quantity of goods taken? They do not take very large cargoes. They do more in passengers than in cargoes. On an average, they take six or seven passengers a trip to Eden.
323. And 50 tons of goods? No; they do not average 20 tons.

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324. Can you tell us how the last year's returns of trade with the Bega district, through Tathra, compare with those of previous years? The last three years' returns are about the same.
325. Was there any increase prior to that? Not much. The increase has been very gradual.
326. And you think they have now reached the point where most of the best land is in use, and that there is therefore not likely to be any marked increase in the future? I do not think so. I think all the good land is selected and taken up.
327. Did the Works Department or the Railway Commissioners obtain any information from you in regard to the trade? The Railway Commissioners inspected our books.
328. The trade of the southern port is almost exclusively in the hands of your Company? Yes; with the exception of Eden. Howard Smith's boats run there occasionally.
329. *Mr. Wall.*] What are the shipment returns from Merimbula? Thirteen thousand two hundred and ninety tons for last year.
330. Has the shipment been increased in consequence of the discovery of the Pambula Gold-fields? Yes; the fields have increased our freights and passengers a little.
331. What is your passenger traffic from Merimbula? One thousand four hundred and twenty-three adults and half fares.
332. Is that similar to the returns prior to the discovery of the Pambula Gold-fields? Yes; there is very little difference.
333. You think those figures fairly represent the shipment between Merimbula and Tathra, without regard to the increased population consequent on gold discovery? Yes. About two-thirds of the Merimbula tonnage comes from the Monaro district, from Pambula, and Delegate, and right on to the borders of Victoria.
334. But it is still likely to come there, is it not? Yes. If the railway were there, I think it would cross the line and come on to Merimbula, where there is plenty of feed and good water for the carriers.
335. *Mr. Ewing.*] What do you charge to take a passenger from Sydney to Tathra, Merimbula, or Eden? Thirty shillings.
336. What is the carriage from Tathra to Bega? Ten shillings or 12s. a ton.
337. And from Merimbula to Pambula? I cannot tell exactly; it is only a matter of 5 miles.
338. What does the "Oonah" steamer charge to go to Twofold Bay? The same as we do.
339. To reach Bega passengers would go by the present route, by the Illawarra Steam Navigation Company, plus the road carriage of 10 miles? Yes.
340. If the railway were constructed they would go to Twofold Bay, plus the railway carriage of 20 miles? Yes; and plus the extra water carriage.
341. Do you consider the people there are suffering any inconvenience? No.
342. How far is it to Tathra? One hundred and eighty miles.
343. What is the charge per ton to Tathra? Fifteen shillings; and the same to Eden and Merimbula.
344. What does the "Oonah" charge per ton to Twofold Bay? Fifteen shillings.
345. Do you think, with a larger class of boat, stuff could be carried cheaper? We cannot get the stuff to carry; our boats are not a third full now.
346. Supposing all the produce of the district were diverted to Eden, would a large boat be required to go for it? No.
347. You think, then, there is no trade here for a boat like the "Oonah"? No; except to do as she is doing now—calling in and shipping cattle for Hobart.
348. *Mr. O'Sullivan.*] I understand, from your evidence, that Tathra is accessible nearly all the year round? We have only brought the cargo back to Sydney once in five years.
349. Does the same remark apply to Merimbula? Yes. We lie out in the bay under the head, in a snug place, and drogher the cargo in. We steam into Merimbula Lake with a drogher.
350. But you cannot drogher in there with an easterly wind? We do it all the year round, and have done it for the last thirty-three years.
351. Are you acquainted with the country at the back of Eden? I have been over it a good many times.
352. Is it likely to be fairly well settled in due time? It will not support a large population there; it is more of a grazing country.
353. Is there much auriferous country? The finds made there lately lead one to believe it will be an auriferous country.
354. The auriferous country is principally on the proposed railway route? A portion of it, I suppose.
355. Do you think the existing cattle trade could be developed by the railway? I do not see how it is going to be done. Most of the cattle are brought to the district to fatten, and to be sent to Tasmania.
356. Will not the graziers be more likely to drive their cattle to Eden than to utilise the railway? I do not think they will put them in the railway trucks off the ground; they would sooner drive them the short distance they have to drive them.
357. Does the proposed railway route lie in cattle country? No.
358. The cattle, then, principally come down from the Bombala and other centres away to the westward? Yes.
359. Therefore, they would be more likely to be driven? They would have to be driven if they came from Bombala.
360. *Mr. Humphery.*] The droghering of the cargoes to Merimbula would involve double handling, in the same way as would their carriage by railway? Yes.
361. You mentioned that 13,290 tons of produce came from Merimbula? That includes about 6,000 bales of wool which comes from Monaro.
362. Will you describe the nature of the freight? It consists of general merchandise—cheese, hides, and tallow. Last year we brought down 6,000 bales of wool.
363. How many tons of dairy produce were brought down from Merimbula? About 1,000.
364. The freight from Sydney to Merimbula would be distributed over the whole of the district? Only in certain limits.
365. Between Merimbula and Monaro? Yes.
366. Where would the bulk of that freight go? All the freight to Bega goes to Tathra.
367. Would much of the freight brought to Merimbula find its way to Candelo? Yes; if it were addressed to Candelo it would be landed at Merimbula.
368. It is a well settled dairying district? Yes; there are large factories there.

369.

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369. Do you think the residents or settlers at Candelo would not make use of the railway, in view of the fact that droving to Merimbula would involve a second handling? They do it whichever way is the cheapest.
370. The freight from Twofold Bay by Union boats is 15s. per ton? Yes.
371. And it is the same from Merimbula? Yes; except for bark, which is a little less.
372. Therefore, there would not be any appreciable difference in the water-carriage? No.
373. The only difference would be in the cost of transit from the locality of the producer to the port of shipment? It is just the difference in the matter of cartage.
374. Would there be the same markets open for the settlers if they shipped from Eden, as they have now shipping from Tathra and Eden? Yes.
375. They would not send to Victoria? I do not think so. They send pigs to Victoria.
376. Excepting pigs very little else is sent? No; sometimes a little bark.
377. Do you carry any pigs towards Sydney? Very few.
378. All the pigs go from Eden to Melbourne? Yes; in droves of about 200.
379. Is there any other trade between Victoria and Eden? Yes; they call in occasionally, with machinery for the diggings.
380. *Mr. Hoskins.*] I suppose the land about Eden is of inferior quality? Yes.
381. Supposing the railway were constructed, do you believe, judging from the natural capabilities of the country, there would be a largely increased settlement? No.
382. Is there much export trade from Eden at present? Cattle to Tasmania, and pigs to Victoria.
383. But nothing much is sent to Sydney? A little dairy produce and bark.
384. Do you know that for several years the steamers going to Tasmania called at Eden and took in fat cattle? They do now.
385. Are you aware they have discontinued that practice, and buy the cattle in Sydney and ship it there? No. Huddart Parker's Company takes from Sydney, and the Union Company from Eden.
386. You have stated that large vessels could enter the port of Eden or lie in Twofold Bay;—do you mean they could lie at wharfs if they were constructed? Yes; a good sized ship could lie at the wharf now.
387. If the export trade largely extended it would be necessary to build a breakwater? Yes.
388. Would it have to be a long one? There is none there now; you would have to build one.
389. That would involve the outlay of a large sum of money? Yes.
390. *Mr. Davies.*] You know the district between Bega and Eden? Yes.
391. Do you think, if a railway from Eden to Bega, entailing an annual cost of £30,000 a year, were constructed, that any possible traffic, which could be developed, would pay that sum of money? No.
392. Do you think it would be possible, within the next twenty years, to receive from freight and passenger fares, anything like £30,000 a year from 36 miles of railway? No.
393. The ports at which your steamers call appear to be tolerably safe? We think they are.
394. You have not found any great inconvenience discharging or taking in cargo? No.
395. And the trade has been practically at a standstill? The only increase has been due to the Pambula diggings, and that has been nothing of importance.
396. Do you ship much live stock? No.
397. *Dr. Garran.*] But of the three ports with which we are concerned, Eden, Merimbula, and Tathra,—Eden, I suppose, is the best of the three? Yes.
398. But it does the least commerce of the three? Yes.
399. Then the best port is in the wrong place? Yes.
400. Which do you consider the chief business port? Merimbula.
401. Which do you consider the worst of the three ports? Tathra.
402. As a rule, if a port is open to the north-east, it is worse than if it is protected against the north-east? Yes.
403. Merimbula is protected against the north-east? Yes. In bad weather we go over to the Pambula side, where it is protected on the south-east.
404. If you cannot load and unload at Merimbula, you load and unload at the southern end of the bay? Yes.
405. You can always do one or the other? Yes.
406. Supposing the railway were constructed, you would still load something at Tathra? I think so.
407. How much traffic, which you now receive at Tathra, do you think the railway would take from you? Not much.
408. Would it take one-half? No.
409. Would it not take all that is centred in the town of Bega itself? I think not.
410. What is the cartage from Bega to Tathra? Ten shillings a ton.
411. It would probably be only 5s. from Bega to Eden by railway? But people have their own carts and horses. They have to start from their dairy with their produce, and it would spoil a day to take it to the railway. They could go to Tathra equally as well.
412. You think a dairy-farmer whose place is to the west of the Bega township, would go past the railway station on to Tathra with his own vehicle, rather than unload at Bega? I believe so.
413. Would the railway take one-half of your Merimbula business from you? No, because the greatest part of the Merimbula cargo goes on to Monaro, and they would not bring down the cargo to where the railway crosses the Merimbula Road and leave it there. They would go on the extra four or five miles and leave it at Merimbula, where they have good feed and water.
414. Then the bulk of your Merimbula business comes for some distance inland? Yes.
415. What does it consist of? Wool in the wool seasons. At other seasons we have bark and tallow.
416. Not much cheese? No. We get some from Bombala.
417. Do you not think that the railway would take the greater part of the Candelo traffic? It might.
418. Do you take machinery to the mines at Pambula by your boats? Some of it.
419. Do you land it at Merimbula? Yes.
420. Is not the advantage of the port of Eden enough to counteract the extra distance by road? I would not take a big boiler to Merimbula, but to Eden.
421. Would you take a stamper to Merimbula? Yes.
422. Have you landed a fair quantity of machinery at Merimbula? Yes.
423. Without accident? We have never lost anything yet.

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424. I gather from you that Eden is not really a great ocean port? No; not for lying alongside the wharf.
425. A vessel alongside the wharf must stand prepared to go off at an hour's notice? Yes.
426. You cannot guarantee to load and unload without having to shift from the wharf? No.
427. Then if this railway were made, it would not necessarily drive your boats off the coast? I do not think so.
428. It would be a severe competition? They must send by water. We should have the trade at Eden if we lost it at another place. It would not pay larger boats to run there regularly, as we do.
429. If the trade were concentrated in Eden in large quantities, would it not pay to run a boat to Eden direct? Yes; if you could only get a large quantity of trade.
430. You do not think that the country which lies to the west of the line will contribute much to the railway traffic? No.
431. When people have to travel 20 miles, they will go right on to the port? Yes.
432. The principal contributors to the railway would be the Candelo and Bega districts? Yes.
433. And not very much beyond that? No.
434. You get a little trade at present at Merimbula, from the coast country to the north? Yes.
435. And that would still go to Merimbula? Yes.
436. You do not get much from the south of Merimbula? Pambula is rather south, and we get all that trade.
437. Do you think people would come to Merimbula from Pambula, instead of coming to Eden by railway? I think so. You get to Merimbula quicker than to Eden in the first place, and you have only a matter of 5½ miles to go from Merimbula to Pambula.
438. But they go as cheaply from Pambula to Eden as by road to Merimbula? Most people have their own vehicles.
439. And they have an easier way of getting on board ship? Yes.
440. You have to take them off in a boat? Yes.
441. Whereas they step ashore at the jetty at Eden? Yes.
442. Then you are of opinion that it is not fair to take a calculation of the whole of the produce of the district, and to assume that it will all be produce for the railway? No.
443. You have given the opinion that the farms are producing up to their full power? Yes
444. And you do not believe the railway will double the production? No.
445. If we had evidence to the effect that the construction of the line would double the produce of the district, you would doubt it? Very much.
446. *Mr. McCourt.*] What are the principal exports of the Bega district to Sydney? Butter, cheese, and bacon.
447. Do you carry that for 15s. a ton? We charge so much a bag for bacon.
448. How much a keg for butter? One shilling for 50 lb., 2s. 6d. for 70 lb., 3s. for 80 lb., over 80 lb. 3s. 6d.
449. The charge for butter to Sydney would be from £2 to £3 a ton? About £2.
450. And there is seldom a ton of butter shipped in one consignment? I can only remember one consignment of 2 tons of butter, and that came the other day from Tooth's factory.
451. If all this trade were concentrated at Eden, would it not bring competition from other steam companies? Any steamer could call at Eden.
452. In that case, produce would be liable to be carried to Sydney cheaper? Yes.
453. If the line were carried from Bega to Eden, would not the trade of the district be concentrated at Eden? Yes; if you can get it there.
454. Do you not think the railway would take the greater part of it? No.
455. Would it not take a considerable portion? It would take a portion.
456. In that case the trade of Eden would be considerably increased? It would, if you took it there.
457. Would not that induce other Companies to compete with you? It might, but I do not think so; for the simple reason that with a produce trade like ours, you must have regular days of sailing. A chance vessel might come in, and that would not suit in summer time.
458. But if there were a big trade, would not the steamers suit their days of calling to suit the people? No doubt, if there was a big trade.
459. Is corn largely grown in the Bega district? By a few farmers. Last year we had about 29 bags up; most of the maize is grown by one farmer, Mr. Gowen.
460. It is not generally grown? No.
461. *Mr. Dawson.*] How many ships do you run a week? Two.
462. Do you always find them loaded? Never; except in the wool season.
463. But the wool season has nothing at all to do with Bega and this line? I simply wished to show that a certain amount of freight only comes out of the Bega district.
464. But there is no wool in the Bega district? No; it all comes from Monaro.
465. The bark all comes from Southern Monaro? Yes; from the back of Bega.
466. From your knowledge of the district, how long would it take to fill a reasonably sized train at Bega with produce; would there be one full train a week? There might: it depends on the length of train.
467. An ordinary, fair-sized train? I do not think there would.
468. *Mr. Neild.*] I suppose the proposed railway would tend to some extent, to centre a trade at Eden, which does not exist there now? It is sure to do that.
469. Consequently, there would be some risk of your Company meeting with that competition at Twofold Bay, which it does not meet with at coastal ports? We have competition now at Eden. The Union boats call there.
470. But you do more business with the smaller ports than with Eden? Yes.
471. If the trade were centred at Eden the competition would be increased? I expect it would.

Hugh McLachlan, Esq., Secretary to the Railway Commissioners, sworn, and examined:—

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472. *Chairman.*] You are Secretary to the Railway Commissioners? Yes.
473. In June, 1889, the Railway Commissioners furnished a statement in connection with the proposed railway; has there been any further inquiry since this statement was made? No.
474. There has been no inquiry as to whether there has been a large increase in the probable trade? Not by the Railway Commissioners.
475. So that we may take this document of the 11th June, 1889, as being the latest information you are prepared to give? Yes.
476. In this statement the Commissioners do not recommend the construction of the line because of the large prospective loss? And they do not recommend it now. In fact, I do not think the revenue would be quite as great as it is put down, because the principal traffic on the line would be dairy produce, and since that time we have reduced the charge for dairy produce one half.
477. But you would not charge the same rate on an isolated line as you do on the main line? If we charged a high rate the traffic would all go to the steamers.
478. But you want to bring it to the steamers? Yes; but there are competing ports—Tathra and Merimbula. It would be intercepted by the steamers at those places.
479. So that the report presents a better state of affairs than exists now? I think so.
480. Unless there has been a large increase in the productiveness of the district? Yes.
481. *Mr. Neild.*] The calculation is for about two double fares for adults, and one double fare for children? Yes.
482. Is it customary for the Department to estimate the travelling capabilities of the people as high as that. The Commissioners think they have made a fairly high estimate for a district like that, where the people do not come into town daily, as they do in Sydney.
483. But the estimate, which was made by the Commissioners for the travelling of the people in the Inverell district, was not placed as high as it is in this instance;—do you recollect what that estimate was? I think the Commissioners in their report say they consider it a high estimate.
484. Was not the calculation in the Inverell district made for 5,000 double fares, for a population exceeding 6,000—that is something less than one double fare for every one in the district;—but in this instance the Commissioners appear to have almost doubled the prospective income? I do not recollect the Inverell estimate; but the Commissioners consider it a liberal estimate to allow two journeys a year for every adult in the district.
485. Do you think the travelling of the people in any district of the Colony comes up to it? A good deal depends on their nearness to the metropolis. People at Picton, Mittagong, Moss Vale, or Goulburn, may travel more. People who are more distant would not travel so much. In this case, seeing that the people are so far away from Sydney, and there is the discomfort of the sea voyage, I do not think they would make the two journeys. Apart from that, in districts like this, every landowner owns his own trap.
486. Do you think a good many people would go to the seaboard in their own vehicles, notwithstanding the existence of the railway? Yes.
487. And the same remark would apply to the carriage of provisions? Yes If produce were going some distance to a station, rather than wait to unload, the person in charge would continue the journey.
488. Does not your experience show that the ordinary charge for the carriage of goods by carriers is no a fair criterion as to the cost to the producer who uses his own vehicle? I take it you mean that a carrier may put his charge down at 8d. a mile, whereas if a man takes his own vehicle it may not cost him more than 6d
489. Therefore, there is always a risk of missapprehending the advantages of railway communication, as affecting the rates of carriage of produce? Yes; where a line is situated as this would be.
490. Where the ports are within reach of vehicles? Certainly.
491. *Mr. Ewing.*] You say you have put down dairying and other freights one-half? Yes.
492. Then are we justified in taking the first item of your estimated revenue—goods and live stock, £7,062—as £3,500? Not quite; because that includes general goods which have not been touched; but a large proportion of the traffic to the sea-board would be dairy produce.
493. Might we call it £5,000? That might be nearer.
494. Therefore, this statement of the Commissioners ought to be altered? It might, I think, be reduced £2,000.
495. *Mr. O'Sullivan.*] The report of the Commissioners on this line is three years old? Yes.
496. Why is it not brought up to date? They only report when they are asked. They were asked by the Government to report in 1889.
497. Since the report was drawn up there has been a considerable access of population to the district, owing to the diggings at Pambula? There has been an increase.
498. That has not been taken into account? No.
499. And the leasehold areas in the neighbourhood have been thrown open for settlement? I have heard it stated that there has not been a great increase of what you might call residential settled population.
500. Are the Commissioners of opinion that the report of 1889 is a fair reflex of the state of things in 1892? Yes; so far as they are advised, it is.
501. *Mr. Humphery.*] How much per ton are you now charging for the conveyance of dairy produce? What we call B rate—say 2d. per mile.
502. And from Bega to Eden? About 6s. 4d.
503. *Mr. McCourt.*] The Commissioners' estimate is considerably less than the estimate of Mr. Crawford, for traffic? Yes.
504. Mr. Crawford's estimate was £18,494? Yes.
505. How did the Commissioners put that down? They went into the district themselves, and were satisfied that their estimate was a fair one.
506. How long were they in the district? Two days, I believe.
507. How long was Mr. Crawford there? I think two days.
508. *Mr. Wall.*] Do you think there would be a strong objection on the part of the farmers, to the the rehandling of dairy produce;—if they can ship at the Tathra and Merimbula, would they not be more likely to ship it there than bring it by train? I think so.

509.

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509. If the manager of the Illawarra Company has stated that the whole of the tonnage shipped from Tathra and Merimbula amounted to about 19,000 tons per annum, and that in any case the railway would not get more than one-half of that, how long would it take an ordinary train on a 1 in 40 grade to carry it away? If all the stuff were there ready to be handled, one train could take it away in about seven weeks making one journey each way a day.
510. You agree that the construction of the railway would not command the whole of the trade? It would not.
511. There would also be an objection to the rehandling of pigs? They can be driven, if the distance is not too great.
512. If they can ship pigs at Tathra or Merimbula, they are not likely to put them on the train, bring them to Eden, and rehandle them? I do not think so.
513. *Chairman.*] In the statement of the Railway Commissioners there is an item which does not appear in any previous statement, namely, "Depreciation of rolling-stock, £1,785?" Yes.
514. What is the reason that is omitted from other statements? So far as I recollect the reason of inserting it was this:—On the other branch lines which have been connected with the main lines, the Commissioners were quite willing to let the main line rolling-stock do the branch line work. On this line we should have to have a purely separate rolling-stock.
515. *Dr. Garran.*] Supposing the railway were made, and you brought the produce to Eden, would you take the agency of putting it on board ship? It has never been usual for us to put it on board ship, and act as agents.
516. The people would have to employ agents? Yes.
517. You would charge 6s. 4d. per ton from Bega to Eden? Yes.
518. We have it in evidence that the carriers' rate between Bega and Tathra is 10s.? Yes.
519. Do you think a man at Bega, when he can take his produce to Tathra for 6s. in his own cart, would pay you 6s. 4d. and the agent's fee into the ship at Eden? I do not know that he would. Of course he would naturally go to the cheapest port.
520. You think it would cost a man more to send his butter and cheese by railway to Eden than to carry it in his own cart? In some cases. It may be of interest to the Committee to know that the Commissioners are opposing one or two of these lines because they feel that they are likely to be a heavy drag upon them. I have here a statement made of the sectional earnings of a dozen of the branch lines for last year.
521. *Chairman.*] Does the statement include the whole of your branch lines? Yes; it also includes the Armidale to Jennings, and Dubbo to Bourke lines. The Dubbo to Bourke, and Narrabri lines are the only ones which return a small profit over working expenses.
522. It is hardly fair to call those branch lines? I have taken them in addition to the others.
523. Have you the particulars of each? Yes; they are as follows:—

Line.	Length	Capital Cost.	Loss in connection with working expenses and interest on capital, 1891.	Profits on the year's working.
	Miles.	£	£	£
Sydney to Kiama	70	2,152,610	53,950	
Junee to Hay	107	1,034,072	22,592	
Narrandera to Jerilderie	65	424,143	16,371	
Wallerawang to Mudgee	85	1,035,021	35,246	
Werris Creek to Narrabri	97	649,681		907
Cootamundra to Gundagai	34	218,611	8,870	
Goulburn to Cooma	127½	1,456,991	46,215	
Orange to Molong	22	282,976	8,716	
Hornsby to St. Leonards	11	215,146	10,061	
Dubbo to Bourke	225	1,602,001		37,347
Armidale to Jennings	132	1,533,068	63,367	
Murrumburrah to Blayney	112	1,135,592	46,042	
Total	1,087½	11,769,912	311,430	38,254

Non-paying lines, 765½ miles, £9,518,230.

Working expenses	£319,059
Interest	352,475
	£671,534
Less earnings	360,104
Loss	£311,430

The earnings only provide £41,045 to meet the interest upon an outlay of £9,518,230.

Of course these lines may have helped the main line to some extent by feeding it.
524. *Mr. Neild.*] Reckoning interest, what rate do you charge? The money has been borrowed under certain Loan Acts at 3½ or 4 per cent.
525. You do not take any all round rate? No, at the rate borrowed.
526-7. Against your earnings do you reckon anything for the rental value of the buildings which are occupied by your Department, and which have been built with either lent money or Consolidated Revenue money? No.
528. Have you made any allowance for interest on loans, between their raising and the opening of the lines? I think not.
529. Are the expenses of the Construction Branch charged against the railways? Yes; it has always been usual to do that.
530. I suppose, in earnings, you reckon all the assumed earnings, which are not actual cash transactions—for instance, Members' travelling passes are reckoned? No.
531. Are they not credited to the earnings of the Railway Department? No. We have a general vote of £25,000 a year to cover all unremunerative services, but the unremunerative services cost us £40,000 or £50,000, calculated at ordinary rates.
532. But, calculated at ordinary rates, from the returns which have been presented to Parliament from your

your Department, it is evident that you credit the Department with earnings for free passes, as per your regular table of rates. For instance, a month pass is put down as being worth £8 6s. 8d. As a matter of fact, in a great many cases, nothing like that amount of travelling is done? As a matter of fact, we do not charge £8 6s. 8d. A question was asked in the House as to the value of the travelling, and that was only an assumed figure. We do not take credit for that amount. H. McLachlan, Esq. 11 Aug., 1892.

533. Your Department, then, does not take credit for earning up to the assumed value of a free pass? No; if we did that vote would have to be nearer £50,000.

534. You are aware that the free passes are not used to anything like their nominal value? No.

Alexander Crawford, Esq., Railway Superintendent, Goulburn, Department of Railways, sworn, and examined:—

535. *Chairman.*] You are Railway Superintendent in the Goulburn District, Department of Railways? Yes. A. Crawford, Esq. 11 Aug., 1892.

536. You were called upon by the Commissioners to make inquiries and to furnish an estimate of the probable traffic of the proposed line in 1889? Yes.

537. Have you visited the district since that time? No.

538. Do you think the estimate was a fair one at the time it was made? Yes.

539. You are aware that the Commissioners afterwards cut it down? Yes. I would like to explain that. I took an estimate of the whole of the traffic of the district. I did not allow for anything which might go by boats.

540. Do you think the traffic would drain to your railway from 10 miles north of Bega? Quite that.

541. And your estimate was based on the understanding that every bit of produce would go down to Eden on the line, and would not be intercepted by steamers? Yes.

542. How did you obtain your information? From the storekeepers. We also went to a number of the principal dairies.

543. Was it after your return to Sydney that you checked the local statements with the books of the Illawarra Company? I was not allowed to see them.

544. Are you aware that the Commissioners afterwards had access, through their representative, to the books? Not until now.

545. And if they had reference to the books, and have reduced your estimate, it would probably be from the fact of their finding that your estimate was not borne out by the books of the Company? I expect so.

546. You do not know whether the trade has increased much since you were there? No.

547. *Mr. Dawson.*] You say you went to the storekeepers. Were you at the Long Island factory, near Candelo? No.

548. Were you at Towamba and Kanoona—Styles' and Manning's? No; I went over the district with Mr. Rawlinson, and we called at several places. I could get the names from him.

549. Were you on the Bega River? I came through Braidwood right down to Bega.

550. Did all the farmers round Bega tell you that they would use the railway? Yes.

551. Did you go to Tathra? Yes.

552. It is a very fair road? Yes; sandy in places.

553. You gathered that the farmers would sooner send butter to Eden than take it by means of their own drays to Tathra? They said they would; they objected to Tathra being a bad port.

554. But they have been using Tathra for some time? For years.

555. They have been using Merimbula for a longer period? Yes; but they object to that port, as they have to put their produce on droghers to take it out to the steamers.

556. Do you really think they would avail themseves of the line? They said they would.

557. Supposing you were a farmer north of Bega, would you go to Tathra, or send your stuff to Eden? I would send it to Eden.

558. *Mr. Ewing.*] Do you think the estimate of £18,000 as your total traffic, is rather high? Yes. We will have to take the quantity they would ship at Tathra and Merimbula from that. You might take one-third off it. Then there is the reduction of one-half in produce rates.

559. *Mr. O'Sullivan.*] I presume you went to reliable persons to obtain your information? Yes.

560. When you obtained your information, was there any rush of miners at Pambula? No; that has arisen since.

561. *Mr. Humphery.*] How many miles to the west of the proposed line did you estimate the traffic? About 30 miles wide, I think.

562. Did you consider the railway would take all the traffic 30 miles to west of the proposed line? Yes; to Eden.

563. Did you expect any of the traffic from Pambula to go by the line? Yes; I passed through.

564. You took in the whole of the Candelo traffic? Yes.

565. What part of the line do you think the Candelo traffic would strike? At Wolumla.

566. How far is Wolumla from Merimbula? About 6 miles.

567. How far is it from Eden to Wolumla? Twenty miles.

568. Did you reckon that the whole of the produce between the line and the coast would be sent by railway? Yes; taking into consideration the bad ports they had at Tathra and Merimbula.

569. The manager of the Illawarra Company has informed the Committee that the Company's steamers have never been unable to land their cargoes on the coast, except on one occasion, during the last five years. Do you think that that is correct? I was told by the people that they frequently could not land there. It is very much exposed at Tathra.

570. In estimating passenger traffic, did you estimate that the whole of the people, travelling between Sydney and the district, would use the railway to get to Eden? No.

571. How did you estimate the probable passenger traffic? I took the population, and averaged them at two trips a year.

572. Between Bega and Eden? Yes.

573. What about the travelling population between Eden and Sydney, or Eden and Melbourne—would that be additional? No; I do not think so; it would be inclusive.

A. Crawford, Esq. 11 Aug., 1892.

574. Do you think you made a very full estimate? I think I made a very liberal estimate.
575. *Dr. Garran.*] Do you think, as a practical man, that the railway will get the whole of the traffic of the district? No.
576. What proportion do you think the steamers would still get? About one-third.
577. That would reduce your estimate by one-third? Exactly.
578. *Mr. McCourt.*] In your statement you add 25 per cent. for increase—what does that mean? To allow for expansion of traffic when the new line is put into a district.
579. Within what time would that occur? Within two or three years.
580. Do you think any expansion has taken place since you were there? I have no idea.
581. You state, in your report, that some steam company would be prepared, if trade were concentrated at Eden, to put a line of steamers on constantly. What company was that? I forget. I was told it in Bega by Mr. Rawlinson, the solicitor.
582. Are you aware that the inhabitants, in their petition, estimated the railway traffic to amount to £26,000 per annum? Yes.
583. Mr. Rawlinson was one of the gentlemen who prepared that statement? Yes.
584. *Chairman.*] How did you go to Eden from Sydney? I went from Goulburn to Braidwood, down to Moruya, from Moruya down the coast to Bega, and from there to Eden. I came back through Candelo, and came by Brown's Mountain up to Cooma.

Charles James Saunders, Esq., Chief Draftsman, Department of Lands, sworn, and examined:—

C. J. Saunders, Esq. 11 Aug., 1892.

585. *Chairman.*] You are Chief Draftsman in connection with the Lands Department? Yes.
586. You furnished Mr. Barling, the Under Secretary for Public Works, with the plans showing the lands alienated and unalienated in the south-coast district? Yes.
587. Can you state the area of land alienated, unalienated, and in reserves in an area 10 miles north of Bega, 10 miles west of the proposed Bega-Eden line, down to 10 miles south of Eden, and of the coast line? I have taken a line 10 miles north of Bega, and another 10 miles south of Eden, and I have run both of them out back to the edge of the table-land. It is practically the country which will be affected by the line.
588. How far west will that be from the line? It might go as far as 20 miles west in some cases. The alienated land is 369,200 acres; Crown land, not including reserves, 446,000 acres; and reserves, 127,940 acres, making a total of 943,140 acres.
589. Can you state whether the alienated land is the pick of the district? I believe it is.
590. What are the reserves you have mentioned? Thirty-four thousand seven hundred and ten acres of forest reserves; 8,838 acres of gold-field reserves; and other reserves, 84,400 acres.
591. Have there been any Crown land sales within the area you have mentioned of late? I do not know of any, but towards the southern part of the area we have been offering some land for annual licenses. It was offered first at £1 6s. per section of 640 acres, per annum, and we had no bidders. Afterwards, it was offered at 10s. per section, this year, and we only sold two lots. That is out of a total area of about 400,000 acres, which we offered, including the southern part of the area referred to in question 588, and the land thence southward to the boundary of the colony.
592. These facts will go to prove that the land is of a poor quality, or means of access to it is so difficult that it is of very little value? It is reported by our surveyors that it is of very little value for grazing purposes in its present state. It is rough, mountainous, and heavily timbered.
593. Is there a Crown lands agent in the district? There is one at Bega and another at Eden.
594. Is the plan you produce charted up to date? As nearly as possible.
595. You do not think many transactions have occurred other than what are shown on the plan? Not of any great moment.
596. *Mr. Wall.*] Is any portion of land you have noted as Crown lands, open to alienation, fit for agriculture? It is believed that parts of it might be suitable if they were cleared.
597. Is some of the land, which may be adapted for agriculture, the land offered on the liberal terms you have mentioned? Small parts of it might be—principally towards the southern end.
598. Was that land going to be leased for any special object? No; it was offered for ordinary annual occupation licenses for grazing purposes.
599. Has there been any alienation of land there during the last few years? There has been a small amount of selection going on.
600. *Mr. Ewing.*] The main settlement appears to be to the west of Bega? That is where the main alienation has taken place.
601. There is not much settlement between Pambula and Twofold Bay? No.
602. When were those reserves made? I think the railway reserves are of comparatively recent date.

TUESDAY, 20 *SEPTEMBER*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Eden to Bega.

Henry Clarke, Esq., M.P., sworn, and examined:—

H. Clarke, Esq., M P. 20 Sept., 1892.

603. *Chairman.*] You have represented the electorate of Eden in the Legislative Assembly for some time past? For a little over twenty-two years.

604. You are consequently familiar with the whole of the district and its requirements? I think I ought to be. I have known the district for forty years.

605. Do you desire to make a statement to the Committee, or would you rather that we should examine you? I have no wish to make a statement. I think the Committee had better examine me first, and then if I am permitted I may afterwards make a statement.

606. *Mr. O'Sullivan.*] From your long connection with the district you are in a position to give us some information regarding it? I think so.

607. What are the chief resources of the district? It is a dairying district, devoted to the manufacture of cheese, butter, bacon, and produce such as that. Of course a large quantity of other produce comes up to market, and I think this production would be increased if the district had a railway. I find by a rough calculation that from 1,500 to 2,000 tons of cheese are sent from there annually, and that 1,000 tons of butter, and from 400 to 500 tons of maize are also sent annually. During some seasons there is not so much maize sent, but I think during average seasons from 400 to 500 tons of maize are sent out of the district.

608. This produce is now brought by steamers from Tathra and Merimbula? Yes; together with 400 or 500 tons of bacon.

609. Is much inconvenience caused to the settlers through their having to ship their produce at Tathra and Merimbula? Very much indeed. Tathra is an open roadstead and very often the steamers cannot call there, either on their downward or upward trips. To make the port of Tathra a port to which they could come at all times and in all weathers would be very expensive. I know that more than once or twice I have gone down there from Bega, intending to go to Sydney, and have not been able to get on board. The steamers can get there in fine weather. At Merimbula the steamers do not go in at all; they lie outside, and cargo is brought out to them in lighters.

610. Do you think it is a fact, as stated by Captain Turner, that only once or twice in five years have the steamers of his company been compelled to return to Sydney unloaded? I think he must have made a mistake when he said that. I believe that last month the steamers passed three times backwards and fowards without being able to call in. They were not able to call in during the time that the Sectional Committee were in the district. I cannot tell how many other times they have been unable to call, but I know that I have once or twice been compelled to return from Tathra to Bega because I could not get to Sydney, and I had then to go overland to Moruya.

611. The produce from Merimbula is shipped into droghers? Yes.

612. That produce is generally of a perishable nature? Yes; it is generally all of a perishable nature. The chief products of the district, cheese and butter, and butter particularly, are of a perishable nature.

613. Have you heard of any losses being caused to the settlers owing to their not being able to ship this produce at once? Yes; on several occasions. In the summer time, in very hot weather, the steamers being of a class which is not exactly adapted for the requirements of the district, the butter, which is generally carried on deck, and the cheese which is then sent up in large quantities, deteriorates, and as very often the market varies considerably, a good deal of inconvenience and loss has been occasioned to people, because of the want of a regular service and a better class of steamers.

614. I suppose the same amount of inconvenience is not caused to those who ship at Tathra as is caused to those who ship at Merimbula? Not if the steamers can call there; but there are occasions when they cannot call in.

615. Do you know the distance from Tathra to Bega? About 12 miles.

616. Do you think that if a railway were constructed from Bega to Eden the people of Bega would ship at Eden instead of at Tathra? Yes, and particularly dairy produce.

617. Do you think the certainty with regard to the means of transit at Eden would weigh against the shortness of the journey from Bega to Tathra? Yes; undoubtedly, as far as dairy produce is concerned. It is also hoped that if the railway is constructed a better class of steamers would call at Eden, and that freights would consequently be lower than they are at present.

618. The settlement round Bega and Candelo is of a permanent and a profitable character? Yes.

619. Is all the land there taken up? Not all of it. There is a great deal of it occupied. I should say that fully 600,000 acres are in occupation in the district.

620. If so much of the land is occupied, how comes it that only about 12,000 acres are cultivated? It does not pay the people to cultivate. Maize is grown upon the alluvial land. That maize is sent to Sydney when we have a market for it here, but if the market is low it is used to fatten pigs, which are generally shipped from Eden. The pigs have to travel 36 miles to get to Eden. Sometimes they are made into bacon before being sent away.

621. Does it pay better to occupy the land for dairying than for cultivation? The great bulk of the land is better adapted for dairying, but there are many things which now it is impossible to send away, in consequence of the high rates of freight and long carriage, which might otherwise be profitably produced. Oats could be grown to a considerable extent, and so also could hay and potatoes. Unfortunately all the

good

H. Clarke, Esq., M.P. 20 Sept., 1892.

good land is a considerable distance from the port of Eden. From Eden to Wolumla is, I think, about 22 or 23 miles. That land, with the exception of the land at Pambula, where there is some alluvial soil, is not so good. The good land commences at Wolumla and includes the Candelo and Colombo districts. It extends for about 40 miles north and south, and 30 miles east and west.

622. So there is ample scope for the development of the dairying industry? I think dairying will considerably increase. A good deal of the dairying land has certainly been taken up, but if there were the means of transit to a good port that area would considerably increase.

623. How do they bring dairy produce to Tathra? Some of it is brought to Tathra, but a good many people go to Merimbula.

624. In vehicles, or on horseback? They use carts and waggons and other vehicles. That is the only way they have of bringing produce to market.

625. Do you think that after they had once loaded up and got their produce to Bega they would rather put it into railway trucks and send it to Eden than take it 12 miles further to Tathra? I am sure they would. The people in the immediate neighbourhood of Tathra might send some of their heavy produce there, but, as a rule, nine-tenths of the produce would go to Eden if it could be sent there by railway.

626. Is there much population in the district between Bega and Eden? Yes; there is a large population—not on the immediate line of route, but a short distance back—about Candelo and Colombo.

627. I presume you know the Pambula gold-field very well? Yes.

628. Is it progressing? I think it is progressing fairly. There is a large population there now, and from what I can hear some of the mines are turning out remarkably well. I am not much acquainted with mining matters, but I think it is likely to be a permanent gold-field.

629. What population have they there now? I cannot exactly say. I suppose there must be from 300 to 400 people there at present.

630. The total annual cost of the proposed railway is estimated at £30,270. That includes interest on capital expenditure and on rolling stock, working expenses, depreciation of rolling stock—in fact, everything? Do you think there will be sufficient traffic on the line five years from the date of its being opened to return that amount to the State? I do not think so large an amount as that will be repaid in five years.

631. Do you think the indirect advantages afforded by the railway, such as the opening up of the land for settlement and the giving of more convenience for trade, will be so great as to justify an annual loss upon the line? I think so. I think the country will be perfectly justified in incurring a certain annual loss, but not a loss to the extent of £30,000 per annum. I, however, do not think that there would be that loss, taking into consideration the quantity of produce and the number of passengers which would go by the railway.

632. The Commissioners' estimate is as follows:—Annual cost—interest at 3½ per cent. on capital, £19,740; rolling stock, £624. Working expenses:—Locomotive expenses, £2,166; traffic, £1,475; permanent way, £4,480; depreciation of rolling stock, £1,785. Total, £30,270. Do you think the railway would earn that amount per annum within five years? I have my doubts about it earning as much in such a short period as five years. I think it might earn that amount in ten years.

633. You appear to think that the indirect advantages which it would give would be so great as to justify the State in incurring an annual loss on the line? I think so.

634. Are there any other points which you would like to bring out? The only other point which I should like to bring out is this:—Twofold Bay as a port is the best, perhaps, after Port Jackson and Newcastle, that we have in the Colony. It may rank with Port Jackson, Newcastle, and Jervis Bay. The people of the district have long suffered from the very high rates of freight which they have been compelled to pay to various steamers which have been trading there, and I think that if we had a railway from Bega to Eden it would be a great benefit to them. I believe that they are justly entitled to some consideration, considering the large amount of land which has been taken up there chiefly by free selection. I do not think there is any other part of the Colony where there are more *bona-fide* selectors. There has been very little dummying or anything of that kind done there, and considering the large amount of money which the Government have received from the sale of land—I believe that the present annual receipts from the districts of Eden and Bega, the greater portion of which the line passes through, are about £15,000—the people are entitled to some consideration, even if there should be a loss on the railway.

635. Is Twofold Bay a safe port in all weathers? Yes, it is a very safe port. It might be made a little safer at a very small expense, but within the last forty years I have known only one occasion when the steamer could not lie alongside the wharf. In the bay there is splendid shelter in every kind of weather. As a rule the port is an excellent one.

636. But you think it would require a breakwater to make it safe? It would only be a small expense. It is a very safe port as it is now.

637. Do the steamers now trading there experience any difficulty in loading or unloading? No, the occasion to which I refer was an extraordinary one. A tidal wave came along the coast and the steamers had to cast off. At that time part of the store at Tathra was washed away. With the exception of that instance there has never been to my knowledge any difficulty in mooring the steamers alongside the wharf.

638. A great many cattle are shipped at Eden? Yes; to Hobart, and pigs are sent from there to Melbourne.

639. Do the steamers experience any difficulty in shipping cattle? Never.

640. That is *prima facie* evidence that the port is a good one? Yes.

641. Do they ship the cattle from the wharf? No; they ship them from a beach on the north-west side of the harbour. The cattle are put into a stock-yard and roped, and boats then tow them alongside the steamer. That is a cheaper and more expeditious way of shipping them than by putting them direct on board from the wharf, where they would get knocked about. The shipping of cattle has been carried on to my knowledge for the last thirty-five or forty years.

642. If this line were made do you think it would draw much trade from the Monaro district? Yes; I think it would. About 8,000 bales of wool come from the southern end of Monaro—about Bombala and around that way—to Eden at the present time, notwithstanding the Cooma railway.

643. That traffic would probably be drawn to Bega if there was a railway? It would go to Wolumla, 12 or 13 miles from Bega. I think a light line of railway, which would be much less expensive than the proposed

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proposed line, would be quite sufficient for the wants of the district. I think the proposed line could be made much more cheaply than is estimated; but the people would be quite satisfied with a light line, which would cost considerably less. A light line would not cost half of what this line is estimated to cost, and if the people could not travel at 25 miles an hour I think they would be perfectly satisfied to travel at 15 miles an hour.

644. *Mr. Humphery.*] Have you given any consideration as to the best means in the interests of the district of connecting it with the existing system of railways? I think a line from Wolumla to Cathcart and on to Bombala would be most suitable at the present time. Ultimately there may be a line along the coast; but I think that a line to the table-land of Monaro would be the best at the present time to meet public requirements. I believe that the railway will ultimately be extended from Cooma to Bombala. I do not think that there are any great difficulties in the way. Two or three surveys have been made, and it has been proved that a line could be constructed at a reasonable cost.

645. *Mr. Davies.*] Would you be surprised to learn that the Engineer-in-Chief for Railways estimates the cost of the earthworks on the proposed line at something like £200,000? I have heard so.

646. A light line of railway would not be very much cheaper than the proposed line if the earthworks are so expensive? I think a light line could be made for a much smaller expenditure.

647. You would still have the earthwork to do? Yes; but I am sure that the light line could be made much more cheaply than the proposed line.

648. This is a very difficult piece of country through which to construct a railway? Only a portion of it, from Pambula to Wolumla—12 or 13 miles. There are no great engineering difficulties between Eden and Pambula, or Wolumla and Bega.

649. Would you be surprised to learn that £100,000 is estimated for culverts and bridges? From what I can hear, the only expensive bridge would be that over the Pambula River.

650. Three hundred thousand pounds are allowed for earthworks and culverts, and bridges? I am not an engineer, but I have been over the line repeatedly, and I do not think the cost would approach anything like that amount.

651. Do you think it is possible for any trade that may be developed in the district by the railway to pay the interest on capital and working expenses? I do not think so at the present time, and I do not think it should be expected. I believe that within from five to ten years the railway would pay by reason of the large increase of population, and of the amount of traffic that would be sent along it.

652. Do you know the population of the electorate of Eden? The electorate of Eden will not embrace the whole district.

653. Take the whole district? The whole of the district of Eden?

654. Yes? I know that there are 3,600 or 3,700 electors on the roll, and I should say that the population would be from 15,000 to 16,000. I am only speaking in general terms, as I have not taken the trouble to go into the matter.

655. The population in 1889 was estimated at 12,000? For the whole electorate?

656. Taking the whole district? The population for the whole electorate would certainly be more than that. This line would serve nearly the whole of the police district of Eden, and the police district of Bega. That would be about the population.

657. Do you think there has been any marked increase since 1889? There has been an increase.

658. But has it been anything very substantial? The number of electors has, I think, increased from 3,400 to 3,700.

659. This being an isolated railway, it would be necessary to have a fitting shop and repairing shop, and other works of that kind? I am aware of that; but it will not be more isolated than the line from the Tweed to Lismore. Ultimately, if you extend the railway to the table-land, the isolation will be done away with.

660. But for very many years it must be an isolated railway? Yes, unless it is connected with Monaro. There is, however, a much better port at Twofold Bay at which to land material than you have at the Tweed, or the Richmond, or the Clarence.

661. If the railway were constructed and a connection made with the Monaro line, do you think much traffic would find its way to the main line, and thence to Sydney? Yes. The expense of taking goods to the table-land would be not inconsiderable, and water carriage is generally cheaper than land carriage.

662. I think you misunderstood my question;—I asked if much produce would find its way from Bega to the metropolis by the main line if a connection were made with Monaro? A great deal of produce would be sent from the coast.

663. Would not most of it, from right back at Bombala, be sent by water? That is what I say. If the railway were extended to the south, traffic would come from that district to the coast.

664. The Commissioners estimate the revenue of this line at £11,443;—do you know how that estimate was made up? I believe it was made up from the reports of Mr. Thompson and Mr. Crawford.

665. It is assumed that the whole adult population of the district will make two double journeys in the year, and each child one double journey? Yes; I should say that they would do that at the very least. There would, in addition, be the traffic from Sydney, which is considerable. Evidence with regard to it has, I believe, been given by Captain Turner, of the Illawarra Company. I think the estimate is a fair one; but I believe that it would be exceeded, because when you give people facilities for travelling, more particularly to such a nice place as Twofold Bay, they travel more frequently.

666. Is much live stock shipped direct to Sydney? Not to Sydney; but a good deal is sent to Hobart, and pigs are sent to Melbourne. I may also mention that a good many calves are now slaughtered because of the insufficiency of the means for getting to market. It is not worth while to keep them.

667. Do you think any possible traffic that could be developed in the district over 36 miles of railway would pay a revenue of £30,000 a year? I think that amount will ultimately be paid. It will not be paid at present.

668. It is estimated that there would be an annual loss of nearly £19,000 on the railway? That, I think, would be made up within a few years.

669. Do you think we should be justified in constructing a line on which we should lose £19,000 per annum? I think so, taking into consideration the large number of people there, and the amount of revenue which they contribute to the State. Then they have such a miserable port at Tathra. I think that the line will be perfectly justifiable for those considerations.

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670. The estimated cost of construction does not include the cost of land resumption? I do not think that that expense would be very great for the greater part of the distance. From Eden to Pambula there would be very little, because a good deal of the land is Crown land at present, and between Pambula and Wolumla, with the exception of a mile or two near Pambula, the cost would be very inconsiderable. Between Wolumla and Bega there might be a considerable amount of resumption, but not to any great extent. I think the people who want the railway will not be very particular in asking for a great deal of compensation.

671. Do you think that they would all give the land if necessary? I do not know that. If the betterment principle could be applied, that would be the best way to get at them. If land is improved by a railway going through it, I do not see why the people who own it could not contribute to the cost of the railway. Whether that principle can be enforced under the present law, I do not know.

672. The survey of the line passes through country that is nearly all settled? The only old settled country is between Wolumla and Bega, with the exception of 2 miles near Pambula; but even at Pambula the line goes through a good deal of Crown land. It goes below the settled portion of Pambula and nearer the coast.

673. The yellow tint on the map denotes settlement, and on referring to the map you will see that the survey passes through country which is all settled? Yes; but between Eden and Pambula the line for the most part goes through Crown land, and it does the same thing between Pambula and Wolumla, with the exception of 2 or 3 miles about Pambula. It is only when you get to Wolumla that the land is thoroughly settled, and compensation may be demanded by the various property owners.

674. The last portion of the land belongs to large holders? They are not very large holders.

675. Then the carrying through of the railway would destroy their holdings? No; it would benefit them.

676. If the holdings are small they would be completely severed by the railway? They are not so very small. I think the railway would benefit them. Wherever a railway goes it must benefit the people who own the land through which it passes.

677. What area of country on each side of the railway would be served by the railway—40 miles on each side? The railway would serve the country right through.

678. More than 40 miles on each side? Yes. Of course, some of the land is much superior in quality to other land.

679. Would the line be of any great advantage to a settler 40 miles away? Not 40 miles away. It might benefit a man 30 miles away, right under the mountain. It is 36 miles from Eden to Bega, and the railway would benefit the country as far as Brogo, 15 or 16 miles further north.

680. Mr. Crawford, of the Railway Department, who reported upon this proposal, states that the country likely to be benefited by the line is 30 miles wide and 40 miles long, giving an area of about 1,200 square miles;—do you think that is correct? I think so.

681. He says that the greater portion of that land is at the present time alienated and occupied for dairy-farming? A great deal of it is, but the land from Wolumla to Pambula, and from Pambula to Eden, would be available for agriculture and for fruit-growing, if there were a railway.

682. If the land is already alienated and occupied by dairy-farmers, how is the settlement to be increased? The land is not all alienated. A portion of the land between Wolumla and Pambula is not alienated, though some of it is. Between Pambula and Eden the land is unalienated. Some of it is still Crown land.

683. How much land is available within the area named for free selection? A good deal of it. Many portions of the land would be taken up if people had means of communication with a port.

684. But how much is available? I cannot say exactly.

685. *Dr. Garran.*] You told Mr. O'Sullivan that there was some land beyond Bega which, if the railway were made, could be profitably employed for growing potatoes and oats;—whereabouts is that land? In patches all over the district.

686. Is it occupied at all now? Yes; for dairying purposes.

687. Which pays best—dairying, or growing potatoes and oats? That all depends upon the market. Dairying is the only industry which they can go in for at present. The carriage to Tathra and Merimbula, or Eden, is so heavy that it would not pay them to grow oats or potatoes, or anything of that kind.

688. We have been told that it is a very level and a very good road from Bega to Tathra? Yes.

689. Is the cost of carriage on that road so destructive as to kill the growing of potatoes at Bega? No; I do not say so. It is the best road in the district, and a great portion of the alluvial land in the district is between Bega and Tathra.

690. That is where they could principally grow potatoes? No; there are other places where they could grow potatoes. There are many places all over the district.

691. How near is the best land that you speak of? The rich land, I suppose, is within 8 miles of Tathra.

692. Do you know of any dairy people in the district who have lately given up dairying for growing potatoes and oats? Certainly not, because those being bulky products the cost of carriage would be too much.

693. Do you think the reduction of freight which would be obtained on a railway from Bega to Eden would induce the abandonment of dairying for agriculture? No; but the two could be combined.

694. But you would have to take some of the land used for dairying to grow the potatoes upon? Yes, if it were found more profitable to grow potatoes.

695. Is it more profitable? That depends upon the price and upon the season. Besides, it does not do to have all your eggs in one basket. A farmer would grow what suited him best. The people cannot grow oats and potatoes now, because of the cost of carriage on such heavy produce.

696. I do not see where the proof comes in that if we made a railway we should get potatoes as freight? You would encourage the people to grow them.

697. If it paid better? Yes; and it would pay better in some cases.

698. I do not see what evidence you have to give that we should get a better freight for the railway than there is now—a potato freight instead of a cheese or butter freight? A keg of butter weighing about 100 lb. could be produced off the present area of ground, but a ton of potatoes might be got off the same area.

699. But what chance have we of getting that heavier freight? As long as the people cannot get a convenient means of carriage to the proper port they will keep on in a humdrum way at dairying, but I believe

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believe that if they had facilities for getting to a good port many other things would be produced that are not produced now—not only potatoes and oats, but also hay, barley, and fruit. They would not depend on one or two things only.
700. The Sydney market is not wholly supplied with potatoes for New South Wales at the present time? Not altogether.
701. To what extent? To a very small extent.
702. We principally import potatoes? Yes; from the other colonies.
703. At what season of the year do they come in? From about January or February up till October.
704. Could we supply ourselves with what we now import? Yes, I think so.
705. If there were a great increase in the production of your district would not the people cry out to have the freights lessened? I think the people would be too much inclined to consult their own interests to ask for a reduction of freight after the railway had been constructed.
706. From what you know of your constituents you feel sure that they would not ask for reduced freights? I do not think they would. If they want to get a ton of oats, or hay, or potatoes to Merimbula it costs, I suppose, £1, to Tathra, 10s. or 12s., and to Eden a great deal more.
707. What would it cost by railway from Bega to Eden? I do not know. There is a fixed rate at so much per ton per mile.
708. You said to Mr. O'Sullivan that the difficulty with the district was the cost of the steamer freight to Sydney? Yes.
709. If you shipped everything at Eden you will still have the steamer freight to pay? Yes; but we will have a good port where a vessel of 2,000 or 3,000 tons could come in, instead of a vessel of 400 or 500 tons as we have now.
710. Do you look forward to getting such large vessels? Yes. They can come to Twofold Bay now.
711. Do you think there will be sufficient freight for them? It would be to their interests to go there, if there was sufficient encouragement for them. At present they cannot go there.
712. Do you think that if the railway were made there would be work for a steamer of 2,000 tons from Eden to Sydney? Steamers would call there on their way from Melbourne to Tasmania. I do not say that it would pay them to trade direct. Besides if we had Eden as a port, the people of the district would not be dependent upon the Sydney market. They would be able to ship to the other colonies or to England. Ships of a reasonable size could take produce from there to London direct, if necessary. It is, I believe, in contemplation to establish freezing works at Eden, and a good many cattle and sheep would come down there from the table-land at Monaro.
713. But they could ship from Eden now to Melbourne? Yes, of course.
714. Why do they not? Simply because the carriage is too much.
715. Because there is no market there? The expense of carriage is too much.
716. But is there a market there now? Not at the present time.
717. Would the railway make a market there? Perhaps not; but when we get federation and inter-colonial freetrade, we shall be able to send to any part of the world.
718. That is an argument for the postponement of the construction of the railway until we get federation? I hope we shall get federation.
719. You would recommend a light line in place of the line proposed by the Commissioners? Yes.
720. Have you paid much attention to the construction of light lines? Not a great deal.
721. Do you know any instance of a light line being made over hilly country? There is the tramway from Campbelltown to Camden.
722. Do you know what it cost per mile? No.
723. The tramway has been made along the road? Yes.
724. It has no cuttings? As I have said before, the cuttings would have to be made only along a portion of the proposed line.
725. If you do not go in for cuttings you must take the surface level of the ground? Yes, and that has been done in Queensland.
726. Would you not, by making the road heavier, diminish the load that could be carried? Yes.
727. Would not that increase the cost of freight? Yes, to some extent.
728. So that what you would gain in the cost of construction you would lose in the subsequent cost of working? I cannot say much about that, but I believe that a light line could be made for a great deal less than it is estimated that this line will cost.
729. You have never worked out the problem? No.
730. *Mr. McCourt.*] Are the farms in the district at present being worked up to their full producing capacity? I think not.
731. Could they double their present production? I do not think so, but they could, perhaps, increase it by one-third or by one-fourth.
732. It could be increased? Yes, even in dairying, right up to the mountain.
733. Would the railway create any industries that do not at present exist in the district? Yes, it might. Other things would be grown, but I am not quite sure as to whether any industries would be created. It is purely a farming and a dairying district.
734. Do you think it would be fair, if the line were constructed, that a higher rate than is charged for the same distance on the main line should be charged upon it? I do not know whether it would be advisable to do that, but if the people want a railway I do not think from what I know of them that they would object to an increase of freight.
735. In order to make the railway pay something? In order to make it pay something.
736. On the main line the price of a first-class ticket for 36 miles is 4s. 6d.;—do you think that the charge on this line might be increased? Yes, I think it might. They have to pay a good deal more on the coaches, and they are a longer time on the journey. With a light line they could do the journey in two or three hours.
737. Supposing the fares from Eden to Sydney and from Tathra to Sydney were the same, would they pay 4s. 6d. to go to Eden instead of going to Tathra? Undoubtedly, because they would be sure of getting a steamer there at all times.
738. And it would be the same with regard to freight? Yes, except in the case of a few of the farmers in the neighbourhood of Tathra.
739. Do you know the district thoroughly and the surveyed line? Yes.

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740. Do you think it would be possible to get a cheaper line by keeping closer to the coast between Merimbula and Tathra? Yes. There are no engineering difficulties at all on the line from Eden to Pambula. Between Merimbula and Bega, by going along the coast, the line might be constructed for less, but it would not suit the public—it would be right away from settlement, and would not suit the general public at all.

741. It would not get the traffic? No. The people from Candelo and Wolumla would have to go a considerable distance out of their way to get to the line, whereas if the railway were carried along the proposed route it would be almost in the centre of the district. A line nearer the coast would be cheaper, but it would not serve the district.

742. Are you aware that a light line would cost very nearly as much as a heavy line? I should say that a light line of railway, somewhat similar to those they have in Queensland, would be very much cheaper than the proposed line.

743. With the narrow gauge? Yes.

744. Do you think the narrow gauge would suit the district as well as the broad gauge? Yes. I think any line that would give the people facilities for getting to a good port would serve them well enough.

745. You do not object to a break of gauge with regard to this line? If a broad gauge line could not be made without enormous expense I do not think that the people would object to a narrow gauge line.

746. If a narrow gauge light line of tramway could be constructed at a cost of £4,000 or £5,000 a mile, do you think that that would suit the district? Yes, it would be justifiable, even if it cost £6,000 a mile.

747. So long as it would serve the district any sort of line would do? Exactly.

748. *Mr. Wall.*] You said something about connecting with Cooma? With Bombala.

749. That is a matter of secondary consideration. You have no particular desire to bring about a connection? The late Secretary for Public Works, Mr. Bruce Smith, would not consent to the construction of an isolated line, and he instructed three or four surveyors to try and find out the best line for the Monaro table-land. A line has been found, called Postle's line, so that his objection would be done away with.

750. If the Eden to Bega line is constructed on a narrow gauge, and it is afterwards desired to connect with the Bombala line, would not a difficulty be created? There would be no great difficulty in taking the line to Bombala, because there you would join the main line from Sydney, which ultimately may go through to Melbourne.

751. If you were going to construct a line to Bombala, what gauge would you propose—the narrow gauge? I do not know. My own personal feeling is that any light line, whether a tramway or a narrow gauge line, would suit the people between Bega and Eden; and I do not know that such a line would not do for a connection with Bombala.

752. Dr. Garran asked whether the lessening of the haulage-power on a light line would not increase the cost of freight. Do you imagine that if the line were constructed they would be hauling full trains upon them continuously, or do you think that there would be a considerable waste of strength if the produce of the district were conveyed along an ordinary line? I do not know.

753. Do you think that a sufficiently big load could be taken along a light line to prevent any increase of freight? I have not sufficient engineering knowledge to say, but if a light line could be constructed at a reasonable cost, it would, I believe, meet the requirements of the district.

754. Have you any data for the figures which you have given, showing the production of the district? Yes, I have.

755. What do you think the cost of freight on a railway from Bega to Eden would be? There is a certain scale—so much per ton per mile.

756. The present rate is 4s. 9d. That, taking your figures into consideration, would only give a small annual return? Many things would be produced which are not enumerated—wattle-bark, tallow, lard, hides, cattle, pigs, calves, and other things. I should say that from 1,000 to 2,000 tons of wattle-bark are annually exported from the district, though I cannot speak positively as to that. More than four-fifths of the cheese made in the Colony is made in the electorate of Eden.

757. It is estimated that there will be an annual loss upon the line of over £18,000? Yes.

758. You stated in reply to Dr. Garran, that you did not think it was possible to double the production of the district? Not at present; it might be done in eight or ten years.

759. Do you think it would be doubled in eight or ten years? I doubt if it could be doubled, but it would be considerably increased.

760. If the estimated revenue were doubled there would still be a deficiency of £7,000? It might be doubled, and it might not. Ultimately it would be doubled.

761. But, assuming that it would be doubled, it would still leave a deficiency of £7,000 per annum? That is if you expended an enormous amount, which it is estimated that this line would cost.

762. A number of people in and around Bega ship at Tathra at present? Yes; and a great deal more at Merimbula.

763. What is the cost of freight from Tathra to Sydney? For cheese, from 30s. to 40s. per ton; for butter, about £3 a ton.

764. What is the cost of land carriage? Butter, 10s. to Tathra and 15s. to Merimbula. Eden is out of the question, because it is too far.

765 Do you think that if the railway were constructed all the produce now shipped to Tathra would be taken along the line to Eden? A great deal of it would, except heavy produce such as maize. That might possibly go to Tathra, but most other produce and all perishable articles would go to Eden, because the expense would be very little more.

766. If the betterment principle were applied, people shipping at Tathra could reasonably object to it on the ground that they were not benefited by the line? The people near Tathra would send their heavy produce to Tathra and their light produce to Eden.

767. If they continued to ship at Tathra and Merimbula the betterment principle could not be applied to them, because it would not increase the value of their property? They would be benefited by the line because it would increase the value of their property, and if their property was improved by the railway I do not see how they could object to the betterment principle.

768. With regard to a light line of railway, do you not think that a narrow gauge would considerably lessen the cost? The cost of a narrow gauge line would be very much less. The Department prefer a broad gauge line, so that the railways all over the Colony may be alike. I believe that a narrow gauge would

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would suit the people very well. They want to get to a good port, and to get there as quickly and as expeditiously as possible.

769. Are you aware that they are running lines in France very successfully with an 18-inch gauge? No; I have not taken any interest in the matter.

770. You think the people of the district would be quite satisfied with a narrow gauge line if they could send their produce away by it? They ought to be, and I think they would be.

771. *Mr. Neild.*] Would the 1,000 tons of butter of which you spoke be the production of Bega alone, or the production of the district, that would find its way to the railway line? Produce would come, I think, about 30 miles from the west and within 40 miles from the north and south.

772. That amount is the total quantity that would be likely to travel over the line? At the present time.

773. It might be increased by one-third or by one-fourth? Yes; and by one-half, perhaps, in a few years.

774. How often do you think trains would be required to run to convey the butter—butter cannot be kept indefinitely? I suppose about twice a day.

775. That would be twelve trains a week? Yes. They would have to run once or twice a day. I think twice a day would suit.

776. If you had two trains a day you would only send a little over two tons of butter per train? Then there would be cheese and many other things.

777. I understood you to say that the quantity of cheese sent away is about 50 per cent. more than the quantity of butter? I daresay from 1,500 to 2,000 tons of cheese are sent away annually.

778. Do I understand that you advocate the running of two trains each way every day? I should only advocate what was thought best and what would suit the people.

779. Do you think there would be a reasonable amount of traffic for a train every other day? I think there ought to be a daily train, because there would be a large number of passengers. Independently of the butter, cheese, bacon, and maize, a large quantity of bark would be sent.

780. The bark comes more from the table-land? A good deal of it comes from just up the mountain—from Wyndham, and around that way. It would all come to Eden.

781. Would it come to the railway or make its way direct to Eden? I think it would go to the railway.

782. What is your experience with regard to Tathra and Merimbula;—are they available shipping ports in all weathers? Merimbula has not been a port for many years. Cargo is brought out to the steamers from there in lighters. Tathra is available in fine weather, but very often they cannot get in when there are easterly or even north-easterly gales blowing.

783. How often has cargo been taken back to Sydney in the last two years because it could not be landed? I cannot say. I know that last month, when the Sectional Committee were in the district, the steamer passed and re-passed three times.

784. Tathra or Merimbula? Tathra.

785. You are well acquainted with Twofold Bay? Yes.

786. Do you think the proposed terminus on the northern side of the Bay at Eden is the most suitable? Yes.

787. Is that the most sheltered place for the shipping? Yes.

788. Is it not very much exposed to the east? No; certainly not—it is not exposed to the east at all.

789. Does the map before the Committee correctly depict the place—it shows exposure to the east? It shows a little exposure to the east, but not a very great deal. Sometimes a heavy sea comes in, but it is very seldom that they cannot load at the jetty.

790. What you really want in the district is a more rapid means of transit to port, but you are not very anxious for a high rate of speed by rail? Yes.

791. I suppose if you get 6 or 10 miles an hour that would do? I think that would be rather slow. I think that we ought to get 15 miles an hour at all events.

792. Then you want a heavy line? No; I do not think so.

793. I suppose you know that goods trains in the country do not travel much more than 15 miles an hour, except in the far inferior? If the trains on this line only travelled 12 miles an hour the journey would take three hours.

794. How long does it take by coach? I do not know. It takes a considerable time, but a coach would go quicker than teams would go.

795. I suppose the coaches do not do more than 6 miles an hour? About that—barely that.

796. If you got 9 or 10 miles an hour it would be a very great improvement? Anything would be better than the present system. It is disastrous to the people to have to go to the tinkering ports of Tathra and Merimbula.

797. Is there sufficient timber in the district for the construction of the line? Any quantity.

798. And how about ballast? There is plenty of ballast and plenty of timber.

799. Is the timber scattered along the line of route, or is it found only at certain spots? It is found nearly all along the line, and particularly between Wolumla and Eden. There is plenty of timber between Wolumla and Bega, within a very short distance of the line.

800. The map conveys the impression that there is a good deal of vacant land between Tathra, Wolumla, and Bega;—is that poor land? A portion of it is poor land, but it is particularly adapted for fruit-growing, and there are many patches which would be cultivated in other ways.

801. For what class of fruit is it adapted? For any kind of fruit. We could grow apples and even oranges.

802. On poor soil? Yes; by trenching. The orchard soil on the Parramatta River is not by any means rich.

803. Well, the land to which you refer bears favourable comparison with the land in the Cumberland district? I do not know that the worst of it is as good as that land.

804. How much is that vacant land worth? The land to which I allude is barely worth £1 an acre.

805. Would it be increased in value by the construction of the railway? Undoubtedly.

806. Do you think that the land should be reserved pending the construction of the railway, and afterwards sold? I do not think it would be necessary to reserve it.

807. Do you not think it would be better for the State to take advantage of the enhanced value that the railway would give the land? That is for the Government to decide.

808. *Mr. Dawson.*] Looking at this matter from a national apart from a local point of view, do you think the railway ought to go any further than Wolumla? Undoubtedly.

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809. If the railway were taken to Wolumla, and continued along Postle's line to Cathcart, it would serve Candelo and Bega, whereas if it were taken direct to Bega the Bega portion of the line would be isolated? What the people want is to get to a good port.
810. I am speaking of a line from Eden to Wolumla? That would be one step in advance, but why not continue it on to Bega?
811. Why take it to Bega;—would there be any particular traffic from there? The greater part of the good country is round about Bega.
812. You were talking about the production of cheese. I suppose a great deal of it comes from Kameruka, Long Island, and Towamba? Yes; from as far as Colombo, but not all of it.
813. How far is Candelo from Colombo? About 10 miles.
814. I think it is about 7 miles. Do you not think that any place within 7 miles of the railway would be very well served? What are you going to do with the people further north?
815. The same question might be asked about the people at Gundaroo and Gerenderry at present? I do not think the line would suit the district at all, unless it was taken direct to Bega. It has been said that Tathra would be available as a port, and if you did not take the railway into Bega, some of the people would be compelled to go to Tathra.
816. I think myself that, as regards the Bega traffic, Tathra is near enough, and Tathra would do. Passengers could get on to the steamers easily enough. For what other reasons would the line go to Bega? Because that is the most productive part of the district.
817. The Candelo people would still have to go to Wolumla? They would go to the nearest port.
818. And you think the line from Wolumla to Bega should be constructed just for the traffic around Bega? Yes; because there is a great deal of good land there. The land there is quite as good as that at Candelo.
819. Do you think that that land can be made more productive? Yes.
820. In what way? In many ways. If people could get their produce to a good port they would go in for other things.
821. What sort of hay do they grow round Bega? Oaten hay.
822. What is it like? It is good hay.
823. Is it not very flaggy and thick in the straw, and 6 or 7 feet high? I have seen very good hay at Kameruka.
824. How far would Kameruka be from the line? They could go to Wolumla.
825. They would be 8 or 9 miles away? Yes; about that.
826. What is the price of the hay in Bega now? I cannot say.
827. As a matter of fact, it is nearly always dearer than it is in Sydney? Very few people grow hay unless they see a chance of getting it away to Sydney or other places where there is a good market.
828. A great deal of corn is grown there, but very little is sent to Sydney? Last year very little was sent, because most of it was destroyed by the flood. This year between 400 and 500 tons will be sent away, and next year a great deal more.
829. How is the railway going to benefit the people who send fat cattle to market? Some of the people would drive their cattle down and others would take advantage of the railway.
830. Would not the cattle come chiefly from Kanoona and round there? Yes; and from Kameruka.
831. Do you think people would drive cattle 10 miles to Wolumla and then go to the trouble of trucking them to Eden; would they not sooner drive them to Eden? No doubt it would be cheaper to drive them down than to truck them, and in a good many cases they would be driven down.
832. You do not anticipate that much revenue will be derived from fat cattle? Not from fat cattle, but revenue will be derived from pigs and from calves. The calves now are virtually all destroyed.
833. It has been said that about 75 per cent. of the calves dropped in the district are killed? A good many of them are killed, but I cannot say how many.
834. How are you going to send these calves? By rail to Eden.
835. But all the calves, I take it, are not dropped along the railway line? There will be no difficulty in getting them to the railway. People when going in with butter or cheese would take a few calves.
836. At what age would the calves be sent down? At a month or two months old, and sometimes when younger.
837. Would it not pay now to send the calves down when two months old? It would not pay—it is too far to send them.
838. How far would they have to take the calves if the railway were constructed? A number of them would be close to the line, and some of them 8 or 9 miles away.
839. If they kept the calves two months, could they not keep them two months more. As a matter of fact, are not a great many of them killed directly they are dropped? Yes; calves at two months old are better for the Sydney market than older calves. They are generally sent when they are six weeks or two months old.
840. What do they get for them now? It depends upon the supply and demand. Sometimes they get a good price, and sometimes they do not.
841. Are the calves ever sent now? Very few are sent from this district now.
842. But you think the trade would be considerably increased if there were a railway? Undoubtedly.
843. Have you ever considered in the matter of a railway connection with the Monaro that a lot of produce, such as butter and cheese, has been sent there? Butter might be sent to Monaro in the winter time when it is too cold to make it there.
844. And on the other hand you would get lucerne down to feed the cattle? They do not want lucerne from there. They can grow enough themselves.
845. How much lucerne is grown in the district—none at all? Not that I know of, except on a few patches here and there. They can grow lucerne.
846. They are growing lucerne at Kameruka by irrigation? I do not know whether they are or are not.
847. You say that oats are not grown here at present? Except in small quantities.
848. Have they ever sent oats to Sydney? Yes.
849. What sort of a sample was it? Very fair; and I have also seen wheat grown there, but not within the last thirty years. I have seen some thousands of bushels grown on alluvial flats by old Mr. Gowing near Tathra. The Garden of Eden he calls the place—Jella Jellait.
850. Where is the wattle-bark stripped as a rule? It is stripped generally up Wyndham way.
851. And about Colombo? Yes; and a good deal comes from Colombo.

James

James Patrick Garvan, Esq., M.P., sworn, and examined:—

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852. *Mr. McCourt.*] You are well acquainted with the Bega and Eden districts? I am.

853. You represent the electorate of Eden in the Legislative Assembly? I do.

854. Would you like to make a statement with regard to the line before the Committee? Perhaps it would be the best way to put my views forward in the form of a statement. I think myself that the district is entitled to railway communication with a port, and I think all the documents which have been submitted dealing with the question can be fairly construed to justify that conclusion. We have a district which is one of the most fertile in New South Wales, one of the oldest settled, and one of the cheapest governed. It has contributed to the Treasury in actual cash for the purchase of land upwards of £500,000, and it is now contributing annually for land alone fully £20,000. I maintain that, because of these facts by themselves, the people are entitled to a large measure of consideration in the making of great public highways such as a railway would be. For, assuming that the expenditure and revenue on the contemplated railway would be upon the basis put forward by the Commissioners, who show a loss of £18,000 a year on the line, I maintain that the present revenue from land, being a larger sum than the estimated deficiency, should be taken into consideration as balancing that deficiency. Besides that, I maintain that since the people there have never had any advantage from railway construction since railways were first commenced in this Colony, although they have contributed to meet the deficiency caused by the working of those railways, they are fairly entitled to be considered in the matter now. They have paid £500,000 into the Treasury and have received nothing in the shape of railway communication in return for it, and they have also contributed their fair quota towards the cost of carrying on the Government of the country. Whatever taxation has been imposed they have paid their share of it. Now, if we analyse the statement upon which the Commissioners estimate has been based, I think it will present itself to the Committee in a somewhat more favourable light than the bald estimate of the Commissioners laid before the Committee by Mr. Barling. It has been estimated that the railway will probably cost £564,000, and I will not discuss that matter, although I am strongly inclined to think that a railway which would meet all the requirements of the district—and I do not mean a narrow gauge line, for I will not commit myself to the advocacy of a variety of gauges in the Colony—could be constructed for very much less. I think it is well to face the difficulty of the gauge by saying that the gauge now generally adopted must be adopted there, but having regard to the traffic of the district, and to the fact that a much slower line would meet all requirements, I think the cost of £564,000 might be very largely reduced. The reduction of the capital cost would also proportionately reduce the annual cost as far as the interest upon expenditure is concerned. The Commissioners estimate the cost of working the line at £9,906, and I would draw the attention of the Committee to the basis upon which that estimate is put forward. What appears to be the usual system of inviting officers of the Department to report upon the probable cost of a line was taken in this instance, and I find on reference to the Parliamentary papers that on the 31st May, 1889, the total cost of working this line was estimated item by item by Superintendent Crawford. Mr. Crawford estimated that the total cost of running the railway would be £5,005, whereas the Commissioners' estimate is £9,906. I submit that in no other case has there been such a variance between the Commissioners' estimate and other estimates put before the Committee, and I find two items included in the Commissioners' estimate which have not been included in any other estimate which has been submitted to the Committee. I refer to the item "annual cost of rolling stock, £624, and "depreciation of rolling stock, £1,785." As far as my knowledge goes, those items have not been included in the estimate of the expenditure in connection with any other proposed railway which has been submitted to the Public Works Committee, and consequently, to put this line on a similar footing with the other lines which have been before the Committee, those items must be excluded from consideration. Mr. Crawford's estimate of the expenditure must, I think, commend itself more to any person inquiring into the matter, because the details are set out with such exactitude by one who is a specialist on the subject, and who was specially deputed to report on the matter, and it must be taken as more closely approximating to the real expenditure than the larger estimate of the Commissioners. I would also draw attention to the estimate of revenue. But before I pass away from the estimate of expenditure, I might say that when the report was returned to one of the officers of the Department for reconsideration on a particular point, he said, "I have again gone into the matter with one of my officers, and I think the sum will cover the expense of the Locomotive Department." Now, with reference to the estimated income. I admit that it is extremely difficult to state with any degree of accuracy what the income from the contemplated railway will be, but in considering this as an isolated line, I think we are entitled to take a favourable estimate of the income. Mr. Crawford estimates an actual income from the existing traffic of upwards of £14,000, and he suggests that there would be an increase of at least 25 per cent., which would bring the income up to £18,000. As against that the Railway Commissioners estimate the income at £11,443, and upon those figures they have come to the conclusion that they cannot recommend the construction of the railway. I might be justified in drawing attention at this point to the report upon another railway which was made during the time that the country has been passing through a set of special circumstances by reason of the monetary tightness, and that puts it in a similar position to the report on this railway. I refer to the report on the line from Molong to Parkes. The Commissioners there show that the probable expenditure for the working of the railway will be £10,900 per annum, and they do not include the two items to which I have drawn special attention—the annual interest on rolling stock, and the depreciation of rolling stock.

855. *Chairman.*] The explanation given was that those items were put down because this will be an isolated line? But the depreciation will take place whether the line is connected with the main trunk line or not. They estimated that the income would be £11,264, showing an excess of revenue over expenditure of £364 per annum. In the case of the Bega to Eden line, they show there would be £1,537 more income than expenditure, even allowing for the two charges to which I have referred; but excluding those charges, there would be £3,946 more income than expenditure. Yet the line from Molong to Parkes was sanctioned, while the line from Bega to Eden, which shows more than ten times the same margin between income and expenditure, has been reported against. I might point out that in the case of the Molong to Parkes line there was no estimate of a larger traffic than that submitted by the Railway Commissioners, whereas, I find that Mr. Crawford in this case estimates a return of £18,000 a year, a much greater return than the Commissioners estimate. There is no doubt that if the railway is constructed it will not long remain an isolated line, and I admit that isolation is a very serious

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serious difficulty in regard to railway construction. There is almost a certainty that within a reasonable time this line will be connected with the trunk line on the table-land by that route which the investigation of the surveyors shows to be best, and to my mind there is an absolute certainty that within a measurable time the coast line will be continued to Bega, and I am prepared to say, from an intimate knowledge of the country between Nowra and Twofold Bay, that a trade would be developed along that line which would agreeably surprise anybody inquiring into the matter. There is a report, which will be found among the papers laid before the Committee by Mr. Barling, from the head of the Forest Department, showing that he has travelled along the line and has discovered an immense quantity of magnificent timber along the whole route. Almost all the way from Nowra to Twofold Bay, with scarcely the gap of a mile, there is some of the best timber in Australia. That timber, by reason of its bulkiness and weight, cannot be worked now, except in moderate quantities. But if the district were traversed by a railway an enormous trade would be developed. In a squatting district where the country is fairly good, and will keep a sheep to the acre, they get a yield of 5 or 6 lb. of wool in the year; but an acre of timber country such as that to which I refer would give 500 tons of freight to the railway.

856. But you could keep on growing sheep? Timber, certainly, takes forty years to grow to a marketable size; but it must ever be a matter of consideration for the Government how to develop the timber resources of the country. The timber country to which I have referred is even now being worked to a very large extent, considering the difficulties of access to the market. In one portion of the district almost unknown to anybody living in Sydney, from the Clyde River, Bateman's Bay, running northward, there is at present owned by a private individual a tramway 10 miles long, which is merely used for carrying timber from the mills where it is cut to the shipping port, and I maintain that if there were a railway through that country it would pay from the day it was opened. With the immense quantity of trade that there would be as the result of the timber traffic, the railway would pay from the moment it was opened. The reports of the most competent officers show that it is timber not rivalled in the world. Our hardwoods are magnificent, and they grow in great quantities in that part of the country.

857. *Mr. Dawson.*] Ironbark? There are several sorts of timber—ironbark, spotted gum, woolly butt, black butt, turpentine, and other timbers that do not occur to my mind at present. The best hardwood timbers in Australia are grown in that district, and are being cut to a considerable extent. But large as is the traffic which has been going on for the last thirty or forty years it has merely touched the fringe of the forest growth there. The bulk of the country is good agricultural land, which when cleared of timber will be eminently adapted for settlement. A great deal of the land has been reserved for forest purposes and consequently is not open for selection. There is, I think, every justification for assuming that the south coast railway will be extended from Nowra to Twofold Bay, passing as it would either through magnificent forest country, or through magnificent alluvial land such as that at Moruya, Bodalla, Cobargo, Bega, and right down to Twofold Bay. The objection to the proposed line that it will be an isolated one cannot long remain an argument against its construction. With reference to the production of the district, upon which the estimated revenue is calculated, I maintain that with additional facilities for conveying the produce which could be grown in the district to a fitting port, production would develop to at least double its present amount, and that within a very short period after the construction of a railway.

858. *Chairman.*] What time do you give it? I think anyone who knows the district, and understands the advantages of farming on small areas as compared with large areas, would know that with a denser population the production of the district would be doubled, and that within five or six years of the construction of the line. I might, by way of illustration, compare the settlement in this district, which has had none of the advantages of railway communication, with other districts to which railway communication has been vouchsafed, and I have obtained my figures from the last edition of "The Wealth and Progress of New South Wales." On page 518 of that work a number of the electoral districts are set out, with the number of the occupiers of land there—a class of population which above all goes to show the healthful development of a district, and which it is in the interests of all statesmen to encourage. Every railway which has hitherto been constructed has brought about competition with this district; but I will nevertheless show the Committee how the district compares with other districts. The following are the figures on page 518 of the work to which I referred:—"Camden has 939 occupiers holding 293,707 acres of freehold land. Kiama, 205; 32,223. Illawarra, 244; 40,642. Shoalhaven, 499; 164,587,—whilst Eden has 878 occupiers owning 443,564 acres of freehold land."

859. There is a larger area of freehold land in that electorate than in any of the others? That goes to prove that it is capable of immense development in small holdings, which will at least double the production of the district. On page 515 of "The Wealth and Progress of New South Wales" are these figures:—"Morpeth, 112 occupiers of freehold land holding 29,151 acres. The Hunter, 294, holding 76,476 acres. Patrick's Plains, 338; 359,616. Wollombi, 617; 134,085. Hawkesbury, 639; 83,111. Nepean, 532; 62,641. Eden, 878 holding 453,564 acres." And on page 522 there are the following figures:—"Hartley, 399 occupiers holding 144,419 acres. Mudgee, 719; 442,138. East Macquarie, 381; 193,043. Orange, 391; 191,164. Molong, 526; 490,849; Wellington, 263; 302,883. Eden, 878; 454,564." Each district which I have named has had the advantage of railway communication for some years. The following are some districts which have had the advantage of railway communication for at least some years. In this case I give the number of occupiers only without mentioning the areas:—Argyle, 650; Queanbeyan, 302; Monaro, 590; Yass Plains, 450; Boorowa, 228; Young, 664; Gundagai, 388; Eden, 878.

860. *Mr. Neild.*] There is no railway to Boorowa? It has been decided to construct a railway there. I will name a few others:—Hume, 600; Albury, 257; Murray, 338; Murrumbidgee, 915; Forbes, 273; Gunnedah, 233; Namoi, 231; New England, 607; Glen Innes, 291; Tenterfield, 332; Tamworth, 505; Eden, 878. I have now taken every district that will afford a guide to the Committee as to the relative importance of the district which I represent, taking into consideration the yeoman character of the settlement. In the Eden district, which has never had the advantage of railway construction, and against which every railway has brought a competitor, you find a more perfect settlement than you will find in any other part of New South Wales. Then I would draw attention to the position of the Eden electorate as a dairying district. I am quoting from the same authority as before, and I find that the number of dairy cows in Camden is 26,516; in Shoalhaven, 20,482; in the Richmond, 15,477; in Kiama, 14,775; in Argyle, 12,602; in Illawarra, 8,931; and in Eden, 35,293. I may say that the last estimate is, I think, much understated. I should also like to draw attention to the quantity of dairy produce obtained from the various districts. From Shoalhaven, we get 2,720,479 lb. of butter, 37,220 lb. of cheese, and 1,249,476 lb. of bacon

and

and ham, making a total of 4,007,175 lb.; from Kiama, we get 2,398,198 lb. of butter, no cheese, and 431,770 lb. of bacon, &c., making altogether 2,829,968 lb.; from Camden, we get 1,875,778 lb. of butter, 14,956 lb. of cheese, and 275,004 lb. of bacon, &c., making in all 2,165,741 lb.; from Eden, we get 2,513,119 lb. of butter, 3,813,288 lb. of cheese, and 583,929 lb. of bacon and ham, making in all 6,910,336 lb. So that from a dairying point of view its importance and superiority over every other dairying district must be manifest. J. P. Garvan, Esq., M.P. 20 Sept., 1892.

861. *Mr. McCourt.*] From the Camden and Kiama districts they send a lot of milk away, do they not? I believe they do.

862. That would lessen the production of butter? Undoubtedly. I will quote the production of two other large dairying districts. From the Richmond River, 1,025,934 lb. of butter, 130,962 lb. of cheese, 64,625 lb. of bacon, &c., making in all 1,221,521 lb.; from Monaro, we get 191,166 lb. of butter, 222,074 lb. of cheese, 149725 lb. of bacon, &c., in all 562,965 lb. The quantity of land purchased from the Crown in the district of Eden is, according to the last returns, 536,129 acres.

WEDNESDAY, 21 SEPTEMBER, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Eden to Bega.

James Patrick Garvan, Esq., M.P., sworn, and further examined:—

863. *Chairman.*] Your statement yesterday was interrupted by the adjournment of the Committee? When my evidence closed yesterday afternoon, I was pointing out the relative importance of the Eden electorate, to which no railway communication has yet been given, compared with that of several other districts of the Colony to which railway communication has been given, and I would continue in the same vein by making a comparison with another line. As the probable traffic upon a railway depends to a very considerable extent upon the population and wealth at its terminal points, I would draw attention to the information that I am about to offer. Quoting from Coghlan's "Wealth and Progress of New South Wales," I will compare the municipality of Bega, which it is proposed to make a railway terminus, with several other towns of New South Wales already occupying that position. I will show the relative value of property in these places, and by inference from that the traffic which may be likely to result from the line. At Nowra the capital value of ratable property in the municipality is £182,000; Narrabri, £116,260; Narrandera, £138,000; Parkes, £186,000; Gundagai, £119,100; Deniliquin, £232,858; Camden, £149,676; Cooma, £182,813; Morpeth, £115,775; Molong, £141,250; Cobar, £126,930; Windsor, £163,980; Tenterfield, £144,274; Blayney, £97,454; Carcoar, £43,322; Bega, £283,291. J. P. Garvan, Esq., M.P. 21 Sept., 1892.

864. If you are taking the terminal points only, why do you give us the value of property in Windsor instead of in Richmond? Well, Windsor is the larger place. I simply offer the information as a guide to the Committee as to the probable volume of the traffic that will result from a terminal point where the capital value of the ratable property is so large compared with the capital value of ratable property in many other places. There is one feature in favour of the construction of the railway which I did not bring specially under notice, because it has been referred to by my colleague, but I may, perhaps, emphasise it now, and that is the fact that Twofold Bay is the only harbour in that part of the Colony. It is a great natural harbour, and the only harbour. At present, by reason of the imperfect harbours at which these people have to ship their goods, they are under the necessity of paying twice, three times, and in many cases four times the freight that would have to be paid if the trade were concentrated at one great harbour such as Twofold Bay, so that it could be taken away by larger vessels. The cost of railway transit to that point would be much less than the present carriage to the existing inferior ports. For instance, the passenger-rate from Bega to Tathra by coach is 7s. 6d. per head, and I am certain that the passenger fare on a railway from Bega to Eden would not be more than that, and it would probably be less. From Eden the rate of freight would certainly be less than the freights from the present inferior ports. The whole importance of the matter again does not centre in the exact amount of freight that has to be paid. The small vessels that now bring produce from Tathra and Merimbula, by reason of their smallness have to carry their cargo in a much more imperfect way than it would be brought if the trade were centred at Twofold Bay. With larger vessels the produce would be brought up to Sydney in better condition, and at a very much less cost than at present. These appear to me to be good reasons why a very favourable view should be taken of the proposal to construct a railway that would centre the whole trade of the district at Twofold Bay, a port designed, I think, by nature to be the outlet for that district.

865. *Mr. McCourt.*] I understand that you are in favour of a cheaper and lighter line of railway than is proposed? I am in favour of the cheapest line of railway that can be got with the present gauge, but I would not alter the existing gauge.

866. The present line will cost £14,000 per mile. By how much do you think it could be cheapened? I would be no authority whatever on that subject, but I should expect that it could be constructed at a cost not exceeding £9,000 or £10,000.

867. With the same grades? The grades might possibly be a little steeper, and the sleepers would be lighter, the rails lighter, and consequently the rolling-stock would be lighter.

868. Lighter rails would only reduce the cost a little. If you used a 50-lb. rail instead of a 70-lb. rail you would only get a very small saving? I am not an authority on that point.

869. Supposing the Engineer for Railways says that a cheaper line cannot be constructed upon the present gauge, what is your answer to that? I should construct the railway nevertheless.

870.

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870. Do you think that a railway would pay within a reasonable time at the proposed cost? I do not think it would pay interest on the cost of construction for a good many years.
871. Would it pay working expenses? Even the adverse report which has been submitted to the Committee shows that it would pay considerably more than working expenses.
872. Do you think that the estimate of revenue is a fair and liberal one? No. I am inclined to think that the revenue would increase very considerably after the construction of the railway—within two, three, or four years of its construction.
873. You know the route which has been adopted? Yes.
874. Is it the best that could be obtained? I do not think my evidence on that point would be of use.
875. Would not a line along the coast be better. Easier grades could be obtained there? I think they could, but the route proposed would be preferable.
876. You said that Bega was entitled to a railway because the district was paying £20,000 per annum as interest on free selections? Yes.
877. Is not nearly all of that absorbed in the making of roads in the district? No; I do not think a shilling of it is.
878. Why not? I think the cost of maintaining the roads and of upholding the Government is fully met by the general taxation of the district.
879. The same rule would apply to all the other districts in the Colony? I do not think it would apply in the same degree as it would apply to this district.
880. Why not? Everyone pays equally, and I suppose they get as much for roads in that district as in any other district? They get a fair average, but nothing more.
881. Do you believe that they get £12,000 per annum for the whole district? I think they get more than that.
882. I am speaking of the police district of Bega only? I should say that the whole district would get from £20,000 to £25,000 a year for roads and bridges.
883. That is more than the interest that they pay on their selections? Yes.
884. *Mr. Ewing.*] Why have you such an objection to a cheaper line if it would necessitate an alteration of the gauge? It will make an immensely larger cost in all the requirements for carrying out the railway—in the machinery and the rolling stock. You will want fresh patterns for every little repair.
885. Practically, would it amount to much? Yes; I think it would, but I am no authority on the subject.
886. I thought perhaps you would be influenced in this way, that in that eventually this line would be connected with the main line, complications would arise from the difference in gauge. Is it not possible that a cheap line in an isolated district could do good service before the time of connection? If I thought the time of connection was very far in the future I would assent to the proposal, but I think the connection will take place in the very near future.
887. With the south coast line and with the table-land? Yes.
888. You believe that this line will be joined to the main line so shortly that it would be unwise to adopt a narrow gauge? I think it would be unwise to adopt a new gauge.
889. Do you know that some farming districts which might otherwise have railway communication are prevented from having it by the cost of the broad gauge? I think that is so.
890. Do you not think it possible that there may be some instances where a narrow gauge would be justifiable? I think it is quite possible.
891. It has been unquestionably a wise thing in Queensland with their large territory? I think so.
892. You only speak on general principles? That is so.
893. *Mr. Humphery.*] I suppose you know that the Commissioners have laid it down as a principle that lines may be built in a good district if they will pay the working expenses, leaving the parent line for a time to bear the interest on the cost of construction. Now it will be impossible for many years, I presume, to make a connection between the proposed line and our existing system. What view do you take of the position laid down by the Commissioners as to the construction of this particular line and the improbability of the earnings on our main line being increased by it? I would say that the generosity of the principle which the Commissioners are willing to apply to the districts which can be brought into touch with the main trunk lines should be extended to an isolated place like the Eden electorate.
894. But there can be no contribution for many years from the proposed line to the main line? I think my previous evidence differs from that view. I do not think it will be many years before a connection does take place. Mr. Bruce Smith took a very active interest in this railway, and while he opposed it as an isolated line right up to the time when he left office, he had virtually decided, and left a minute in writing to that effect, that if a practicable line could be made from the coast to the table-land he would consent to the construction of the Bega to Eden line.
895. Then the hopeful view you take of this line is based upon what you consider the certainty of an early connection with the table-land? That would be a much more favourable project than a proposal to keep the line isolated.
896. *Mr. Davies.*] Yesterday you put it forward as a plea for the railway that the Crown had received some £500,000 from the district for the sale of land. I presume those who purchased that land got an equivalent for the money paid? Yes, they got the land.
897. It was good land—land situated in one of the most fertile districts in the Colony? Yes.
898. The same argument would apply to almost any district in the Colony? Nearly every other district in the Colony that has contributed largely to the revenue by the purchase of land has had railway communication given to it.
899. There are hardly any districts equal, as far as fertility of soil is concerned, to the Bega district? There are very few superior to it.
900. There are very few equal to that, I presume? They are very few equal to it.
901. You also put it forward as a plea that there is an annual income from land in this district of £20,000, is that the balance on free selections? Yes. In addition to that, annual payments have already been paid into the Treasury for land amounting to about £500,000 from the Bega end alone.
902. You know the estimated cost of this line? Yes.
903. Do you think that there is any possibility in the near future of a marked increase in the production of the district which would warrant that expenditure? I think that whatever the goods freight would amount to, it would be doubled within five years.

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904. Do you think that if the production of the whole district—an area of 40 miles long by 30 miles broad—were carried on the railway it would pay the interest on the cost of construction? I think almost the whole of the produce of the district would be carried on the railway if it were constructed, and I am of opinion that the production would develop very rapidly if people were given facilities for getting to a good port so that they might go easily to market. The traffic would develop so largely that the freight would very closely approximate to the interest on the borrowed capital.
905. Do you know the total amount of freight carried by sea in this district? Only in a general way.
906. Do you know the gross amount paid for the carriage of all kinds of produce? My information will be based almost entirely on the documents put before you by Mr. Barling, and on which the Commissioners' estimates were based.
907. But as an old representative of the district, and having a knowledge of its fertility, you can surely tell the Committee the probable amount paid every year for the carriage of produce by steamer? I could not give an estimate for the guidance of the Committee. That information has been submitted to the Committee. My evidence can only be of a general character.
908. Do you know the capital value of the products shipped at the ports of Tathra and Merimbula? My evidence on those points would not be any guide to the Committee. I am no authority on them, and I can only speak in a very general way.
909. Do you know any resident of the district who is in possession of authentic facts with regard to the capital value of the products of the district that would be served by the proposed railway, and the amount of freight paid on produce taken away from the district to Tathra, Merimbula, and other ports? It goes to those ports now because from there they have communication by steamer with the metropolis. There are steamers twice a week from those ports.
910. I am putting these questions in order to find out what freight the railway would be likely to carry. I want to know where the trade would come from, and if it would warrant an expenditure of £560,000? I am not an authority on the question that you are asking me, and I should prefer not to state anything about which I am not as much an authority as anyone else.
911. *Dr. Garran.*] You said that £500,000 have been paid for land in this district. Could you indicate on the map the position of that land? The alienated land is tinted yellow on the map.
912. It does not go so far west as Cathcart? No, not up there at all. Cathcart is on top of the mountain. The land I refer to is below the mountain.
913. Would the whole of the district for which which that money has been derived, be benefited by the railway? Yes, the whole of it would.
914. So that no man who has bought any land there would be outside the benefits conferred by the railway? Of course, some of them would only be slightly benefited as compared with others.
915. Do you think the alienated land comprises 500,000 acres? Very close to that amount I should say. It comprises, I think, about 450,000 acres.
916. If we say that 400,000 acres will be benefited by the railway, shall we be within the mark? I think so.
917. Then there is a fine opportunity here for the application of the betterment principle? I do not think there is any objection to its application.
918. Between Eden and Wolumla, has a very large amount of money being raised from the sale of land? No; Between Eden and Pambula it is poor land on the whole. The bulk of it is held in forest reserves, mining reserves, and railway reserves.
919. Between Pambula and Wolumla, has a very large amount of good land been bought? No; you only come on to the good land at Wolumla, with the exception of a patch of good country in the neighbourhood of Pambula.
920. From Eden to Wolumla is about two-thirds of the whole length of the line, and therefore we shall be constructing a railway which for only one-third of its length will run through good land? The fact of the remoteness of the good land from the port constitutes the argument and the necessity for the railway.
921. The railway will not go all through good land? No; it will go through poor land.
922. Would you advocate that all the money received from land should be spent on railways? I have advocated that principle in Parliament for the last twelve years.
923. And you would not hesitate to apply it? In my opinion, every shilling raised from land should have been applied to that purpose, and should never have been used for the Government of the country.
924. Would you advocate money being borrowed for railways to equal the amount raised from land? I would deal with each district according to circumstances.
925. You advocate the application of the principle in this district without dealing with any other district? I should prefer to deal with each case as submitted.
926. You are not prepared to apply the principle generally? Nor am I prepared to refuse its application.
927. *Mr. Wall.*] In the report of the Railway Commissioners no reference was made to a connection with the table-land. If the Department were to consider this line as a special line, admitting of no extension, would you then advocate the adoption of the narrow gauge? It is no use giving an answer to a hypothetical question. It would be possible to connect this line in two places with the existing system.
928. What would be the advantages gained by an extension from the table-land. Would such a line enable the people in the vicinity of Bombala to bring their produce to the coast in order to ship it from there? I think so. I think that the southern portion of Monaro, and particularly the Bombala end of it, is admirably fitted for the growth of potatoes, oats and wheat. They fail to grow these things now, because it is impossible to get them to market at a payable price. But if you gave them 50 or 60 miles of railway to Twofold Bay, I think their land would be very largely used for agriculture.
929. That connection would take some of the traffic from the Cooma line? It would.
930. Although it would give greater facilities to the people of that district, and perhaps create further settlement there? Hardly any of the produce from that district goes to Cooma now. Nearly all of it goes to Merimbula and Twofold Bay, and arguing inferentially, much more will it do so if the people had the advantages of a railway.
931. The object of taking a railway to a place like Cooma is to conserve the trade for that line, and if the Commissioners wish to do that they will not be likely to advocate an extension to the coast? That is the only way of developing the southern portion of Monaro.

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932. As the only object of a line from the table-land would be to bring produce to the coast, would not a narrow gauge line from the Eden to Bega line suit all requirements? It would certainly conduct all the traffic and do all the work required.
933. Seeing that the whole of the trade of the district must be brought to the coast, would not a narrow gauge line very materially promote settlement and at a very much lower cost than a broad gauge line? I believe it would.
934. *Mr. Neild.*] You know the country to the north of Bega? I do.
935. To what distance north do you think the country will be served by the proposed line? The country as far as Cobargo would certainly be very much influenced by the railway.
936. What distance is that from Bega? Twenty-five miles.
937. What is the nature of the country? It is good pastoral country, and some of it is good agricultural country.
938. When you speak of pastoral country, do you mean country that can be used for dairying purposes, or country fit merely for running stock upon? Dairying country.
939. What is the nearest port north of Bega? Bermagui.
940. That is a very poor affair? It is something similar to Tathra—a shade better.
941. It is 130 odd miles from Bega to Kiama, is it not? By road?
942. By sea? Yes.
943. Do you know the range of the country northwards from Bega to Jervis Bay? I do—well.
944. Are there any important engineering difficulties there? There are no serious engineering difficulties there at all.
945. Would the country be easier or more difficult for railway construction than the country between Eden and Bega? On an average, I think it would be easier.
946. There is a great deal of pastoral country there suitable for dairying if people could get their produce to market? There is.
947. What sort of country is it that would be traversed by a line from Wolumla to Bombala? Splendid grazing country, and a fair proportion of the flats would be good agricultural country.
948. When you say agricultural country, do you mean country used for dairying or for cropping? For cropping.
949. Do you consider that if the railway were constructed there would be a large area of land put under the plough? I think there would.
950. What crops would be raised? I think that to a very large extent the land would be used to give additional aid in the dairying industry by growing green stuff to provide winter food. That would increase the dairying capacity of the country very much.
951. Agriculture would not take the place of dairying? No, it would not.
952. It would be an assistance to dairying? Yes.
953. You would look forward to an increased traffic in dairy produce rather than to a production of agricultural crops in place of butter and cheese? I think there would be a considerable increase in agricultural produce, to the extent of giving freight for the railway.
954. The agriculture would have that effect? It would have that effect.
955. Would the agricultural produce be sent by railway for shipment or for local distribution? For shipment, I think. More would be produced than would be required in the district, and the surplus would be shipped to Sydney or to any other market. But in any case it would travel over the railway.
956. The Committee were informed that the surveys for a route to connect Wolumla with Bombala were expected to be completed within two months—are you aware whether they have been completed? To the extent of knowing that a suitable grade could be found, they have been completed.
957. Of your own knowledge do you know that a suitable grade has been found? I know from inquiry from the Department.
958. Do you know what the grade was? An easier grade than 1 in 50.
959. You would consider the proposed line as far as Wolumla as part of the connection with the table-land? Yes.
960. You look for a line between Wolumla and Bombala and you expect that the Cooma line will be extended to Bombala? Yes.
961. Would produce from the neighbourhood of Bombala find its way to Twofold Bay for shipment, or to Sydney *via* Cooma? The best answer I can give to that is that at present nearly the whole of the produce from that portion of Monaro goes to the coast at Twofold Bay and Merimbula.
962. Can you tell me the distance between Bombala and Cooma and Bombala and Eden by road? It is very nearly the same.
963. I suppose produce goes from Bombala to Twofold Bay because freight from there to Sydney is cheaper than the railway freight from Cooma to Sydney? That is a very important consideration; but there is another matter which must also be taken into consideration, and that is that in wet seasons parts of the road between Bombala and Cooma are almost impassable.
964. Are the roads from Bombala to Eden better than the road from Bombala to Cooma? The natural features of the country are more favourable to good roads from Bombala to Eden than from Cooma to Eden. The Eden roads never get so bad.
965. Is the gradient better? The soil is different.
966. You said just now that goods shipped at Merimbula and Tathra suffer considerably before reaching the metropolis, by reason of the smallness of the steamers on which they are carried? Yes.
967. Do you recognise that small things like kegs of butter can be carried much better by a large steamer than by a small steamer? Yes; very much better.
968. Why should that be? In a large steamer we can get cool chambers.
969. It is not a question of handling; it is a question of temperature? Yes.
970. With a large steamer you would expect a cooler temperature? Yes.
971. *Mr. Ewing.*] And greater speed? Yes.
972. *Mr. Neild.*] Do you look forward to Twofold Bay being at an early date an oversea shipping port? I think it is certain to be.
973. Do you think that the mail steamers now trading from Sydney to the old country *via* Melbourne could be induced to make Twofold Bay a port of call? I think they could.

974.

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974. That would at once largely increase the traffic upon the proposed railway, would it not? It would.
975. There would be a great inducement to produce largely if the metropolitan charges were done away with and people could send direct to the markets of the world? Undoubtedly: and I might mention that in summer time, on account of the excessive production of butter, it is necessary to export a considerable quantity to England, and that butter, instead of going as it does now from Twofold Bay to Sydney, and then passing Twofold Bay again, could be shipped direct. I have reason for supposing that the mail steamers, which now take butter from Sydney, would call at Twofold Bay if the inducement offered.
976. At Merimbula produce has to be put on board the steamers by droghers? Yes; it is taken out to sea that way.
977. Does the produce suffer from contact with sea-water on the drogher, or is it put on board in perfect order? On that point I am not an authority. My colleague, Mr. Clarke, and other gentlemen, are more familiar with the subject. The produce, however, must of necessity run a risk of being injured if it is brought out in bad weather.
978. Have passengers from Merimbula and Tathra to experience any difficulty in landing? It not infrequently happens that intending passengers cannot get on board at all.
979. And in like manner, it frequently happens that they cannot get ashore? Yes.
980. But is it not a fact that at Merimbula passengers can generally be landed under the shelter of either one headland or the other? I believe that sometimes passengers can be landed at Merimbula when they cannot be landed at Tathra, but I think in many cases they cannot be landed except at Twofold Bay.
981. I think it has been given in evidence that if passengers could not be landed at Merimbula at the ordinary place, by reason of the south-easterly weather, they could be landed at the southern end of the inlet;—do you know if that is so? If the weather was in any way rough it would not be safe.
982. Are there any shipping appliances at the southern end of the Merimbula inlet? Not that I am aware of
983. Is it not customary to try to land passengers and goods there? I think it is very rarely done.
984. That end of the inlet would be nearer to Pambula? Yes.
985. Then why is it not used? It is too open, and too unsuitable for a shipping place.
986. Is the water too shallow? No; but it is too open to the roll of the sea.
987. Does the map correctly represent the inlet? I presume so. I would not question the accuracy of the map.
988. According to the map it seems that there would be considerable shelter at the southern end of the inlet? No vessel could go close enough in there to obtain shelter from the headland.
989. Then the water is shallow at that end? It is shallow where the Pambula River runs into the bay.
990. The Admiralty chart shows six fathoms right at the mouth of the Pambula River? You cannot with any safety go close to a bar harbour entrance There is always a dangerous break, and you cannot with safety take a vessel close to it.
991. There would be 36 or 40 feet of water there. There are, however, to your knowledge, difficulties in the way of conducting shipping operations there? Yes; so serious that they scarcely ever attempt to use that end of the inlet.
992. Your evidence would be to the effect that what has been stated before the Committee with reference to the landing of passengers and goods at the southern end of the inlet is unreliable? I do not know what the evidence given was, but I am certain that that is no place for the transhipment of passengers or goods except in the calmest weather.
993. Then in southerly weather Merimbula is a port incapable of approach? Yes; or in any easterly weather.
994. You can only use it in westerly or northerly weather? Only when the wind comes off the coast.
995. Is there any prospect of either of these ports being so improved artificially as to allow them to compete with the proposed railway? No; not if you expended as much on them as would make the railway.
996. Taking Wolumla, Bega, and Tathra as the points of a triangle, how is it that there is so much unoccupied land in that area? Some of the land is reserved.
997. Is there any demand for Crown land in that district? There would be a great demand for it.
998. There is still a considerable area of Crown land there? Yes; but a great deal of it is reserved.
999. What is the character of the Crown land in the district? A fair proportion of that which is reserved is from medium to good land.
1000. I suppose the best land has been alienated? Yes; years ago.
1001. Then if the balance of the Crown land were thrown open for selection it would not give relatively so large a production per acre as the present production from the alienated land? Any that would be sold would fetch as high a price as was paid for the alienated land, because the minimum would be the same in both cases.
1002. But I am looking at the traffic which the railway would receive. The production per acre of the unalienated land would not, if it were alienated, be so large as the production of the alienated land? No; it would not. The best of the land is alienated.
1003. Judging by the production per acre, it cannot be expected that there would be a proportional increase in the traffic on the line? Not if you view it in that light.
1004. Would the unalienated land be suitable for dairying, or for cropping, or for fruit-growing? A great deal of it—in fact, nearly all of it—would be fit for fruit-growing; a moderate portion of it would be fit for grazing; and but very little would be fit for agriculture.
1005. Is there much fruit grown in the Eden and Bega districts? No; there is not.
1006. Are those districts suitable for fruit? I think so.
1007. What kinds of fruit? The peach, the apple, the cherry, and the plum.
1008. Fruit suitable to a cold or temperate climate? To a temperate climate.
1009. Can you give any reason why fruit has not been grown there largely? Because of the difficulty of sending it to market.
1010. Are we to understand that the shipping arrangements at Merimbula and Tathra are so uncertain that a week or ten days might pass before it would be taken away? There would be that risk, I am certain.
1011. That would be a fatal objection? Yes. I might say that some magnificent fruit has been grown in the district—fruit equal to that grown in any part of the Colony.

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1012. Would the construction of the railway open up a fruit trade with England? I would not express an opinion on that point. I do not know sufficient about fruit-culture to be an authority upon the subject.
1013. If the steamers call there for dairying produce in the shape of butter, they would be quite willing to take away fruit? Undoubtedly.
1014. Are there any other industries suitable to this locality? Dairying and agriculture generally would be the main industries.
1015. The country is not suitable for the fattening of stock? Yes, it is admirably suitable, but dairying pays better.
1016. The area of land is not sufficient to enable them to go beyond dairying? Yes.
1017. Is the country suitable for the fattening of stock to the westward? Yes; all up to the mountains.
1018. When you reach the mountain range you get into poorer country? No; on top of the mountain range the land is as good as that down below, but the climate is very much colder.
1019. Then it is not so good for fattening? Except for a few months of the year.
1020. Is there much population between Wolumla and Bombala? Yes; a good deal.
1021. Are there any towns? I have been along there and seen a good many farmers, and the average of their families is about a dozen.
1022. Are there any towns along the route of the line to the table-land? There is Wyndham, Rocky Hall, Colombo, and Candelo.
1023. Candelo would be some distance from Postle's line? About 5 or 6 miles.
1024. What produce would be carried by the line—dairying produce, I suppose? I could not say with any authority.
1025. What do you think the country is suitable for? At Bombala it is eminently suitable for agriculture. There are very few better places in the Colony.
1026. Would it become a dairying district? It is now; but they labour under the disadvantage of having a very cold climate.
1027. The railway will not alter that? No.
1028. Is it too cold for successful dairying? They labour under a disadvantage in having to compete with the warmer climate along the coast. Agriculture would be the great thing that would be developed in the Bombala district by railway communication.
1029. Cereals or root crops? Both. Potatoes, wheat, and oats would grow admirably. The soil is very rich; but the freight at present would eat up the value of the article produced.
1030. What about the production of wattle-bark—a good deal of that finds its way to Eden at present? Yes.
1031. From what district does it come? From the Crown lands throughout the district.
1032. From no special locality? No: it is very general throughout the district, though not in the best settled portions of it. The wattle grows, as a rule, on most of the land that has not been alienated, and on the Towomba River a good deal of wattle grows on the farming land, and has of late years been cultivated.
1033. Artificially? All the cultivation it requires is thinning out.
1034. Yesterday you gave evidence with regard to the timber north of Bega;—would it be affected by the line? It would not be affected by the railway; but the railway would pass through or close to a moderate amount of forest land on its way to Eden.
1035. Then what are we to understand from your evidence? That an extension from Nowra to Eden would pass through magnificent forest country.
1036. That line is very much in the future, is it not? I do not think so.
1037. You said that the timber in the southern districts is equal to any in the colonies;—do you still hold that opinion? I do.
1038. Are you not aware that there is a strong prejudice in the Sydney market against southern timber, and in favour of northern timber? No.
1039. Are you not aware that there is a difference in the market value? No; I am not. In fact, I know that in some of the largest contracts in connection with our railways it has been specially stipulated by the Commissioners that the timber shall be brought from that district.
1040. Is there any sale for the timbers of the southern district for public works in Victoria? A pretty fair quantity of our timber finds its way to Victoria.
1041. But are contracts taken in that locality for Victorian public works as they have been in the northern districts of the Colony? Some contracts have been taken there—and quite recently, too.
1042. There is at present some trade between Twofold Bay and Melbourne in pigs, is there not? Yes.
1043. Does anything else find its way there? Very little else. Occasionally bacon and cheese are sent that way, but only occasionally.
1044. I suppose that was before the recent duties were imposed in Victoria. Do you know whether the changes in the tariff have affected the Twofold Bay trade? I do not think so. I do not think the duties on those things have been altered.
1045. Has it not been changed with respect to pigs? Yes; the duties on live stock have been altered, but there has been comparatively little done in that way.
1046. That trade would not affect the earnings of the railway. It would not matter to the railway whether produce or live stock on reaching Twofold Bay went north or south? It would make no difference to the railway.
1047. You have been prominent in your desire to serve the interests of the taxpayers of the country in many ways;—would it serve their interests to construct a line upon which there would be an annual loss of something like £19,000? To begin with, I do not think the loss would be anything near that.
1048. Why? I think, as I pointed out yesterday, that the estimate of the cost of running the railway for a year is rather excessive, for it includes some items of a debatable character.
1049. *Chairman.*] It is hardly worth while repeating that evidence? I am not going to repeat it; I am only answering the question. Some items are included in the estimate of expenditure which I think are unusual, and in estimating the cost of running the railway they might reasonably be deducted from it. On the other hand, I think that the revenue will be something more than is estimated by the Commissioners.

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1050. From what source will it be derived—from goods or from passengers? From both. There will be a very considerable development, I think, if railway communication is given.
1051. You heard Mr. Clarke say that he anticipated an increase of from one-fourth to one-third in the goods traffic if the line were made;—do you think that that estimate would be realised? I am not sure that Mr. Clarke gave an estimate in the way you put it now. My impression is that the production of the district would in five or six years double itself—that is, the gross production that would be taken by the railway.
1052. But the loss during that time would largely increse the capital cost of the line? For many years the districts that have had no railway have been contributing to make up the loss upon other railways. It is only within the last fifteen years that the revenue from our railways has nearly approximated the interest on capital.
1053. You recognise that the estimate has been based on an interest of 3½ per cent., but it would be impossible to obtain money at that price now, so that the estimate will have to be increased to the extent of ½ per cent.? It is possible that the railway will not be commenced for some little time yet, and I am in hopes that the financial condition of the Colony then will be as good as it was when the estimate was made.
1054. *Mr. Dawson.*] You say that some traffic would come from Bombala to Twofold Bay? I believe that a very considerable traffic would come that way.
1055. Wool? Yes; and I believe there would be agricultural produce, too.
1056. Do you know how many bales of wool go from the Bombala district to Eden and Merimbula now? I do not know with any degree of accuracy, but the evidence has been put before the Committee.
1057. About 8,000 bales. Wool being shorn in the summer time, the state of the roads at Cooma can have nothing to do with its going to Eden. As a matter of fact, they cannot send wool to Cooma, and so they send it to Eden? Yes.
1058. *Mr. O'Sullivan.*] If the railway were constructed to Bega, would it form portion of a railway to connect with the line between Cooma and Bendock? No; it would not.

William Neilley, Esq., journalist, sworn, and examined:—

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1059. *Chairman.*] What is your occupation? I am a journalist.
1060. Are you resident in Sydney? Yes; at present.
1060½. You were for some time a resident of the Bega district? For about fifteen years. I have resided in Eden and in Bega.
1061. How long is it since you left the district? Five years, but I have been backwards and forwards frequently.
1062. Have you any interest in the district? Yes.
1063. Do you desire to make a statement to the Committee with regard to what you consider the reason why the line should be constructed? Yes; if you will allow me. In the printed papers laid before the Legislative Assembly the first document is a memorial from the residents of Eden, Bega, Pambula, and other places, as well as Monaro, praying for the construction of a line from Eden to Bega and thence to Monaro. That petition I presented as sole delegate with Mr. Clarke and Mr. Garvan in, I think, November, 1881. I, myself, visited Monaro on business and obtained signatures for that petition, and I think, with three or four exceptions, all the residents of Bombala signed the petition, and it was presented to the then Secretary for Public Works, Mr. Lackey. The estimate of income which we gave then, eleven years ago, very nearly accords with the estimate given by Mr. Crawford, after a great deal of research, some eighteen months ago.
1064. Then there was not a very large increase in the eleven years? Mr. Crawford took only "down the mountain" traffic. We calculated the traffic which we expected to come from Monaro as well, and that shows that there was a considerable increase in the production of the Bega district.
1065. What you call "down the mountain" traffic is the Monaro traffic? I should have said "under the mountain"—the traffic from the lower ground which the Bega to Eden railway would traverse.
1066. Mr. Crawford left out the Monaro traffic, and took only the "under the mountain" traffic? He only professes to give the traffic between Bega and Eden. I was connected with the port of Eden as far back as 1869, when I chartered the only ship that ever loaded horses there for India. At that time I had a large contract for the shipment of sleepers for the India Peninsula railway to Bombay, and to a company at Calcutta. We were told that there were immense stores of splendid red gum in the Bega district. At the time we were getting red gum from the Murray at a cost of 5s. 7d. per sleeper, and we found that if we attempted to ship it from Eden the cost would be something like 8s. a sleeper, owing to the want of roads, and the impossibility of getting cargo alongside a ship.
1067. Where is this red gum? From the Wolumla Range north, and in the whole basin of the Bega district. Since then much of it has been killed by ringbarking.
1068. That would not bring any trade to the railway? No; but there is a great deal of timber still left.
1069. Whereabouts? In the parish of Bredbendoura, at the back of Candelo, and on the Bega reserves.
1070. Do you think that if the railway were constructed red gum from the west of Candelo would go along it? Yes, to Eden.
1071. Where would it tap the line? At Wolumla, or if the Monaro connection were made, which as Mr. Garvan has said, must be made within a reasonably short time, the line would pass through a country timbered with red gum.
1072. Let us confine ourselves to the Eden to Bega railway. How far would this timber be from the line? Some of it would be 6 miles away, and some of it would be right alongside the line.
1073. Have you been in the district lately? I was there a little over a year ago.
1074. Where are the red-gum forests within 6 miles of Wolumla? Out to the back of Lithgow's flats, and out towards Brookvale—Mr. Kirby's place.
1075. Do you think that the construction of the line would enable you to compete with the red gum from Victoria? I think it would be brought cheaper from that district than all the way from Echuca. You have to go high up the rivers for it now.
1076. Are you aware that the Director-General of Forests has expressed it as his opinion that the Murray is the home of the red gum, and that no red gum in any other portion of the Colony can compare with the

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the timber there? I have heard that he has said that, but I do not think that he is correct. He has not had much experience as to other timber. I have seen Bega red gum that has borne the test of forty years.
1077. How much is there now to bring grist to the railway mill? Not so much as there was in 1869.
1078. Can you give us any idea of the quantity? There is a very considerable quantity—it is almost impossible to say how much. The selectors have no outlet for their timber, and so they ring it.
1079. So we may consider that the red-gum forests are dead, and that they would not contribute to the railway? There is a great deal of timber yet. It is constantly being used for fencing.
1080. Do you not think that there is such a local demand for it that there would be none to export? There would be a good deal for export, and there are other timbers there which would be quite as valuable.
1081. Suppose the railway were constructed, and there were a market for the timber, do you think there would be sufficient to keep the railway going for six months? With other wood.
1082. Take the red gum first? It could not absolutely keep the railway going by itself, but it would be a very valuable adjunct to the earnings of the railway.
1083. Do you think it would keep the railway going for six months? Not constantly carrying red gum.
1084. What else have you to say? The petition to which I have referred asked for a line from Eden to Bega, and thence to Monaro. The cost was estimated at that time at something like £12,000 a mile. We have always contended that the estimate placed before the Government by the Engineer-in-Chief's Department was excessive. Three years ago, with Mr. Kirby, I obtained and laid before the then Colonial Secretary an estimate framed on an absolute tender which would reduce the cost by some £68,000. The principal reduction was made in the stations, and in using local timber instead of imported ironbark. We proposed to use black butt, woolly butt, blood wood, red gum, and ironbark as it could be had along the line at a cost of 1s. 9d. or 2s. a sleeper, instead of 6s. a sleeper, which would be the cost of imported ironbark. In addition, we suggested that when the line left Eden it should come on the east side of the hill, on which the township is situated, and so save a considerable amount of cutting.
1085. You are going over very ancient history now. Do you not know that this line has been surveyed and re-surveyed for the purpose of bringing expenses down, and that we have been told by the Railway Construction Department that they do not think it can be reduced in any shape or form? I know that an enormous amount of money has been wasted on surveys.
1086. If that is their statement after due consideration, can you show us where any saving could be effected? This ancient history is only September, 1889. It was an estimate by the engineer for one of the principal contracting firms here.
1087. Whose estimate was it? Mr. Cook's. He was engineer for several important works in South Australia.
1088. Engineer for the contractors? And for the Government, I was told by Mr. Walker. He said that by making the alterations to which I have referred, a considerable saving could be effected.
1089. What was the saving? The final estimate was £487,291.
1090. The saving was to be effected by a deviation to the east, and by using only local timber for sleepers? Yes; and by substituting concrete for brickwork in the culverts, by using local hardwood in place of ironbark, and by reducing the expenditure on station buildings, locomotive shops, &c.
1091. The Railway Construction Department, having had the advantage of that information, have come to the conclusion that the line will cost £564,000? The only answer I can make to that is that, at that time a firm of contractors were prepared, and I believe they are now prepared, to commence the work on the figures I have given.
1092. On their own specifications? On the specifications given by the Government, with certain exceptions.
1093. Exactly—on their own specifications. And if the Department say they will not accept them, because they want a thorough job, is any one to blame them? They might get a thorough job with local timber as well as with imported timber. These people were prepared to put down their deposit.
1094. Is not that the usual thing when contractors wish to get a job? I daresay they did want to get the job.
1095. Who were they? There is no objection now to mention the names—they were Messrs. Walker and Swan. At that time the names were not to be made public, and I was to place them in a sealed envelope in the hands of Mr. Clarke. They constructed the Cooma line, and were prepared to construct this line.
1096. That was when they had all there plant there? They had horses there then and they have now.
1097. In reference to the probable traffic—you have heard the evidence of Mr. Clarke and Mr. Garvan. Do you agree with Mr. Garvan that within five years from the construction of the line the present production of the district would be doubled? I firmly believe that it would be more than doubled, and I base my belief on what I have seen of the increase during the twenty years I have known the district.
1098. As a matter of fact, is not all the good land now in use, and used to its greatest capacity? Not by a long way, because the difficulty of carriage prevents anything but dairying being gone in for.
1099. Is not the district better suited for dairying, except on a few of the flats, than for anything else? There are portions of that country more adapted for growing root crops and cereals—except wheat, which will not grow in consequence of the rust—than they are for dairying.
1100. What proportion of the country that would be served by the railway is suitable for agriculture, as distinct from dairying? I should think fully one-tenth.
1101. That land is capable of being used for agriculture? Yes.
1102. How much of it is now being used for agriculture? Very little more than would provide for local consumption. A ton of potatoes can be brought from Circular Head to Sydney for one-half of what it could be brought from Tathra for.
1103. Would the railway enable you to compete with Circular Head? Yes; Howard Smith and Company would carry freight for 7s. 6d. a ton if the railway were constructed.
1104. And you would have to add 10s. a ton as the freight from Bega to Eden? The freight, according to the railway tariff, would only be 4s. 1d.
1105. But surely you do not expect to pay the same freight on the proposed line as is charged on other lines? I do not know why not. The people of the district have equal rights with all other taxpayers.
1106. Then, if there is a loss of £19,000 per annum on the line, you would not allow an increased freight to be charged to make it up? I question if there will be that loss. The highest figures have been taken on the one side, and the lowest figures on the other side.

1107.

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1107. You have said that only a very small portion of the land which is fit for agriculture has been used for that purpose. Suppose the land were used up to its fullest capability, what tonnage would be carried by the railway? The tonnage would probably be doubled within the next five years.
1108. In agricultural produce only? The dairying produce will also increase, for where they were able to grow food for their cattle they would produce more than where the cattle were turned out on the natural grass.
1109. But if the land is used for agricultural purposes, it must be taken away from dairying? Not necessarily, as you could utilise much of the land that has never yet been ploughed and go in for farming more scientifically. Things are rather slipshod there now, though they are getting better than they were.
1110. Whereabouts is the agricultural land of which you speak—on the flats? No; scattered over the district. The flats are mostly cultivated.
1111. Except on the flats is not the soil very thin—are there not only 9 or 10 inches of soil over decomposed granite? In some instances. You, perhaps, judge from the road you passed over from Candelo to Bega.
1112. It is not for you to say that? I say, possibly.
1113. If we have local evidence of the fact do you not think that that ought to be sufficient? There is a good deal of such country, but there is a great deal more that carries rich, deep soil.
1114. Is the country to which I refer fit for agriculture? No; I would not plough that ground. It now grows splendid grass and had better be left alone.
1115. You think that one-tenth of the whole of the land is good agricultural land, and that land is to be found either on the flats or upon the sides of the hills? There are plenty of undulating hills.
1116. Do you think that if a railway were made there would be an increase in dairy production? Yes; I believe it would considerably increase.
1117. Would it double in five years? I consider that the general production of the district would fully double in five years. I quite agree with Mr. Garvan's evidence in that respect.
1118. If the railway were made, the dairying production would be doubled in five years, and there would be a very large increase in the agricultural production? Yes, an all-round increase.
1119. Do you think the country would be justified in constructing a line on which there would be a loss of £19,000 per annum? We have to judge of what has been done already. The Bega farmers are placed at a great disadvantage in having their produce sometimes delayed for a week, ten days, or a fortnight, and very much injured.
1120. When do you know of the produce from Bega, Wolumla, or any of those places having been delayed for a week, and how many times in a year has that happened? Very frequently. When the Sectional Committee were down there the other day three steamers passed, and I have frequently seen bacon that has been there a fortnight. I have frequently had to go off to the steamer in a boat myself, I believe at extreme risk to life and limb, when there has been a towering sea on, and no cargo could be shipped for two or three trips.
1121. That would be one week? The cargo was there over ten days on the occasion I refer to.
1122. How often has that occurred during the last twelve months? I could not say, but it occurs very frequently.
1123. If Captain Turner, the manager of the Illawarra Company, has told us that only once in five years has the steamer had to bring back its cargo owing to stress of weather, what do you think of his statement? I agree with Mr. Clarke—and I should not like to use a harsher term—that his evidence is a mistake. I have been there many times, and have seen the steamer go by, and have had to go to Eden; and I have seen men, women, and children bundled ashore when you had to keep your wings out like a hen to reach the wharf. I have embarked at Merimbula, and the passengers had to be bundled off the rocks into the boats with absolute danger to themselves. I remember, by the way, that Sir William Manning was a passenger that very trip. There was absolute danger to life and limb; but we had to get to Sydney, and we chanced it.
1124. And in spite of all these dangers you have lived to tell the tale? There will be a hole in the water there some day for a lot of the prominent residents. I was going on to say that the farmers there are under a considerable disadvantage. If a man leaves ten bales of wool or half-a-dozen bags of maize on the wharf it does not matter much, but it makes a great difference to butter and cheese; and seeing that the country is paying nearly £200 a day loss on the Kiama line, I think the proposed expenditure is very little.
1125. That allusion is foreign to the question. We want to hear of the inconveniences from which you suffer, and what the production of the district is likely to be? Still it is a fact.
1126. That is a matter of opinion. You have expressed the opinion that if the line were made the dairying production would be doubled in five years, and that there would be a large increase in agriculture? I say that the general carriage of the district would be doubled in five years.
1127. Do you think that the produce would be carried to Eden, or that a large portion of it would still go to Tathra and Merimbula? I believe the whole of it would go to Eden if the rates were reasonable, because fast steamers would be calling there constantly.
1128. What do you think the people would be able to pay per ton to send their produce from Bega to Eden? At present it would cost the best part of 15s. per ton to Tathra.
1129. If they could send it to Eden for 10s. a ton, they would save 5s. a ton and be able to use larger boats? Yes, and I may state positively that Howard Smith and Company are prepared to take freight at 7s. 6d. a ton.
1130. Under these circumstances the people of Bega would be prepared to pay 13s. a ton on the railway? They would have to pay what the Department demanded, but I think that they could well afford to pay two-thirds of what they are at present paying to go to Tathra.
1131. Supposing they could get their produce to Eden for as much as it now costs them to take it to Tathra they would still save on the water freight? Yes; and there would be a certainty about getting the produce away at once. A great deal of produce would be shipped to London, being brought to Eden in refrigerating cars. The mail steamers would be willing, I believe, to go in there to load up for London.
1132. Do you think that if the railway were constructed to Wolumla, where in all probability the Monaro extension would join it, it would be sufficient for the time being? I do not. I do not think that any line short of Bega would be generally availed of, there is so much good country at Bega and Frog's Hollow.

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1133. The people of Bega would rather not have a railway than have one which comes only within 12 miles of them? No; because they well know that in a very short time it would go on.
1134. Supposing it is not deemed advisable to spend the whole of the amount estimated, would it not benefit the people to have a line as far as Wolumla? Such a line would be a benefit, but not so great a benefit as a line going to the principal centre of the district.
1135. If the line were constructed to Wolumla would a very much larger portion of the trade continue to go to Tathra than if it were constructed to Bega? Yes. It is just the same distance from Bega to Wolumla, as from Bega to Tathra, and I think you would lose the bulk of the Bega traffic—that coming in from Kameruka, Buckajo, Numbugga, and those places.
1136. If we are told that the principal production of Kameruka goes to Merimbula through Wolumla, there will be no loss of trade? I take Kameruka as a large extent of country—a good deal of it goes to the Eden road at Frog's Hollow.
1137. As a matter of fact is not Wolumla as near to Candelo and Colombo as Bega is? It is about the same distance from Bega to Wolumla as from Bega to Candelo.
1138. So a railway to Wolumla would serve the Colombo people? Yes.
1139. That is one of the richest portions of the district? Yes, it is very rich.
1140. A line to Wolumla would also serve Candelo? Yes; but not the country to the north, west, and east of Bega.
1141. So far as Candelo is concerned, the line would be as near as ever? Yes, they would come to Wolumla, and so would the Monaro traffic.
1142. Have you anything more to state? No, I think not.

Major S D. T. A. M. Woods, Esq., landowner, Twofold Bay, sworn, and examined:—

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1143. *Chairman.*] What is your occupation? I am a landowner.
1144. Were you a resident of the Bega district for some time? I reside at Twofold Bay.
1145. How long were you a resident there? I have been living there about four years, off and on.
1146. Do you know the country through which the proposed railway will go? Yes.
1147. You are familiar with the whole of it? Not the whole of it.
1148. How far north are you familiar with it? From Eden to Pambula, and towards Wolumla.
1149. Your knowledge of the district is confined to the country from Eden to Pambula, and a portion towards Wolumla? Yes.
1150. You understand that the line is estimated to cost £564,000, and that it is estimated that there will be an annual loss of £18,827 on it? Yes, estimated; but I do not believe it.
1151. And do you think the district is of such importance, and that its production is likely to increase so much, that that loss would soon be overcome if the line were constructed? I do.
1152. What grounds have you for believing that, if your knowledge of the district only extends as far as Wolumla? Speaking of the district to which I have already referred, I think the railway would increase the value of land to each freeholder by not less than one-third, and it would affect Crown land in the same way.
1153. Then you would advocate the construction of this line for the purpose of increasing the value of private property and also to make Crown land worth more? That is one reason for its construction.
1154. Are you aware what the character of the Crown land is which is left in the district? I have a fair knowledge of it.
1155. How does it compare in fertility with the land that has been alienated? Perhaps in places the richer land has been alienated, but I should say that altogether in the county of Auckland about two-thirds of the Crown land, which at present is unoccupied and produces no revenue, would, if the railway were constructed, be marketable to-morrow.
1156. If we have it in evidence that some of the best land yet unalienated has been offered at auction and there has been no bid for it, how will that bear out your statement? At present there is no access to a market to justify the investment of money in that land.
1157. Have the people of the district not got an outlet at Tathra and Merimbula? Not a justifiable outlet considering the expense of carriage.
1158. You know very little of the country north of Wolumla? Very little, except that I have seen the location of population on the county map.
1159. What is the nature of the evidence you desire to give—as to the suitability of Eden as a port? Yes.
1160. You want to confine your remarks to that? Yes.
1161. What is your opinion with regard to Twofold Bay. Do you think, in the language of one of the witnesses. that it is equal if not superior to Port Jackson? Yes; I think so. As far as its entrance is concerned, it is second to nothing in Australia.
1162. It has a very wide entrance, and a ship could come into it day or night? Yes. The Admiralty report by Captain Stokes and Lieutenant Gowland clearly shows the security of the place and the depth of the water.
1163. Is it not a fact that sometimes, owing to the width of the entrance and the nature of the prevailing winds, vessels are unable to lie alongside the wharf to take in cargo? Yes, on the Eden side, but not on the southern side. The prevailing and powerful winds come from the south and south-east.
1164. In your opinion any depôt or town at Twofold Bay should be on the southern side of the bay near Boydtown? Yes.
1165. You think Mr. Boyd was correct in putting his settlement where he did? So the Admiralty report says, and shipping captains who have traded there since 1848 are of the same opinion.
1166. So that if the proposal to bring the railway to Snug Cove is carried out a mistake will be made, and the line will afterwards have to be taken round to Boydtown? No; I say it is quite right that there should be a depôt at Eden. It would greatly benefit the district; and for a sea-bathing place Eden is admitted to have the healthiest climate of any part of the world. You will find that in Mr. Reid's essay on the Colony.
1167. Whereabouts is your property situated? On the south side of the Bay.
1168. Over in Boydtown? Yes.

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1169. In view of the fact that it is estimated that there will be a loss of £19,000 per annum on it, you would advocate the extension of the line down to the southern shore? No, not under the same heading. But the line proposed *via* Bondi, coming in and joining the Bega line would be remunerative, simply because of the people who would come to the place for the benefit of their health.
1170. You are now presuming that a connection would be made with the Monaro table-land *via* Bondi? Yes; that is what the Government approve of, so far as the surveyors are concerned.
1171. Have you had any private conversation with the surveyors? Yes, with Mr. Carver.
1172. Then how do you know that? I understand so from the reports. We have proof that there would be a proper grade, and that an outlet from the table-land would be provided in that way.
1173. Are you not aware that five or six surveys have been made to find a line to connect the table-land with Twofold Bay? I have heard of three.
1174. There are the Bondi, Big Jack, Postle's, Arnheim's, and Darragh's routes. Would you be surprised to learn that if the Department favour any it is Mr. Postle's route from Wolumla, *via* Cathcart? I know that that route has been recommended, but I think you would find that a line with an easier grade, and one which would serve the district better, would go to the south of Eden, to near the borders of Victoria, where there is a great quantity of land unoccupied, because of the want of means for sending produce to market.
1175. There is no population there to serve at present? Yes, there is; and the Government cannot sell the land, because there is no access to it.
1176. Do you not think it is better for us to try and give railway communication to districts that are already settled rather than to districts where there is no settlement? It is quite right that the settled districts should first receive consideration, because they pay a certain amount to the State, but a railway would increase the value of unoccupied land.
1177. What you have come here for more particularly is to urge that that large area of Crown land lying between the southern and south-western side of Twofold Bay and the Monaro table-land should have railway communication? Yes; in addition to the line already before the Committee.
1178. Did you say you do not know much about the country which would be served by the proposed line beyond Wolumla? I have travelled over it, but a man is not justified in giving evidence on oath about country over which he has travelled only in a casual way. Knowing the class of country that it is, I think it is entitled to a railway, even if a railway would cost the £600,000 voted by Parliament in 1884.
1179. If it is estimated that there would be a loss of £19,000 per annum on this proposed short line, where already there is a large population, is it not reasonable to suppose that there would be a much greater loss on the Bondi route, which would be a great deal longer, and would pass through very little settlement? First and foremost, a railway *via* Bondi would be in no way as expensive as a railway from Eden to Bega, and the distance, Eden to Bombala, is not greater.
1180. Have you been over the route? Over a great portion of it.
1181. If you have only been over a portion of it how can you say that? I understand that the roughest portion of it is between Eden and Pambula. I have been over that country often.
1182. Have you been over the Bondi route? Over a portion of it.
1183. How can you say whether you have been over the easiest or the hardest portion? I am going by the surveyors' reports.
1184. You have no personal knowledge? Yes; of a portion of the line.
1185. Between the Bay and Sturt? Yes; it is the highest portion.
1186. That is not the highest portion? Imlay is the highest pinnacle we have to go over. It is nearly 2,000 feet on Imlay, and the altitude graduates from there. It falls down towards the table-land, *via* Bondi, into a sort of gulf.
1187. We are not going to run a railway line to the top of the Imlay Mountain? I do not mean to convey that impression.
1188. I ask if you are familiar with that portion of the Bondi line which runs from the south-western side of Twofold Bay to Sturt? Yes.
1189. Would not that be the easiest portion of the line to construct? No; I think it would be the heaviest.
1190. Why? Because from Bombala down it is more of a flat. I have not measured it, but I think the distance from the Gap down the table-land to Bombala direct is only about 14 miles.
1191. But at all events you have not been over the intervening portion between Sturt and Bombala and, therefore, you cannot speak from your own personal knowledge? No; I have been to Bombala, but not on the surveyed line.
1192. You stated just now that there were times when vessels could not lie alongside the wharf at Snug Cove to load and unload? That is quite right.
1193. Would it be necessary to carry out any harbour works to make the Bay more secure? It would not be necessary for the trade.
1194. It would not be necessary for the present trade? No. If the railway came there and goods were brought by it daily there would be such a number of vessels calling and recalling that produce would not lie there any time.
1195. If one vessel had to leave her cargo another would pick it up. That is what they have to do at Tathra. You would place Twofold Bay, a port which you say is as good, if not superior, to Port Jackson, on an equality with Tathra? I do not mean that at all. In any weather they can ship their goods from Eden.
1196. You have just told the Committee that there were times when, owing to the swell, vessels could not lie alongside the wharf? Not now, but in days gone by, before the wharf was extended; a ship of 3,000 tons could go alongside there now.
1197. I asked you whether it was a fact that owing to the swell in Snug Cove there were times when vessels could not lie alongside the wharf there? That was before the present wharf was lengthened and made suitable for large ships.
1198. Now there could not be any interruption to the loading of the shipping? I do not think there could be any interruption worthy of the slightest consideration.
1199. *Mr. Davies.*] Was it proposed some years back to construct this railway by an English syndicate? If the Government would grant permission for it to be constructed it would be done within three years.
1200. Was there a proposal of that kind? I went to England for the purpose of forming a company to ship direct from Twofold Bay, and within nine months after I had gone, there could have been £1,000,000 here if a guarantee could have been got that the railway would be constructed.

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1201. The company was not formed for the purpose of constructing the railway? That was considered, but as it was known that the Government were averse to private lines the suggestion had to be abandoned. It might have been done easily. They were willing to take Crown lands for the railway in order to open it right through. A company can be formed for that purpose.
1202. I understand you to say that you went to England for the purpose of raising funds to construct this railway? No; in order to form a shipping company to buy produce and ship direct to England.
1203. What kind of produce would be shipped direct to England? Bark, hams, tallow, hides, bones, wheat, maize, butter, and the ordinary produce of the district. Wool in quantity.
1204. Where would the wool come from? From Monaro and the lower part of the Murrumbidgee.
1205. These commodities would be shipped direct to England? Yes.
1206. What was the cause of the failure on your part to raise the funds? There was no certainty as to the railway being constructed.
1207. Was the construction of the railway a part of your project? No; it was the intention to have a company shipping direct to England.
1208. Do you think there is any possibility of a railway paying at a cost of £560,000? I do.
1209. In what way? I think that when the Commissioners took into consideration their estimate of the passenger traffic, they forgot to consider the increased population in the district—the population in the county of Wellesley, and in the various gold districts between Nimitybelle and the coast. There is a great population there now, which is increasing, because of the minerals there and will continue to increase, if there is a railway, over and above what has been estimated by the Commissioners.
1210. Do not the Nimitybelle people go by way of Monaro? Some of them do.
1211. The majority of them? I cannot say as to the majority.
1212. Do you say that there is likely to be a larger settlement if the railway is constructed? I believe that if the railway were constructed to-morrow there would, in six months, not be a portion of the land now lying waste which would not be occupied if it could be bought from the Crown.
1213. Do you think that if the whole of the production of the district were carried on the railway for the full 36 miles it would pay the interest and cost of management? I do.
1214. *Mr. Neild.*] Has there been any discovery of coal in this locality? Yes.
1215. Has any attempt been made to work it? No.
1216. You are well acquainted with the Pambula Gold-field? I have a fair knowledge of it.
1217. Is the population there increasing or decreasing? It is increasing largely.
1218. The increased population to which you refer will be engaged in mining? I consider that one-third of the industries of the country.
1219. But an increased mining population would increase the consumption of produce grown in the district? Yes.
1220. And would tend to reduce the exports? Quite so.
1221. If the people at Pambula ate up the dairy produce of the district there would not be much for shipment? Yes; but you might look at it in this way. At present, potatoes and other things which we consume are brought from Victoria, but if we had a railway to convey them to market from this district, instead of money going out of the country it would be kept in the country.
1222. That would not make any work for the railway? Of course it would. If produce was brought from Bombala and other places round to the coast it would make work for the railway.
1223. Would the proposed railway from Eden to Bega be more profitable if connected with Bombala at Wolumla? I believe it would be, because the connection would take in a large portion of rich and valuable land.
1224. You advocate a line *via* Bondi? I do.
1225. The Bondi route would be much the longer? About the same, and it would go through much Crown land that is now lying waste.
1226. What kind of land is it? Some of it is good grass country. There is a great quantity of mineral country, and there is also agricultural country.
1227. Would it be as good as the country between Wolumla and Bombala? Portions of it would.
1228. But other parts of it would be inferior? There is no portion of the county of Auckland which is not able to produce the best quality of fruit. If we had a railway and shipped direct from Twofold Bay, a lot of trade would come from the north-east of Victoria, through Bendock and along that way.
1229. The people there would be going away from their own railway system? Yes; they are only 40 miles away from the Bay.
1230. What is the distance from there to the Victorian railway system? I should say not less than 100 miles, if not more.
1231. To Bairnsdale? That is more than 100 miles distant. I should say it was 200 miles.
1232. I suppose your knowledge of the locality is more confined to the Bondi route than to the Bega line? I have an equal knowledge of the country on both lines.
1233. Do you agree with the evidence that has been given by Mr. Garvan and Mr. Clarke? Yes.
1234. *Mr. Dawson.*] How far is Eden from Cooma? I think about 120 miles as the crow flies.
1235. You talk about getting trade from the Murrumbidgee, do you mean from the Upper Murrumbidgee or the Lower Murrumbidgee? From the Upper Murrumbidgee, near the coast.
1236. Do you know where the Murrumbidgee is? I have an idea where it is.
1237. How far is the nearest point on the Lower Murrumbidgee from Eden? A long distance.
1238. Do you know that Cooma is between Eden and the Murrumbidgee and that the Murrumbidgee starts straight from there? I do not understand that to be so.
1239. How far is the Murrumbidgee from Cooma? I am not acquainted with that portion of the district sufficiently to be able to speak with authority. By Murrumbidgee I mean the district, not the river.
1240. Have you looked at the map or have you got your knowledge from travelling over the country? I have been to Cooma.
1241. How far is Cooma from the Murrumbidgee, do you think? I should say perhaps about 5 miles.
1242. What part of the Murrumbidgee would be nearer to Eden than Cooma is? I should have to examine into the matter to give you an answer.
1243. You admit that Eden is 120 miles from Cooma, and that Cooma is about 5 miles from the Murrumbidgee, and yet you say that the Murrumbidgee is 60 miles from Eden? I am inclined to think that it comes nearer than Cooma, but then I mean the district, not the river.

1244.

1244. You say that you think the line ought to come in by Boydtown? I did not say that. M. S. D. T. A. M. Woods, Esq.
1245. Would that be a good place to go to? It would be the best place, according to the Admiralty, for a secure harbour.
1246. Could you tell us who owns the land about Boydtown? I do.
1247. How much of it—the whole of it, do you not? No; the Government have about a mile reserved for a township between East and West Boyd. 21 Sept., 1892.
1248. But opposite your land would be the best harbour? No; as good a place for shipping purposes is opposite the Government frontage.
1249. You said something about the minerals about Nimitybelle? Mr. Clark, who is one of the best geologists we have had in the country, speaks of that district as being very rich in minerals.
1250. But you know that there are no minerals there now? There are the Gulf diggings and the diggings at Delegate.
1251. How far from Nimitybelle are the Gulf diggings? A considerable distance.
1252. Are they within a two days' ride? Yes; I should say so.
1253. Which way would you go in two days? I do not know the country as well as you do.
1254. How far away is Delegate? A good distance.
1255. About 50 miles? Between 40 and 50.
1256. The minerals at Nimitybelle exist in Mr. W. G. Clark's book? Yes; and they have since been proved to exist at Nimitybelle.
1257. Whereabouts in Nimitybelle are there any minerals that would affect this line? Well, I do not say they are exactly at Nimitybelle. There are minerals in the county of Auckland.
1258. You come here and give us evidence about these minerals, and then you say they are in Mr. W. G. Clark's book? Before the line was made from Queanbeyan to Cooma I was travelling there by coach with Mr. Ryrie and two other gentlemen, and they stated that it cost them £3 10s. a ton more to send their produce through Goulburn than to take it to Twofold Bay and thence by steamer to Sydney.
1259. Mr. Ryrie lives about 40 miles on the northern side of Cooma? I do not know where he lives.

THURSDAY, 22 SEPTEMBER, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Eden to Bega.

William Charles Willis, Esq., sworn, and examined:—

1260. *Chairman.*] You were for some time the Sydney representative of the Tasmanian Steamship Company? Yes; my firm were the agents for the Tasmanian Company in Sydney. We had a service to Twofold Bay, *en route* to Tasmania. W. C. Willis, Esq. 22 Sept., 1892.
1261. *En route* to Hobart, or to Launceston? Both places.
1262. How long were the Company engaged in that trade? They were engaged in carrying cattle more particularly from about 1857, but as far as general traffic and passengers were concerned, from 1878.
1263. Has the cattle traffic or the goods traffic been an increasing one? The cattle traffic has increased, but I think the goods traffic has rather gone down since 1883.
1264. And the passenger traffic? The passenger traffic remains about the same.
1265. Do you know the district yourself? Yes, I do. I have been backwards and forwards to it a great many times.
1266. To the port of Twofold Bay only, or to the district through which the railway will pass? I have been several times to the port, and I have also travelled between Eden and Bega and Eden and Bombala at different times.
1267. You desire to give evidence as to the suitability of the port and as to the trade that has been done there during a period of years? Yes. The Tasmanian Company have only done a small portion of the trade. The principal portion of it has been carried from Merimbula and Tathra by the Illawarra Company.
1268. That is the trade of the district? The trade of the district. The Tasmanian Company only came into the trade when the Illawarra Company's stores at Merimbula were so blocked up with cargo that the steamers could not take it away. It was only at the earnest request of a great many of the people of the district that the Tasmanian Company stepped in and relieved the trade. Some people's wool had then been kept in the stores for as long as three months, and wool that went in first came out last. That was the state of affairs with regard to the business at Merimbula in 1878.
1269. What was that block caused by—bad weather or the insufficiency of boats? I believe it was caused by the weather, and by the steamers not being able to get up to the wharf. At present all the cargo from Merimbula has to be taken out into the bay to the steamer in droghers.
1270. At the time you speak of the steamers of the Illawarra Company used to go inside the river at Merimbula, and it was owing to the river silting up and the boats being prevented from coming in that the block was due? Yes.
1271. After that the Illawarra Company altered their arrangements and had a drogher stationed at Merimbula permanently? I do not know whether the drogher was there before or not, but an accumulation of cargo occurred, and I believe at the time the steamers used to go up the river.
1272. That was when your steamers were invited to come in and relieve the district? Yes; and a good deal of wool was consequently sent to Eden instead of to Merimbula. I think that that year we carried to Sydney between 3,000 and 4,000 bales of wool.

W. C. Willis, Esq. 22 Sept., 1892.

1273. Did that wool trade continue, or were increased facilities provided at Merimbula by the Illawarra Company, and your cargo consequently diminished? Our wool carrying diminished when increased facilities were given at Merimbula. The extension of the railway to Cooma, I think, further decreased our shipment of wool.

1274. And the Illawarra Company's shipment, too? Yes. The Tasmanian Company have never been very active competitors for this trade. They have simply taken what came from Eden without much canvassing, and no doubt a lot of cargo has gone to Merimbula and Tathra which, under other circumstances, would have come to Eden.

1275. But your boats called regularly at Eden? Yes, they called regularly—about once a week or once in ten days.

1276. So that unless cheaper freights and cheaper means of getting to Sydney from Merimbula or Tathra had presented themselves, the cargo would have gone to Eden for your boats? Merimbula was favoured principally, because the carriage there was less than to Eden. The teamsters had better feed at Merimbula than they had at Eden. I may mention that Merimbula is almost all private property, in fact the wharf is private property. I do not know that I can say anything further about the carrying trade from the district. For ten years I think we have carried about 1,500 tons a year from Eden backwards and forwards, and, as I have mentioned, that was only a very small portion of the trade of the district, because the Illawarra Company's boats were then running to Eden, and also to Merimbula.

1277. A Sectional Committee recently visited this district, and obtained information from, and examined Mr. Solomons, who, I understand, is the local agent for the Union Company at Eden, and who has held that position for a number of years. You admit that any statement that he put before us would be perfectly reliable? I should think so.

1278. Being the agent of the company he would know exactly what went through the port? Yes.

1279. Can you inform the Committee whether the boats of the company whose Sydney representative you were, ever had to pass by Eden because of the bad weather? Yes, they did.

1280. They were sometimes not able to get into Eden because of the weather? At times when the weather has been very bad they have gone past, more especially when they were not advised of cargo or passengers.

1281. Knowing that there were passengers or cargo to be shipped or unshipped at Eden, have they, because of thick or bad weather, passed by? They have on some occasions, but not very often.

1282. How many times would that occur during the twelve months? As a rule not at all in the twelve months, but at one time one or two of our ships did pass more often than they should have done. I do not think any of the boats have passed for the last two or three years.

1283. It is considered a very safe port to enter? Decidedly.

1284. Have any of your steamers ever gone to Eden and been unable to load or unload alongside the jetty because of the swell which was rolling in? Yes; I believe they have anchored in the harbour and taken their cargo on, and brought it back again next trip.

1285. How often might that occur in the twelve months? That was a very rare occurrence.

1286. But it did happen? It did happen.

1287. Do you know of your own knowledge whether any proposal has been put forward to make Twofold Bay a more comfortable port for vessels lying at the jetty? I have heard from some experienced people that a very small breakwater would materially lessen the danger of any swell.

1288. The fact that there exists, in the opinion of some experts, the necessity for a breakwater, shows that there must be at present some disturbance alongside the wharf at times? There is a range alongside the wharf at times—a captain would not like to remain alongside the wharf all night in bad weather, for fear his warps might give.

1289. Suppose the railway were constructed, and Eden were made the depôt for the produce of the district, do you think the Union Company, or any other large company, would send their boats there more regularly? I have not the slightest doubt that there would be a larger trade done there by different boats. At present almost any of the intercolonial boats will call in if they get a certain amount of freight.

1290. I suppose there is some loss of time in getting off the direct course from Sydney south? Our captains used to reckon it at about three hours.

1291. Three hours would be lost in getting off the direct course, independently of the time that would be occupied in taking in cargo? Yes.

1292. In the case of a steamer like the "Oonah," what would the value of three hours be to the company? In money?

1293. In money? I could hardly tell you.

1294. Do you know the running expenses per day? Not per hour.

1295. At all events it would be something? I might mention, as some guide, that any of the intercolonial boats will run into Eden if they can get £20 in freight or passage money.

1296. Twenty pounds would pay them to deviate from their course? Yes.

1297. You think that if the trade of the district, which now finds an outlet at Tathra, Merimbula, and Eden, were concentrated at Eden, not only the Union Company's boats would go there, but that some of the other intercolonial boats would also call? Yes; I feel satisfied that such would be the case.

1298. And the competition would bring down the freight? Yes.

1299. Do you know the freight now per ton from Eden to Sydney? From 10s. to 20s.

1300. It depends upon the nature of the merchandise or of the goods? Yes.

1301. If there were a larger volume of trade than at present exists, it would pay the company to carry for less? It would.

1302. If the volume of trade were increased 100 per cent., what reduction in freight would the company be able to allow? They could set the sum down at 25 per cent.

1303. The more the trade increased the more the freights would come down, until they reached a point at which there would hardly be anything? I think 10s. a very fair freight from Twofold Bay to Sydney.

1304. But if the vessels called twice a week, and could each trip secure at least 100 tons of cargo, what would they be able to reduce their freights to? They could carry at a profit at 7s. or 8s.

1305. So that if the railway were constructed, and Eden made the port of shipment, the producers of the district, so far as water carriage is concerned, could obtain much cheaper transit than they have at present? Yes; that would follow.

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1306. You tell us that you have been through the district on several occasions—when were you last there? It is seven or eight years since I was at Bega. I was in Eden about a fortnight ago.
1307. The Bega end of the district is very much better for produce than the Eden end? It is.
1308. Did you think at the time of your visit that the district was working up to its full capability? Not nearly. I think it is a district that can be developed very materially.
1309. Of course seven years is a long time, and you do not know whether it is not developed to a very large extent since then? I have not been in Bega for seven years, but I have been as far as Pambula quite recently.
1310. There is not much difference between Pambula and Eden so far as production is concerned? No.
1311. Have you ever had complaints on the part of the captains trading there, expressing a dislike to go into Twofold Bay for any reason? On two or three occasions, when they have gone past the port, they have told me that it was too thick to go in.
1312. Is there any difference in the insurance of vessels if they make Eden a port of call? There is no extra charge.
1313. Twofold Bay is considered by the insurance people as being a very safe port? Perfectly safe.
1314. There are no reefs to run on to, and no heavy gales which would confine them in a dangerous place? No.
1315. Do you know of vessels having gone to Snug Cove, and then having had to shift to the other side of the Bay, owing to a change of wind? I am not sure about it. It may have happened, but I would not like to say positively.
1316. Is there anything else which we have not touched upon about which you would like to give evidence? I should like to say that I think a railway would tap the northern part of Victoria and Gippsland and all the southern part of New South Wales, and that large developments would follow its construction.
1317. Are you speaking of this particular railway without any connection with Monaro? I refer more particularly to a connection between Eden and Bombala.
1318. *Via* Bondi, I presume? Yes, *via* Bondi, and with the Eden to Bega railway as a connecting line.
1319. Do you think there would be much trade from the northern part of Victoria to Twofold Bay if the railway connection with the table-land went from Wolumla to Cathcart, or would that trade only come on the line from Bondi? I think it would come if the line went *via* Bondi. It would not use the other line.
1320. Some produce comes at present to Twofold Bay from the northern portion of Victoria, does it not? Yes, a small quantity, I think.
1321. The making of this particular line would have no effect upon the trade of the northern portion of Victoria unless there was also a connection with the table-land? No.
1322. You were anticipating a connection with the table-land? Certainly.
1323. If the Railway Commissioners, who are supposed to manage our railways on a commercial basis, have estimated, after making what they consider a liberal allowance for present and increased traffic, that there will be a loss of £19,000 per annum on this line, do you think we should be justified in constructing it? I think it is a question whether there would be such a loss.
1324. I have just told you my authority. Do you know of any point where the cost has been over-estimated, or the probable traffic under-estimated? I am not qualified to go into those figures, but I would say this, that if we were commencing with a new line of steamers we should not expect the trade to pay much during the first year or two. We should look to developments to make it pay.
1325. How long, as a general principle, do you think it should be before we might reasonably expect a line to pay? It is rather hard to give an opinion. I should say four or five years.
1326. You think that if there were a reasonable prospect of the line paying within four or five years, that would be a sufficient justification for its construction, even if, in the first year, there should be a loss of £19,000 on it? Certainly. Then I forgot to mention the minerals in the district. I am interested pretty considerably in the Pambula mines, and I think it will be a permanent field. Only yesterday I arranged for a steamer to call in from Melbourne, with a crushing plant for one of the mines.
1327. Are you aware that the population of the Pambula gold-fields has very much diminished of late? Yes, it has; but I think that is through want of proper appliances for treating the ore on the field.
1328. Those proper appliances you think are now being obtained? We have made a departure, and have a new invention in the plant which we are putting on the field now.
1329. And you think that when these appliances are in working order the population will increase again? Yes, I think so. There would be a large number of men there if they had machinery to get the gold out.
1330. You think there is a large future before the field? I think so.
1331. If your anticipations are borne out there will be a large population there? The population would increase.
1332. Do gold-fields, as a rule, contribute to the traffic of a railway? The people there travel backwards and forwards on it a good deal. They would give a passenger traffic.
1333. And merchandise would have to be carried to the mines? Yes, of course, they would require supplies.
1334. You think that not only is there a possibility of a large increase in the ordinary produce of the Bega portion of the district, but that at Pambula, in consequence of the minerals there, there would be a large population, and consequently a large passenger traffic? I think so, and not only from Pambula. The whole of the district at the back is mineral country, and no doubt there will be some valuable finds there later on. I refer to the country up towards the Whipstick.
1335. Pambula would be their point of connection with the line? Yes; but any mines that brought population to the district would support the line more or less.
1336. The township of Pambula would be the nearest point on the line to this country which is yet to be developed? Yes.
1337. Is there any other point you would like to speak upon? No, I think not; excepting the climate. I believe that Eden in the future will be one of the best watering places in Australia. It is a lovely climate. Captain Russell, the harbour-master, showed me the rating of his thermometer when I was there. It averages something about 75 degrees in the summer.

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1338. Does he not live in a peculiarly favoured position? It is a beautiful climate. I was there off and on for three months during last summer. It is a wonderful change from this climate.
1339. But how would that benefit the railway? People would travel there and make a watering place of it.
1340. People from Sydney would not use the railway except, perhaps, to go to Bega for a ball? I am speaking of the line from Bombala.
1341. You are reckoning on a line to the table-land to bring the frost-bitten inhabitants of Monaro to the salubrious climate of Eden? At the present time many go from there to the sea.
1342. *Mr. Neild.*] You mentioned the present rates of freight, and the prospective rates of freight if there should be an increase in the local trade. Do you know the rate of freight between Melbourne and Sydney at the present time? At present it is from 4s. to 4s. 6d. per ton.
1343. Is that a paying rate? No; it is not.
1344. Not even with quantity? There is no considerable quantity.
1345. But assuming quantity? Assuming quantity it would not pay.
1346. Therefore, the lowest rate that could be looked for in the case of Twofold Bay would be such as you mentioned—7s. or 8s.? Yes.
1347. That would be the minimum; Yes; I think so.
1348. With the growth of the place as a watering place, would the steamers be able to compete with the railway from the table-land? The steamers could carry for less than the railways, but passengers generally prefer to travel by land.
1349–50. From your knowledge of the district, do you think that the extension of the line to Bega would cause as much trade to centre at Twofold Bay as the construction of a line to the table-land would bring there? I think the line to the table-land would bring most.
1351. Then the line to the table-land would be a greater benefit to the community as a whole? It would in the first instance.
1352. If there were more trade upon it its earnings would be greater? Yes.
1353. You say that you have known the Bega district for some years. Do you anticipate that the construction of the proposed line would largely increase its agricultural and dairy output? Undoubtedly.

Roger Kirby, Esq., dairy farmer and grazier, near Candelo, sworn, and examined:—

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1354. *Chairman.*] What is your occupation or profession? I am a dairy farmer and a grazier.
1355. Residing in the Bega district? Yes.
1356. How long have you resided in the district? Thirty years.
1357. Whereabouts is your holding situated? Two and a half miles from Candelo.
1358. West or east of Candelo? South, on the road towards Wyndham.
1359. What is the area of your holding? One thousand and fifty-eight acres.
1360. Is it principally used for dairying? For dairying and fattening at present. Allow me to explain that it was rented for a number of years, and that I only returned to it to work it myself during the last two years. That would account for my not having any cultivation except a small paddock and garden.
1361. Are you now putting more of your land under cultivation? I have not completed other improvements yet. I intend to.
1362. Where do you send your produce to now? Sydney.
1363. From what port? Merimbula, mostly.
1364. Do you send some to Tathra? Very little.
1365. Merimbula is your nearest port? There is a very trifling difference. Two or 3 miles.
1366. What quantity of produce do you send to the Sydney market per annum? In weight? I suppose it would average about one ton a month.
1367. And about half a ton of return goods? I daresay quite that.
1368. Would you, if the railway were constructed, send and receive your produce and merchandise through Eden? Decidedly.
1369. Tapping the line at Wolumla? Yes.
1370. You have no doubt about that? No doubt in the world. The line when connected with Monaro ought to come within 1½ mile or 2 miles.
1371. Take the proposed line first. If it were constructed would the produce you send away and the goods you get in return, instead of going through Merimbula, go through Eden? Yes.
1372. They would contribute to the traffic on the railway between Eden and Wolumla? Yes.
1373. Suppose the contract for the line were already let, would your production be increased appreciably during the next year or so. According to your statement you would contribute about 18 tons per annum. I want to know whether, if the railway were now in course of construction, you would at once set about providing more freight for it? Yes. I have a very considerable quantity of land which is fit for agriculture, and that would, perhaps, pay me better than dairying. I am speaking of a portion of my land, not the whole of it.
1374. What portion of your land is fit for agriculture? It would not be fit for growing maize longer than two or three years at a time, but apart from that it would be fit for growing any kind of cereal.
1375. What proportion of your land is fit for agriculture as compared with that which is fit for dairying? Considerably more than one-half.
1376. Your land is exceptionally good then? Yes.
1377. If the people of the district say that the greater portion of the land there is better suited for dairying, do you agree with them on the whole? On the whole I consider that 10 per cent. of each holding would be fit for cultivation, and that cultivation would pay considerably better—100 per cent. better—than dairying. That is allowing for wages. Allow me to remark, before going further, that, taking the district as a whole, it is capable of increasing its dairying production to the extent of quite 25 per cent., and I will tell you why. A great portion of the country has only comparatively recently been occupied and has not been sufficiently cleared. With the exception of a few hills round Bega the whole district is capable of being improved by the expenditure of labour to the extent of 25 per cent. for dairying purposes. There is a great portion of it under tussocks, sedge grass, swamps, timber, and fallen logs, and that, if properly cleared and planted with artificial grass, would increase the dairy production fully one-fourth.

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1378. Why is it not cleared? The district is young, but it is being done. When you were at Candelo, if you had gone to the top of the hill, to Mr. Hefferman's farm, you would have seen there very good crops of corn and very good crops of lucerne just in sight of the town, on the high ground.
1379. You contend that there is a large area of land there the dairying capabilities of which can be more fully developed, and they would be developed more rapidly if the railway were constructed? Yes.
1380. You agree with the expression of opinion that, taking the district as a whole, 10 per cent. of the land is fit for agriculture? Other than maize-growing.
1381. But so far as your land is concerned one-half, or 50 per cent., is fit for agriculture? Yes.
1382. The rest of the land, I presume, is better fitted for dairying than for anything else? Yes.
1383. There will always be 80 or 90 per cent. of the land which it will be better to use for dairying than for anything else? I think so. If freezing works were established at Twofold Bay, I think a considerable amount of sheep fattening would be done there. It is good country for sheep fattening, but it is not good country to feed sheep on. It is flukey.
1384. You have told us that you would contribute 18 tons per annum to the railway traffic? That is as near as I can calculate.
1385. What do you think you would be able to send to the railway in three years, or take five years if you like? I am speaking of my own position—others would be in a better position. Most people would probably be able to increase their production materially in three years. In my position I should not, perhaps, be able to increase my production beyond 50 per cent. I expect to increase 50 per cent. in dairy produce, but in that time I should not be able to put much land under cultivation. Later on, perhaps, I might take in more than any of my neighbours.
1386. Do you think the rest of the district would develop faster than yourself, or not so fast? I think that on the whole they would develop faster, because they have been living on their land and are further ahead than I am. My property was handed back to me two years ago almost a wilderness, so that anything I might say as to what I myself could do would not fairly apply to the district.
1387. You think that within three years the district generally would produce 75 per cent. more than it is producing now? I think 75 per cent. is a good average.
1388. You are going to produce 50 per cent. more, so that I have only added on 25 per cent. for the rest of the district? Yes; but let me explain that the dairying capabilities of the district are not developed now to the extent of 50 per cent. I expect to increase my output to that extent in two years, but my improvements are not sufficient yet.
1389. You have told us that your production would increase 50 per cent. in three years, and that it will not compare with the increase of the district generally;—I ask you if the district generally could in three years produce 75 per cent. more than it is now producing? I told you that I should not be able to increase my agricultural productions in three years, though older farmers than myself probably would; but the dairying capabilities of my land would, in less time than you mentioned, be developed 50 per cent. After that I shall probably increase my output in tonnage more than 200 per cent. by going in for agriculture.
1390. In using Merimbula as a port have you, personally, been put to any inconvenience? Yes; to very serious loss.
1391. How have you suffered loss and inconvenience? Through the deterioration of my butter.
1392. How has that deterioration come about? We have to send our produce to the port by carriers.
1393. How far? Twenty-two miles, I think, and in summer it very often takes three days to go there. Others, 20 miles back, would have to put up with a couple of days longer. The butter leaves my place on a Saturday and does not get to Merimbula until Monday. It is then thrown on the wharf, and afterwards exposed to the sun on board the drogher. It is then put into the hold of a small steamer alongside the engines, where the temperature is probably frequently from 120 to 130 degrees. No butter in the world will stand that.
1394. That is where the loss comes in? While we are on this subject, let me explain, for fear it may leave my memory, that our principal market in summer is England; but, at present, by the time the butter reaches Sydney, a very great portion of it is often not fit to be sent to England, and the whole of it must, in my opinion, and I have had thirty years' experience, be deteriorated. We must lose from 1d. to 2d. a lb. upon the butter that does pass muster.
1395. Your produce on its way to Sydney is deteriorated by the delays in transit, and you are completely shut out from the home market because of that deterioration? I do not say that we are entirely excluded from the English market.
1396. You are handicapped? We are handicapped to a great extent.
1397. You told us that if the railway were constructed Wolumla would be your nearest point, and you would have to cart your produce 14 miles to get there? Certainly not.
1398. How far is Wolumla from Merimbula by road? The cross road to Wolumla, joining on to the Wyndham Road, and coming through my property, would be 7 miles in length.
1399. I understand that you are 7 miles from Wolumla; but you have not answered my question—how far is Wolumla from Merimbula? Thirteen or 14 miles. I am not positive as to the distance, although I have lived in the district so long.
1400. Do you think you would be able to bear the cost of railway freight to Eden, and then compete in the Sydney market with ordinary agricultural produce? Seeing that I can bear what I believe to be a much larger cost now, it would be reasonable to suppose that I could bear the railway freight and the cost of shipment from Eden.
1401. It has been estimated by the Commissioners that there would be a loss of £19,000 per annum if the line were constructed;—can you give the Committee any idea as to when it is reasonable to suppose that the loss would be overcome or converted into a profit—five years, seven years, ten years? If you allow me first to deal with what I consider will be the increase in the course of five years, and the still greater increase in ten years, I may say that I consider that you would have an increase of at least 25 per cent. within five years.
1402. That would not wipe off the £19,000? No; but I think I shall be able to convince the Committee that there will never be such a loss.
1403. But presuming that the estimate of the Commissioners is correct, how long do you think it will be before the production of the district will wipe off the loss? It will depend upon the time it would take to develop the resources of Southern Monaro, together with the increased resources of Bega.

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1404. What has Monaro to do with this line? A very great deal. Eden is the nearest port to Southern Monaro for heavy goods now. Southern Monaro is splendid agricultural country. I know of no country better suited for the growth of cereals, vegetables, and potatoes.
1405. How would 22 miles of railway from Eden to Wolumla help to develop Southern Monaro, which would be 80 or 100 miles away? It is not that distance.
1406. What do you call Southern Monaro? It is not 40 miles from Wolumla.
1407. What do you call Southern Monaro? Bombala.
1408. Is it 40 miles from Bombala to Wolumla? Forty-eight or 50 miles.
1409. How will the construction of 22 miles of railway from Eden to Wolumla develop the agricultural production of country 50 miles away? The railway would go through 25 miles of bad country where there is no feed for stock. That would make the cost of carriage very much cheaper than it is now, and cheap water-carriage from Twofold Bay would also be obtained.
1410. Do you think the people of Southern Monaro would be able to compete in agricultural produce with the beautiful Bega district? I do not see how Bega would affect them. They will not look to Bega for a market.
1411. But if they have to carry their produce 50 miles further than the Bega people have to carry theirs, will not the Bega people necessarily cut them out? There will be the world for a market. We shall not affect what they grow in Monaro. The outside world is as much open to the Monaro people as to the Bega people. The Monaro people are handicapped to a certain extent at present, but I am assuming that they will have railway connection.
1412. But I am not assuming that. Wolumla will be the nearest point to Southern Monaro? Even so, the railway would materially increase the traffic from Southern Monaro to Twofold Bay.
1413. You think it would? I am sure it would.
1414. In agricultural produce? In everything.
1415. You know the surveyed route of the line from Eden to Bega? Yes.
1416. Do you think it is the best that could be adopted? Yes. It would be possible, I think, to obtain a cheaper route, but that route would not be of much service to the people. It would not get the trade of the district.
1417. A cheaper line could be got further east? Yes.
1418. But it would be away from the present population? Yes. There is a high stretch of country there which is all useless.
1419. In view of a possible connection with Monaro, it would be inexpedient to take a line further east? Yes.
1420. You think that on the whole the suggested route is the best? Decidedly.
1421. Do you know of any place where the proposed line could be cheapened in any way? Except, perhaps, by the slight deviation mentioned by Mr. Neilley yesterday, near Twofold Bay.
1422. That would not make very much difference in the cost? Not very much difference.
1423. You were the suggestor of a proposed deviation from what is known as Postle's line, south of Candelo to Bega? No; I never had anything to do with the Bega line; but I think we could reverse positions as regards the line to Bombala.
1424. Postle's line runs from Wolumla to Bombala? Postle's line is my line—my papers being in Sydney before Postle went out. Mr. Postle's line is the same as mine, except for about 8 miles after it leaves the Bega line. It was I who found the low gap going into Monaro which all the lines that have succeeded in getting out to the table-land with a grade have gone through.
1425. There is a dotted line on the map branching off from the Eden to Bega, line 4 or 5 miles south of Bega, and going out to halfway between Wolumla and Candelo, where it joins what is known as Postle's line, and which you say is your line. Did you suggest the route indicated by the dotted line on the map? My line joins the Bega to Eden line between Bega and Wolumla, on the north side of Wolumla. I leave the line about three miles from Wolumla. I cross above the junction in order to avoid two bridges, and I follow leading country until I get to Myrtle Creek, where Mr. Postle joins me. He keeps round the Chalk Hills. I examined the country through which he goes, but I gave up that route because, although it was a mile or two shorter, the cost of the line would have been so expensive as to be prohibitory.
1426. You went over your route with Mr. Paul, did you not? Mr. Paul agreed to go out with me, and I went with him over that portion of my line which lies between the Bega line and Myrtle Creek, and I never saw any more of Mr. Paul after that. His instrument got out of order; and when we came to examine mine, it was out of order also.
1427. What was your aim in tapping the Bega line at the point where you have tapped it? You have to cross the waters of Wolumla Creek somewhere, and there is high country intervening. By following the Bega line down 3 miles I get rid of that high country and get on to a leading ridge, which I never leave until I get on to the side of a very high mountain, turning into the gap leading to the table-land.
1428. How long is it since you saw Mr. Paul? A considerable time. The gap he speaks of in his Bega evidence as requiring to be filled up is a gap between two hills, and would require to be filled up about 40 feet; but I was quite aware of its existence, and he need not have made it such an objection. I was also quite aware of the necessity for a tunnel. You will see it marked on the papers. By the way, have you got Mr. Cummins' report on these various routes. He was an engineer sent out by the Engineer-in-Chief to report upon Darragh's, Postle's so-called, and my line. You should have that report amongst the papers.
1429. You are not an engineer? Not a professional engineer, but it does not follow that I have not brains enough to be one, and it does not follow that I did not understand what I was doing. More than that, Mr. Postle is not an engineer, and neither is Mr. Darragh. Neither of them are professional men.
1430. Are you an engineer? No.
1431. So far as the line under consideration is concerned you think that the route adopted by the Department is a correct one, though it might be cheapened by a deviation near the Bay as suggested by Mr. Neilley. Now, if it is thought that the cost of the line would be too great to sanction just at present, do you think if it were taken to Wolumla and left there for a time it would benefit the Bega district generally? Very greatly, though a great portion of the trade from North Bega would still go to Tathra.
1432. We should not have the whole of the Bega trade which we would have if we went to Bega? Yes; but still the line would be a benefit to the district.

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1433. And it would get the Candelo traffic and the Colombo traffic? Yes, and a great portion of the traffic between Bega and Wolumla.
1434. Traffic from the east and north of Bega would still go to Tathra? The heavy traffic would, but I do not think that butter would, because if we had a railway we should have chilling cars, and the port of Eden would be so developed that there would be shipping competition there. I know from conversations which I have had with shipowners that chilling apparatus would be put into their steamers if the trade justified it, and thus our produce would be carried to Sydney in as good a condition as when it left home.
1435. You think that if it is not possible to construct a line all the way to Bega, a line to Wolumla would greatly benefit the district. Yes, it would very greatly benefit the district; I should like to make a further explanation.
1436. *Mr. Humphery.*] What explanation would you like to make? I want to show that there are very serious discrepancies in the revenue set down by the Railway Commissioners. I am in a position to inform you very credibly that I have very good reason to believe that the estimate of the cost of construction far exceeds the amount for which it will be found the work can be done when the tenders are submitted to public competition. I am in a position to say so, and I will give you figures to prove it.
1437. Will you state in what way the officers of the Department have over-estimated the cost of construction, and also in what respect the estimate of the probable earnings is incorrect? I think I have a better knowledge of the resources of the district than the Railway Commissioners have.
1438. Will you make your statement as brief as possible? The estimated cost put down by the Railway Commissioners is £564,000. Some time ago the estimate was over £600,000—£17,000 a mile, and I at that time, through the kindness of Sir Henry Parkes, was able to prove that the Department were wrong, and they admitted it themselves. The Commissioners put down £19,740 as the annual interest on the cost of the line. I am in a position to tell you, however, that when the tenders are submitted to public competition instead of £564,000 being the cost of the work it will probably cost, unless the people alter their minds very much, only £432,000.
1439. How are you in a position to say that without having seen any specifications? I was in a position to put in a tender with a guarantee of £10,000 cash, before I could convince the Department that they were wrong in their estimate. That tender was for something over £13,000 a mile, and there were special reasons for supposing that the persons tendering would make the most they could out of it. In other words their engineer made out an estimate for them which was larger than an estimate made by a friend of mine and myself. There is every reasonable probability of the line being contracted for at £12,000 a mile, which would reduce the capital cost to £432,000 and the annual interest to £14,320, making a difference in the annual interest of £5,420. That is one item. The Commissioners also charge £1,475 for an item which the Department puts down, and has persisted in a second time, at £1,162, the difference being £998 per annum.
1440. The difference between £1,475, and £1,162 is not £998? I am talking about the locomotive expenses. £14,320 will be the interest on what I say the work will cost, and £19,000 will be the interest on the Commissioners' estimate. I am in a position to say that in all reasonable probability the work will be done for the figures I give you.
1441. The next item, "Locomotive expenses," amounts to £2,166? I have not got that item. One estimate was made out at £2,166, and another at £1,162, so that there would be a difference of £1,004.
1442. Are you in a better position to estimate the locomotive expenses than the Commissioners are? I am taking the Departmental estimate. That is not my estimate.
1443. The estimate of the locomotive expenses put before us is £2,166—do you question it? Yes, I do; for the simple reason that the Department puts it down at £1,162.
1444. Where? You will find on reference to page 38 of the Parliamentary papers, that the locomotive expenses are put down at £1,475.
1445. If you look at page 38 you will see that the locomotive expenses are stated at £2,166, which is the estimate put before us by the Commissioners? Well, on page 36 Mr. Midelton puts them down at £1,162 per annum. He was asked by the Commissioners to make a second estimate, and after obtaining the services of one of the officers of his Department to assist him, he said that he could not make it any more. Therefore, I hold that I am right in saying that there would be a difference of £1,004. As to the Commissioners' estimate of revenue, I do not know how they got it, or what particular qualifications they have for making such an estimate.
1446. Mr. Midelton says, should there be one train per day each way, the cost of firing would be £1,162. That report is dated the 19th March, 1889, and following upon it the locomotive expenses are stated at £2,166? But we should not want more than one train per day for a long time.
1447. Do you not think it is better in estimating the probable annual cost of the railway to take the Commissioners' estimate rather than to accept figures that are not proved? I certainly dispute their estimate of revenue.
1448. What is your objection to the estimate of revenue? Because they were not qualified to make one. They did not possess the necessary local knowledge.
1449. Do you know Mr. Crawford? Not personally.
1450. Do you know that he has made a special report on the probable traffic? I find that he has estimated it at £14,795.
1451. Do you object to that estimate? I think it is under the mark, but it is very nearly a fair estimate.
1452. In what respect do you think the Railway Commissioners have under-estimated the traffic? I am not attributing any motives to them, I simply object to their want of local knowledge.
1453. In what respect do you think they are in error? Their estimate is £11,443. This is a subject to which I have given great attention in years part, and therefore I think my estimate is entitled to fair consideration. I say that Mr. Crawford's estimate is very nearly right, though perhaps a little under the mark. I should be willing to accept his figures as very nearly fair.
1454. Do you know that Mr. Crawford, when under examination, reduced his estimate by 25 per cent.? I see that he allows for an increase of 25 per cent.
1455. Do you think that the Commissioners' estimate of the passenger traffic, £3,937, is less than the earnings of the railway will probably be? Yes. I think the earnings from passenger traffic would be very much increased, for reasons that I will give you presently. If you will allow me to finish my statement, I will give you two reasons why the passenger traffic and heavy goods traffic would be very much increased. I find that there is another difference of £3,352 in the annual expenditure.

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1456. Where? The difference between their estimate of revenue and Mr. Crawford's.
1457. But you said a difference in the annual expenditure? That would go against the annual expenditure.
1458. You had better confine yourself to either the revenue or the expenditure. You cannot, by showing a discrepancy in the revenue, increase the expenditure? The Commissioners' estimate of revenue is £11,443. If you will allow me, I will commence again. The difference in the annual interest which is put down in the loss of running the railway is £5.420.
1459. What is the next item? The next item is £1,004. And the difference between the Commissioners' estimate and Mr. Crawford's estimate, is £3,352. There is another item which, although I have put it down I am not very positive about, because I do not know enough to say whether I am right or wrong, but it appears to me that depreciation of rolling stock should be charged against the general revenue of the Colony. Why should we pay our share of the depreciation on all the other railways and the depreciation on our own railways out of our own pockets. The amount put down by the Commissioners for the depreciation of rolling stock is £1,785. That reduces the total loss per annum on the working of the line by £11,555—that is a very big amount.
1460. Are you not aware that the item "depreciation of rolling stock," appears in the Commissioners' estimate because this is an isolated line, and their principle is to charge the depreciation of rolling stock on a branch line to the main line only, when the branch line is connected with the main line? Well, without that amount I could reduce the expenditure by £10.000 a year.
1461. Briefly, you say that the cost of construction is very much over estimated, and that the probable revenue is under-estimated? Yes.
1462. *Mr. Davies.*] Can you tell the Committee what is the gross amount paid for the carriage of the production of the district by the various steam companies? I forgot what it is. I did not take very much notice of that.
1463. But I think it is a very important consideration? It is not what we have produced, but what we will produce.
1464. I want to know if you can tell me what amount is paid for freight from the whole district? I could not say from memory.
1465. Is there anyone who could give us that information? Of course the shipowners could. One of them has, I believe, given the information on the subject, but how far he is right I am sure I do not know. He stated, however, that the rate of freight was 15s. a ton, and I know that I pay £3 a ton for my butter.
1466. I do not want to know the freight for butter. I want to know the total freight paid by the district. If I knew that I could tell what the earnings of the railway would be likely to be? I went into that matter some two or three years ago, but I cannot say from memory what amount of freight would be paid.
1467. Do you wish the Committee to understand that if all you produce were sent over this 36 miles of railway, which will cost annually £30.000, it would pay that cost? At present?
1468. Yes? No; but I contend that there would be no such loss upon the railway as has been estimated, nor anything like it.
1469. I am only asking you if it is possible that the whole production of the district would pay that at the present time? No, it would not.
1470. Do you expect that the production of the district will increase so that it will, in the future, pay the interest on the cost of construction and the working expenses of the railway? In the first place, I expect that there will be a very great increase in the railway traffic from the establishment of freezing works at Twofold Bay. That project is no chimera, because the capital has already been subscribed; and I believe that a sufficient number of shares has been taken to enable the company to be registered. Those works would bring traffic from south of Goulburn to Twofold Bay. Then the railway would cause a great deal of heavy freight to be grown in the district. I also believe that the Pambula Gold-field will eventually prove itself to be the richest in the Southern Hemisphere, and if you will allow me I will show you that I have good reasons for what I am saying. I am a shareholder in one of those mines to my cost, and the ores that we get only give a few pennyweights to the ton when tried by our present machinery, but I had them tested at Sydney, and with only one or two exceptions in thirteen or fourteen assays we have got from 7 oz. to 29 oz.
1471. *Chairman.*] I think you are going a good deal too much into detail. You might simply state that you have reason to believe that the production of gold will be largely increased. This is merely making the Committee a vehicle to bring forward certain companies? I beg your pardon, but I had no such intention. I was simply going to show that that ore would be carried by rail to Twofold Bay.
1472. *Mr. Davies.*] I want to know where the increase will come from? I am telling you.
1473. That is all in the dim future? It is more than probable that we shall have freezing works at Twofold Bay, because the money has already been subscribed.
1474. You have told us that if you had a railway the butter would be conveyed in freezing cars? Yes.
1475. What would be the necessity for carrying butter 36 miles in freezing cars? Chilling cars.
1476. It would be about an hour's journey? The heat destroys the butter.
1477. But would it be necessary to have chilling cars to keep the butter on an hour's journey? Perhaps so; but at any rate we should have chilling rooms on the steamers.
1478. *Mr. Neild.*] Does the route marked on the plan as Mr. Kirby's suggested route represent your route? No.
1479. Does your route run as far north as that before connecting with the Bega line? My route turns off the Bega line 3 miles north of Wolumla, and goes round by the Cut Hill, about 2 miles from Candelo.
1480. Your route is not correctly shown on the map? Not so far as I can understand the map.
1481. It connects with the Bega line about 3 miles to the north of Wolumla? Yes.
1482. And not anywhere as represented on the map? Certainly not.
1483. Do I understand from you that the ores from the mines you have mentioned would be treated at Eden if there were a railway there? I think that most of the ore I speak of would be reduced as much as possible on the ground, and then sent by rail to Eden, and shipped from there to Germany for treatment; that is, unless we get machinery that will treat it here.
1484. Then there will be something more than the carriage of gold in small quantities on the railway. There would be the carriage of ore in reduced bulk? Yes, and an increase in the mining population.
1485. Giving a certain earning to the railway? A very great earning.

1486.

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1486. Whereabouts are these mines situated? The Pambula Gold-field is situated 1½ or 2 miles off the proposed line.
1487. Is it in the vicinity of Pambula? Yes.
1488. The carriage of ore would be from Pambula to Eden, not from further along the line? Yes.
1489. You have had a good deal of knowledge of mining? I have been dabbling in it more or less ever since I was 14 years old.
1490. Do you anticipate that the country to the west of Wolumla will produce minerals? I anticipate that the country round about Wyndham will prove itself to be a very rich mineral district, and will produce silver and gold.
1491. Would that district be sufficiently near the line to give traffic to the proposed railway? The railway would afford the easiest means of getting to market. It would save them 12 miles of cartage.
1492. Is the country between Wyndham and the proposed line difficult? There is a good dray road.
1493. Mr. Postle, whose line is shown on the map, is the District Road Superintendent, is he not? Yes.
1494. He should have some knowledge of the country? He ought to have a very good knowledge of the country.
1495. Is he a licensed surveyor? I have been informed that he is not; but I think he is a very competent man.
1496. Another route has been suggested by Mr. Darragh? Yes.
1497. Is he a professional man or a settler? No; he was for a long time in the Lands Department in Sydney. He is a very competent surveyor; though, owing, I believe, to some dispute with the examiners in the Department, he never went up for examination. He is really a clever surveyor, though he has not got a license.
1498. You are still of opinion that there would be no great engineering difficulties to encounter between Wolumla and Bombala? Certainly not. I am astonished that Mr. Cummins' report is not before you. He is the engineer who got over the difficulty on the Wollongong line, and the difficulty on the Hawkesbury line. He is the best field man in the Department. He was sent to report on Postle's, Darragh's, and my line. I claimed a grade of 1 in 52, and he gave me a grade of 1 in 60. He reported upon the cost of Mr. Postle's line to where it joins my line as prohibitory, and he said that it was impossible to get a grade of more than 1 in 40 on Mr. Darragh's line without very great expense.
1499. Do you know anything of the district between Eden and Bombala, *via* Bondi? Not enough to institute a comparison with any other district. I do not think that a man is justified in doing that unless he has minutely examined the country.
1500. Would it be sufficient to take the railway as far as Bega, or would it be desirable to take it further;—is there any good country that an extension would serve? There is a lot of good country beyond Bega. For 10 miles north it is as good as any part of the Bega district, and then for another 14 miles you pass through fairly good country right up to Cobargo.
1501. How would you get most traffic—on the line from Eden to Bega, or a line from Eden to Bombala? Are you now asking me to define the difference between the two districts, and exclude the country which will use the Wolumla station?
1502. No; I wish you to compare the traffic from Wolumla north with the traffic from Wolumla west—which would be the largest? At present the Bega traffic would be the largest; but if the Bombala country was properly treated—used for the purpose for which it is best suited, agriculture—it would certainly yield a greater traffic to the railway than the Bega country would yield.
1503. Did you hear the evidence given by Mr. Willis with regard to the steamer freight? No; I was not in the room.
1504. What freight do you pay from Merimbula to Sydney? I pay at the rate of £3 a ton—3s. per 100 lb. on butter. That would not be charging for the kegs that it is in—only the butter.
1505. The freight is charged upon the weight of butter and not upon the weight of butter plus the weight of keg? That is what it costs us for the weight of butter.
1506. Do you know the freight for butter from Twofold Bay;—is it the same? I cannot answer that question of my own knowledge; but I have been informed that it is very much less.
1507 The rate of freight from Twofold Bay to Sydney would be less than from Merimbula to Sydney. Recognising that, you could afford to pay railway carriage from Wolumla to Twofold Bay without being put to a heavier expense than if you shipped from Merimbula? There would be a saving.
1508. And you would have sufficient accommodation for your goods and more regular transit? Yes; and the butter would not have to bear so much heat. That would be the greatest gain.
1509. Do you know the rate at which goods trains travel in New South Wales? I could not say from memory.
1510. About 12 miles an hour, is it not? I daresay that would be about it.
1511. Then it would take about two hours to go from Wolumla to Eden? Yes.

James Inglis, Esq., M.P., sworn, and examined:—

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1512. *Chairman.*] You represent the electorate of New England in the Legislative Assembly? Yes
1513. Do you know the country through which it is proposed to carry this railway? Yes; I have been over it a good many times.
1514. You know the project before the Committee? I have only a general knowledge of the proposal, I might say at once that I have not gone minutely into this matter. I only know generally what the claims of the district to a railway are. I would speak more as a citizen and as a traveller.
1515. You know the district thoroughly? I have been all over it. It is a beautiful district, very rich, and well settled.
1516. A district chiefly devoted to dairying? Yes. There is also a large amount of mining carried on there, and there is a good deal of timber getting, and a large amount of stock raising. My idea of the importance of the district has been formed chiefly from the large amount of business which it does with the metropolis, and I consider the line as a political necessity in order to have other outlets, besides Sydney and Newcastle, for our trade on the coast, and thus to prevent centralisation. I think that having in view the general development of the country, the more busy ports we have, such as there are in New Zealand, the better it will be.

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1517. As long as they are not obtained at too great a cost? Precisely.
1518. How long is it since you last visited the district? I have for a number of years visited the district two or three times annually, driving through it in my own buggy. I was there a few months ago with my wife and spent four or five weeks in it. I know every town there.
1519. Have you visited the various ports of the district? Yes; I know them all.
1520. And Eden? I know Eden thoroughly, because I have often called in there when going to Tasmania. My idea is that the Eden and Bega railway should be clearly understood as forming part of the Monaro railway. I think that as a matter of fact the Monaro railway will eventually be carried through to Bombala and very likely to Melbourne, and if you opened up the port of Twofold Bay I think you would get an enormous amount of traffic from Gippsland. An immense amount of timber and minerals would come from Bendock and all round that way—from Bombala, and Delegate, and the southern part of Monaro.
1521. Have you any idea as to where the connection should be between Eden and the Monaro table-land? I think the idea is to join the Monaro high lands at Bombala and to come down through Wolumla. That seems to me the most feasible plan.
1522. Would you advocate the construction of the proposed line before the Department has decided where the connection with the table-land should take place, or would you defer its consideration until then? No. I think the district is of such importance that if you were to do as it is proposed to do in other places—impose special rates, get the land for nothing, and introduce the betterment principle—the railway would pay.
1523. So far as the connection with the table-land is concerned it has not been settled where it should be, but a number of surveys come somewhere near where you have suggested, and one survey is for a line from Eden *via* Bondi? I have, of course, heard all the local talk about the various routes, and I think the concensus of opinion is that the best route in the interests of the country would be a line coming from somewhere about Wolumla. I believe there is another proposal to bring the line from Nimitybelle down Mount Brown and through Colombo, but the grades would be very steep. I do not think that would be a good proposal.
1524. You think that this proposed line should be taken in conjunction with a possible connection with the table-land? I think a connection with the table-land should be steadily kept in view. At the same time if there was any reasonable prospect of the line paying, it would be an immense convenience to the district. It would enhance the value of the holdings there very much, and I believe that with proper arrangements a special rate might be charged so as to meet any anticipated loss. A railway would give a very great impetus to the further industrial development of the country. More land would be brought under cultivation, and there would consequently be more production, and I believe that a very large export trade might be done with the outside world from the magnificent harbour of Eden.
1525. Do you know of your own knowledge whether the present ports—Tathra and Merimbula—are defective? We do not send much to Tathra. We send to Merimbula, and we send a good deal to Bodalla, and round about there. A large quantity of goods is sent to Eden for Pambula, Bega, and all the other districts round there.
1526. Do you know whether the people in Sydney who deal with these places suffer inconvenience through Tathra and Merimbula being defective ports? I could not altogether say that. The general feeling in the district seems to be that a railway would give an immense impetus to further industrial development.
1527. A railway to Eden? Yes.
1528. If we are informed that only 10 per cent. of the land in the district is suitable for agriculture, and that the remaining 90 per cent. is now being used for dairying, which it is best fitted for, there cannot be much increase in agricultural produce from the district? I have in my mind's eye the tremendous development that has taken place round about Kangaroo Valley, Wollongong, Kiama, and those places because of the railway. I believe that if these people had a quick outlet to the markets of the world their land would be cultivated right up to the top of the hills. All the brush would be cut away, and clover and other good grasses would be put down, as has been done round about Milton.
1529. You think the land now used for dairying is capable of cultivation? I think the cultivation might be largely extended.
1530. You recognise that this will be an isolated line? Yes; that would be an objection to it, but at the same time it should, in my opinion, form part of a regular plan to extend the great southern main line to Monaro.
1531. If a connection to the table-land is not yet decided upon, and not likely to be put forward for some time, do you think that in order to give this district railway communication to a good harbour it would be desirable to construct a cheaper description of railway than we have hitherto been in the habit of constructing? I think, undoubtedly, that that might be done. I am perfectly well acquainted with that method of opening up the country, because it has been the plan adopted in India. There the great main strategic lines were put down first at a heavy cost, and we could not get any inlet into the tea and indigo districts until they were completed. Afterwards the Oudh and Rohilcund, the Eastern Bengal Railway and other lines were made at a much less cost. Trains could only go 10 or 15 miles an hour on them at first, and the permanent way was of a very light character, but they met the exigencies of the situation.
1532. Was the gauge the same as on the main lines? Yes.
1533. But the work was of a less expensive character? Yes. There was no fencing and no great expenditure on railway stations.
1534. Do you think that if it is likely that the Monaro connection will be postponed for a number of years a light railway might be constructed to accommodate the Bega district? Yes. If the expense of the ordinary permanent way were altogether out of proportion to the requirements of the district I should say that a light line would do all that was necessary.
1535. Five hundred and sixty-four thousand pounds is rather a large sum for a short line like this? That is purely a matter for experts. You might pay too much for your whistle.
1536. Suppose the estimate of the Commissioners is correct, is not that rather a heavy expenditure to put upon the general taxpayers? I think it would be scarcely fair to make the general body of taxpayers provide for the loss that would occur in any particular district. That is why I advocate special rates for special district.

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1537. And the application of the betterment principle? Yes.
1538. And you think that with that principle, combined with a cheaper mode of construction, a railway might be given to this district? If the calculations bear out my opinion. It is purely a question of cost.
1539. *Mr. McCourt.*] What is the grade on the Indian lines? It varies very much. The line up to Darjeeling is one of the steepest in the world—they have a centre-grip there. But the grade on the Oudh and Rohilcund line is very much easier.
1540. Easier than 1 in 50? Not so steep as that.
1541. What is the steepest grade that they have on those light lines? For the greater part they run over almost level country. On the Eastern Bengal line, going up the valley of the Brahmapootra, they have severe pinches sometimes, but I do not suppose the grade in any case would be steeper than 1 in 50.
1542. You are aware that this is very heavy country? Yes.
1543. In reference to a cheaper line, Mr. Deane when asked, "Do you think the proposed estimate of £14,000 a mile might be reduced while giving a grade of 1 in 50," replied, "I am afraid not?" I would not presume to put my opinion against that of Mr Deane, who is a thoroughly reliable officer. My opinion is merely that of a traveller, and is formed from a political point of view.
1544. Have you any idea of the cost of the Indian lines per mile? The information would be of very little value even if I had it, because labour is so cheap there. Those lines cost very little indeed. Deputations used to be sent from the indigo and tea districts, asking for railway communication, but until the Indian Government had connected the whole of their strategic railways they would not put down lines to develop the country.
1545. Suppose Mr. Deane is correct in saying that a cheap line could not be constructed on the present gauge, would you advocate a break of gauge? That is a matter for experts to consider. I do not think it would be a good thing.
1546. If a narrow gauge line would do all the work of the district as well as a broad gauge line, do you not think it would not meet all the requirements for many years? No doubt, if you are going to keep this line isolated, and have a separate rolling-stock.
1547. You think that if a narrow gauge line would give people communication with the sea-port such a line might be constructed? I think so.
1548. *Mr. Ewing.*] You spoke of special rates. Do you recognise the presence of ports such as Tathra and Merimbula, although they are not very good, as a bar to very high freights being charged. If very high freights were charged people would be forced to use these ports again? That, of course, would have to be part of your calculation. But there is another matter to be considered. I believe the expenditure on roads would be very much less if the railway were constructed.
1549. *Mr. O'Sullivan.*] In view of the adoption of the Bondi route as a connection with the table-land, and the probable isolation of the proposed line, would you recommend the construction of a light line as far as Wolumla, until the trade justified its extension? Certainly, that would be better than nothing.
1550. Would the benefit of that line be so great as to justify an expenditure upon it at once? Such a line would undoubtedly benefit the district very much. When you have a railway you are quite independent of the weather, and of almost all climatic conditions. It does not matter whether the roads are good, bad, or indifferent, you can carry your produce all the year round. At present, however, after bad weather, the farmers are at an immense disadvantage, and their stuff has to go bad because they cannot get it away. With a railway, however, they could send it away every day.
1551. The indirect advantages of this line to the people of the district, and to the Colony generally, would be so great as to justify the proposed expenditure? They would justify a very large expenditure.
1552. I am presuming that the light line would be constructed as far as Wolumla? That, I think, would be a very great advantage to the district.
1553. *Mr. Hoskins.*] What is the density of the population in the districts in India which you said were served by light railways? The Oudh and Rohilcund railway goes through very sparsely-peopled country part of the way, but it touches such enormous towns as Lucknow and Cawnpore. For miles at a time it goes through very sparsely-peopled districts, but at the same time it links together very populous towns. So with the Eastern Bengal railway. Sometimes it will skirt a river for several miles where there is very little population, and will then touch upon a very densely populated place. There is an enormous quantity of rice and other produce grown there.
1554. The density of the population in British India is 500 to the square mile? That is in the valley of the Ganges, but in some parts it is very sparsely populated.
1555. If these light railways connect populous towns they serve a dense population? Undoubtedly.
1556. Is the population of the Bega district fifty to the square mile? I do not think there is any comparison, of course. My illustration was merely to show that the policy of constructing light lines has been pursued in such a place as India, where they have such large facilities for traffic.
1557. *Mr. Davies.*] At present there are ten non-paying railways in the Colony having a total length of 765½ miles, of which the capital cost was £9,518,230. The annual working expenses on those lines are £319,059; the interest amounts to £352,475. The credited earnings upon them amount to £360,104, leaving an annual loss of £311,430. Do you think it is wise, in view of those facts, to sanction the construction of non-paying lines, such as this would be, according to the estimate of the Commissioners, and of those who have been able to give an opinion upon satisfactory data? If I might be permitted the Scotchman's privilege of answering one question by asking another, I would say: "How much of the estimated cost of the line goes to pay for land?"
1558. The land through which this railway will pass is principally in the hands of private holders, and the estimated cost does not include the cost of land resumption? I should not like to set up any dictum of mine against the opinions of qualified experts; but the estimate seems to me enormously high. I fancy a light line, such as Mr. McCourt referred to, might be made for very much less; but my evidence is not that of an expert, but merely that of a fairly intelligent and observant traveller. I believe a railway would be an immense advantage to the district.
1559. Do you think the Engineer-in-Chief and his officers would be out in their calculations in putting down the cost of earthworks at something like £200,000? I think, unfortunately, that such estimates have generally been under the mark.
1560. Do you think £100,000 for bridges and culverts an expensive estimate? I do not think such an expenditure would be justified at present; but I believe that a light line might meet the requirements of the district at a much less expense.

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1561. Is it country in which you could construct a light line? I think so. Light lines have been laid down in New Zealand, and in many other places, and I do not see why they should not be laid down here.
1562. A light line would have to be a cheap line? Light lines have been laid down in New Zealand in very rough country for £4,000 or £5,000 a mile. The railway through the Taieri Plains did not, I understand, cost more than that.
1563. Do you know what it cost per mile for sleepers, taking the timber in the district? I have no idea.
1564. Would you be surprised to learn that the Department estimates the cost at £500 a mile? There is plenty of good timber there, and I think they ought to get it for less than that.
1565. Have you any idea of the cost of rails per mile? No.

TUESDAY, 27 SEPTEMBER, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM MCCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee further considered the proposed Railway from Eden to Bega.

William James Featherstone, Esq., Captain of the Union Company's Steamship "Oonah," sworn, and examined:—

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1566. *Chairman.*] You are in command of the Union Company's Steamship "Oonah"? Yes.
1567. You are engaged in running between the ports of Sydney and Hobart, and have been so engaged for some years? Yes, for a number of years.
1568. You have frequently called at the port of Eden? Very frequently.
1569. How long have you been in the trade? I have been constantly in the trade now for three years I have been in it altogether for a matter of ten years off and on.
1570. Have your calls at the port of Eden been more frequent lately than they were three years ago? Yes.
1571. You did not call there frequently three years ago, but now you are calling there regularly? It is very seldom that we miss calling there now.
1572. Either up or down? Either up or down.
1573. What conclusions have you arrived at as to the safety of Twofold Bay? It is one of the safest ports in the Australian Colonies.
1574. Has there ever been a time when you were unable to go in there on account of the bad weather? Never; neither by day nor night.
1575. Would an easterly or north-easterly gale make it uncomfortable to ride there, or to lie alongside the wharf? It is not always possible to lie alongside the wharf when there is a heavy sea running in.
1576. Has there been any time during the last twelve months when you have gone into the Bay and could not lie alongside the wharf? I think that about four or five times during the last three years I have been unable to lie alongside the wharf.
1577. Because you were afraid of damaging the ship, or because you were afraid of damaging the wharf? Because I was afraid of damaging the ship.
1578. Have you plenty of water alongside the jetty? Yes, plenty.
1579. What does your ship draw? On an average 17 ft. 6 in.
1580. Have you to keep to the outer end of the jetty, or can you go far in? We have to keep to the outer end.
1581. What do you do when you cannot lie alongside the wharf? Just lie off.
1582. Have you had to leave the port on those occasions without taking in or landing cargo? We are never in a hurry as a rule. We can always miss a day down there. It is very seldom that we have been kept more than a day there.
1583. You have never had to leave the port without landing or shipping your cargo? Not of late years.
1584. Do you think Snug Cove is the best place in the Bay in all weathers? Undoubtedly.
1585. You think that Boyd made a mistake when he located his settlement on the other side of the Bay? I do not think so; I am certain of it.
1586. During south-easterly weather do not vessels go over there for shelter rather than remain on the northern side of the Bay? Yes; but unless you go very close in you still get the roll of the sea. They invariably go over there until they learn better.
1587. You think that there can be no doubt that Snug Cove is the best place for a port in Twofold Bay? Without doubt.
1588. Do you think there is sufficient room in Snug Cove, and just about there, for any very large number of vessels? It is according to what size they are.
1589. Vessels like yours for instance. How many of such vessels could be accommodated in and about Snug Cove during an easterly gale? At the present time half-a-dozen.
1590. They could lie there without any fear of their fouling each other? Yes.
1591. Unless a sudden chop of wind took place there would be no fear of their fouling? Without doubt.
1592. Suppose vessels of very large tonnage, such as the Orient boats, were calling in there frequently, would not that reduce the capacity of the port for other vessels very materially? Decidedly.
1593. The present jetty, I suppose, would not be convenient or suitable for vessels of that tonnage? Not without extension.
1594. Do you know if the water has shoaled at all alongside the jetty? Very little.
1595. There has been an extension of the jetty from its original length? Yes; but then formerly vessels of no size at all went alongside it.

1596.

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1596. It has been lengthened because of larger vessels going there? Just so.
1597. You have never shipped cattle yourself from Cattle Bay? Yes; we take them in mostly every trip.
1598. Has there ever been a time when you could not take in cattle? Oh, yes; if there were a heavy range on.
1599. Do you know of any vessels ever having come to grief in or about Twofold Bay? No; except through getting too close in shore when sailing in, and so feeling the bottom.
1600. What time do you think is lost from your direct course between Tasmania and Sydney by going into and out of Twofold Bay, not counting the time of your taking in cargo? Just coming into the wharf and making straight out again takes an hour and a half, besides what time we are detained there. It is very seldom that there is more than three hours loss of time, including one and a half hours at the wharf.
1601. Has the ordinary trade from Eden increased? More went away from there formerly than has been sent away lately.
1602. How do you account for that? I cannot tell you.
1603. Do your steamers or do the Illawarra Company's steamers take most produce from there? I think the Illawarra Company's boats take more produce than we do.
1604. From Eden? Yes; from Eden.
1605. Then why are you calling in more regularly now than you used to do? I do not know exactly, but I fancy that the company have a mail subsidy for running there.
1606. Is it a fact that your boats have sometimes gone past Twofold Bay, because of the state of the weather? Not of late years.
1607. You have not done so? I have not, neither by day nor night, though it is very rarely that we get there at night time.
1608. You go there in the day time, so that you can work while it is light? In former days, when the company was pushing more, the captains used to take a fit into their heads, and when it was thick they would not go in there. I know that many of the captains of the Melbourne boats will not look at Twofold Bay now in a south-east gale; but it is a very rare occurrence for the sea to come in there.
1609. Twofold Bay is considered a safe port by the insurance authorities? Yes, a very safe port.
1610. They are glad to have it as a shelter for their vessels sometimes? Yes.
1611. Do you think that Snug Cove could be improved by a breakwater, or anything of that kind? Yes, greatly improved.
1612-3. You think that if a breakwater were run out from the point near the light-house it would make Snug Cove smoother and more comfortable for vessels? Yes; and you could lie there in almost any weather.
1614. *Mr. Ewing.*] What is the tonnage of the "Oonah? One thousand seven hundred tons.
1615. What depth of water is there alongside the jetty? Twenty-one feet at low spring tide.
1616. There is plenty of water then for any rise or fall? Yes.
1617. When there is a range on, you have always 4 feet under her? Yes.
1618. Is Cattle Bay a fairly good place for shipping? Yes, a very good place.
1619. Not so good as Snug Cove? Not so good as Snug Cove.
1620. If there were an extension of the wharfage accommodation, do you think the shipping could be put there with advantage? By all means; if you could ship cattle from the wharf it would be far better.
1621. You said something about south-easterly gales blowing in. Could you get into Twofold Bay at any time that you could get into Sydney harbour, with the same kind of sea running at each place? You would not get the sea at Twofold Bay that you would get at Sydney heads.
1622. Could you go into Twofold Bay when the sea there was as bad as it is off Port Jackson? Yes, and worse.
1623. It is quite as approachable a port in heavy weather? Every bit so.
1624. Do you know the other ports—Tathra and Merimbula? Merely by sight.
1625. What do you think of them? They are in unsafe places.
1626. You would not like to take the "Oonah" in there? No; I do not think she would come out again.
1627. What sort of holding-ground is there in the bay? Good.
1628. *Mr. O'Sullivan.*] You load your cattle by swimming them out?, Yes.
1629. You can load at Twofold Bay in any fair weather? In any fair weather at all we can load.
1630. You say that during the three years since you have been captain of the "Oonah", you have only been prevented four times from calling there? Yes; but in the intermediate times, when I was away, there might have been a sea setting in there.
1631. Do the Launceston steamers call there? Yes, from Launceston.
1632. Do they take cattle? No, they only take cattle to Hobart.
1633. Is your vessel the only one which ships cattle? No, the "Flora" also takes cattle.
1634. There is a regular trade in cattle between Twofold Bay and Hobart, and that trade has existed for the last thirty years? Yes.
1635. In your opinion, would it require the construction of a breakwater to make the harbour perfectly safe? Yes.
1636. Would it be a very costly construction? Not at all.
1637. Where should we commence—at Signal Hill? Just this side of the light-house.
1638. A short breakwater would give you an absolutely safe harbour? For all vessels of any size.
1639. *Mr. Davies.*] Can you give the Committee any information as to the quantity and value of the produce carried by your company from and to the district of Bega? I cannot tell you exactly what the other boats carry; but as a rule we do not carry much. We are something like the express boat of the Company.
1640. You simply take cattle? Yes. We also carry a little cargo up and down, but not a great deal. I have had 20, 30, 40, and as high as 70 tons from Eden to Sydney, but it is a very rare occurrence to get so much.
1641. You do not bring much as a rule? No.
1642. What number of cattle do you take away annually? Well, it varies from forty to eighty.
1643. Each trip? Yes.
1644. All fat cattle? Yes.
1645. *Dr. Garran.*] Is there any preference shown to the north side or to the south side as giving most protection to ships? Yes, the north side is the best.

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1646. Far the best? Yes.
1647. How does this port compare with Jervis Bay as a sheltering place for ships? Well. it is not quite so sheltered as Jervis Bay.
1648. The main body of the water, according to the map, is not sheltered from an easterly gale at all? No; but it is very rarely that an easterly gale blows home there. I have shipped cattle there when it was a misty dirty day inside, and was blowing a south-east gale 4 miles out to sea. You may get the range, but you do not get the sea.
1649. It is sheltered against a south-east gale? No; a south-east gale blows right in, but it is very seldom that a gale gets home there.
1650. If the vessels of the Orient Company called there for produce, they would be unable to lie alongside the wharf even if it were lengthened? Yes, it would need a breakwater before it would be a perfectly safe harbour for large vessels.
1651. How much would the breakwater cost? That I cannot say. I do not think it would cost a great deal. I do not suppose you would require it to go more than 1,000 feet out.
1652. Would £150,000 do the work? Yes, you could do it for less than that.
1653. You would have to carry out a mole for some distance? Yes.
1654. Before we can make Twofold Bay a port for ocean steamers we must make a breakwater there? Yes, and then it would be a good port. You would not require such breakwaters as they have at Timaru or Oamaru, where large blocks of concrete are used. The hill at Twofold Bay should afford all the material.
1655. *Mr. Dawson.*] Do you think that if the railway were constructed any fat cattle would be sent along it to the ships? Yes.
1656. You remember it is only 36 miles? You mean would the cattle come down by train to the wharf?
1657. Yes? Yes; we could then unload them without any trouble.
1658. You misunderstood me, Captain; I want to know if you think that the graziers living near Wolumla and Bega, 36 miles away from Twofold Bay, would go to the trouble of putting their cattle into the trucks, and sending them by rail instead of driving them:—do you think that cattle would bring any more railway traffic? I do not think you would get much in the cattle line, as the owners would sooner drive them. It is better to drive them down a couple of days before hand than to ship them direct from the trucks.

Alfred McFarland, Esq., sworn, and examined:—

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1659. *Mr. Dawson.*] Do you know this district well? I do.
1660. Have you been over the proposed railway line? I have not been over the line itself, but I am intimately acquainted with the country through which the line passes, and have been intimately acquainted with it for twenty-five years.
1661. Perhaps you would like to make a statement to the Committee? If you please. I understand that the question before the Committee is the propriety of constructing a line of railway which shall connect the townships of Eden and Bega. That line if constructed would be a portion of the New South Wales coast line of railway, and would correspond with that portion of the coast line which is now being constructed from the Richmond to the Tweed. One is in the north and the other in the south-coast district of New South Wales. The railway from the Richmond to the Tweed is, I believe, at the present moment being constructed under the sanction, or at least under a favourable report of this Committee, and one scarcely sees why that portion of our general line of railway should be constructed and a similar line denied to the southern district, unless there be some facts peculiarly favourable to the northern district. I think I shall be able to show before I conclude, that so far is such from being the case, there are circumstances in favour of the southern portion of the line which do not apply to the northern portion of it, or to any other railway at present in existence in New South Wales. I have just mentioned that for twenty-five years I have been intimately acquainted with the tract of country lying between Eden and Bega, having in the discharge of official duties visited almost every portion of it two or three times a year during that long period. On the other hand, as I wish the Committee to fully understand under what circumstances I am here to-day, it might be right that I should mention this, as having possibly some influence upon my evidence, but of that the Committee will judge. I am the owner of about half an acre of land in the township of Eden. That may or may not affect in some degree the opinions I have formed, though I do not think it has affected them. As regards the immediate districts, or the places surrounding Bega township, as the result of my lengthy knowledge of the southern country, I have formed, and now beg to express the opinion that in general progress, increase of population and stock, number and character of the houses, and improved value of land and holdings, those districts have gone ahead to a greater degree than any other portion of the southern country with which I am acquainted, and I am acquainted with every part of it. Of Eden township and its immediate district, I shall speak by-and-bye. Dealing now with the Bega and Eden districts at large—they themselves, and a precisely similar character of country lying north and south of them, and including Wogonga, Tilba Tilba, Cobargo, Candelo, Pambula township and gold-field, Towomba and Genoa, extend about 140 miles north and south, and from 10 to 30 miles westward from the sea. In my opinion there is no tract of land in New South Wales better adapted than this is for agricultural, dairying, grazing, timber-producing, and fruit-growing purposes. The selected land within it, taking it all round is, I believe, at this moment worth £5 per acre. These districts comprise the Parliamentary Electorate of Eden. That Electorate contains 531,738 acres of alienated holdings over one acre in extent each. With respect to the stock which the electorate owns, it stands, according to the most recent returns, thus: Horses, 6,832; dairy cattle, 34,348; ordinary cattle, 43,729; sheep, 14,482; and swine, 15,321. If a line of railway were formed between Bega and Eden, that line should command almost the entire export and import trade of those districts At present there are, no doubt, some small ports along the intervening coast, such as Bermagui and Tathra, but those ports are uncertain and dangerous, and they are only fitted at best for small craft, whereas if the line of railway in question were formed there would be constant export and import communication with Eden by large vessels passing these small ports, and in a very short while amalgamating the trade of the whole of the districts thereabouts. Then, what is the back country to the Eden Electorate? It is the Parliamentary Electorate of Monaro, and that comprises the districts of Michelago, Cooma, Seymour, Kiandra, Nimitybelle, Bombala, and Delegate. That back country

is

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is about the same length as the Eden Electorate—140 miles—and its average width is 60 miles. It extends, in other words, from the coast range to the Snowy Mountains, and is watered by the Murrumbidgee and the Snowy Rivers. It produces an immense amount of wool and it could produce as much corn—that is oats—as would suffice to supply the whole of New South Wales with grain. I beg to state distinctly as the result of my observations and knowledge of the subject, that the port of Eden is the natural shipping place for the entire amount of the produce and imports of that great Electorate, especially if it were connected by means of a branch line of railway, that branch line running from, say, Mount Cooper to Candelo—Candelo being, I believe, one of the places which the projected line of railway would touch. The back country to which I refer, contains 1,269,580 acres of alienated holdings, over one acre each. Its stock consists of 16,337 horses, 7,617 dairy cattle, 52,781 ordinary cattle, 1,410,406 sheep, and 5,019 swine. Now with respect to Eden township and harbour, that township is in its present state almost insignificant. That is, however, owing to the continuous neglect of successive Governments. I think I am right in saying that it has even been deprived of a Police Magistrate and harbour boat. But if it belonged to any Colony except New South Wales, if it belonged to Victoria especially, it would be in a very different state from what it is or what it has been for many a long year. It has been cruelly neglected by the successive Governments of New South Wales. It would appear, therefore, that the circumstance of a line of railway, if constructed to-day from Bega to Eden, not paying at the time of its construction is, to a very large extent, beside the question. That line might not at first pay, because of the neglect to which I have referred, but the question is, having regard to the facts I have mentioned, whether within a very short while it would not pay largely. Now as regards the harbour of Eden. It was said some years ago by a leading member of our legislature that the harbour of Eden, as he was pleased to express it, was a "tin-pot harbour." That gentleman is now in his grave, and I shall merely say that the statement was as reckless as it was unfounded in fact. With the exception of Port Jackson and King George's Sound, the harbour of Eden is the safest and the noblest in the Australian Colonies. The fleets of the world might ride in safety in the inner harbour. It is, or might readily be, sheltered from every wind that blows, and would be very easily fortified either from the cliffs on its eastern side or the long projecting tongue of land that runs in front of it; and yet owing to past neglect the only sails to be seen there are those of an Illawarra steamboat once a week, or a fisherman's skiff. At the same time if hostile ships should find their way into that harbour, the trade of Sydney and Melbourne would be at their mercy; and for that reason it is the duty of this Colony to be able at a moment's notice to send a body of troops from Sydney to that place for its protection; and that can best be done by the extension of the south coast line of railway, which at present has been constructed, or is in the act of being constructed, from Sydney to Nowra. The proposed line from Eden to Bega would be part of that general line through means of which reinforcements could be sent. I come now to the last argument I shall use in support of the projected line of railway. The leading men of New South Wales, whether they belong to one particular party or to another, appear to have declared themselves in favour of the confederation of the Australian Colonies. That confederation involves the selection of an inter-colonial confederate city, which should be the seat of Government, the place of residence of the Governor-General, and of the Australian Confederated Senate; a seat of Government that should be free from mercantile influence, from the dominancy of a local Legislature, and from the over-awing influence of mobs. Is there any township in Australia that can point to the same facts in its favour as the seat of that Confederate Government so strongly, directly, and conclusively as Eden can? It is now exactly twenty years ago since I stated in a little pamphlet which I then published the opinion which I held at the time on this subject. From that opinion I have never departed, and I hold it at this moment in its entirety. The opinion is this,—

> When the day comes that the Australian colonies shall unite and form a great Dominion there could not be selected a more admirable Sovereign State than would be found in the rolling downs, sloping plains, bright rivers, and great mountain ranges of Monaro, nor could there be a more suitable site for the Confederated capital than the hills of Eden, or a nobler harbour for its fleets than the waters of its bay.

Why? Because Eden is midway between Melbourne and Sydney, between Brisbane and Adelaide, between Cooktown and Perth, and every ship which is bound for Tasmania from Sydney, Brisbane, or the northern ports of Queensland passes its very door. The climate, too, is as near to perfection as climate can be. The very act of existence in such a place is a privilege. It is most admirably watered by means of two neighbouring, and, small though they be, yet ever-running rivers; and the rounded hills of Eden seem designed by God—if one can say so with sufficient reverence—to be the site of a great city. Surely then such a place is entitled to a line of railway?

1662. Have you seen the report of the Commissioners with reference to the cost of construction? I have not.

1663. You do not know what the expenses of a railway will be? No, I know nothing of that.

1664. According to the statement put before us by the Department there will be a loss of £19,000 a year on the line? I can only say that I am surprised to hear it, and still more so, if the statement were reliable. I do not believe that within two years of the construction of the line there would be any loss. On the contrary, there would be a large profit.

1665. People have been sent down there from the Department to make very careful inquiries, to get hold of statistics, and to find out from the people there what the probable traffic on the railway would be, and they say that after careful consideration they believe that the total annual cost of the line will be £30,270, and its annual revenue £11,443? That is nonsense.

1666. They estimate a revenue of £7,062 from goods and live stock, £3,937 from passenger traffic, and £443 10s. from mails? I am here to express my opinion as resulting from my own knowledge, and I say that the figures you have just quoted seem to me to be absolutely ridiculous.

1667. Can you give us any reasons for the revenue being more? The facts which I have mentioned afford the answer to that question. They show, in my opinion, a state of things which would differ enormously from the conclusions drawn by those gentlemen, whoever they are.

1668. In taking the passenger traffic, how would you calculate that? I would calculate the passenger traffic having reference to the freight, and the population, and importance of the districts I have described.

1669. Would it be a fair estimate to allow two journeys a year for every man, woman, and child in the district? Certainly not. If you said ten or twenty journeys, considering what a harbour Twofold Bay is, you might be nearer.

1670. But where would they go to? They would go to Eden, and then to Sydney, Melbourne, and other ports, in connection with their produce, general business, and health. 1671.

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1671. Do you think that they do not do that now because they have not got 36 miles of railway? I say that the fact of their being no railway, and therefore no freights between those places, accounts for the fact that few travellers pursue that route.
1672. Have you taken it into consideration that this is an isolated line? No. In my opinion it is part and parcel of the southern coast line of railway, and ought to be treated as such.
1673. But it is the only matter that we have under consideration? Yes; but you cannot sever it from its adjuncts.
1674. For some years at any rate it must be isolated? Well, just as the Richmond to the Tweed line is isolated; but there is no such country behind that railway as there is behind the electorate of Eden.
1675. What country do you mean? The Monaro country, which would feed this line.
1676. The people from Monaro will not make use of this line? The whole of the produce from Monaro should come to Eden, and will come to Eden if the immediate line to which I have referred from Mount Cowper to Candelo, from near where the present road to Nimitybelle branches off, is constructed.
1677. You mean the road from Holt's Flat across the Willica River? Yes.
1678. No survey has been made there, and no line is practicable? I am sorry to hear it; but I thought a survey had been made for a line from the top of the mountain years ago, and reported upon favourably.
1679. It is proposed to take a line from Wolumla to Cathcart? Cathcart is not very far from the point I speak of. Cathcart is somewhat nearer Bombala. The other place is far more central. I am referring to the Tantawanglo route.
1680. You would have to have a line between Cooma and Bombala? Yes, and I hope that line will be made.
1681. Do you think that people would take the trouble to send their produce from there to Eden and then to Sydney, or would they send *via* Cooma? They would gain Melbourne as well as Sydney for a market if they sent to Eden, while a large quantity of the wool that is now sent from Sydney to England would be shipped direct from Eden to England, just as the wool from the Hunter River district is shipped now from Newcastle; and a direct import trade would be established in turn.
1682. Have you made any calculation as to the amount that would be earned upon this line? No; but the figures I have quoted I have taken from the most recent register of the Colony.
1683. Have you worked out in any way what the produce of the dairy cattle would be? No; but I have given you the number of the dairy cattle, and any member of the Committee would be as competent, if not far more competent than I am, to work that out.
1684. It has been stated that 300 milking cows will produce 75 tons of butter and 25 tons of cheese? I am not competent to give an opinion on that.
1685. What is the country like immediately around Eden? Comparatively poor. It is a sandy soil; but for that reason it will cost the less when it is taken up by the Government of the country, as I hope it will be.
1686. Notwithstanding the existence of such a splendid harbour as Twofold Bay, Eden is no further ahead now than she was twenty years ago? Not a bit, owing to the neglect of successive Governments. Every other part of the Colony has been benefited and served, while that district has been left out in the cold.
1687. I have always understood that Eden was a place to live out of rather than to live in? There is no part of New South Wales where I would rather live.
1688. *Mr. O'Sullivan.*] One of your arguments is that Eden would do for the site of the confederate capital? Yes.
1689. Would it not be very much open to a bombardment from the sea? No; I think I have mentioned that this place possesses superior facilities for fortification, owing to the long neck of land extending in front of it, and to the cliffs on the ocean side.
1690. Would it not be a very inviting place for a strong fleet to attack? A very inviting place for a strong fleet to enter in order to crush the trade of Sydney and Melbourne, if it be not protected.
1691. Have you heard of any proposal from the federal leaders to establish the capital there? My life has not been spent among politicians, but in a very different sphere. The opinions I have expressed to-day are opinions expressed by me twenty years ago this month. I have never altered them, and I have from time to time read suggestions in the public prints to the same effect, namely, that Eden possesses advantages in favour of making it a confederate city, stronger and greater than those possessed by any other part of New South Wales. Monaro stands on a like footing for a sovereign state.
1692. Do you know the country well? Very well.
1693. Do you think that the interests of the general community would be served by constructing a line from Eden to Wolumla? I do not think such a limited line would be very important. I can scarcely say that it would, because a large amount of traffic which I anticipate would come from and north of Bega, which is the very heart of dairy produce, would be left in the cold by such a line stopping short of it.
1694. Bega would be no further away from a line under those circumstances than Candelo would be if the railway were taken on to Bega? I had thought that the line would run not very far from Candelo.
1695. According to the map, Wolumla is the nearest point on the railway from Candelo, and it is 7 miles distant? A line of railway passing 7 miles from Candelo would take all the traffic from there; and Wolumla is twice as distant.
1696. Having regard to the present state of the finances, and being at the same time desirous of serving this district, would it be advisable to construct a light line from Eden to Wolumla? I think not, but it would be desirable, no matter what the state of our finances might be, to construct the line for the entire length proposed.
1697. You would prefer to see it go the entire length? Certainly, it would be much more beneficial to the southern district at large.
1698. *Mr. Davies.*] You told the Committee the number of horses, cattle, sheep, and swine in these districts;—can you tell us the annual amount of freight that is carried away from there by the various steam companies? I cannot, because the absence of a line of railway renders the carriage from Monaro almost out of the question.
1699. I am not talking of Monaro, I am talking of the district which the line is proposed to serve? I cannot tell you, and I do not wish to speak of anything of which I have not personal knowledge.
1700. The line is proposed to serve a strip of country 30 miles wide by 40 miles long? You mean the district between Eden and Bega. That is a circumstance I wish to advert to. It would appear to me that the splendid district of Cobargo which lies north of Bega has been altogether lost sight of.
1701. Do you know the district between Bega and Cobargo? Between 20 and 30 miles—say 25 miles. Yes; the land about Cobargo, and other such places, is as good as the Bega land, and just as well adapted for dairying purposes.

1702.

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1702. Would it come within the area served by the railway? Most certainly, because its produce would reach Eden by means of the railway. The Cobargo district lies immediately to the north of Bega.
1703. Where does the produce from that district go now? Through the little port of Bermagui, a most unsafe, dangerous, and uncertain port of export.
1704. Have you any idea of the quantity of goods shipped from there? I could not state it.
1705. Is the land there all occupied by selectors? A large portion of it is occupied by selectors. When you pass from Cobargo you come to the Tilba Tilba country, between the Dromedary and the sea, and then you come to the Wogonga country which is also equal to the Bega country, and the produce from each of which would pass through Bega to Eden if the railway were constructed. The Tilba Tilba country is not known to the people of Sydney, neither is that of Towomba.
1706. What portion of the produce would find its way to the line? Almost the whole. No rational man would send his produce to Tathra if the railway were constructed,
1707. But the railway freight would have to be added to the water carriage? It would be much less than the cost of carriage by vehicle between Bega and Tathra.
1708. How many miles is it from Bega to Tathra? Eleven or 12 miles along a dreadful road.
1709. You think it is possible that any trade that might develop in the district would pay the cost of management, and the interest on the capital cost of construction in the near future? I have no more doubt of it than I have of my own existence. It would pay very largely, and the figures quoted by Mr. Dawson are simply ridiculous. Nor are money returns the only considerations involved.
1710. You are aware that the estimated cost of the work is £564,000? I suppose it is—I do not know.
1711. You know that the country is pretty difficult for railway construction? No; I do not think it should be so, It is comparatively level country, and I have travelled it a hundred times. If I said 500 times I do not think I should be wrong.
1712. Would you be surprised to learn that the estimate for the earthworks alone amounts to £200,000? I should be very much surprised, if the proper route has been adopted, and economy consulted.
1713. And the cost of bridges and culverts £100,000? I should be very much surprised, and I should be still more surprised if the estimate turned out correct, the conditions to which I have adverted being observed.
1714. But you would not put your judgment against that of the Engineer-in-Chief for Railways? Certainly not. I have only come to give evidence regarding all the facts I know, and my inference is from those facts; while engineers look only at outlay and receipts.
1715. Do you think it would be wise on the part of the Legislature to authorise the construction of a railway that would entail an annual loss upon the Colony of between £18,000 and £20,000 in addition to the £300,000 that we are losing now? It might not be wise to do so if there would be such a loss, but I firmly believe that there would be no such loss, and that this would be one of the best paying lines in New South Wales.
1716. Do you think that if the whole of the produce of the district were carried along these 36 miles of railway it would pay the interest on the capital cost, and the working expenses? I think it would do far more than pay that interest, bearing in mind as I request you to do, that the Cobargo, Tilba Tilba, Wogonga, and other districts would profit by the railway, and use it almost as much as the Bega people would.
1717. It is not possible for you to tell us the total quantity of produce and goods that leave these ports? I am not in a position to do so, but I believe that the present output would be trebled if the line were constructed—trebled both as regards Bega and the other places I have mentioned. You have scarcely an idea how people are deterred from embarking in any enterprise on account of the difficulty of shipping their produce with certainty.
1718. Thirty miles is not regarded as a very great distance? Not on very good roads; and Cooma and Bombala are twice that.
1719. Have they not got very good roads? No; about the worst roads in the country. I think I have travelled over the districts in question more frequently than any gentleman in the room.
1720. In those parts of the country where they have railways produce is often carried 30 miles to the line? There is no part of the country so badly supplied as that is, and there is a difference between 30 miles and 60.
1721. This line would only be a little more than 30 miles in length, and it would cost £500,000? I do not see how it will cost that if constructed with an ordinary regard for economy.
1722. Taking the settlement along the railway, and within 15 miles on each side of it, the settlers should not have any great difficulty in getting their produce to the coast? There is not only the difficulty of reaching the ports, but there is also an uncertainty about shipping their produce. I do not know if you have ever been alongside a steamer lying at Tathra, but if you have you must know something about the difficulty.
1723. You heard Captain Featherstone state that the port was a very safe one? Tathra?
1724. No, Eden? So it is. Eden is as safe a port as there is in the world.
1725. Merimbula is not a bad port? It is a very bad port. It is always impossible for any vessel to enter it with any degree of safety, and nine-tenths of the cargo are taken outside the bar by a drogher.
1726. And do you say that Tathra is also a bad port? A very bad port and a dangerous place.
1727. Would you set your opinion in this matter against that of Captain Turner who states that the vessels of his Company which have been trading there for a number of years have not had to pass the port more than once in the last five years? I do not desire to contradict Captain Turner, but you amaze me when you state that that is his evidence. I am told that the steamer had to pass Tathra only last week, and I have known steamboats unable to touch there at least twenty times in my own experience.

WEDNESDAY, 28 SEPTEMBER, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Eden to Bega.

Henry Deane, Esq., Engineer-in-Chief, Railway Construction Branch, Department of Public Works, sworn, and further examined :—

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1728. *Chairman.*] The Committee desire some information as to the possibility of cheapening lines in country similar to that through which the line under our consideration will pass, whether upon our standard gauge, or with a narrower gauge. Can you inform us what is the average cost of the New Zealand and Queensland lines which, I understand, are constructed on the 3-ft. 6-in. gauge? I was looking that up when I was called here. I can easily obtain the information.

1729. Have you any recent information as to the progress being made in the engineering world with regard to the adoption of lighter systems of railways for general purposes than that we have adopted here? Yes; a good deal has been written and done in the matter. I have gone into it a good deal myself lately. I believe the chief means of lessening the cost of a railway, in a hilly country, like that under consideration would be by sharpening the curves, and adopting a style of locomotive more fitted to go round curves than the ordinary locomotives with stiff wheel bases.

1730. Would the sharpening of the curves bring about any considerable reduction in the cost of the railway? Yes; it would in some cases. In the Eden to Bega railway the cost of the earthworks divided by the mileage gives £4,952 per mile, which is very heavy.

1731. To what extent would the sharpening of the curves reduce the earthworks—£1,000 per mile? Very much more than that. In order to show exactly what could be done in that way it would be necessary to make a survey, but I have examined some of the plans, and I am now having the matter worked out, so that I may know what saving would be effected if 6-chain curves were introduced, instead of the 12-chain standard curve. I find that many of the cuttings which run from 30 to 50 feet in height could be almost avoided. The undulations of the ground are too sharp to enable us to go around these places with a 12-chain curve, but it could be done with a 6-chain curve.

1732. Then we may fairly presume that if the earthworks on the present proposal would cost £5,000 a mile, that estimate could be reduced between £2,000 and £3,000, say, £2,500? I daresay it might be reduced even more than that, but then the question arises: Is it desirable to use such curves?

1733. A sharper curve would necessitate a special locomotive which we have not got at the present? Yes; but which could run upon our lines. There would not have to be a break of gauge.

1734. A 6-chain curve would necessitate a slower rate of speed than could be obtained on a 12-chain curve? Yes; and yet on some of the railways where these sharp curves are used a speed as high as 30 miles an hour, I believe, is obtained, and at any rate a fairly good speed could be got from these locomotives without danger.

1735. If a locomotive suitable for such curves were adopted, the cost per mile might be reduced by perhaps £3,000? I have no doubt of it.

1736. What would the saving be if you had 6-chain curves and a 3-ft. 6-in. gauge? With a 3-ft. 6-in. gauge the earthworks and the permanent way would be somewhat less costly.

1737–8. And the bridges? The smaller bridges would be less costly, but the larger bridges would have to be built with a view to carrying the wider gauge, supposing it should at any time be thought desirable to adopt it.

1739. Putting on one side the possibility of widening the line to the standard gauge, what saving could be effected by using the 3-ft. 6-in. gauge in place of the 4-ft. 8½-in. gauge? I should say that the saving would be about one-third; apart from the earthworks, on which there would be the saving mentioned before, as due to the sharper curves.

1740. Could we say that we should save another £3,000 a mile, or would the one-third include the saving obtained by steeper grades, sharper curves, and a narrow gauge? The saving on earthworks being £3,000 per mile would reduce the cost to £11,000 a mile. You ask whether by using a 3-ft. 6-in. gauge instead of a 4-ft. 8½-in. gauge another £3,000 could be knocked off.

1741. That is it. Remember that I am not committing you to an advocacy of the 3-ft. 6-in. gauge? If the line were treated as one of a less important character, and stations of the most rudimentary description erected, though of course the sidings would have to be at least as long and probably longer because there would be more trucks to accommodate. I think it is very likely that another £3,000 could be knocked off.

1742. So that £6,000 per mile would be saved if 6-chain curves and the 3-ft. 6-in. gauge were adopted? Yes.

1743. Are there any railways running and giving satisfaction on a 2-foot gauge or on any gauge less than 3 ft. 6 in.? There is the Festiniog line in North Wales.

1744. Is that a passenger line? Yes. It was originally a horse tramway. The chief work done there is in connection with the slate quarries, but a large number of passengers are carried on the railway.

1745. It is primarily a quarry line, but it carries passengers? Yes, though you would not like to have a line made like that is.

1746. Do you not think that the people of Bega would put up with such a line? Perhaps they would sooner have a 2-foot gauge or a 1-ft. 11½-in. gauge than nothing at all; but with such a type of construction you must keep in your head and your arms in going through a tunnel or you might get them taken off.

1747. Do you know what it would cost to make a line with that gauge between Eden and Bega? I should think there would be very little difference in cost if properly carried out.

1748. As between a 3-ft. 6-in. gauge? Yes. With a 3-ft. 6-in. gauge you can do all that is required In my opinion that gauge has a better relative capacity than any narrower gauge would have.

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1749. You do not think that a reduction of the gauge to less than 3 ft. 6 in. would appreciably reduce the cost of the line? It would not reduce the cost very much, and it would reduce the convenience very considerably. With regard to the locomotives that I have referred to I should like to mention that there are several important railways in the world of the standard gauge or even wider on which sharp curves have been used. There is the Ceylon Railway with a 5-ft. 6-in. guage and curves of 5 chains, and that has worked very satisfactorily. Then there is the St. Gothard Railway, of which I have some particulars. It has curves of about 7½ chains. The Central Swiss Railway has 5-chain curves. There they work bogie-hinged locomotives.

1750. Who is the maker? The locomotive I refer to is the Mallett-Brunner pattern, made by Maffei at Munich, in Bavaria.

1751. Is there not considerably more wear and tear on the rolling stock where the curves are sharp than where you have 12-chain curves? I fancy there would be less if that style of locomotive were used. As it is a more complicated machine there might be greater wear and tear on its parts, but there would be less wear and tear on the permanent way, because it would run round the curves so easily. If the rolling stock were adapted to the permanent way there would be less wear and tear on the line than if rolling stock with stiff wheel bases were used.

1752. But with ordinary trucks would there not be considerably more wear and tear upon the rails, and upon the flanges of the wheels, where there were sharp curves, than where there were 12-chain curves? Yes; perhaps so, especially if the rolling stock had stiff wheel bases, but if the rolling stock were fitted with bogies there would be no additional wear and tear of importance on the sharp curves.

1753. To economically work a 3-ft. 6-in. gauge with 6-chain curves you would want rolling stock fitted with bogies? Yes. Of course you might have short waggons with short wheel bases, but the modern style of vehicle is one supported by bogies. There is then less dead load to the paying load.

1754. What would be a safe speed to run over a 3-ft. 6-in. gauge with a 6-chain curve, and rolling stock such as you describe? I suppose that from 20 to 25 miles an hour would be perfectly safe. I believe that is frequently done.

1755. Are they using the locomotives to which you refer on the Queensland lines? No; they are not.

1756. What is the standard curve on the Queensland lines? I believe there are some 5-chain curves between Wallangarra and Stanthorpe. I know that the curves there are very sharp.

1757. Can you tell us the standard curve on the New Zealand line? I have not the particulars.

1758. Or on the South Australian narrow-gauged line? No; I have not looked the matter up.

1759. If the line from Eden to Bega is likely to be an isolated line for at least fifteen years, do you think it would be advisable to depart from our standard gauge, and go in for a 3-ft. 6-in. gauge with a 6-chain curve? If it would pay it would be far better than having no railway at all I should think.

1760. From an engineer's point of view you think it would be only a makeshift? No; I do not think it would be a makeshift. I may say that having recently travelled over several of the Queensland lines I was very much struck with their convenience of working and comfort. I do not think such a line would be a makeshift at all. While I do not consider the narrow gauge as good by a long way as the standard gauge I think it is very satisfactory. The roads in Queensland are kept in very nice order.

1761. If the proposed line were constructed on a 3-ft. 6-in. gauge, with 6-chain curves, and special rolling stock, there would be no objection to it inasmuch as it would be an isolated line? I do not see that there would be any objection to it as an isolated line.

1762. If the line were constructed in that way, and remained isolated for fifteen years, we could save about as much on it during that time as would enable us, if we then wanted to connect with the main line, to pay for the substitution of a wider gauge? If there were sufficient traffic, and always assuming that locomotives for running on sharp curves on the standard gauge could be used with advantage. I would, however, in that case recommend the standard gauge from the first.

1763. And, in the meantime, the people in the district would have the railway facilities for which they are asking? Yes.

1764. *Mr. O'Sullivan.*] I have not heard you define exactly what you mean by a light line of railway. Will you kindly do so now? I understand by a light line of railway, a cheap line of railway; in fact, that the word "lightness" is used in the sense of cheapness—a line with light rails, and everything as cheap and as rudimentary as possible.

1765. With short curves and with a narrow gauge? I do not see how you can have exactly what is called a light line of railway—a cheap line of railway—in rough country.

1766. But you propose now, or you acquiesce in the suggestion that, what to all intents and purposes would be a light line, should be run through the Bega district? I think it is scarcely fair to ask me what I mean by a light line of railway. Parliament asks for a light line of railway, and I think it is they who should be asked to define what is intended by a light line of railway. If it simply means a line with light rails, it would not necessarily mean a cheap line. If it meant a line with light rails, no earthworks, no fencing, and very ordinary stations, of course one would know exactly how one stood.

1767. I am asking you simply to gain information. I want to ascertain from you as Engineer-in-Chief for Railways, what is meant by engineers by a light line of railway. I gather that the rolling stock would be lighter and that the rails would be lighter, and that possibly the curves would be sharper and the gauge narrower? I would leave out the term altogether—I would not use it. It is a misnomer, and it is misleading. If you say a railway with a light permanent way, or a railway with works of the lightest possible description you can be understood, but it would depend upon the nature of the country as to whether such a line would or would not be a cheap one. The term "light," as applied to a railway, does not convey any definite meaning.

1768. It is a term very much used in regard to railway construction, and I thought it would be just as well that we should understand exactly what it implied? I think many people use it without knowing exactly what they mean by it. They imply cheapness, but in a rough country you cannot have a cheap railway.

1769. You have read of the cheap lines in the Argentine Republic which were constructed for £1,500 a mile. Would you understand them to be light lines? I have not the slightest doubt but that they are.

1770. I take it that you think the Committee might be justified in recommending the construction of a light or cheap line of railway in this district. You think that such a line would be safe and profitable? It would answer all purposes, but I do not say that it would be profitable. I do not touch on that question. Such a line would be cheaper than the proposed line.

1771. And would carry the traffic of the district? Yes.

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1772. Do you know the line from Hobart to Launceston? No; I have not been in Tasmania.
1773. Do you know the curves in that line. They are very sharp, are they not? I believe they are.
1774. You cannot tell the length of those curves? No; I cannot say definitely, but I can obtain the information.
1775. That line, although containing very sharp curves, and having been very roughly constructed, has carried the entire traffic of Tasmania for twenty years. Could not a similar line be safely and satisfactorily worked in the hilly district of Eden? You are asking me to give an opinion upon a style of railway that I have not seen.
1776. But you have read about the main Tasmanian railway which was constructed by a private company, and has since been bought by the Government? Yes, I have read a good deal about it.
1777. You have read that it was very roughly constructed with very short curves, and that for twenty years it has carried the entire traffic of the country? I do not know what the cost of maintenance would be. I do not know that it is a style of railway which I should recommend.
1778. If it has carried the traffic of the country for twenty years is not that very good evidence that it has done the work for which it was intended? Yes.
1779. That being so, I presume we should be justified in recommending the construction of a similar line in this case? I cannot say, because I have not been over the Tasmanian line, and although I have the report of it I have not studed it to see if it gives any particulars with regard to the cost of maintenance. If the line has been too roughly made the cost of maintenance may be very serious. It is generally an economical thing to make a line somwhat substantial.
1780. *Mr. Humphery.*] Would a 3-ft. 6-in. railway be less costly than a tram similar to the Camden tram? I do not see the difference—the Camden tram is a railway.
1781. What are the grades there? The steepest grade is 1 in 17.
1782. Would it not make a very considerable difference in the cost of a permanent way if you had a grade of 1 in 18 instead of a grade of 1 in 50, and used similar motive power to that which you are using at Camden? I should not recommend steep grades, because the hauling power of an engine is so very much reduced on them. On the Eden line the country is undulating. There are up and down grades in both directions. It is not like a line coming down from the hills with heavy traffic and going up with empties. You would have the heavy grades against the heavy traffic whatever direction it went.
1783. If the Bega to Eden line is not likely to be constructed for a number of years with our existing railway system, and as probably the traffic on it will be comparatively light, perhaps a steep grade there might not be so costly? I think that the system which I suggest, with sharper curves and special rolling stock, would get over all such difficulties.
1784. What would be the steepest grade? 1 in 50, probably. We could get that just the same as on the proposed line.
1785. Would that description of railway be the most economical that you could suggest and the most suitable for the district? I believe it would be the most economical in every respect—it might not be the cheapest.
1786. Can you say approximately what the cost per mile would be for the whole distance? I think, according to the calculation I made just now that the cost would be reduced to £8,000 per mile.
1787. Do you think we can take those figures as correct? The length of the line would possibly be increased to 40 miles; but there would still be a considerable saving.
1788. Would you recommend the saving of that additional length by the adoption of a 1 in 40 in place of a 1 in 50 grade? I should recommend the abandonment of the 1 in 40 grade, because with sharp curves the question of grade would be immaterial. It might be just as easy to get 1 in 50 as to get 1 in 40 on this particular section.
1789. You estimate the cost of the line at present at £564,000. Do you think a railway could be built with a 3-ft. 6-in. gauge, and of the character described by you, for £300,000? Forty miles at £8,000 a mile, would come to £320,000.
1790. But allowing for only 2 additional miles, it would come to £300,000? I did not consider that 2 additional miles would be sufficient. This is after all only guess work—I have not had time to work it out.
1791. Before committing yourself to £8,000 a mile, you would like to go carefully through the figures? Yes. I could do so in the course of a few days.
1792. Do you know the steepest grade on the Queensland line? About 1 in 28. I went over such a grade about three months ago.
1793. You do not approve of such a grade? No, I would not recommend it.
1794. If they have a 1 in 28 grade on the Queensland line, do you not think that a 1 in 40 grade would do for this line? I daresay it would. Of course, with small loads it is not worth while going to any expense to make the grades easy.
1795. Could you make out for the Committee an estimate of the cost of this line with a 3-ft. 6-in. gauge and 1 in 40 grade? Yes.
1796. And with 6-chain curves? Yes.
1797. *Mr. Hoskins.*] You said that if this line were constructed with sharper curves, its length would be increased by 4 miles? Yes.
1798. Therefore the adoption of sharp curves would increase the cost of the line? There would be the cost of the extra mileage.
1799. You propose to have a grade of 1 in 50, and Mr. Humphery suggested a grade of 1 in 40. If you were working a railway with 6-chain curves and a grade of 1 in 40, could you take very heavy trains along it? Yes.
1800. What loads could you take? I am not prepared to say at the present moment—it is a matter for calculation.
1801. Can you tell us the maximum load which they can take over the 1 in 28 grade in Queensland? That grade is on a branch line. They have 1 in 30 grades on the Townsville line, which is a good paying line, and which crosses the Burdekin River. I will get the information for you, if possible.
1802. What is the necessity for adopting such sharp curves as 6-chain curves? Chiefly to cut out the earthworks.
1803. If you adopt 6-chain curves you will still retain the steep gradients originally proposed—1 in 40 or 1 in 50? Yes; but you cannot do everything. In the first place you cut down the earthworks, and then you can see if any further improvement can be made.

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1804. If you make this proposed cheap line you will have gradients as steep as those on the line now before us, and at the same time you will increase the length of the line? Yes.
1805. Would you consider it advisable to work heavy trains on a line with 6-chain curves, and with gradients of 1 in 40 or 1 in 50? No. If you are going to have heavy trains I would say, "use the standard gauge." It would only be on the assumption that the traffic would be very light that I should think the adoption of the narrow gauge worth considering. A narrow gauge and light construction have been suggested, because the traffic may be very light.
1806. If a line such as you have described were constructed, it would not be capable of contending with a large amount of traffic? I did not say that. I think it would be capable of contending with a large amount of traffic.
1806½. But not with such a large amount of traffic as the line you originally proposed? No. I said that if there would be a large amount of traffic I should recommend the 4-ft. 8½-in. gauge. I do not for a moment think that the other should be considered under such circumstances.
1807. Therefore, I gather that there is a limit to the amount of traffic that could be carried over a narrow gauge 6-chain curve line? There is a limit to what any line could carry.
1808. But a narrow limit? I think that a 3-ft. 6-in. line would carry a great deal more traffic than can be expected for another twenty years.
1809. What is the difference in the formation width of the bridges between a 3-ft. 6-in. gauge and a 4-ft. 8½-in. gauge? It is the practice to make the width very much less on the narrow gauge. On the Queensland lines the cuttings are made 13 feet 6 inches, with the exception of the section between Stanthorpe and Wallangarra, where the earthworks have been made conformable with our northern line, or 15 feet wide.
1810. On the western railway we are working with 8-chain curves? Yes.
1811. In answer to Mr. O'Sullivan you said that you were not prepared to define a light line of railway;—do you consider the Nyngan to Cobar line a light line of railway? In some respects it is.
1812. Are there not less depth of ballast, lighter rails, cheaper stations, and an absence of fences there? It is a cheaper line than the main line, and the rails are lighter.
1813. And the Temora line is a light line? Yes.
1814. Would you be disposed to lay down light rails on a 6-chain curve line with a gradient of 1 in 50? It is a matter of calculation in connection with the probable traffic. In Queensland up to recently they have been using 42-lb. rails; but now they are putting down 60-lb. rails on some extensions, and some of the renewals have been made with 60-lb. rails. They have come to the conclusion that 60-lb. rails are more economical, in comparison with the cost.
1815. What is the weight per yard of the rails on the Cobar line and on the Temora line? Sixty pounds.
1816. Are they steel rails? Yes.
1817. Do you think that such rails are sufficiently strong for a line with a grade of 1 in 50 and with 6-chain curves? Yes; I think they would do quite as well on such a line as on any of our other lines, especially if that particular style of locomotive were adopted to which I have been referring, because the load on the axle is very much less with them than with the other locomotives in use.
1818. Does not the weight on the axle give adhesion? Yes; but in that style of engine it is more equally divided. There are six axles, each carrying 10 tons; whereas on the engines which we have recently imported there are nearly 16 tons to the axle.
1819. You will not commit yourself to the advocacy of any modification of the proposed line, except a line costing about £8,000 per mile? If I had instructions to make a line with a 3-ft. 6-in. gauge and 6-chain curves, that is about what I should estimate it to cost.
1820-21. *Mr. Davies.*] Are the Committee to understand from the evidence you have given this afternoon that you recommend a break of gauge in this Colony? No; I have been asked to consider this railway as a distinct system, and therefore there would be no break.
1822. Is it not a fact that there is an agitation almost all the world over for a uniform gauge? Yes.
1823. Do you think it wise to depart from the uniform gauge in this Colony? If you will allow me I will read an extract bearing on the question. In 1870 reports were made to the Secretary of State for India as to the question of gauge there—as to whether the Indian railways should all be constructed on the standard gauge or with a reduced gauge. Sir John (then Mr.) Fowler, Colonel Strachey, Colonel Deacon, and Mr. Rendell were asked to report upon the matter, and though they did not come to an actual agreement they all recommended the narrow gauge, and this is what Sir John Fowler said in the eighth paragraph of his report:—

> I need scarcely remark that the introduction of a second gauge in a country which already possesses a great length of railway is a step of much responsibility. The evils of a break of gauge are well known in England, America, Sweden, and elsewhere; but notwithstanding this there are many countries where the introduction of cheap railways on an exceptional gauge has become a necessity to avoid the much greater evil of no railway at all.

1824. Is it simply on that report that you recommend the break of gauge? I am not recommending it on any report, but I have to consider the question in all its bearings. I am not recommending a break of gauge, but I was asked to consider this line in a certain way as if we were starting a distinct system, and looking at it in that light the question arises whether it would not be better to have a narrow gauge, seeing that it could be made at less expense than the broad gauge.
1825. Are not the Department at present making a survey for railways to connect the proposed line with Cooma on the one hand and with the south coast on the other? Yes.
1826. In view of that fact you recommend a break of gauge on this line? Perhaps I do not make myself clear. I have been answering the inquiries made up to the present moment from a certain standpoint, in consequence of the way in which the Chairman put his questions.
1827. I want it to be clearly understood whether you hold the opinion that the line should be constructed with a 3-ft. 6-in gauge, in view of the fact that surveys are now being made to connect it with our main system? Of course it does not follow that the lines now being surveyed will be carried out next year or for years to come.
1828. You are under the impression that the line will never be built although a survey has been made? No, on the contrary, I hope it will be built I think it is a line of the future.
1829. To connect with Monaro? Yes. But even supposing the connection were made, in fifteen years' time the traffic which would be developed upon it might pay for the alteration of gauge. Besides, the alteration

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alteration of the gauge is not such a serious matter as regards works as might be imagined, because the sharp curves could be worked with the flexible locomotives to which I have referred. There would be the widening of the earthworks and the strengthening of the bridges to be done.*

1830. The Committee are to understand that it is not a serious matter to construct this line on the 3-ft. 6-in. gauge? I do not think it is a serious matter.

1831. Notwithstanding that we have a uniform gauge at the present time? I always prefer a standard gauge for many reasons; but if a 3-ft. 6-in. gauge can be made to pay when a wider gauge will not pay, I certainly see little objection to the narrower gauge.

1832. Would not your answer to a certain extent be an argument against the construction of this line;—if the line will not pay why construct it? Is it not a question rather of amount? I am not going into the question of whether it would pay, because that is not in my province.

1833. You regard a cheap railway as one that would cost £8,000 a mile? I did not state that I would make a cheap line. I said that you could not make a cheap line through rough country.

1834. This country is pretty rough? Very rough.

1835. According to your estimate it would cost at least £8,000 a mile, with a 3-ft. 6-in. gauge. Do you regard that as a cheap line? I should not call a line at £8,000 a mile cheap; but it would be cheaper than a line at £14,000 a mile.

1836. I want to know what is your definition of a cheap line of railway. You told us that you could not give us a definition of a light line? The way I put it was that I did not think I should be called upon to say what a light line of railway was, but that the term should be defined for me, and that if I had instructions as to what was wanted, I would carry them out.

1837. I quite understand that; but I want to get some information as to what a light and cheap line of railway is? I would point out to you that this cannot be a cheap line, not only on account of the earthworks, but also on account of the culverts. It is near the coast, and there is very frequently a heavy rainfall there, so that the rivers and creeks require costly bridges to span them. Then, again, it must not be forgotten that as this will be a separate line, special works will be necessary—engine-sheds and offices, and so on.

1838. Your original estimate provides £93,000 for culverts and bridges. Supposing a cheap line were constructed, on a 3-ft. 6-in. gauge, what saving could you effect with regard to that item? It would be almost impossible for me to say, without going into the matter.

1839. In what way would the £3,000 per mile be effected? Some of it would be effected on the bridges, some on the permanent way. If the permanent way were made light, there would probably be a saving of £600 per mile on it; and there would, perhaps, be a saving of a considerable amount on culverts and bridges if they were made only strong enough to carry this line. I would assume, also, that the station buildings would be made as cheap as possible.

1840. I want to know in what way any practicable saving in culverts and bridges could be effected. There would only be a difference in width? There would also be a difference in the weight to be carried. With the heavy engines that have lately been imported, the weight per foot amounts to nearly 4 tons

1841. You are comparing the Baldwin engines with the style of engine you propose for this line? Yes.

1842. But although the weight may be differently distributed, the actual difference in weight between the two styles of engine is very little? The weight of the new Beyer-Peacock engines comes to about 3 tons a lineal foot. The Baldwin passenger engines weigh about 3¼ tons per lineal foot, and the Baldwin goods engines nearly 4 tons per lineal foot.

1843. What is the gross tonnage of one of those locomotives? Between 97 and 98 tons.

1844. What is the tonnage of the engine you suggest for this line? I do not suggest any particular engine. I referred to a certain class of engines as an example. Comparing them with other engines they weigh 60 tons each, and it is all useful weight, because it is distributed over the axles, making the weight on the road only 2½ tons per lineal foot. In designing a small bridge you would have to design for a live weight, 2½ tons per lineal foot with those engines as against 4 tons with the other engines.

1845. But when you came to adopt the uniform gauge would not these culverts and bridges have to be strengthened or rebuilt? Yes; but it would be a long time to look forward to.

1846. Would you not feel it your duty to construct bridges and culverts that would carry the ordinary traffic that is carried on the other lines? Yes, in the case of the larger bridges. I should recommend in the case of the larger and more permanent bridges that they should be made strong enough to carry the heavier rolling-stock, but I have not had time to consider that question yet. If I were to design the bridges for the particular class of locomotives to which I have referred, they would be all that would be required for any future time, because those locomotives are stated to be capable of doing as good hauling as one of our heaviest engines.

1847. Your estimate for earthworks is something like £200,000, and in answer to the Chairman you stated that you could make a considerable reduction on that item? Yes.

1848. How would you effect a saving—would the cuttings not be so wide? The saving is effected by contouring.

1849. So that you would avoid a large number of the cuttings absolutely? A great number of them would be avoided or reduced to very small dimensions.

1850. And you would lengthen the line from 4 to 6 miles? I do not think it would be lengthened more than 4 miles.

1851. The railway would be lengthened to that extent for all time in consequence of those detours? Yes.

1852. *Dr. Garran.*] I gather from your evidence that you think a cheap line in difficult country is practically an impossibility? Yes.

1853. You do not, on the spur of the moment, see your way to promise even a 3-ft. 6-in. railway through this country for less than £8,000 a mile? No.

1854. Do you know the Joadja Creek tramway, near Mittagong? No, I do not.

1855. Do you know the gauge of that tramway? No, I do not.

1856. You are aware that the railway to Broken Hill has a 3-ft. 6-in. gauge? Yes.

1857. It carries a very heavy traffic? Yes.

1858. But it runs over moderately level country? Yes, I think so.

1859. So that there is no difficulty about carrying the large traffic on a narrow gauge? No, not a bit.

1860. The question of gauge is one that must be determined in each case on its own merits in a country like this? Yes, I have no doubt that it is.

1861.

* NOTE (*on revision*):—The worst part of the difficulty would be the conversion of the rolling stock. That must be taken into consideration.

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1861. You cannot lay down any general rule for all branch lines? No. Of course there are always differences of opinion.
1862. It is admitted that a break of gauge is an evil in itself? Yes.
1863. At the same time it may be a greater evil to have no railway at all? I think the evil is somewhat over-estimated. On a main line like our southern or western line it would have been a great calamity.
1864. It is a great disadvantage in the through traffic between Melbourne and Sydney? Yes.
1865. This railway would only carry the local trade of the district, so that there would be no disadvantage there? There would be very little disadvantage; in fact there would be no break of gauge. When a connection was made that would be the time to consider the evil, not now.
1866. The trade of the district is principally for dairy and agricultural produce with possibly a little wool once a year, and a few cattle. There would not be an insuperable difficulty in a break of gauge there? I think not.
1867. Pending the time when a connection is made with the main line there would be no evil at all? No.
1868. Which do you think the greatest disadvantage to a railway—sharp curves or steep gradients? Stiff gradients.
1869. If you had to begin and lay out a line you would rather avoid stiff gradients than sharp curves? Yes; you cannot get rid of gravity.
1870. But you can, by mechanical contrivance, so adapt your rolling stock to the line as to diminish friction on sharp curves? Yes.
1871. But no mechanical contrivance can get over stiff gradients? No.
1872. Therefore, it is better to go in for as level a line as you can and submit to the curves? Yes.
1873. That will give you a slightly longer line, but not a more costly line on the whole. It will not be more costly to make and will be cheaper to construct than one with stiff gradients and cuttings? Yes; it will be cheaper to work. You are comparing curves with grades.
1874. Yes? A line with curves would be cheaper to work than a line with grades.
1875. If you had to lay out a line with a 3-ft. 6-in. gauge you would avoid gradients wherever you could and put in curves in lieu of them? Yes; they could be got rid of in that way. We did that on the Milson's Point line.
1876. *Mr. McCourt.*] In case you break the present gauge, is the 3-ft. 6-in. gauge the most workable one to adopt? I believe it is.
1877. Have they not got a workable gauge in Europe of a less width than that? Yes; there are some about 2 feet. There is the metre gauge.
1878. The 3-ft. 3-in. gauge? Yes.
1879. If those gauges are found to work well in Europe why should they not work well here? There would be nothing gained by taking off the 3 inches.
1880. Would the 2-ft. gauge work well? You can do a lot of work on that gauge. There is a lot of traffic on the Festiniog line.
1881. There are a lot of similar lines in Europe? Yes.
1882. If that gauge is found to work well in populous districts in Europe why should it not work well in the Bega district? Without knowing all the facts I can scarcely make a comparison, but I think it is generally admitted that if you cannot have the standard gauge a gauge of about 3-ft. 6-in. is the most economical. It has a greater carrying capacity in proportion to its cost than any other gauge.
1883. But if a 2-ft. gauge would do the work of a district like Bega, could it not be constructed for half of £8,000 a mile? No; decidedly not.
1884. Why? There are a lot of expenses which will remain the same in any case.
1885. The cuttings would be very much less, would they not? Not much, because I am keeping them down to the minimum. You would still have to provide for the draining of the permanent way, so that you must have certain cuttings. Then you must have bridges for crossing the creeks, and you must have fencing, and must provide water, and put up a certain number of stations. If you have a very narrow gauge you will only have to lengthen the permanent way at the stations in order to get sufficient siding accommodation for the trucks, because they would have so much less capacity. There are other expenses which would have to be incurred whether the gauge was 2 feet or 3 ft. 6 in.
1886. Then the Committee understand from you that you could construct a 3-ft. 6-in. gauge quite as cheaply as a 2-ft. gauge? No; I did not say so. I said that I considered that the 3-ft. 6-in. gauge was, for its carrying capacity, the most economical.
1887. I want to know the difference between the cost of constructing a 3-ft. 6-in. gauge and a 2-ft. gauge—£1,000, £2,000, or £3,000 a mile? I will prepare a comparative estimate showing that if you wish. I cannot tell you straight off.
1888. If the people of Europe find that the narrow gauge lines do the work of populous districts there, do you not think that they might be applied to New South Wales? It does not follow that the conditions are exactly the same, or that because they have bound themselves down to a certain gauge another gauge would not be more serviceable here.
1889. If narrow-gauge railways are found to do the work well in those places, do you not think a similar railway would do the work of the Bega district? Yes, perhaps it would; but I say that a 3-ft. 6-in. gauge would do it better.
1890. You are in favour of the 3-ft. 6-in. gauge? I am so far in favour of it that I know a number of lines that are worked in a very satisfactory manner with it.
1891. You are the Engineer-in-Chief for Railways, and I as one of the Committee would like you to give a definite opinion as to which is the best guage for this particular district. You are not in a position to do that to-day? It is a matter of cost. I have submitted an estimate of the cost of constructing a line with a 4-ft. 8½-in. gauge and adapted to our ordinary rolling stock. I have stated that that estimate can be considerably reduced with regard to the earthworks, and in other ways, if sharp curves are adopted and special rolling-stock used. Then the Chairman asked me to state my opinion upon the narrow gauge. That makes three different proposals.
1892. What would be the difference in the cost of maintenance between a 2-ft. gauge and a 3-ft. 6-in. gauge? I should say that the cost of maintenance would be quite as much if not more on the 2-ft. gauge as on the 3-ft. 6-in. gauge, because the vehicles would overhang a great deal more. There would be more oscillation, and consequently more wear and tear.

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1893. If the engineers of Europe say that it would be considerably less, perhaps they are not correct? Perhaps they are not in a position to make a comparison.
1894. They have the wide gauge there? I can hunt up various opinions for you, which I have not the slightest doubt go to show that the 3-ft. 6-in. gauge is the best—that it is better than any narrower gauge.
1895. Is not that gauge doing good work on the main line in Western Australia and Queensland? Yes; they have not adopted anything narrower.
1896. In your original estimate you allowed for 12-chain curves, did you not? Yes.
1897. They were working 8-chain curves on the western line? I would not put in any new 8-chain curves. The western line was made, as you are aware, under peculiar conditions. It was intended to be as cheap a line as possible, and to be worked at a low speed—about 16 miles an hour.
1898. *Mr. Wall.*] What is the steepest grade on the Blue Mountains? One in 30.
1899. In consequence of the steep grades there, you have required heretofore a large number of additional engines to take the trains from Penrith? Yes.
1900. Relatively, it requires nine engines to bring the goods trains from Sydney to Penrith, and twenty-two engines to take them over the Blue Mountains. There is a minute from your Department, which has been in existence for some time, to the effect that no engine shall take more than fourteen trucks over the steep grades? A minute from the Commissioners' Department.
1901. One of Mr. Goodchap's minutes. It was written because of the existence of these 1 in 30 grades. I understand that if there had been 1 in 40 grades there would have been no necessity for extra engines. How much do you suppose a grade of 1 in 40 would lessen the number of engines required? The power required is, approximately, proportionate, to the grade. That is to say, you would do about 33 per cent. more work on the 1 in 40 grade than on the 1 in 30 grade.
1902. In other words, you would have required very little additional power, if any, had the grade been 1 in 40? There would have been a saving had that grade been adopted.
1903. It is not possible that the trade on the proposed line will ever equal even one-third of the trade that has gone over the Blue Mountains during the last three or four years? I should think not, but I am not in a position to say.
1904. If one-third of that trade went over the line from Eden to Bega, it could be drawn by one of the ordinary engines? Yes; I see what you mean.
1905. On a part of the level country from Dubbo to Narromine, you have a grade of 1 in 28? No; there is no grade of 1 in 28 there.
1906. What is the grade? I think it was 1 in 40.
1907. Do you know that the steepest grade on the western line is between Orange and Ironbarks? No.
1908. I think you will find that it is so. Do you know that when Mr. Townsend was surveying a line which would bring about uniform grades from Sydney to Bourke, he had to go beyond Narromine, on the other side of Dubbo? That is because he went in the wrong direction. The western line was to tap Bathurst and Orange, but Mr. Townsend's line never attempted to do that, and he could not have done it.
1909. Do you know the actual grade between Narromine and Dubbo? Yes. The steepest grade on the Blue Mountain line is 1 in 30 rising from Emu Plains. There are a number of grades of 1 in 33 beyond there, but the only grade steeper than 1 in 40 beyond Wallerawang is at a place called Locksley, where there is a grade of 1 in 33. There is nothing like that anywhere else.
1910. There is a very steep grade between Dubbo and Narromine, and also between Dubbo and Ironbarks. Do you know anything of the proposed tramway that is going to be constructed to Deepwater with a grade of 1 in 40, and on the standard gauge? Yes. I have not been over it, but I have seen the plans and the sections.
1911. It is intended to carry the Government trucks on that line? It is a railway.
1912. Do you know that a company of contractors who have done a considerable amount of Government work, have undertaken to construct that line at a cost of £2,000, including rolling stock? No; I am quite sure that they will not do it. They will have the rails provided for them.
1913. No; they are getting 60-lb. rails from the Commissioners at £4 a ton? They cannot do it. Perhaps they are interested in the locality, and expect to get it back in some other way. You cannot get old rails everywhere. If you had 500 miles of line to construct you could not get 500 miles of old rails.
1914. Sixty-pound rails go about 100 tons to the mile? Not so much. It takes 102 tons for rails and fastenings. You would require about 94 tons of rails alone, I think.
1915. Say, approximately, 100 tons to the mile. These rails could be obtained for about £6 a ton irrespective of concessions? In Sydney, without freight.
1916. Therefore, the rails will not come to more than £600 a mile? New permanent way in Sydney would be £674 a mile.
1917. Including fastenings? Yes; that includes fastenings.
1918. What quantity of ballast do you use to the mile? Ordinarily for country lines about 1½ cubic yards to the yard.
1919. About 2,000 yards to the mile? Yes.
1920. On the Queensland lines they use 600 yards to the mile? On the lines which I mentioned they only put 3 inches of ballast under the sleepers.
1921. Is it not a fact that the total amount of ballast used upon the Queensland railway is, approximately, 600 yards to the mile? Not everywhere, but it is so on some lines.
1922. Do you know what the average quantity is? I cannot tell you what the average quantity is, but I know that the line from Wallangarra to Stanthorpe is ballasted just as well as our country lines are ballasted.
1923. When you gave evidence here some time ago, with reference to the railway from Glen Innes to Inverell, I think you said that after the earthworks were completed it required something over £2,000 a mile—I think you said £2,800 a mile to finish the line? For the permanent way?
1924. Yes. That was for the laying down of the line, including rails, sleepers, and fastenings? The permanent way, with materials and labour, and the sidings to the stations, taken at 5 per cent. of the whole and divided over the line, comes to £2,208 per mile.
1925. That takes into calculation the ordinary station houses which have been erected in connection with lines heretofore constructed in the Colony? No; the station accommodation is now fixed by the Commissioners.

1926. Does that mean a reduction on the ordinary cost of station buildings? It is a reduction on the cost of some of the older lines. H. Deane, Esq.
1927. Do you know the Mudgee line? Yes.
1928. You know that a number of the costly station houses there are now absolutely closed up. My reason for asking the question was to ascertain if the Government intended to adopt some more moderate system in the future? The responsibility lies entirely with the Railway Commissioners now. Before I construct any stations I consult them, and submit my plans to them, and the buildings are not erected until they have expressed their approval of them in writing. 28 Sept., 1892.
1929. I suppose you have noticed a marked difference in the station buildings and sidings of Queensland as compared with those of New South Wales? I do not know about the sidings—they are simply a repetition of the permanent way. I doubt very much whether the New South Wales public would be satisfied with some of their station buildings.
1930. Do you know that in Victoria the public are asked to erect their own buildings for the accommodation of produce? They do it here.
1931. I thought the Government always did it? The Government always erected goods-sheds, but the Commissioners invite the public to rent a piece of ground for putting up a grain-shed.
1932. Would it not be impossible for you to reduce the cost of the Eden to Bega railway as a narrow-gauge line to its utmost limit unless you had a survey made. Can you, from the reports already given you, make out in the office what the cost of a narrow-gauge line would be? I think I can, but at the present moment I am not quite sure. I have plans in the office which show cross-levelling, and I could make use of them for the contours.
1933. You were illustrating just now the difference between short curves and long curves. Do you know Hunt's cutting, on the Mudgee line, where the landslip took place? Yes.
1934. There, in ten or twelve days by making a short curve, a loop line was constructed, although it had taken eighteen months to make the original line. That is a fair illustration of the saving that might be effected by short curves. The original cutting cost some hundreds of thousands of pounds while the loop line was constructed in a few days? Yes: in that particular case the saving would have been enormous.
1934½. It would have amounted to some £200,000? It is a very good illustration.

THURSDAY, 29 SEPTEMBER, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Eden to Bega.

Henry Deane, Esq., Engineer-in-Chief for Railway Construction, Department of Public Works, sworn, and further examined:—

1935. *Mr. Wall.*] What was the severest grade on the line between Dubbo and Narromine before it was altered? One in 50 facing the west, and 1 in 55 facing Sydney. H. Deane, Esq.
1936. And between Orange and Ironbarks? One in 40.
1937. *Chairman.*] Can you furnish the Committee with any more definite data as to the locomotives in use on the St. Gothard and other lines to which you referred yesterday? I have two drawings here of locomotives on the principle that I mentioned yesterday, one of which is working on the St. Gothard Railway and the other on the Central Swiss Railway; the first-named line has curves of 7½ chains radius, and the locomotive, of which a description is given, weighs 85 tons. The Central Swiss Railway has curves of 5 chains radius and the locomotives in use weigh 59 tons—59,000 kilogrammes. 29 Sept., 1892.
1938. And the gauge? The gauge in both cases is the standard 4-ft. 8½-in. gauge. I do not advocate the use of locomotives of that kind without further inquiry; but I am certainly of opinion that further inquiry is desirable, because such locomotives permit of being worked on very sharp curves, and if it were possible to use much sharper curves than we have been in the habit of using in this country the cost of some of our proposed mountain lines, such as the line from Monaro to the coast, from New England to Grafton, and from Tenterfield to Casino might be very considerably reduced.
1939. You only bring this before the Committee to show that in other countries they are negotiating these sharp curves with a particular kind of locomotive? Yes; but I cannot speak as to their performances, because I have not seen them working. I think the matter is one that deserves further report, as it might enable the cost of the mountain lines to be cut down very considerably.
1940. *Mr. Ewing.*] But not only would the locomotives have to be specially adjusted for these sharp curves, but also the rolling-stock? Rolling-stock on bogies, or with short wheel bases would do. It is the locomotive that is the chief difficulty in all cases.
1941. The rolling-stock does not matter?' I do not say that it does not matter, but the adaptation of the rolling-stock is a very simple matter.
1942. Still you regard it as something that is immaterial compared with the other. You said yesterday that you thought, without expressing a definite opinion, that a light line of railway in the Bega district would cost about £8,000 a mile? Yes.
1943. Does not that seem to you a great expense? You would not regard such a line as a cheap line? It is not a cheap line.
1944. Why is it not a cheap line? I should call a cheap line one costing between £2,500 and £3,000 a mile.
1945. Why is it not possible to get a cheap line here? The earthworks would still be rather heavy, even if they only came to £2,000 a mile, and then the cost of bridges and culverts is large.
1946. It is the cost of making bridges, and the broken character of the country generally that makes the line expensive? Yes.

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1947. If a line with less engineering difficulties could be obtained, it would be cheaper? If it could be obtained.

1948. Have you any knowledge with regard to such a line? Not personally. Mr. Surveyor Dyer, according to the Parliamentary papers, made this report:—

I have been over Messrs. Robertson's and Arnheim's lines, and must admit that the proposed line *via* Merimbula presents fewer difficulties and lessens the distance by at least 2 miles from Pambula, the country being less broken. Consequently, a much cheaper line would be constructed.

1949. What value do you give to that report? I should not be very sanguine of any great reduction in cost—in fact, I think it is rather doubtful whether there would be any great reduction in cost by adopting that particular route. I understand that it would cross the estuary at Merimbula and follow the coast for some miles, working towards Bega, and, though no doubt more flat country would be encountered, there would be still some spurs to be gone over, while there would have to be more waterways provided than on the other line. Besides, it seems to me that you do not tap the good country until you get near to Bega with that line, whereas with the Wolumla line you tap it at once.

1950. Mr. Surveyor Dyer speaks very indefinitely with regard to the engineering difficulties on the route. In his opinion there would be fewer engineering difficulties on that route than on the Wolumla route? Yes, it appears so from his report.

1951. Have you any other information on the point? No.

1952. Therefore, what you say in antagonism to his report is surmise? I say I have not the information at the present moment, but I can look it up. The feeling has been against that line. I think you will find that in the printed papers.*

1953. Generally speaking, the people have regarded a line *via* Wolumla as the one that would serve the district best? Yes.

1954. From Wolumla to the sea coast appears to be about 6 miles? Yes.

1955. As far as Bega is concerned, it would not matter which way you approached it? No.

1956. Therefore, the objection to the coast line is limited to Candelo and Wolumla? It is limited to the principal part of the district.

1957. The worst that could happen if the coast line were made, would be that the Wolumla people would find themselves 5 or 6 miles further away from the railway? Yes. Then you see the roads converge at Wolumla.

1958. Those people would have 6 miles further carriage? I think they would have more than that, because there is a spur running down towards Bega parallel with the line which would prevent easy communication with it.

1959. It might be possible that the cheaper route although not serving the district quite so well, in that some of the people there will have to carry their stuff 6 miles further, would be more justifiable than a direct line? It is possible under some circumstances; but without going into the cost, I am not prepared to give an opinion.

1960. Therefore, you say that you believe that the line proposed by the Department is the best for the development of the district, and you cannot tell us definitely the merits of the alternative line reported on by Mr. Dyer? No; that line has been so long abandoned that I did not expect that the question would be raised again, and I have no information about it at the present moment.

1961. How long would it take for a competent man to tell you what the route from Pambula *via* Merimbula to Bega was like, in general terms? I could have it done in a day or two.

1962. In other words, a person passing over the country would be fairly well able to tell you? Yes.

1963. And you would also get the distance from Wolumla to where that line might be supposed to go? A good surveyor would be able to give a good general idea.

1964. You have men there who could do it in two or three days? I could send Mr. Stuart, only he happens to be away just now.

1965. It could be done in a week? I may be able to get the information from others.

1966. *Mr. Neild.*] You have suggested the possibility of reducing the curves on the proposed line by one-half—that is, of using 6-chain curves instead of 12-chain curves—and yet you think it may lengthen the line;—why should it be necessary to lengthen it? Because in some places you would have to wind about instead of keeping a straight course. The country being undulating, you would wind about to follow the contours.

1967. But that would not be likely to reduce the curves, would it? The contour very often follows sharper curves than the adopted minimum.

1968. Then the increased length would not be the result of substituting sharp curves for long ones, but of substituting sharp curves for a straight line? Well, there is the substitution of a different minimum.

1969. Would the engines to which you have referred, while adapted for sharp curves, be suitable for running on our main line, should a connection be made? Yes; there is no reason why they should not go on the main line. I do not say that all the present rolling stock would be suitable for running round sharp curves; but certainly the most recent rolling stock with bogies could be used.

1970. Suppose this line were constructed as a light line—to use a term which is more or less understood—with fairly steep gradients, would it be an expensive thing to hereafter reduce those gradients? It might mean in many cases adding to the length of the line, or even adopting a new line altogether. Where you have a long ascent like that up the Wolumla Gap, if after having adopted a certain grade you want to reduce it, you must take a new line, going higher up the hill.

1971. It could not be done as a mere matter of excavation? No; it would scarcely be possible, because the incline is too long.

1972. In the estimate which you have put before the Committee you provide for a state of traffic analagous to that on our main lines? The line would be quite capable of carrying a similar traffic.

1973. But according to the evidence before the Committee there is no likelihood of anything like a heavy traffic for a long time to come. The demand would probably be for more frequent trains than for trains carrying a heavy load at a time. Under those circumstances there would not be the necessity for such a heavy line as the main line is. Is it not possible to take that into consideration in reducing the cost of the work? The only reduction that we could make would be in the bridges, so as to provide for lighter engines; but I think that would be very unwise. I think all the bridges ought to be built to carry the heaviest

* NOTE (*on revision*):—There is no further information beyond this contained in the printed papers.

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heaviest engines, because if the standard gauge were adopted at a later period they would be called upon to carry those engines. Possibly, if this line is made, there may in ten years' time be a very large trade there, which would necessitate longer trains and heavier engines for hauling, and then if the bridges were found too weak, it would mean very great expense, and probaby some anxiety before they could be altered.
1974. Have you provided for wood bridges or for iron? Chiefly wood.
1975. Is your experience in favour of wooden bridges in preference to iron as permanent structures? Yes. Considering the cheapness of ironbark in this country, I am very much in favour of wood for ordinary small spans.
1976. Would the ironbark in this locality be suitable for the purpose? No; but that is of very little importance, because it could be brought down the coast.
1977. Are the timbers of the southern coast district as highly esteemed by you as the timbers of the northern portion of the colony? On the table-land the timbers are very poor. All the ironbark used on the Michelago to Cooma railway had to be brought from the coast—from Moruya, Shoalhaven, and Bateman's Bay.
1978. Does your Department stipulate that northern timber shall be supplied in preference to southern timber? No; but in the case of road piles, girders, transomes, and things of that kind we stipulate for timber of special durability and strength.
1979. Irrespective of the locality from which it comes? If you get a good ironbark I think you may be very well satisfied with it wherever it comes from. Of course I am entitled to reject any particular specimen that is not found suitable.
1980. You are aware that in the open market there is a preference for northern timber as compared with southern? Are you speaking of timber generally?
1981. Yes? That is, comparing one species with another.
1982. Using the general term "hardwood," is it not the case that hardwood from the north of Sydney is preferred to hardwood from the south of Sydney? I might give an example. Tallow-wood comes from the north, but there is none south of Sydney.
1983. I mean the ordinary hardwood that is used in the building trade generally. Is there not a preference for the northern timber? The forests in the north are better, and no doubt more timber comes from there.
1984. *Mr. McCourt.*] Would not a 30-ton engine do all the work on the Bega line as well as a 60-ton engine? I think it is very likely, but I have not gone into the question of the loads to be hauled. When I brought forward that sketch of the 60-ton engine yesterday, I did not mean to say that that was exactly the weight of the engine that should be used.
1985. Do you know what a 30-ton engine would haul up a grade of 1 in 50? I have not got it at my finger's ends, but I can get it for you.
1986. If a 30-ton engine were used would not the bridges be cheaper? Yes; they might be constructed more cheaply, although the heavier class of engines is not always the worst on the bridges. As I said a little while ago, I should strongly recommend, if the line were constructed and the standard gauge adopted, that the bridges be made to carry the heaviest engines.
1987. If the bridges had to be renewed every twenty years it would not matter much? They do not want to be renewed every twenty years. Look at the bridges on the western, and the southern line—the Solitary Creek bridge—and the Menangle, and the Wollondilly bridges. They would stand for years.
1988. But you are always repairing them from time to time? There has been very little done to them.
1989. Speaking about bridges, is it not a fact that on the Camden tramway you use the old road bridges for crossing the Nepean. You did not construct a new bridge? I must acknowledge that I know very little about the Camden tramway.
1990. Were you in the Department when it was constructed? I had nothing to do with it.
1991. *Mr. Collins.*] Do you say that you have been over most of the Queensland lines? I have been over some of them; I have been over the line between our border and Brisbane, on the Townsville line as far as Charters Towers, on the branch line to Ravenswood, and on the Cairns line.
1992. Do you know of any country similar to this in Queensland where they use the narrow gauge? I should say that on the Cairns line, which I went up to inspect, you get all kinds of country within a small compass.
1993. What did it cost per mile to make that railway in country similar to the Bega country? I cannot say at the present moment, but I shall be happy to furnish you with any information that I can get on the subject.
1994. Can you tell us about what cost? No. It must be undoubtedly cheaper than the standard gauge because of the sharp curves.
1995. Do more accidents occur on the narrow gauge railways than on the wide gauge railways? I believe that there is a great freedom from accidents on a well managed narrow gauge railway.
1996. *Mr. Dawson.*] Do you think it is absolutely necessary that this line should be fenced on each side? In most cases it would be necessary to fence it, but perhaps where the line runs through rough country over Crown property it might not be necessary. Wherever land has been taken up I am sure it would be necessary to fence, and to use a very heavy class of fencing, too.
1997. Do they fence in lines in Queensland? Yes. In the case of the Cairns railway they tried to do without fencing, but they are fencing that in now.
1998. Is the Cobar line fenced? No.
1999. You think it simply depends upon the country as to whether a line should be fenced? I think it depends on the country. A line like the Cobar line would do very well without fencing.
2000. Where there are deep cuttings and rough country do you think it necessary to fence? I think it depends more on the class of settlement.

NOTE (*on revision*):—I should like to add that generally speaking I disapprove most strongly of an alteration of gauge for main lines especially, but also for short branch lines. In level country the difference of cost between the standard gauge and the narrower gauge is so little that it would be unwise to adopt the latter. The Chairman put before me the question of the adoption of a narrow gauge on this line considered as an isolated system. This line, or that part between Eden and Wolumla, may become some day part of a connecting line with the table-land and the existing railway system at Cooma. It would then no doubt be entitled to rank as a main line, and a break of gauge would be highly inconvenient. While I think that a narrow gauge would often be better than none at all, it seems to me a question whether a narrow gauge should be recommended for adoption, unless there was a probability that there would be sufficient funds derived from the additional profits obtained through the cheaper construction to be put on one side and applied afterwards to cover the expense of altering the works and rolling stock to the standard gauge.

Hon.

Hon. John See, M.P., Colonial Treasurer, sworn, and examined:—

Hon. J. See, M.P. 29 Sept., 1892.

2001. *Chairman.*] Are you familiar with the country through which the proposed line will run? I have been over it.
2002. On several occasions? On two occasions.
2003. Recently? No; it is about ten years since I was there last, but I know a great deal of the country. I know a great deal of its trade and importance from the nature of my occupation.
2004. What time elapsed between your two visits? I think about two years.
2005. Did you find any marked improvement in the productiveness of the district during that period? Yes; I know that it is a progressive district, not only from my own observations, but from information which I have received since. I know that it is a very rich dairying and agricultural district.
2006. Have you formed any idea as to whether it is not working up to its full capabilities? I do not think it is. There are a great number of very large estates down there which are not being worked to the extent which they would be worked if there were a better outlet for their produce.
2007. Did you form any idea during your visit, or have you formed any opinion since, as to whether the country is being used in the best way considering its capabilities;—is it better suited for dairying than for agriculture? I think it is adapted for both, but one of the drawbacks to agriculture there is the cost of conveying produce to market. Their principal port of shipment is Tathra.
2008. As a matter of fact, except on the flats on the river banks, is not the soil comparatively thin. It would not stand cultivation for agricultural purposes? It might not grow maize, but there are many other things beside that. I rely upon a great deal of it as good agricultural land.
2009. You think that if a better port were provided for the people than they have at present their produce would increase? I think that ultimately we shall have a railway along the south coast connecting with the present railway to Shoalhaven.
2010. Do you think that will be in the near future or is it some distance off? I think as soon as we can finance such a line we shall be justified in constructing it. I believe that the land to the south of Shoalhaven is quite as good as that to the north of that place. We know that there is a great deal of valuable coal land there which could be worked if there were a demand for the coal
2011. Is it not complained that there are too many coal-fields now? Yes; but there are a great many valuable deposits at Jervis Bay and further south.
2012. You think that this line would, sooner or later, form part of the continuation of the south coast line? I do.
2013. In the meantime, do you think the country would be justified in facing an annual loss of £19,000 upon it? Yes; I think so. I think a large amount of population would follow the construction of the railway and, of course, that must always be considered. If the country were to remain in its present state we should not be justified in making a lot of the railways that we have made, but in the hope that we shall have a large population in this district, and that a large amount of trade would follow the construction of the line, I think it is fully justifiable.
2014. Will you give us your idea as to the comparative importance and suitability of Tathra, Merimbula, and Eden, as ports? Tathra is an open roadstead, and a very bad shipping place except in fine weather. On one occasion, when I was there, the only way we had of getting on board the steamer was in a basket. I remember the late Right Hon. W. B. Dalley being put into a basket, and at very great peril hoisted from the wharf on to the ship. Excepting in moderately fine weather they cannot use the wharf there.
2015. Does the same description hold good with regard to Merimbula? I do not know much about Merimbula, but it is a bad harbour, a shallow harbour.
2016. We are informed that vessels do not go in there, but that the produce is taken out on droghers? Yes. It is a shallow harbour with a bar.
2017. You have been to Twofold Bay? Yes.
2018. Do you consider it a good port? One of the best in the Colonies; one of the best on the continent I should think. It is an excellent port.
2019. If we have been informed that there are times when, owing to the gales and the swell, it is impossible for vessels to lie comfortably alongside the jetty, that does not show that it is an excellent port? I have not seen it under those conditions. I look upon Twofold Bay as an excellent port, though under some circumstances, as at Williamstown, and even at Port Melbourne, the vessels may surge about there on account of the violence of the wind. With a strong easterly gale a range would come in.
2020. You think that in all probability, although there might be a loss on the line in the first instance, the increased traffic would very soon overcome it? I think it would be well to try and reduce the cost of the railway. I think a great many of our second-rate railways are too expensive in construction, and that cheaper lines would serve the traffic at a fair rate of speed.
2021. Suppose this line were likely to continue an isolated one for ten or fifteen years, do you think there would be any serious objection, for the purpose of cheapening it, to altering the gauge, and to making it differ in other respects from our main lines? I think it would be as well to try it. I should be very pleased to see a cheaper system introduced.
2022. The Committee have been informed that if 6-chain curves were used instead of 12-chain curves, there would probably be a reduction in the cost of earthworks of between £2.000 and £3,000 a mile, and that if the 3-ft. 6-in. gauge were adopted there would probably be a further reduction of £2,000 or £3,000 a mile—in other words, the cost instead of being £13,000 odd per mile would be somewhere about £8,000 per mile. In view of the fact that this may remain an isolated line for some time, do you think that in order to give railway facilities to the district we might adopt a narrow gauge and sharp curves? It depends entirely upon what the cost of widening the line afterwards would be. If the widening could be done at comparatively little expense I think the experiment would be justifiable. My impression is that this will ultimately form part of the south coast line.
2023. You think we should hardly be justified in departing from the usual standard because such a connection may be near? Yes. I know that the ports of this district are very difficult to navigate, and although the steamers are admirably fitted for the trade, I am sure the development of the district would warrant not only a steam service but also a railway service. Of course they are very well served at the present time. No people in some respects are better served, but still for these bar harbours railway communication is desirable.

2024.

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2024. *Dr. Garran.*] Looking at the fact that we should have to borrow £500,000 in order to lose £19,000 a year, do you think it would be wise to postpone the construction of the line? It will have to be done. But I am not giving evidence now with a view to recommending the construction of the line at once. We must, consistent with our obligations, so arrange the construction of our railways as to be able to finance them.
2025. Do you think the application in London for debentures will be very great if we go there to borrow this money under the present circumstances? I do not think they would lend you money under any circumstances if you went in that way. We have never said that we wanted to borrow money for railways that would pay. Generally we have said that we wanted money for public works, and they have paid.
2026. On the whole they have paid? A great many of the lines that do not pay directly contribute to the traffic of the trunk line.
2027. But allowing for that it would appear that we are losing upon some of them? But, as I said the other day, they give us a return which we do not appreciate.
2028. The debenture holder does not get the benefit of that return? He gets the interest on his money, and that is all he cares about.
2029. But as far as the line is a security for the loan, the debenture holder will not have much reason to be satisfied? I do not think that that is a fair way of putting it.
2030. Of course he has the revenue of the whole country as security? Quite so. The same thing might be said of the south coast line, and of other lines which show no return directly, but rather a considerable loss. Look, however, at the enormous advantage it is to the people of Sydney to get fresh milk and all the produce that comes on that line daily.
2031. But we got milk from the Southern line before? Not in sufficient quantities.
2032. We have only shifted the trade from one part of the railway to another? We still get milk from Bowral.
2033. I am not denying the advantages of the railway, I am only asking is it wise to recommend this line at the present time? I daresay that if it were recommended it would not be constructed, but I think it is as well to be ahead with our public works. I think it would do no harm for the Committee to recommend that it might, under certain circumstances, be constructed.
2034. Leaving it to the Government to say when the time had come? Yes. I think that any Government could take the responsibility of saying that.
2035. *Mr. Suttor.*] You made a statement the other day as to the amount of money owing upon certain contracts? Including the railways, sewerage works, and a variety of other works it comes to about £1,400,000. That is the amount that is owing upon works that had been let, or were in actual course of construction, on the 1st August.
2036. *Mr. O'Sullivan.*] Do you think it is wise for us to be guided by this commercial idea in constructing railways into new districts like the Bega district? Not always.
2037. Should we not look as much to the indirect advantages which we receive from the construction of a railway, as to the direct advantages in the shape of revenue? Yes, I think so There are various kinds of Government work that do not pay. Police protection, court-houses, post offices, and a variety of other things are necessary for the convenience of the people, and in that view are undertaken; but they do not pay. If court-houses were only built because they gave a return, they would not be built at all. The greatest civilising influences that we can have are the railways.
2038. Just as we make roads to open the country, so we should make railways? I think railways are much cheaper, and I have already said that if we could adopt a more economical system it would be better; but it is for those who understand the practice and theory of railway construction to say whether such a system should be carried out, and whether the wear and tear on such a railway would or would not be more than it is on the present railway. If such a system could be carried out I should recommend it.
2039. If it can be shown to us that this railway could be constructed for one-third less than the present estimate, by adopting shorter curves, steeper grades, and lighter rolling stock, would you recommend it? Yes.
2040. You said that you anticipate that at some future time it will form part of the south coast railway? Yes.
2041. How far hence do you think that will be? It is very hard to say, but I should think within the next ten years, if the country continues to progress as it has progressed. Since I have been in Parliament—within the last twelve years—the line from Newcastle to Sydney has been constructed, and the railway has been taken almost to Shoalhaven; and I reasonably expect that the Colony will continue to progress, by reason of its greater development. I see no exaggeration in supposing that a connection will be made between Bega and the termination of the present south coast line within the next ten years.
2042. But in the last ten years we had no reminders of our indebtedness to Great Britain, and there seems a probability that we shall not be able to borrow so easily under our present circumstances as we did in the past. Remembering this, do you think we shall make as much progress in railway construction during the next ten years as we have done during the last ten years? I think so. Our principal difficulties—the climbing of the mountains, and so on—have been overcome, and in a great many parts of the interior the cheap lines must go on. Railways are cheaper than roads in a great many cases.
2043. That is in the plain country at the back? Yes.
2044. If the south coast railway is to be continued to Bega within the next ten years, would it be wise to construct the proposed line with a narrow gauge? That depends upon whether a narrow gauge railway could be altered to the broad gauge without much additional expense. If it is meant that there would be only a temporary line, and that a great part of its construction would have to be gone over again, I should say that it would be far better to make it consistent with our other railways at once.
2045. To adopt the standard gauge in the first instance? Yes, unless the narrower gauge could be altered later on without very much additional expense. I suppose the cuttings would all have to be made to suit the broad gauge, even if the line were run on the narrow-gauge system. The expense of reducing curves, and making other improvements upon our railways, has been very great of late. It has cost the country a large amount of money to give greater facility to the traffic on the lines that have already been constructed.
2046. But with the probability that this line will stand by itself for many years, would you recommend it as a cheap line on the narrow gauge? I should. I have a great opinion of the southern districts. In

point

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point of fact, I have a great opinion of all the coast districts and of that portion of the Colony generally. I think that ultimately Twofold Bay will be one of the ports of the table-land.

2047. *Mr. Davies.*] In addition to the office of Colonial Treasurer you hold the position of Minister for Railways? Yes.

2048. Are you aware that we have now ten non-paying lines of a total length of 765½ miles, which have cost £9,518,230, and upon which there is an annual loss of £311,430? I am not aware of the exact figures, but I know that a considerable number of railways do not pay.

2049 Are you aware that two other lines, one of which has recently been opened and the other is soon to be opened, namely the Corowa and Cobar lines, will increase this annual loss? I think those lines will pay.

2050. They may pay sometimes, but they will not pay for many years to come? The same argument might be used against the construction of breakwaters or the dredging of rivers. You might apply it to the construction of any public work. We have made breakwaters simply to give people facilities. The people reap the wealth of the Colony, and if we only made public works when we are sure that they would pay a great number of them would not be made at all.

2051. Do you favour the construction of this railway and the adding of £20,000 a year to the loss upon our lines? If the district were to remain as it is at present I should not, but we know that this is a progressive district, and that its development is going on very rapidly, and will go on much more rapidly in the future. A railway that might be a big thing to-day will seem a small matter to-morrow. After all our obligations must be taken into consideration, and the authorisation of this railway would not mean its immediate construction—it would mean that when the time was opportune the work would be carried out.

2052. But will it not have a very unfavourable influence on the money market when you go there to borrow if it becomes known that we have railways in existence upon which there is an annual loss of over £200,000? As long as we can show that our railways are paying 3½ per cent. on the invested capital, so long will they form a magnificent asset, while their indirect advantages are also very great.

2053. Is it fair to the travelling public that a high passenger rate should be charged on the main lines that do pay in order to make the branch lines pay? Our rates and fares are very low and compare favourably with those on any other railways.

2054. Are you aware that they are 25 per cent. more than the rates on the Victorian railways? No; but I have heard that the Melbourne railways are not paying, and that would argue that they should increase their rates, if they are as you say below ours. Compared with some of the English lines the fares and freights on our railways are lower per mile.

2055. I gather that you are in favour of the construction of this line notwithstanding that it will entail an annual loss of £20,000 upon the community? If I thought that that annual loss would continue I should say, "Do not construct the line," but as I think it will be only temporary, and as the railway will bring about a large amount of settlement and increase the trade enormously, I should say "Yes." This is a wonderfully rich district, and I think the railway should be made as soon as we can afford to finance it.

2056. Do you, as a business man and a Minister, think it is wise to construct a railway 36 miles long at a cost of £560,000 in this district? Yes; for its own sake, and as a portion of the south coast system, which I think must be continued.

2057. How many years do you think it will be before it will give anything like a reasonable return;—suppose the whole of the trade of the district within an area of 30 miles by 40 miles were to be carried over the whole length of the line, would it yield £30,000 a year? I have not gone into the question at all.

2058. Do you think that the freights paid to all the steamers calling there amount to £30,000 a year? I do not know, but I should think that they amounted to more. This is a large district.

2059. The population of the district is 12,000, and it is estimated that every person will travel upon the line twice in the year;—do you not think that that is a very liberal estimate? It seems so; but, after all, it is reasonable to suppose that people will travel by the railway. I am not, however, in a position to go into details. I am only speaking generally. The statistics of population and production, would be based on the facts given to the officers who made the ordinary inquiry.

2060. Do you know this country pretty well? I have been over it twice.

2061. Do you regard it as a difficult country for the construction of a line of railway? I should not think that it was, and the estimate of cost struck me as rather large. I did not climb any mountains when I went there. We drove along rather easily with a four-horse coach.

2062. Would you be surprised to learn that the earthworks on this line will cost about £200,000? I am not surprised at anything I hear about railway construction. Perhaps if you and I had to do it, we could do it for a good deal less.

2063. Would you be surprised to learn that the bridges and culverts will cost £100,000? In our railway construction we seem to go right ahead, and I know a case where they had to pull down a farm-house which was in the way. I do not know what they propose to do in this case, though the cost seems large for so short a distance, and the country does not present any great obstacles to railway construction.

2064. Most of the district is occupied by free selectors? Yes; but a good deal of the land is in the hands of large holders.

2065. But the holdings are not very large; they are mostly small areas? A good deal of land is held by three or four persons there. I do not mean to say that it is not put to good use, but I say that it would be put to a better use if they had the means of getting to market at a reasonably cheap rate.

2066. You think that the construction of a railway would increase the settlement there? I am sure of it. I look upon this as one of the richest parts of the Colony.

2067. But is not all the rich land there already taken up? I suppose it is. I think most of it is alienated.

2068. Are you aware that it was offered at 10s. a section and that no bid was made for it? I could not say.

2069. If it were good land it would not be passed? I could not say. I have not been overland to Bega, but I have been overland as far as Shoalhaven. I know Moruya; the country there is wonderfully rich, and further south it is richer still.

2070. You would favour the continuation of the south coast line to join this line? Yes.

2071. And for that reason you do not advocate a break of gauge? Not if the alterations to the broad gauge

gauge would cost a large amount of money. In view of that alteration, they would have to make the cuttings, sleepers, and everything else suitable for the broad gauge when it was necessary. Hon. J. See, M.P.

2072. You do not think that this should remain as a detached railway? No; I do not.

2073. You are looking forward to the time when it will be connected with Nowra on the one hand, and with Cooma on the other? Yes. 29 Sept., 1892.

2074. *Chairman.*] Is there anything else you would like to say? No.

2075. *Mr. Neild.*] Do you think that in the case of a detached and purely local line like this, it would be to the advantage of the people of the district, and also of the public generally, that special rates should be charged, instead of the minimum rates charged on the main system? Special rates, I think, might be charged.

2076. In view of the speedy communication with a good port which the line could give these people, do you not think that they should pay proportionately higher rates than the people in other parts of the Colony where the traffic is of a sufficient volume to pay for the working of the railway? I quite agree with you there. It seems to me an anomaly that in places where the ordinary mode of haulage costs £4 a ton, immediately a railway is made the rates come down to those charged in other places.

2077. Time is an essential factor in mercantile transactions? Yes, and safety.

2078. With the railway you gain both? Yes.

2079. And in this case, the possibility of shipment at a very good port? I know that in some cases vessels have had to leave produce at Tathra when there was a bad gale blowing, and to wait until the weather moderated.

2080. That injures it very seriously, and possibly destroys it? Perishable goods would suffer very severely—butter, eggs, poultry, and things of that sort. Live stock would pine away and become almost useless.

2081. With reference to the expected loss on this line of £19,000 per annum, it might be very materially reduced by charging special rates? I think the Railway Commissioners would be justified in charging special rates on lines of this kind.

2082. And now I have to ask you a question which, if you take exception to it as a member of the Cabinet, I shall not press. Speaking generally, do you think that a proposal on the part of the Railway Commissioners to impose special rates would be likely to meet with serious objection from the Cabinet? I do not see why it should. We have differential rates on the railways now, and we are practically working parts of the lines for almost nothing. Differential rates have been sanctioned between Wallangarra and Glen Innes which do not pay, in order to get the trade over a portion of the line where it will pay; and if differential rates are imposed in that way, it would be just as fair to charge special rates on these lines.

2083. Although the bulk of the good Crown land in the district is alienated, still there can be no question that the construction of the railway would enhance the value of the remainder? Undoubtedly all the land in the district would be benefited by it.

2084. We should have a good case for the application of the betterment principle? I do not quite understand the betterment principle as applied to Crown land.

2085. I am not speaking of Crown land, I am referring to private holdings? Undoubtedly, all the land in the district would be benefited. At present we are alienating our public estate and putting the receipts into what is called the revenue. This revenue is distributed amongst a variety of public works. The only way in which I think the betterment principle could be worked would be by reserving Crown land in order to get a better price for it ultimately, though the object of all Governments up to the present as been to give the people cheap land. Unoccupied land is valueless to the State, and only becomes valuable when it is occupied. That is a theory which is generally accepted, and which to my mind is very sensible.

2086. In view of the fact that the bulk of the Crown land here has been alienated, do you think it would be fair to apply the betterment principle? I do not see any objection to its application where private persons participate in a very great advantage

2087. The application of the betterment principle would necessarily reduce the expected annual loss? They have applied the betterment principle without any special Act of Parliament on the Lismore to the Tweed Railway. A man through whose land the railway passes gets a certain amount of compensation; but he has to pay a certain proportion of that back, because of the increased value which the railway gives to his land.

2088. But the betterment principle can be extended to land at a considerable distance from the line? So it ought to be.

2089. *Mr. Dawson.*] As Minister for Railways, do you know whether the railways take any credit for the amount that is saved upon roads. For instance, the Public Works Department, before the construction of a railway spend from £25 to £50 a year on a road from A to B, but when the railway is constructed that is knocked off, and the country saves it? It does not go to the credit of the railways. Nothing is taken into consideration except the earnings and the cost of working the line.

2090. There certainly is a saving to the country? Undoubtedly.

Gustave Fischer, Esq., Assistant Engineer for Tramway Construction, Department of Public Works, sworn, and examined:—

2091. *Chairman.*] You are Engineer in charge of Tramway Construction? Yes.

2092. You have been connected with the Department for some years? For eleven years now. G. Fischer, Esq.

2093. *Mr. McCourt.*] The Committee are desirous of getting some information with regard to cheaper or more economical railways. Can you give us any information with regard to the construction of such lines? I may have a little information at hand which may help you. 29 Sept., 1892.

2094. Will you give us that information? I am not prepared to make a statement. I would rather you would ask me questions.

2095. Do you know the Eden to Bega district? I do not—I have never been there.

2096. Do you think it is possible to construct cheaper lines than we are constructing now on the present gauge? I am speaking with a qualification. It is very likely that we could construct much cheaper railways than we have been constructing up to date, but it would depend very materially upon the gauge that we used. I do not believe in constructing main lines of railway flimsily.

G. Fischer, Esq. 29 Sept., 1892.

2097. For branch lines doing light work would you advocate the adoption of the narrow gauge? It would all depend upon the district. If you have an isolated district which is not likely to be connected with the main system for many years to come, it may be desirable to use the narrow gauge in order to reduce the cost of construction.
2098. Can you tell us any place where the narrow-gauge lines are working satisfactorily? I know that in Europe there are thousands of miles laid down with a narrow gauge.
2099. On what gauge? Principally on the metre, a 3-ft. 3-in. gauge, and also of late years in France on the 2-ft. gauge. There are various gauges, 2-ft, 2-ft. 6-in, 2-ft. 9½-in., 3-ft., 3-ft. 3-in., and 3-ft. 6-in.
2100. Suppose the gauge in this country were broken, what gauge would you recommend as the best and most economical for districts such as Bega? I could not speak of the Bega district at all. I think every case wants treating on its merits. You should not lay down a general law as to what is best for branch lines.
2101. What gauge would you recommend for a district where the traffic would be light? I would rather not say.
2102. Supposing you were breaking the gauge in the Camden district, what gauge would you adopt? I would first inquire what was the possible maximum traffic, and then calculate what would be the best gauge.
2103. Do you know the Camden district? I have been through it several times.
2104. But you could not say what would be the most economical gauge for that district. Do you think the broad gauge is the most economical? I certainly do not.
2105. Which would you recommend? I should not like to say without going into calculations—it might be a 3-ft. gauge or it might be a smaller gauge. Anything that would carry the possible maximum traffic would be quite large enough.
2106. Do you know what the traffic is now. Have you an idea? The traffic could be carried on a very narrow gauge.
2107. What gauge would you recommend for the work of the district? I think that the traffic on the Camden tramway could be carried on a 2-ft. gauge very comfortably.
2108. Would that be the most economical gauge? I believe so; but I would not like to commit myself on the point. I believe it could be carried very satisfactorily on a 2-ft. gauge.
2109. Supposing we were to construct a line with a 2-ft. gauge through the country, what would it cost per mile? I could not say without calculating it. It certainly should not cost more than £3,000 per mile at the outside.
2110. What curves would be possible on a line like that? In that country you could make your curves rather easy. It is not very heavy. The 2-ft. gauge goes down to a curve of a 66-ft. radius.
2111. What motors are worked on that gauge? In France they are using an articulated locomotive—the Mallet. It is compound and has four cylinders. It is on two bogies with a very small wheel base, and will go round 66-ft. curves very comfortably at a speed of from 18 to 20 miles an hour.
2112. What is the weight of the motor? The motor I have before me weighs 12 tons when in working order. It will pass round 66-ft. curves and pull a load up a grade of 1 in 12½.
2113. What load would that motor take up a grade of 1 in 40? On a grade of 1 in 40 it could haul about 100 tons under very favourable conditions.
2114. With regard to the 3-ft. 3-in. gauge, what would it cost per mile in the Camden district? I do not know so much about the 3-ft. 3-in. gauge. I have information about it, but I have not had time to compile it for your use. The 2-ft. gauge has been most recently brought under my notice, and I have looked it up lately. The metre gauge would increase the cost of the 2-ft. gauge 20 or 25 per cent.
2115. Comparing the 3-ft. 3-in. gauge with our present gauge, what would be the reduction in cost and dimensions? It is very difficult to say. It all depends upon what you carry over it and the speed at which you intend to travel on it.
2116. Would the maintenance be reduced to any extent? It certainly would be reduced, but not to any very large extent.
2117. Are they constructing these narrow gauge lines largely in Europe now? As far as I can understand from the papers that come to my hand, there are something like 300 miles at present in use in France, and there are concessions for 800 miles.
2118. *Chairman.*] That is the 2-ft. gauge? Yes.
2119. *Mr. McCourt.*] Are they using the 3-ft. 3-in. gauge as well? Yes; there are thousands of miles of that gauge in use in Europe.
2120. What gauge seems to be most used? Up to date the 3-ft. 3-in, gauge has been more used than the 2-ft. gauge; but they have found that the 3-ft. 3-in. gauge is too expensive in certain districts. The 2-ft. gauge is used in very sparsely populated districts, where speed is not a great consideration.
2121. The 3-ft. 3-in. gauge would do good work in this Colony? Decidedly.
2122. As a rule would it cost £3,000 or £4,000 a mile? That would depend on the country it went through.
2123. Take fairly hilly country like the Bega country? Well, I do not know the Bega district.
2124. Suppose it is estimated that the Bega line would cost £14,000 a mile on the standard gauge, what could it be constructed for on the 3-ft. 3-in. gauge? I could not say. A line like that might want re-locating entirely. If you send an engineer to locate a line on the standard gauge, he tries to get the line most suited for that gauge, but with a 3-ft. 3-in. gauge he might be miles off that line; he might take quite a different direction.
2125. Would it be half the cost or one-third of the cost? I should not like to say.
2126. Would it amount to the same cost? No.
2127. Would it be any cheaper? It would be decidedly cheaper.
2128. You cannot state how much it would be cheaper? I should not like to. I do not know the district or anything about it.
2129. Do you know anything about the Tasmanian railways? I saw them many years ago. I have not seen them recently.
2130. Do you know the Queensland lines? I have been over some of them.
2131. What is the gauge there? Three feet six inches.
2132. Do they work satisfactorily? I believe so.

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2133. Would they be suitable for any of the districts in this Colony? No doubt they could carry the traffic in many of the districts here.
2134. And they could be constructed for very much less than our main lines cost? I think there would be a considerable saving in first cost. It is contended that the narrow gauge not only makes a reduction in the first cost, but that it reduces the working expenses and cost of maintenance afterwards. The live load carried in comparison with the dead load is much more favourable on a narrow gauge than on a broad gauge.
2135. If you decided to have a 3-ft. 6-in. gauge and to work with an engine weighing 25 or 30 tons, would there not be a great saving in the bridges? In the construction of them?
2136. Would not one-half be saved in the bridges? Not as much as that; you could not save 50 per cent.
2137. If you visited the Bega district, could you say what a 3-ft. 6-in. gauge would cost per mile. Suppose you were there a week? I should have to explore the country thoroughly. A week would not do. I should have to make a proper exploration in order to find if a different route would not do.
2138. It would take a considerable time to find that out? Yes. You would have to explore the country afresh, because you would go out with quite different ideas of the location.
2139. Do you know the plain country about Jerilderie? Yes.
2140. What would a 3-ft. 6-in. gauge cost there per mile? I should say that you would save about 30 per cent. over the standard gauge.
2141. That would be a third less than the standard gauge? About that.
2142. What about a 2-ft. gauge? You could almost save 45 per cent. with a 2-ft. gauge on level country.
2143. If the Jerilderie line was estimated to cost £3,200 a mile, you could do it at £2000 a mile with a 3-ft. 3-in. gauge? Yes; I think it could be done, but you would have to determine not to use heavy rolling stock, because you would be reducing the weight of the rails considerably. If you wanted to run the same speed on the narrow gauge as on the broad gauge the reduction in cost would be really nothing.
2144. Suppose you ran at 20 miles an hour? You would have to be satisfied with that on a light rail.
2145. It could be done for about £2,000 a mile? About that.
2146. Have you anything else to state? No.
2147. *Mr. Wall.*] Do you know what the cost of the Queensland lines are? I do not.
2148. If the Departmental estimate for the Jerilderie line was £3,200 a mile, that line would cost about £2,000 a mile if constructed on the narrow gauge? It all depends upon whether the £3,200 a mile included station buildings and locomotive sheds. If it did, you could not reduce the cost by one-third. I was speaking simply of the permanent way.
2149. Have you any knowledge of the relative difference in the cost of the permanent way? I only know that it has been demonstrated in other countries that the 3-ft. 3-in. gauge costs about 30 per cent. less than a 4-ft. 8½-in. gauge.
2150. Are you basing your estimate on the ordinary Departmental estimate, or have you any separate knowledge of railway construction outside of your Department? I had before I came to the Colony.
2151. Are you aware that a line has been constructed near Jerilderie on a wider gauge than ours at a cost of £2,028 per mile, including rolling stock, carriages, engines, and stations? I know the line you refer to—the line from Moama to Deniliquin.
2152. No; the line from Koondrook to Kerang? I do not know it.
2153. If that is so, and large loads are hauled upon that line, while the working expenses are only £28 per week, do you not think it possible that the Government might make some reduction on a different basis from that presented to us? Is that a private line?
2154. It was constructed by the Shire Council? Of course I could not express an opinion upon it, because I do not know the circumstances under which it was built, and I have not seen it. It all depends upon whether it is a flimsy construction or a solid construction. I am entirely opposed to putting a flimsy construction upon the standard gauge. It turns out wasteful in the end.
2155. Do you know how long the Deniliquin to Moama line has been running? I forget the time, but it is quite a number of years.
2156. It has been running something like twenty years? Yes.
2157. What is the probable life of your railways? What part of them do you mean?
2158. How long will your railways last without needing to be relaid? Sleepers, as a rule, want renewing at the end of about twenty years, and ballast wants renewing more frequently.
2159. Do you know that the Department regarded the line that I am referring to as a flimsy construction, and refused to take it over, although it has been used for twenty years, and now pays 8 per cent. on the capital cost? Yes; I know that.
2160. Have you visited that line recently? Not for eight years. It was in fair condition then, but I should not like to compare it with our main railways.
2161. Do you not think that if a light line could be constructed that would last twenty years, it would pay the Government to replace that line if it could be done at a very much less expense than the ordinary cost of construction? It depends upon circumstances. We cannot generalise upon a subject like this.
2162. We had evidence from Mr. Deane yesterday to the effect that if a narrow gauge line were run for fifteen years, and it was then desired to alter it and widen the gauge, you could well afford to do that? I can quite agree with that evidence.
2163. A light line would last for fifteen or twenty years without having to be renewed. Do you think it would be desirable in the interests of the country to construct such lines. Would it pay to construct them? I do not believe in constructing light lines. I think that every line, whatever the gauge may be, should be substantially constructed—that it should be relatively as strong as our standard lines.
2164. Assuming that the trade of the district amounted to 23,000 tons per annum, would a 3-ft. 6-in. line meet the traffic? It would more than meet it.
2165. Most of our ordinary lines have been re-made since they were put down? No, only a small per centage of our mileage has been relaid.
2166. A great number of sleepers have had to be relaid? A great number of the sleepers have had to be renewed from time to time, but there has been very little renewal of the permanent line.
2167. Is it not a fact that a large renewal of sleepers has taken place on the western line? Yes, I believe so, but I have not been connected with the maintenance department for some years.

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2168. Would not the wear and tear caused through oscillation be more on a narrow gauge line with 6-chain curves than on our present line? Decidedly not, if the rolling stock were constructed to suit the line.
2169. If the rolling stock were constructed to suit the line there would be no extra oscillation to cause a greater wear and tear on the rails than there is at present? None whatever, if the rolling stock were properly constructed.
2170. If Mr. Deane stated that with a 6-chain curve the oscillation would render the cost of maintenance more than it is at present, you do not agree with him? I do not know whether Mr. Deane remarked that the rolling stock would have to be properly constructed to suit the line.
2171. If it were constructed to suit the line there would be no extra cost in maintenance caused by oscillation? I do not think so.
2172. A line with a 6-chain curve would have a very great advantage in rough country as compared with a line with 16 or 17-chain curves? Yes, it could get round much more easily.
2173. And would it cost very much less to construct? As a rule, but it must be specially located.
2174. Are you speaking of standard gauge lines? No, of narrow gauge lines.
2175. I want to know whether by increasing the curves we should add to the wear and tear on the lines;—you think that if the rolling stock were made to suit the line the oscillation would not be very great? It would depend upon two points. In the first place my remarks apply to a narrow gauge line, which would bring down the speed very much.
2176. Do you know what kind of a tramway was recommended some time ago to bring the material on to the Colo Valley line when it was proposed to be constructed? I think Mr. Townsend reported on the matter.
2177. That is very rough country, is it not? Very rough indeed.
2178. Do you know whether Mr. Townsend proposed to construct that tramway at £1,000 per mile, including rolling stock? I cannot remember the cost. I know that he recommended a narrow gauge tramway.
2179. Do you know what gauge he recommended? No, I do not.
2180. You are not aware what the cost of that tramway was to be? No, but it will be given in the official report.
2181. *Mr. Neild.*] When you gave us an estimate of the cost of narrow gauge lines, did you intend that to include or to exclude rolling stock? To exclude rolling stock.
2182. Would there be a proportionate difference in the cost of rolling stock? There would be a difference, but not a proportionate difference. The difference would not be so great.
2183. I think you said that there would be a reduction of something like 33 per cent. for a 3-ft. 6-in. gauge as compared with a 4-ft. 8½-in. gauge? I said that there would be a reduction of about 30 per cent. with the metre gauge, but that would always mean a re-location. If you have a certain centre line laid down for a 4-ft. 8½-in. gauge you must re-locate it for the metre gauge.
2184. Had you anything to do with the Camden tramway? No.
2185. You are acquainted with it? Yes.
2186. Do you know the steepest grades there? About 1 in 18, as far as I recollect.
2187. Is it steeper than the gradients on our street tramways? We have 1 in 17 in Sydney, at Marion-street, Leichhardt.
2188. Would you consider that that grade could be properly worked on a country line? I think it is very undesirable to put in grades of 1 in 18 on a country line.
2189. What would you think a fair grade upon a 3-ft. 3-in line, to carry passengers and goods—medium loads? I think it is very desirable to keep the grades down to the minimum, and rather to increase the curvature. If I had the metre gauge I do not think I would use a steeper gradient than 1 in 30, because directly you commence to haul heavy loads you have to put on heavy engines, and then if the permanent way is weak they are likely to put it out of order.
2190. With a 2-ft. gauge what would be the inside width of the rolling stock;—how many people would be seated? There are various designs. There is a design here to accommodate forty-six people.
2191. Those would not be seated across the car, they would be longwise? No, across the car—it is a *coupé*.
2192. What would be the width? A little more than 5 feet.
2193. I see that you have some designs for an open car;—are those cars used very extensively? They are used in France at the watering places, where there are narrow gauge lines to carry excursionists.
2194. You would not advocate anything like that for long lines, 30 or 40 miles in length? No, they are only for summer traffic.
2195. Do the motors burn coal or coke? Either.
2196. Or wood? Or wood.
2197. Can they burn wood equally well? The boilers want a different construction, that is all.
2198. Is there any greater destruction of the furnace parts caused by burning wood than by burning coal? If the furnace were properly constructed I think wood would be rather more favourable to it than coal.
2199. What weight of rails would you use on the 3-ft. 3-in. gauge? Forty pound or 45 lb.
2200. What width would there be between the centre of the sleepers? Two feet 6 inches or 2 feet 8 inches.
2201. Are those lines ballasted? Yes.
2202. With earth, or sand, or stone? With gravel and stone principally.
2203. Is the question of ballasting as important on the narrow gauge as on the wide gauge? Most decidedly. A narrow gauge line ought to be relatively as strong as the standard gauge line.
2204. What is the weight of the motors on the Camden line? I think they are about 25 tons. I forget the exact weight.
2205. Do you know the cost of construction per mile of that line? I cannot tell you off-hand. We have it amongst the official records.
2206. Do you think that such a line would be preferable to the narrow gauge? I do not think that it is desirable to construct branch lines like that on the standard gauge. I think that on lines like that it is cheaper to transfer goods from the trucks on the narrow gauge line to the trucks on the main line than

to run them right through, because as soon as you take the rolling stock on to a branch line you have to make the branch line as heavy as the main line, unless you wish to go in for very heavy repairs continually. G. Fischer, Esq. 29 Sept, 1892.
2207. But the rolling stock of the light line could be taken on to the main line? That would not do.
2208. Would the extra rate of speed on the main line be destructive? You mean if the branch line were constructed on the standard gauge?
2209. Yes? If you construct a branch line with the same gauge as the main line you have to take the main line rolling stock on to it, and consequently you have to make the branch line as heavy as the main line. It would not do to mix up the branch line rolling stock with the main line rolling stock. The mixing up would be very awkward.
2210. The proposal here is for a detached line, so that there would be no necessity for transhipment? Yes.
2211. With the prospect of no connection being made with the main line for some years, would you advocate the adoption of the narrow gauge there rather than have no railway at all? I certainly think that if the standard gauge could not be made to pay and a narrow gauge could be constructed at a reasonable cost, it would be desirable to construct it.

TUESDAY, 4 OCTOBER, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM MCCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. JOHN DAVIES, C.M.G.	EDWARD WILLIAM O'SULLIVAN, Esq.
THOMAS THOMSON EWING, Esq.	CHARLES COLLINS, Esq.

HENRY DAWSON, Esq.

The Committee further considered the proposed Railway from Eden to Bega.

Gustave Fischer, Esq., Assistant Engineer, Tramway Construction Branch, Department of Public Works, sworn, and further examined:—

2212. *Mr. Ewing.*] What weight will one of our tram-motors draw? The heavy motors—those weighing 16 tons—will, at a pinch, draw three cars up a grade of 1 in 17. G. Fischer, Esq. 4 Oct., 1892.
2213. What weight is that? About 20 tons.
2214. What would a small locomotive draw? It all depends on its weight.
2215. Say 40 tons? On a grade of 1 in 17?
2216. Yes? It depends very much on the conditions. On lines like our street-tramways the resistance is much greater than it would be on an open road. On a good dry track such a locomotive might draw about 50 tons on a pinch.
2217. At what rate do our trams go? Well, they are limited to 9 miles an hour in the streets, but of course we do not go at that speed on a steep grade. They crawl up heavy grades at about 3 miles an hour, when they have a big load.
2218. You said that there would be a saving of about 30 per cent. in adopting the 3-ft. 3-in. gauge, instead of the 4-ft. 8½-in. gauge? Yes; about that, as a rule.
2219. Why would not a further reduction in grade reduce the cost? It would do so, though it would depend upon the amount of traffic which you wanted to carry whether it would be advisable.
2220. Why do you pin your faith to the 3-ft. 3-in. gauge as being the narrowest suitable? I do not. I I think you might go down to a 2-ft. gauge. If a 2-ft. gauge will carry the traffic, there is no reason for putting down a 3-ft. 3-in. gauge.
2221. You know nothing of the probable traffic of the line under consideration? I know nothing about the traffic.
2222. Would a 2-ft. gauge do a lot of work? It has done a lot of work in other places.
2223. You see no reason why it should not do a lot of work here? None whatever. The Festiniog railway carries about 150,000 passengers, and about 120,000 tons of goods traffic a year. Those are the latest statistics.
2224. How long has it been opened? I think since 1832—sixty years, and it is working to this day, very satisfactorily.
2225. Do you know the rate at which they travel on it? I think up to 20 miles an hour. The speed was originally limited by the Board of Trade to 12 miles an hour, but they are now travelling at a much higher rate.
2226. That meets all reasonable requirements? Yes; and it is a very comfortable line.
2227. There have not been many accidents on it? None at all.
2228. What would such a line cost in comparison with a grade of 4-ft. 8½-in.? In favourable country you might put it down at about one-half.
2229. Therefore, a 2-ft. gauge would cost about 20 per cent. less than a 3-ft. 3-in gauge? Yes.
2230. And you believe that in ordinary country the 2-ft. gauge would meet all requirements? It would depend entirely upon the amount of traffic which you wanted to carry.
2231. Generally speaking, the 2-ft. gauge can be constructed for half the cost of the standard gauge? I think so. I think it should be done for half the money.
2232. Can you tell us anything against the 2-ft. gauge? Well, a break of gauge is considered by many people to be very undesirable. Beyond that I do not see any objection to a 2-ft. gauge. Of course it does not give as much accommodation to passengers as the standard gauge. The cars are low, and you cannot stand up in them, but once you are seated you are comfortable enough.
2233. Have you information about any other line besides the Festiniog line? During the last Paris Exhibition a 2-ft. gauge line was laid down from the railway station to the various places in the exhibition, and 6,000,000 passengers were carried over that line during the time the exhibition was open, without the least accident, while the wear and tear was hardly perceptible. 2234.

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2234. But that is level country? Fairly level. The steepest grade, I think, was 1 in 40, but the curves were very sharp.

2235. *Mr. Hoskins.*] Do you know that the Festiniog railway was originally started, and for years was continually used, as a mineral railway? Yes, for carrying slate.

2236. How long is it since they commenced to carry passengers;—are they allowed by the Board of Trade to carry passengers? Certainly. The information I have here is as late as 1872. It states that the speed allowed by the Board of Trade is 12 miles an hour, but the rate of speed has been greatly increased since then.

2237. I suppose you know that the tunnels of that line are very much narrower—that is, that the sides of the tunnels are very much closer to the sides of the carriages than would be allowed on the Government railway? Yes, they are very close; in fact, it is dangerous to put one's hand out.

2238. Are the gradients on that line very steep? The steepest grade is 1 in 79·82—very nearly 1 in 80.

2239. Therefore the gradients on that line are much easier than they would be on the proposed line from Eden to Bega? I do not know what they are on the proposed line.

2240. The Engineer-in-Chief for Railways has stated that a cheap line could be constructed by having 6-chain curves and grades of 1 in 40, instead of 1 in 50 as was originally proposed. Those gradients are much heavier than the grades on the Festiniog line? Decidedly.

2241. Is it not a fact that before that railway was allowed to be used for the conveyance of passengers a great portion of the line had to be re-laid? I am not aware of it.

2242. Have you ever been engaged in surveying and laying out railways in this Colony? I have not been engaged in surveying railways here.

2243. Have you been engaged in surveying and laying out railways anywhere else? Yes, in the old country.

2244. Where? To a limited extent in Switzerland.

2245. In ascertaining the contour of the country, selecting the line, and laying it out? I have not done much of that. I have had more to do with the construction of the railways than with the original surveys.

2246. You have not made original surveys? Not the explorations.

2247. Your knowledge, then, of the cheap railways you have been speaking about has been acquired by reading? Decidedly.

2248. You are reported in the newspapers to have said last Thursday that a railway similar to the Camden tramway would suit the proposed line? I do not think I said that. I do not know the district, so that I could not make such a statement.

2249. Have you seen the Camden tramway? Yes.

2250. Have you travelled over it? Yes.

2251. Do you not know that two-thirds of that tramway is laid down upon the road, and therefore all that had to be done was to lay down the sleepers and the ballast? Yes; that is all.

2252. Do you know that they found such difficulty in working that line that they had to import special engines, which are now in use to do the work, and that they only take four loaded trucks at a time? Yes; the grades are very steep.

2253. Have you any objection to state by what railway you propose to surmount the difficulty of giving communication between Bega and Eden? I am not prepared to make any suggestions, as I do not know the district.

2254. You have seen the gradients? I have not seen any of the plans.

2255. There is a plan before you? That only shows the direction of the line.

2256. The ruling grade, as originally proposed, would be 1 in 50, but if the suggested cheap line is made with 6-chain curves, the maximum grade will be 1 in 40;—can you, from your knowledge of these matters, suggest how a railway can be constructed between Eden and Bega, with a maximum grade of 1 in 40, which will be cheaper than the line suggested by Mr. Deane, costing £8,000 a mile? I certainly would not make any suggestion at all in that direction.

2257. Could we have anything cheaper than a railway with a maximum grade of 1 in 40, and with 6-chain curves, costing £8,000 per mile? I could not say, because I do not know the country at all.

2258. Are you aware that an isolated railway unconnected with the main existing lines would be much more expensive to work, because the rolling stock used on it would have to be repaired in separate workshops? Certainly; but I do not know whether the increased expenditure and working expenses would not be balanced by the saving of interest on capital. If you put down a 3-ft. 3-in. gauge, it might cost 30 per cent. less than the standard gauge, and the question is whether the differences in interest and capital expense would not more than balance the increased cost of working.

2259. What would be the difference in cost of maintenance between an isolated line and a line connected with the main system? It would all depend on the amount of the traffic.

2260. Supposing the traffic were the same on both lines? The repairs on an isolated line would certainly be more expensive to carry out.

2261. Do you think they would cost 10 per cent. more? The repairs to rolling stock?

2262. Would the working expenses on an isolated line come to 10 per cent. more than the working expenses on a line connected with the main system, taking in the cost of coal and everything else? I should not like to say what the differenee would be.

2263. *Mr. Davies.*] A narrow gauge line such as you suggest would only be an apology for a railway? In what sense?

2264. Trains could not travel on it at the ordinary rate of speed, and you would have narrow cuttings where it would be dangerous to put your hand out of the window? Of course a narrow gauge line does not give the same amount of comfort as a standard gauge line.

2265. It would not give the speed? No.

2266. Not half the speed? That would depend upon the gauge. When you get into hilly country you can travel on the 3-ft. 3-in. or 3-ft. 6-in. gauge almost as fast as on the 4-ft. 8½-in. gauge.

2267. The principal saving would be in the cuttings? Not only in the earthworks, but right throughout the construction.

2268. Where else would it come in? It is estimated that as a rule a 3-ft. 3-in. or 3-ft. 6-in gauge costs 30 per cent. less than the ordinary gauge.

2269. How? Because of the saving in earthworks, ballast, sleepers, rails, and station arrangements. Then, on narrow gauge lines the cars are built at a lower cost.

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2270. The station buildings would be the same whatever the gauge. It would depend upon the Commissioners whether you put up brick or wooden buildings? As a rule it is considered that cheaper buildings may be erected on a narrow gauge railway than on a standard gauge railway.
2271. How do you make up the difference in cost of construction between a narrow gauge railway and a standard gauge railway? In the culverts, bridges, ballast, sleepers, and rails.
2272. Would not the sleepers cost very much the same in both cases? No. The sleepers for a standard gauge line might cost 4s. 6d., while for a narrow gauge line in the same district they might not cost more than 3s.
2273. They would be somewhat shorter? Shorter and smaller in size.
2274. Do you think there would be a difference of 1s. a sleeper? I think so.
2275. The rails would be the same weight? No; the weight could be reduced on a narrow gauge line, because the load on each axle would be very much less.
2276. But it is more concentrated on a narrow gauge than on a broad gauge? The tendency is to distribute the load so that you get only a very small weight on each axle.
2277. How would you manage that? The same thing has been attempted on the standard gauge lines. You do not intend on a narrow gauge line to put at the outset more than 8 or 9 tons on the axles.
2278. Is that with the cars? Yes; but with the locomotive specially.
2279. Locomotives have to be constructed for this particular kind of railway? Yes, specially.
2280. Where did you get a knowledge of the construction of railways on the narrow gauge? I have never been engaged in the construction of narrow gauge lines.
2281. All your knowledge has been acquired by reading, which any member of the Committee could do himself? Decidedly.
2282. You have no practical knowledge? None in construction.
2283. It is simply a matter of reading? Yes; I have read the experience of other engineers, and I have seen the lines.
2284. But you have not had anything to do with them? No.
2285. Do you think it would be wise on the part of the Government to depart from the present uniform gauge on the railways? I should not like to say. If it is necessary to give railway communication to a district and you are not able to pay for the standard gauge, it may be necessary to reduce the gauge.
2286. Suppose the proposed line were hereafter to form part of our general system, would not all the goods have to be transhipped at the terminal station? Yes.
2287. Would that be desirable? No; but it is a question whether it would not be necessary.
2288. Would it not be very expensive;—would it cost from 9d. to 1s. a ton for handling alone? I do not think it would cost as much as that with properly arranged platforms and interchanging stations. I think it would only cost 6d. a ton all round.
2289. Is it desirable that that cost should be added to the cost of carriage, especially since the handling of some goods, such as dairy produce, is very injurious to them? It all depends upon whether it would be economical or not.
2290. Would it be an advantage to the producer to have to pay this 6d. a ton, and then to run the risk of getting his goods destroyed or damaged? It would depend upon the amount you would save in the cost of construction, and therefore on the annual interest.
2291. You advocate a cheap and nasty system of railways? Decidedly not; I did not say that it was a cheap and nasty system. You can construct a narrow gauge railway as well as a broad gauge railway.
2292. You have never had anything to do with the construction of narrow gauge railways? No.
2293. *Mr. Wall.*] You said something about unloading the trucks. If we were to establish branch lines with a 2-ft. or 3-ft. 3-in. gauge, could not the narrow gauge trucks be run along the main line if a third rail were laid down? I think it would very undesirable.
2294. You think it would be less costly to unload them? Decidedly.

Clement Van de Velde, Esq., C.E., sworn, and examined:—

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2295. *Chairman.*] Have you been residing in the Colony long? Thirteen years.
2296. You are agent for several Continental engineering firms? I am.
2297. The project we have before us is the construction of a line of railway 36 miles in length upon the standard gauge. In the course of the inquiry the question has arisen whether, in the case of isolated lines, such as this will probably be for many years, it is not desirable to have a cheaper method of railway construction than we have hitherto adopted, by using a narrower gauge. The Committee would be glad to have any information which you can give them on the subject, as to whether such railways are increasing in number or whether the standard gauge is superseding them;—are you prepared to make a statement, or would you rather the members of the Committee should question you on various points? I will make a short statement, and after that I shall be pleased to answer any questions. I may say that on the Continent of Europe for several years past—I daresay for the last fifteen or twenty years—they have been constructing a large number of branch railways on the metre gauge, which is about 3 ft. 4 in., within a fraction. It is admitted by all engineers there that for a given gauge there is only one proper and efficient way of constructing a railway. The cost may be cheapened, but generally at the expense of an increase in the working expenses. There is only one rational way of reducing the cost of construction and of working of a railway, and that is by reducing the gauge. This has been understood for many years past in Europe, where in France, Belgium, Italy, Germany, Switzerland, and Holland, the secondary railways have been constructed on the first gauge; 3 ft. 4 in.; the standard gauge being adopted for the primary lines. For the last few years Decauville has proved that the cost of railways could be cheapened yet by adopting the 2-ft. gauge, and since the last Paris Exhibition, where 60,000 passengers a day were transported without a single accident, the Government of France have sanctioned the construction of public railways on this gauge. At the present time over 800 kilometres are already in operation and are giving every satisfaction. Over 300 kilometres have been sanctioned. I may even add that a certain number of railways which had been sanctioned to be constructed on the standard gauge, but which were never carried out, are now being made on the 2-ft. gauge. In England there has existed since 1832 the celebrated Festiniog railway, which is built on the 2-ft. gauge, and where they now transport annually 150,000 passengers and 120,000 tons of goods. The railway

from

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from Illigori to Darjeeling, in India, also built on the 2-ft. gauge, has cost a little over £5,000 a mile. On the standard guage it would have cost £20,000 a mile. It gives every satisfaction, and answers all purposes. If the 2-ft. gauge does good work in a mountainous country, there is every reason why it should do better work on a flat country. The 2-ft. gauge is cheaper, because, owing to its narrowness, it can, when required, be laid on the public roads, and much less expenditure need be incurred in the resumption of land. Then the proportion of ballast is reduced to about one-sixth of the quantity required for the standard guage, because this gauge allows the use of the metallic sleepers to advantage. For several years past all the big companies have made great efforts to use metallic sleepers instead of wooden ones, but so far the experiments have not been very satisfactory, owing to the difficulty of fixing the rails on to the sleepers. There has never yet been found a good system for doing this with the ordinary gauge; but the 2-ft. gauge allows of the rails being riveted to the sleepers, and that is the best joint in the world, except casting all in the same piece. This cannot be done on the wide gauge, because you would require a very heavy sleeper to prevent bending. The advantages of the metallic sleepers are very great, if the rails are riveted on, because the cost of maintenance is considerably lessened, since the rails seldom get loose, whereas with wooden sleepers they have to be looked at every day. Then, since the steel sleeper is so much less in height than a wooden sleeper, there is a great economy in ballast. It is admitted by all railway engineers that when wooden sleepers are used you must put 3½ or 4 inches of ballast under them, and then raise the ballast to the level of the top of the sleepers. Wooden sleepers are very high as compared with steel sleepers, so that the difference in the quantity of ballast required is about 40 per cent.

2298. What is the depth of the metallic sleeper? I suppose a little less than an inch—about 2 centimetres. In the construction of a railway on the narrow gauge principle tunnels, heavy cuttings, and earthwork can, in most cases, be dispensed with, owing to the sharp curves of which such gauge is susceptible, and which permits of the railway being laid round the hills and valleys on inexpensive side cuttings. The rolling stock being so much lighter, all works of art will become less expensive. The small diameter of the wheels does away with the necessity for platforms in stations. Even the cattle and horses walk into the trucks from the ground level. The rolling stock being lighter, the rails can be lighter. So far, the heaviest rail adopted in France is 19 lb. to the yard. Another great advantage is the facility this line affords to private individuals to connect their factories, farms, and saw-mills with the railway, and by means of a few portable sections enables them to load their goods on the railway trucks on the spot of production, and thus avoid transport to the railway stations, and expenses of loading and unloading. I need hardly point out the great advantage of the narrow gauge over the standard gauge, the cost of construction being so considerably less, much less money will have to be sent to England for interest on borrowed capital.

2299. You spoke more particularly of the extension of the narrow gauge system in France—you have not mentioned any of the other Continental countries? So far, it is only in France that they have used the 2-ft. gauge, with the exception of a railway now in course of construction in the Congo Free State, which is to be subsidised by the Belgian Government. On that railway the 2-ft. 6-in. gauge will be used, but that is a mistake, because you can do on the 2-ft. gauge all that you can do on the 2-ft. 6-in. gauge, or the 3-ft. 6-in. gauge. The tendency in France seems to be to give up the metre system. Though they may go on using that gauge for a year or two, I think that in a short time on most of the secondary lines the 2-ft. gauge will be used.

2300. You said just now that railways on a wider gauge which had been sanctioned but had not been carried out, because it is found that they would not pay, have since been constructed on the 2-ft. gauge; were they originally on the 4-ft. 8½-in. gauge or on the 3-ft. 6-in. gauge? On the normal gauge.

2301. Where the traffic would warrant a 4-ft. 8½-in. gauge, you would advise its use? Yes.

2302. Where the traffic would not admit of the expense of a 4-ft. 8½-in. gauge, do you think that all requirements could be met by a 2-ft. gauge, without considering any intermediate gauge? Certainly.

2303. Your contention is that those will be the only two gauges used in France, if not over the whole Continent? Everything seems to indicate it in France.

2304. In ordinary country what is the average cost per mile of the 2-ft. gauge? That is a difficult question to answer.

2305. As compared with a 4-ft. 8½-in. gauge? Even that is a difficult question to answer. With regard to the particular line which you have under consideration, if the narrow gauge were adopted a new survey would have to be made.

2306. You told us just now, when you were quoting the case of a railway in India, that the difference was one-fourth? In that particular case.

2307. Should we be safe in assuming that a 2-ft. gauge railway could be constructed for one-fourth of the cost of a standard gauge railway? I daresay, but that would not be the proportion in every case.

2308. Each case would have to stand by itself? Yes.

2309. We should be very safe in assuming that it could be constructed for at least one-third? Assuredly.

2310. Presuming that in the case which we have under consideration, a 2-ft. gauge would not be sufficient for the traffic, you do not think that we should go in for the 3-ft. 6-in. gauge, but rather for the standard gauge? Certainly.

2311. Has there been any accident at all with the 2-ft. gauge railways? Never; although there have sometimes been accidents on the 3-ft. 4½-in. gauge, because the rolling stock for the 3-ft. 4½-in. gauge is made on the same patterns as the rolling stock of the main gauge, and its stability is not as great as that of the rolling stock now constructed for the 2-ft. gauge. Even horses and cattle are carried with greater security on the 2-ft. gauge, in the special trucks that are now being made, than on the 3-ft. 4½-in. gauge.

2312. What are the severest grades on the 2-ft. gauge railways? In the construction of railways you have to avoid gradients as much as you can.

2313. You have quoted the case of the Festiniog railway, where the country is very flat? It is very hilly.

2314. I understand that the steepest grade is 1 in 80? The country is very hilly, though they have managed to avoid big gradients. I believe that you should not under any consideration adopt steep gradients.

2315. What would you lay down as the maximum grade for a 2-ft. gauge? That is simply a commercial question. Sometimes railways are constructed with gradients of 1 in 30, or 1 in 20, but if they can be avoided such gradients should not be adopted.

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2316. You would not be able to do much on a 1 in 30 grade with this narrow gauge? On a grade of 1 in 20, which is certainly a great maximum, the little Mallet compound locomotives, which weigh 12 tons when in working order, will pull from 20 to 30 tons, and that, I believe, would answer all requirements.
2317. You spoke just now of metallic sleepers. Is it not a fact that they have used them in the northern parts of Queensland on the 3-ft. 6-in. gauge? I believe they have, but I do not know with what success. So far steel sleepers have not given satisfaction generally, owing to the defective mode of fixing the rail on to the sleeper. There are some good methods, but they are so expensive that they are not practical.
2318. You spoke just now of less ballast being required when iron sleepers were used. What is the object of putting ballast in between the sleepers? To avoid displacement.
2319. If that is a consideration is it not an advantage to have extra ballast between the sleepers? It is an advantage and it must be done, but with the metallic sleepers you obtain the same results at a less expenditure. With the metallic sleepers you raise the ballast to the height of the sleeper. The special sleepers of which I speak are closed all round. Their fixity is considerable.
2320. The rails are riveted to the sleepers? They are.
2321. Is there no fear of a jar breaking the rivets? Not that I know of. At the Paris Exhibition there was a grand demonstration of the usefulness of these railways. I believe that 180 trains passed over the line daily for six months.
2322. Was not the country very flat? No, there were some steep gradients, although they were not very long, and the curves were very sharp. When, after six months, everything was taken up, the rails were found to be as good as new, not a single rivet had broken and not a single accident had happened.
2323. Is the life of 19-lb. rails with light rolling stock as long as the life of the rails used upon the 4-ft. 8½-in. gauge. How long will they last? Just the same time.
2324. There is more metal in the rails used on the 4-ft. 8½-in. gauge because they have to stand a heavier strain? Yes. If anything I think the light rails with a narrow gauge would last longer.
2325. Have the travelling public any very serious objection to using these very narrow lines? Not the least. All prejudice against them has disappeared.
2326. Of course where they connect with the main trunk lines there is the nuisance of transhipping goods from one truck to another? There is, but that can be done for very little money, and it is far better to pay 6d. for transhipment than to lose 3s. or 5s. interest.
2327. It is only on subsidiary lines that you would advocate the adoption of the narrow gauge? I would never recommend it for main lines.
2328. If the line under consideration is likely to be an isolated line for some years to come, you think we should be perfectly safe in adopting the narrow gauge there in order to give the people of the district railway communication? I have not the least hesitation in saying "Yes."
2329. If it has been estimated that a line with grades of 1 in 50, 12-chain curves, and the standard gauge will cost £14,000 a mile, do you think that a 2-ft. gauge of the construction of which you have been speaking could be put down for £4,000 a mile? I believe so, but I do not know the country.
2330. Have any railways been laid down in any of the Australian Colonies on the 2-ft. gauge? On private estates.
2331. Where? In Queensland, Fiji, and the northern part of this Colony. You have there a good example of the capability of these railways. Several sugar-mills bring the cane from the fields by means of these railways. In some of these mills they crush 500 tons a day, and that quantity is brought in by the railway.
2332. There are no passenger-carrying lines? No; but there is no reason why there should not be.
2333. Can you give us any idea of the mileage laid down in the 2-ft. gauge? I have myself laid down about 100 miles.
2334. Principally in Queensland? Principally in Queensland; but also in the northern part of this Colony, at the gasworks in Melbourne, and in Fiji. Some of these lines go as far as 20 or 25 miles, and they carry 500 tons daily. They have been in operation for the last ten years, and the mill-owners could not do without them.
2335. *Mr. Humphery.*] What is the difference in the cost of the rolling stock on the narrow gauge as compared with the standard gauge? I could hardly tell you that. I do not really know what the cost of the wide gauge rolling stock is, but I suppose that the cost of the narrow-gauge rolling stock would be about half as much.
2336. Do you know anything as to the cost or maintenance of narrow-gauge lines as compared with standard-gauge lines? The cost of the maintenance of carriages and locomotives would be about the same I should say, or perhaps a little less, because if a wheel or an axle broke you would not have to pay so much for repairs.
2337. Do you think the working expenses of a narrow-gauge railway would be considerably less than those of a standard-gauge railway? No doubt about it.
2338. The lines you have spoken of as in existence in Queensland were constructed merely for the purpose of conveying sugar-cane? Yes; of course they were not laid down with as much care as a passenger line would be.
2339. No ballast has been used; the sleepers have been simply laid on the surface of the ground? Yes; and they use much lighter locomotives.
2340. You would not propose to use such lines for passengers? Certainly not. Passenger lines have to be laid down with much greater care.
2341. Are there any steep gradients in the places where you have laid the railway? Not that I know of. There used to be a very steep grade in Queensland, near Cairns, but it has been given up now. I forget the name of the place.
2342. *Mr. Hoskins.*] You said that the cost of rolling stock on the narrow gauge would be less than on the standard gauge; but suppose you had to move, say, 500 tons in a given time, would you not require a larger number of trucks on a narrow-gauge line than on a broad-gauge line? No.
2343. Can you put as much loading into a narrow-gauge truck as into a broad-gauge truck? The carriages rest on two bogies. On the average they are 30 feet long, 5 feet 10 inches wide, and 11 feet 6 inches high, and provide fifty-six seats. Their weight is from 4½ to 6½ tons. The luggage vans are combined with second-class carriages and weigh 4½ tons. The goods trucks answer all the requirements of a very important traffic. They are 20 feet long and 5 feet wide, and the covered carriages are 8 feet high. Their weight is from 2 tons 14 cwt. to 3 tons 14 cwt., and you can load as much as 10 tons into them.

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them. In the case of indivisible loads where, as unfortunately happens in France and other places, you have to transport guns, a 48-ton gun can be carried on trucks weighing only 4 cwt. per ton of load.
2344. Do you mean to say that a truck weighing only 4½ tons can carry safely over any road the same amount of loading as a truck weighing on the average from 6½ to 8 tons? Yes; they will carry 10 tons.
2345. Over the same roads as we have on the western line? Yes.
2346. Then, you condemn all our rolling stock, inasmuch as in your opinion it is altogether too heavy? There is the question of speed. You could not make the trucks on a broad-gauge line any lighter.
2347. Then you admit that you cannot carry heavy loads in light rolling stock at anything like the speed that you could run on the standard gauge? Quite so. The speed run on the narrow-gauge lines is nothing like that run on the wide-gauge lines, and that is why I could not recommend the narrow gauge for main lines, where speed is of great importance. On the Festiniog line they have changed their rails three times on account of the increase of traffic. There they travel 40 miles an hour between the stations, and they have never had an accident.
2348. Therefore you admit that while the Festiniog railway was originally laid down as a light line, when the traffic increased they had to relay it? Yes.
2349. Therefore the cheap railway there does not any longer exist? There is still the 2-foot gauge.
2350. The rails you stated were 19 lb. to the yard, and were laid on sleepers 1 inch thick? No, they are not 1 inch thick, they are 1 inch high. They are hollow inside.
2351. What would be the steepest grades you would propose to work on the 2-foot gauge? I would avoid all grades as far as was practicable. If you could make a level line that would be the best; but what can be done on the broad gauge can be done on the narrow gauge. There is no difference between the standard gauge and the narrow gauge in the matter of gradients.
2352. Do you mean to say that you would be prepared to risk your reputation, and if necessary, even more, to work a railway for the conveyance of passengers with a 2-foot gauge and 19-lb. rails, laid on sleepers such as you have described, on a gradient of 1 in 20? I should; but I should take good care to avoid such gradients where possible. If they could not be avoided they could be worked as well with a 2-foot gauge as with the standard gauge.
2353. Can you tell me of any railway within your own knowledge that is working on a 2-foot gauge with 19-lb. rails and iron sleepers on a grade of 1 in 20, and is carrying passengers safely? I know that there are in France very steep gradients on these railways; but I am not prepared to tell you exactly what they are.
2354. You are not prepared to state from practical experience whether railways with a 2-foot gauge can safely carry passengers on grades such as I have described? They would be quite safe.
2355. Are they in use? I could not tell the maximum grade in France; but I will let you know it later on.
2356. Is it not a fact that in France, where they have been making these cheap railways, they have been used as branch lines and are generally run through level country? Some of them run through very hilly country.
2357. Where? I do not know the name of the railway; but I know for a positive fact that they are in existence. There is one in the province of Calvados, for instance. I do not know the two places connected by that railway; but I suppose that it would make very little difference.
2358. You admit that the Festiniog railway does not run on steep gradients at all? There is a grade of 1 in 80.
2359. Do you not call that steep? I do not call it steep.
2360. You spoke of a narrow-gauge railway in India—and I am aware that there are narrow-gauge railways in India;—do you know as a matter of fact that a large number of railways are being taken up, and the broad gauge substituted for them? They may not be constructed on the right principle; they may be badly constructed. In France there is not the least inconvenience from the narrow gauge.
2361. There is the inconvenience of transhipping goods from one truck to another and in moving troops? The difficulty in moving troops is so little that the French Government have adopted the 2-foot gauge to move troops all round Paris, a distance of 300 miles.
2362. There are railways in India 500 miles in length;—you have nothing like that in Paris? There are 300 miles of railway round Paris going to the eastern forts.
2363. *Mr. Davies.*] What length of railway on the narrow gauge did you lay down in Queensland? I presume about 50 miles.
2364. Would you tell the Committee whereabouts? In Mackay.
2365. From point to point? From the Homebush Mill all over the country, in different directions.
2366. It is pretty well all flat country, I presume? The country is pretty flat.
2367. Is it a fact that the railways you speak of have been almost uniformly used in connection with coal-mines and salt-mines, or for carrying to mills? That was so up to the time of the last Paris Exhibition; but the building of these railways has become a new science since then. Before that time the Government would not allow the construction of the 2-foot gauge railways, because they thought that they were not safe; but it was so fully demonstrated in Paris that they are safe that the French Government have since not hesitated to sanction any number of them.
2368. Was not the line laid down to convey passengers to the Paris Exhibition simply of a temporary character—something in the shape of a tramway? It was temporary, insomuch that after it had done what it was required to do it was taken up.
2369. It was a tramway, inexpensive and temporary. Has not the construction of metal sleepers arisen from the fact that they have not the hardwood on the Continent that we have here? Most of the sleepers at home are excellent. They are oak, and last thirty years.
2370. But they are very expensive compared with ironbark? They are expensive.
2371. Would not an oak sleeper cost as much or more than a metallic sleeper? Yes. It has, of course, been a question of economy. The great advantages which result are the saving of ballast and greater stability.
2372. What is the width of the face of the metallic sleeper of which you speak? There are different sizes, according to the traffic. They are about 6 inches wide.
2373. What is the width of an ordinary ironbark sleeper—it is not 10 inches? That is about it.
2374. Would not a 10-inch face be much more permanent than a 6-inch face? No; because a steel sleeper offers more security from lateral displacement. A wooden sleeper offers a large surface, and when the

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the train goes over it and the rail moves, the ballast is shifted according to the size of the surface of the sleeper. If the surface is reduced to a very little it is easy to understand that you do not move it to the same degree. The ballast is imprisoned under the sleeper, while with the ordinary wooden sleeper it comes out in all directions because there is nothing to hold it in.

2375. The metallic sleeper is hollow? Yes; it imprisons the ballast. The ballast underneath cannot move. With the flat sleeper, be it wood or be it metal, the ballast will come from underneath.

2376. These sleepers have to be embedded in ballast? Yes; but it only takes 1 inch of ballast.

2377. But underneath you have to make a bed for the sleepers? The quantity under the sleepers is the same in both cases.

2378. All the rails are single headed? Yes; except, of course, on crossings.

2379. And riveted to the sleepers? Yes.

2380. How many sleepers are there to each length of rail? It is according to the traffic.

2381. What is the regular number? In France we adopt 5 metres, which is about 6 yards, as the length of a rail, and eight sleepers are allowed for each rail.

2382. Is it not more expensive to replace a rail when the sleepers are all riveted to the rails than it is when the rails are simply screwed on? I do not think so. They would take the section up altogether.

2383. How could you replace a rail? With new sleepers.

2384. You could not take a rail up without taking the whole of the line up? No.

2385. For that reason it would be much more expensive to renew the rails than it is with wooden sleepers? I do not think so. Why should it be? If you renew a rail which has been for seven years on a wooden sleeper you probably will not use it again.

2386. You will not use the sleeper? No; it would be done for. It is evident, however, that if this line were put down it would be used for fifteen or twenty years at least. That has been the experience at Festiniog.

2387. But you are aware that rails sometimes after a few weeks turn out to be faulty? Of course that would be an inconvenience, but it is a trifle.

2388. They would be very expensive to renew? Not at all. You could have along the line here and there a section of new rails.

2389. You would take up sleepers and all? Yes, just in one piece.

2390. What was the cost per mile of the 50 miles of railway which you constructed in Queensland on the narrow gauge—of course it was very small? I must tell you that I did not lay them down myself, because it was such a simple matter.

2391. You have no idea of what it cost? It could not cost more than £600 or £700 a mile.

2392. You would not recommend a line of that character for carrying passengers? No.

2393. What do you think would be the cost of a similar line to carry passengers? I should say about £1,000 a mile.

2394. At what speed could you travel on that line? About 20 miles an hour.

2395. That would be over fairly level country? Yes; £1,000 a mile would not include the rolling stock.

2396. *Mr. Neild.*] Did you lay down or provide the material for the tramway connected with the Rous sugar-mill, in the Richmond River district? No.

2397. But you know that there is a piece of line there? I believe that there is.

2398. It goes over undulating country? Yes; but it is on a different system. The sleepers are separated from the rails there, and are bolted together in some way or other.

2399. I do not remember whether those sleepers are metallic or timber? They are metallic. It is a system which would not be suitable for passenger traffic.

2400. What curves can you use on these 2-foot lines? With a compound articulated locomotive the smallest curves are 66 ft. They go round those with very great facility.

2401. I think you said that you used bogie axles? Yes.

2402. What grades do you work on? At the Decauville works they have a line of railway laid down for demonstration purposes, in order to show the steepest grades, and the sharpest curves possible. They have there a grade of 1 in 12½, on which the locomotives pull up 5 tons.

2403. What weight are they? Twelve tons when in working order, and 9 tons when empty. When there are visitors experiments are made almost daily. I suppose there is about 1 mile of railway.

2404. For passenger traffic, what styles of carriages do they use:—are the seats across the carriage or longitudinal? You would find the same style in use as on the standard railways. Sometimes the seats run in the same direction as the rails, and sometimes they go across the carriage.

2405. When the seats are placed across the carriages how many passengers do they contain each? In the carriages used at the Paris Exhibition there were four passengers on each seat.

2406. Then the overlapping beyond the rails is very great? Yes.

2407. What is the width of the carriage? 5 ft. 10 in.

2408. Is that inside or outside measurement? That is outside measurement. At the time of the Exhibition the stability of these carriages was well tested because there used to be a terrible rush for seats, and every one jumping in on the same side, and yet there was no overbalancing.

2409. You say that between 300 and 400 miles of these railways have been laid down by the French Government? Not by the French Government, but by private companies. The Government have to sanction them.

2410. I mean to be used for military purposes in connection with the defence of Paris? Three hundred and fifty miles.

2411. Have those railways been used for the carriage of troops;—are they regularly used, or have they only been used as an experiment? They were very well tested during the last manœuvres in France.

2412. They have been used during the military manœuvres in the same way as they would be used in the case of war? They have.

2413. They have been used not only for the carriage of troops but also for the carriage of war material? They have.

2414. Has the result been the creation of an impression in favour of extending these lines for future use? Certainly.

2415. As a result, are further lines being laid down for military purposes? The Decauville works are constantly making railways for military purposes.

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2416. On the 2-ft. gauge? Yes. I will show you a drawing of a military railway.
2417. That seems to be a line to be laid on the surface of the ground? It is a very light kind of railway with 14-lb. rails. The permanent railways round Paris have 19-lb. rails.
2418. You spoke of it being more advantageous to pay 6d. for the transfer of goods from one line to another than to pay interest on a heavy outlay. I suppose you meant 6d. a ton? I gave that figure as I would give any other. I meant that it is far cheaper to transfer goods from one line to another than to pay interest on a large outlay of money.
2419. How high do the trucks stand from the ground, because you spoke of landing horses and cattle right off the ground? The truck is lower between the two bogies. That is a new kind of waggon constructed only during the last year.
2420. Do the French Government use these trains for the conveyance of cavalry? I cannot tell you. They are being used on local railways for the carriage of horses and cattle, and the loading is far easier than it is on the standard gauge lines, because there you have to construct a platform.
2421. *Mr. Sutton.*] Have you been engaged in the laying down of lines in any part of Queensland besides Mackay? I have not been engaged myself in laying them down. It has always been done by the companies themselves, there being no difficulty in the matter at all. The rails and sleepers come out together.
2422. You advised them? I advised them.
2423. Do you know Bundaberg? Yes; but I did not lay down any lines there. At Bundaberg there is a big centre mill and the cane is grown round it at a very short distance, the juice being taken to it in pipes. Portable railways are not used there to any large extent.
2424. *Mr. Ewing.*] Are they carrying cane 25 miles? Yes.
2425. Do you know what it costs per ton? No. I could not tell you; it is very little.
2426. What would the cane waggons hold? They hold 2 tons. The lines are often put on freshly ploughed ground, so that sometimes the truck may run off, and they find it easy to put on a 2-ton truck, whereas it would be a difficult matter with a 4-ton or 5-ton truck.
2427. *Chairman.*] Is there any other point on which you would like to enlighten us? I do not know of any.

WEDNESDAY, 5 OCTOBER, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Railway from Eden to Bega.

Hugh McLachlan, Esq., Secretary to the Railway Commissioners, sworn, and further examined:—

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2428. *Chairman.*] During the course of our inquiries into the Bega to Eden railway the question has arisen as to whether, having regard to the probability that it will for some years to come be an isolated line, a cheaper mode of construction could not be adopted, in other words as to whether a narrow gauge railway might not meet the requirements of the district for many years. Can you inform the Committee how the Railway Commissioners look upon the breaking of gauge in this or in any other case of the kind? Yes. I have a few notes with me, and perhaps I had better make a short statement indicating the opinion of the Commissioners in the matter. They look at it in this light. They think that inasmuch as this country has adopted what is known as the standard gauge, and that we have either open or in course of construction 2,500 miles of railway, it would be a national calamity to alter the gauge. The question of the breaking of gauge is not peculiar to this country. It has been fought out in every country. In England they have had different gauges, and so they have in America, but by the papers which we have received lately we find that practically the last of the broad-gauge lines in England has disappeared, and that, with the exception of one or two coal tramways, the whole of the railways of England and Scotland are on the standard gauge. In America, too, where they have had a considerable number of gauges other than the 4-ft. 8½-in., strenous endeavours have been made for many years to bring all the lines to the standard gauge, and some thousands of miles were altered in one week in the Southern States of America to achieve this end. If we were considering the question of gauges afresh it might possibly be thought desirable to have a narrow gauge, but a change of gauge would be surrounded by many difficulties. It would necessitate the introduction of a totally new standard of rolling-stock, and it would add to the additional cost of the line in many ways. At present when new lines of railway have been constructed the Commissioners have generally not set apart any large amount for rolling-stock, and have made the rolling-stock of the parent line work the branch line. The Bega to Eden railway, of course, is a separate line, and therefore that policy could not be adopted with it. Their general plan in connection with extensions has been to allocate to new lines rolling-stock which, while not too old for service, is not quite up to the best standard. We use the newest rolling-stock on the main trunk lines, where there is most traffic, and as it becomes old we allocate it to extensions, not charging the extensions with the cost of the stock necessary to equip them. To a slight extent the same thing has been done in connection with the rails. In the case of the Eden to Bega railway, from the contour of the country the grades on the narrow-gauge line would be very sharp, and it would be a very difficult thing to work the line profitably. We are told that it is a railway that will carry a good deal of grain, and a good deal of what we call cheap traffic, but the only way in which lines of that character can be profitably worked is by hauling fairly good loads upon them. If you made a restrictive line, such as the narrow-gauge line would be, you would have to haul light loads, and the men employed would only be able to do half as much work as they could do if the loads were heavier, and consequently the earnings per mile, or per man, would not give

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give a fair return on the capital. You could not make the line altogether a cheap one. A line in flat country can be made comparatively inexpensive; but a line in country such as this, no matter how you make it, must be expensive. You could not dispense with cuttings and tunnels to get any decent grade. Then bridges will have to be made across the water-courses, and the construction must necessarily be expensive. The Commissioners in their report have several times drawn attention to the desirability of having cheap lines in the back country, but lines laid down on the standard gauge. In their report for the year 1891 they say:—

We would suggest for consideration in dealing with railway extensions in districts like Jerilderie and Deniliquin, Narrabri, and Moree, Byrock, and Brewarrina, where the country is practically level, and the traffic will be very light, that lines to be designated "Pioneer Railways," be constructed at a cost of about £1,750 per mile, exclusive of bridges and land (which latter we hope can be dealt with as suggested on page 7), the trains to be worked at a speed of about 15 miles per hour, and during daylight only. Later on, when the traffic has developed, and will justify the class of line being raised, a capital vote to be granted as to make the line capable of carrying the traffic under the same conditions as on other parts of the railway.

In dealing with the matter of cheap railways, I think that the Committee might find the evidence that was given some years ago before a Select Committee of the House, which reported upon the matter, very valuable. About the year 1870, a number of reports were made as to the advisability of having light and narrow-gauge railways for extensions beyond Goulburn and Bathurst, and that Committee reported upon the question. Mr. Whitton also went into it a little later on. Strong opinions were expressed in favour of such lines, but we can see now that it would have been a great calamity if such a proposal had been carried out. I would ask the Committee to remember that this question affects not only the Bega to Eden railway, but practically the railway policy of the country, because if it were decided to make a narrow-gauge railway between Bega and Eden on the ground that it would not interfere with the working of the main line, I think we should receive applications from all parts of the country, where the traffic has not been deemed sufficient to warrant the construction of an ordinary railway, for cheap railways, and in that way we should be brought into contact with different gauges on the same system, which would be a calamity. The Commissioners think that our railways can be made much more cheaply than they have been made in the past, and something in that direction has already been done. They think that the Department should rather make efforts to cheapen the standard gauge than experiment with gauges which the experience of the railway world has proved to be misleading and mischievous. In the Railways Act of 1888, a new departure was made in appointing the Commissioners to be the authority to decide on the positions of stations, &c. The Act says:—

28. The Commissioners shall be the authority to decide on the position, character, and suitableness of all stations, station-platforms, gate-houses, station-yards, sheds, piers, wharves, jetties required for or in connection with any railway hereafter to be constructed, and although such railway may not be constructed by them, or of any other building, siding, platform, or work for the accommodation of the passengers, stock, or goods, to be carried on such railway.

Besides reducing the cost of the station buildings, the Commissioners, by reducing the rate for the carriage of materials to one-fourth or one-third of what it was previously, have effected a very considerable saving upon the capital cost of new lines. Taking the Cobar line, for example, if the same rates had been charged for the carriage of the material used on that line as were enforced previously, the capital cost of the line would have been added to by nearly £30,000.

2429. You are robbing Peter to pay Paul? The working expenses have been affected, but still it does not add to the capital cost of the line.

2430–1. It takes away from your earnings. You were either earning too much before, or you are now carrying on your business at a loss? We carry the material at the bare cost, but that brings down the capital cost of the line. We do not unduly inflate our capital with profit made by the carriage of material. The Cobar line has just been finished, and to show what has been done by the Engineer-in-Chief for Railways, in conjunction with the Commissioners' Department, in the way of cheapening the construction of our lines, I may say that the cost of that railway will work out at not more than £3,300 per mile, including everything.

2432. Exclusive of land? That would not put very many pounds on to the value of the line.

2433. But that amount is exclusive of the land? No; it includes what we have paid for land. There was some Crown land taken, for which nothing was paid. As an instance of the way in which lines are being cheapened by the allocation of old material from the main lines, I may refer to the Yass railway. The Commissioners, in their report, state that—

As an illustration of how outlying branch lines may be cheapened, the short line from Yass station to the town, a length of 2 miles 64 chains, may be cited. By arrangement with the Works Department, selected second-hand rails have been used, which will carry the traffic for many years, and the cost for rails and carriage amounted to £1,420, instead of £3,016, as would have been the case under the old system.

2434. Those rails were taken from the main line near Yass? From the main line in the southern district. They were commencing to show sign of wear, and we thought it was better to put them somewhere out of the way of express trains.

2435. Probably they would have remained where they were for some years had not the Yass tramway been constructed? I do not know about that. When a rail is showing signs of wear we like to have it out. Where there are considerable lengths of sidings to be put in, we use the best second-hand materials we can get, because there is no fast traffic upon them, and they will last for many years, so in that way we save expense.

2436. *Mr. Hoskins.*] You use old rails over again, re-rolled? We have a quantity of that material still, but we are using second-hand rails to a large extent.

2437. The cost of the Culcairn line has not yet been made out? I think I shall be able to give you that.

2438–9. *Mr. Wall.*] What is the cost of the rails? With regard to the re-rolled rails, we have been offered £3 5s. a ton for them by the Lithgow Ironworks. With regard to the saving which has been made on stations, I would like to refer to the cost of station buildings, &c., on three lines, which are somewhere about the same length—the line from Wagga Wagga to Albury, the line from Wallerawang to Mudgee, and the line from Nyngan to Cobar. On the line from Wagga Wagga to Albury, a distance of 77 miles, the cost of the station buildings, &c., was over £83,000. On the line from Wallerawang to Mudgee, upon which there is not a great amount of traffic, and which is 85 miles long, the cost of station and other buildings was £70,950. The cost of the buildings on the line from Nyngan to Cobar, 81 miles, which were approved of by the Commissioners, has been £7,000.

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2440. *Chairman.*] Is there not a great deal of difference between the position of the three lines. Is there not very little settlement between Nyngan and Cobar, while between Wallerawang and Mudgee there are a number of towns, and there is also considerable settlement between Wagga Wagga and Albury? There is this to be said in favour of the Albury line, that an expensive border station had to be constructed there.

2441. Do you know that there are a number of stations and gates on this line? I have not got the number here.

2442. Under the old system, the constructing authority frequently built stations out of all proportion to the traffic and even in the wrong places, so that in some cases they had to be demolished and new buildings erected in their stead. Now, however, owing to the consultations which take place between the running authorities and the constructing authorities, the stations are put up at convenient places, and are made as inexpensive as possible? Yes. The Commissioners approve of the plans, and buildings are put up in accordance with their decision. They generally send one or two of the traffic officers through the district to ascertain where the traffic comes in, and the amount of it.

2443. As a matter of fact, under the old system when buildings were demolished or altered, and the capital cost of the line increased, it was not known to the outside public. For instance, a line might have cost £200,000 when handed over to the running authorities, and they, finding that the stations and other buildings were not in convenient positions, might spend another £50,000 in altering them, so that the real cost of the line would be £250,000 as against the nominal cost of £200,000? Yes; but the lines are always being added to. There are always votes for what we call additional improvements.

2444. To meet the expansion of the traffic? They would cover new station buildings or anything that is wanted. The Commissioners sanction the minimum number of station buildings of the cheapest kind they can get to meet the traffic. The buildings are always designed on a certain standard, so as to admit of extensions as the traffic increases, and when necessary we ask the House for an additional vote to make such extensions.

2445. I suppose there have been no alterations of the buildings on the Cobar line? We have made slight modifications. They have asked for an additional siding at one place to meet a wool clip.

2446. You have not pulled up anything to put that siding in? No. The station buildings were suggested by the Commissioners themselves.

2447. Can you tell us whether the Cobar line exceeded the estimate put before this Committee and before Parliament? No; I should have nothing to do with that estimate.

2448. Can you give us the total cost of that line? The total cost as given to us, amounted to about £270,000.

2449. Can you give us any information about the Culcairn to Corowa line? No; I have no information as to the total cost.

2450. That line has only recently been opened? Yes.

2451. And you have not yet received the figures as to its cost? No.

2452. According to your figures, the Nyngan to Cobar line exceeded the estimate by some £60,000? Perhaps the estimate you refer to may be simply for one tender. The first estimate was, I think, for a grade of 1 in 70. That grade was afterwards altered to 1 in 100, which put many thousands of pounds on to the cost.

2453. Do you know whether that line is fenced? No, it is not fenced.

2454. Are you aware that this Committee recommended the scheme put before them at a cost of £207,360, approximately £63,000 less than you say the work has cost? That was for a grade of 1 in 70, and it was afterwards decided to use a grade of 1 in 100, which would make the cost a good deal more. Certain works of that kind had to be done, which would greatly increase the original estimate.

2455. The extra cost has been incurred in altering the grade from 1 in 75 to 1 in 100? I do not say that that would altogether account for the difference, but it would account for a considerable sum.

2456. It is rather a heavy price for a difference in grade? I do not say that it accounts for the whole of the difference, but I know that it accounts for some thousands.

2457. Is it at all likely that the Construction Department will ever reach the Commissioners' estimate of £1,750 a mile? It was thought that some of our lines might be made for about that.

2458. As a matter of fact, was not the Cobar line one of the easiest that it was possible to construct in the Colony? Yes; it ought to have been a cheap line.

2459. There was no fencing and no expensive buildings? I think the Commissioners' estimate includes second-hand material, which makes some hundreds of pounds difference. On the line from Nyngan to Cobar there are some rather expensive waterways, and some embankments and cuttings were necessary in order to give a grade of 1 in 100, and they increased the cost; but that line is certainly a great improvement upon anything that we have made before.

2460. Its cost was a long way off £1,700 a mile, although the country is the easiest that we could go through? I do not know about its being the easiest. The line has been raised in some places upon very high embankments.

2461. Do you know of any part of the country where a cheaper railway could be constructed? You could make a very cheap line between Deniliquin and Moama. The Commissioners' estimate included second-hand material, and only new material was used on the Cobar line, except on the sidings.

2462. How did the Commissioners arrive at the conclusion that a line on the standard gauge could be constructed for £1,750 per mile? They had an estimate worked out by their engineers on principles laid down by them, and they thought that a line could be made at that cost on level country. The lines which they had under consideration were from Narrabri to Moree, and from Jerilderie to Deniliquin. The estimate of cost excluded the cost of bridges. There would be a bridge on the line from Narrabri to Moree.

2463. If there were any extensive creeks to be bridged over, the cost might be brought up to £4,000 a mile? There would be one expensive bridge on the Moree line, as you would have to cross the Namoi.

2464. The most serious objection that the Department has to an alteration of gauge is the inconvenience which would arise when a connection was made with the present system? Not altogether that; they do not believe in the narrow-gauge system at all, and they do not think that it would be wise to adopt it.

2465. But if you could earn a profit on the narrow-gauge line which you could not earn on a standard-gauge line, owing to the increased cost of construction, would it not be desirable to earn that profit? If you

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you could satisfy yourself that you could make a profit, it might perhaps be wise to consider a narrow gauge, but the Commissioners do not like the narrow gauge at all. They think it would be disastrous to depart from the standard gauge. The difference in cost cannot be very considerable, while the restriction which a narrow gauge would put upon the power of haulage would outweigh any such difference. Besides, it would be a precedent.

2466. Is not that their principal objection to the adoption of a narrow gauge? Not at all; the experience of almost the whole railway world is that where different gauge railways have been made, they have generally been altered afterwards to the standard gauge, and practically the railways of to-day are constructed on the standard gauge.

2467. As a matter of fact, your officers are aiming at no steeper grades than 1 in 50, and no sharper curves than 12 chains? They are aiming at level lines, if they can get them, and straight lines. The ruling grade on many recent lines is 1 in 40, and we have 1 in 30; but we should naturally like the railways to be level.

2468. If the proposed line is expected to cost between £13,000 and £14,000 a mile, and we have been informed by the Engineer-in-Chief for Railways that if he were allowed to put in 6-chain curves it would reduce the cost of earthworks from £2,500 to £3,000 a mile, ought we not to take that into consideration? We might cheapen the cost of construction by having sharp curves and steep grades, but it would make the line a dear one to work. The question was fought out long ago, but, as Mr. Whitton practically said, "If you want a cheap line I will give you it, but I shall have to use almost prohibitive grades, and the line will be a dear one to work. I can make whatever kind you like; but in my opinion it is best to have a decent line on the standard gauge."

2469. The Committee have been informed that in France, during the last year or two, the narrow gauge has been extensively adopted for secondary lines. Do you know if that is a fact? I could not say.

2470. A 2-foot gauge? We should be very sorry to work such a gauge.

2471. But is it not rather hard to make people wait until they are able to pay a very large sum for a standard-gauge railway when a narrow-gauge railway would show a profit? If a railway is justified at all you might just as well construct a decent line on the standard gauge, making it cheap in the first instance, and improving it afterwards.

2472. It is estimated that there would be an annual loss of nearly £19,000 upon the proposed railway; but is it not possible that if we constructed a line with a 3-ft. 6-in., or even a narrower gauge, the trade might pay for that railway? It is very problematical whether it would. You might make such a line for £100,000; but the working expenses would be so high as to give no profit at all. You could not impose high rates upon this line because you have competition by the steamers at three points. The only way in which you could make the line pay would be by hauling big loads; but on a 2-foot gauge you would be restricted to loads of, say, 40 or 50 tons, so the men employed would only do half as much work as they might do.

2473. But supposing that were sufficient for the traffic of the railway? Then, I think, the line would not pay. All your fixed expenses for signals, stations, and labour would be pretty well the same as on the standard line.

2474. Only instead of having to pay interest on £500,000 you might have to pay interest on £250,000? It would work out the other way. What you would save in capital you would lose in working expenses. It is what it often comes to. The Commissioners are most emphatically of opinion that it would be a mistake to make this line on a narrow gauge.

2475. Even though it is likely to be isolated for the next fifteen years? Yes. They would be very sorry to have anything to do with a narrow-gauge railway; but they would so depart from their usual policy of recommending that all lines should be managed by the State as to favour the construction of this line by the people themselves. The line will be an isolated one, and the people of the district have expressed the opinion that it would pay very well. If a cheap narrow-gauge line were to be put down they would favour its being worked by the people themselves.

2476. Queensland has a 3-ft. 6-in. gauge? Yes.

2477. Is it at all likely that that colony, with her comparatively small population, could have extended her railways to the extent which she has if she had adopted the standard gauge? I do not know much of the circumstances of Queensland, but I do not think they are paying their way. I think they are paying a little over 2 per cent.

2478. If they had had to borrow one-third more for construction they would not be able to pay that? They probably would not have made so many railways.

2479. The colony would have been kept back? I do not say that altogether.

2480. *Mr. Hoskins.*] You have been a good many years in the Railway Department? Yes.

2481. Can you tell me approximately what would be the increased cost of working an isolated railway as compared with a similar length on the main line? No, we have never had to do with an isolated railway; but the cost of maintaining and controlling such a line would naturally be much heavier than the cost of working a line connected with the main system, because we should have to have a separate controlling engineer, a separate traffic manager, separate permanent-way men, and probably a separate staff to deal with accounts, and send them on to the principal accountant. It would be more expensive to work such a line than to work a line connected with the main system, but we have not had much experience in that way, and I have no idea what the difference would be.

2482. Seeing that this line would be nearly 200 miles from headquarters would it not require separate workshops, carriage-shops, locomotive-sheds, and so on? Yes; they would have to have separate repairing-sheds, and buildings of that kind, because they could not come on to the main system.

2483. The expense of working an isolated line will be much larger than the expense of working a similar length forming part of the main system? Yes. The expense would be proportionately much greater.

2484. If it were decided to make this a narrow-gauge railway, you would require special rolling stock? We should have to have new stock of every description.

2485. The reason why narrow-gauge railways are advocated is that some people have an idea that they can be more cheaply constructed than ordinary railways, because they have a narrower permanent way, sharper curves, and heavier gradients? Yes.

2486. We had a witness here yesterday who, in speaking of the narrow-gauge railways which they have in France, said that he is not prepared to advocate the construction of narrow-gauge railways with steep gradients.

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gradients. From what you know of railway working, is it not your opinion that a cheap railway means one with the smallest amount of excavation, and, therefore, if it runs over a mountain spur, such as this will do, it will have steep gradients, and would not such a line largely increase the working expenses? Naturally, because on a proper permanent way, with easy gradients, an engine could take a heavy load. Instead of hauling 50 tons at once we should be able to haul 200 tons.

2487. The witness talked of laying down rails of the weight of 19 lb. to the lineal yard, and running engines of 15 or 16 tons weight over them. Do you think such a railway could be constructed to carry passengers over any length of line? I should not care to have anything to do with it. I do not think the line would pay, especially as the freight would consist in this case of grain and low class traffic.

2488. Do you think it would be safe to run 40 or 50 tons of loading over rails weighing 19 lb. to the lineal yard? I should not like to say it was unsafe, but the rails would soon wear out. The Hobson's Bay Railway Company used 55-lb. rails, but they soon wore out, and the Company had to replace them.

2489. We had 60-lb. rails on the line from Blacktown to Richmond, but was not that line a failure until the gradients were reduced, and heavier rails put down? The Commissioners are of opinion that it is a wise policy to make a fairly heavy permanent way in the first instance. A heavy rail pays for itself in the long run, but you have to pay for a light permanent way out of the maintenance. That is the opinion of railway engineers pretty well all over the world.

2490. Do you know anything of the light lines of railway in Victoria? No.

2491. Do you know whether the working expenses of these light lines of railway are very much in excess of the working expenses per mile over the main lines of railway? I could not say from my own knowledge.

2492. As a fact, they are. Supposing a given quantity of a loading had to be moved a certain distance, do you think that the profits from moving it on a narrow gauge would be greater than the profits on the standard gauge? The profits would be greater on the standard gauge, where you could take decent loads and keep your men profitably employed.

2493. *Mr. Davies.*] I gather from the answers which you have given to the Chairman, that the Commissioners are entirely opposed to a break of gauge in the present railway system? They are very emphatically against it.

2494. Mainly for reasons which you have already given? Yes.

2495. They do not regard it as a wise thing to break the gauge? They think it would be disastrous to attempt to do it.

2496. Can you tell the Committee what the station buildings on the Illawarra line cost? No.

2497. They have all been of an expensive character? Yes; they have been fairly expensive, though, perhaps, cheaper than some. Many of them are suitable.

2498. It is about 70 miles from Sydney to Kiama? Yes, including 1 mile of the main trunk line.

2499. You are aware that there is an annual loss of £54,000 upon that line? Yes; I handed in the figures.

2500. Is it a fact that the Commissioners, or some of them, recently paid a visit to the district of Bega? I think they visited the district in 1889.

2501. Have they not subsequently paid a visit there? I do not recollect it.

2502. Do you know the country pretty well? I do not know the country very well. I know a little of the south coast, but I would not say that I knew it intimately.

2503. From the information which has been supplied to you, do you think it is possible to construct these 36 miles of railway at a cost of £560,000, and get a profit from the working of the line? No; we do not think it would pay. The last time I was under examination I gave an estimate of the probable traffic and the probable receipts, but I do not recollect the exact figures now.

2504. You are entirely opposed to a break of gauge and the construction of a temporary railway? Yes, the Commissioners are entirely opposed to it.

2505. I gather that the Commissioners would prefer a railway on the existing gauge, but cheapened as much as possible as far as station buildings, earthworks, and matters of that kind were concerned? Yes.

2506. From the information supplied to the Commissioners, do you think it would be possible to make this a cheaper railway than is estimated? No. I think the engineers understood the views of the Commissioners when they made out their estimate. It is purely an engineering question, but the line must be a very expensive one to make.

2507. The class of traffic which you expect upon the line would be of the cheaper kind? Principally.

2508. Not very much of the merchandise would pay the higher rates of freight? Not a great deal of it. It would be principally dairy produce and grain.

2509. Grain is the lowest freight that you carry? We carry it at very low rates.

2510. It leaves a very small margin? There is a very small margin of profit on grain.

2511. In view of the fact that we have at present something like 800 miles of railway costing nearly £10,000,000, on which we lose annually £300,000, would it be wise for the Committee to recommend the construction of this line, which would entail an annual loss of nearly £20,000? The report of the Commissioners is against the construction of the line.

2512. What is the probable annual loss on the line from Nyngan to Cobar? That line has only been in our hands a couple of months.

2513. What is the estimated annual loss upon it? I do not think an estimate has been made. The line has only been in our hands a couple of months, and the country during that period has had a very bad time. The Cobar mines have been shut down, and it is a bad season, so that everything is unfavourable to the line.

2514. But you expect a large loss? I do not think it will pay.

2515. What do you estimate the annual loss on the Corowa railway? The Commissioners, in their report for 1889, reckoned that it would pay more than working expenses. It goes through agricultural country where there is fair settlement.

2516. It will not pay interest? Not at first. It may develop into a better line.

2517. Do you know what the estimated annual loss is? I think it is something about £6,000 or £7,000.

2518. All these lines will go to swell the present annual loss? Yes.

2519. *Mr. Wall.*] You said just now that sharp curves necessitated steep gradients? No, I did not say that. I spoke of cheap lines having sharp curves and steep gradients.

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2520. Is it not a fact that if you reduced a curve from a 12-chain radius to a 6-chain radius, you are likely to avoid steep gradients? You might ease the gradients a bit.
2521. That is the evidence of the Engineer-in-Chief? It is an engineering question. I should not like to go into it very much.
2522. The Engineer-in-Chief the other day stated that by the adoption of sharper curves the earthworks and the gradients would be reduced;—would the Commissioners have any objection to the sharpening of the curves if that effect could be obtained? We have spent a great many thousands in cutting out 8-chain curves, so we should not care to have 6-chain curves.
2523. Where it is a question of speed the sharper the curves the worse they are? Yes; the sharper the curves the less the speed at which you can go round them.
2524. Are the working expenses on a narrow-gauge line much heavier than the expenses on the main line? Yes, in proportion to the traffic carried. You could carry 200 tons on the standard gauge at a much less cost per mile than you could carry the same weight on the narrow gauge.
2525. I am not speaking of the haulage, I am speaking of the maintenance of the permanent way;—would not that be very much less on a narrow gauge than on a broad gauge? Not necessarily. Light rails generally require more attention than heavy rails. A solid permanent way requires very little expenditure. On the Cobar line the maintenance would not run above £40 or £50 per mile, per annum.
2526. What is the length of the line? Eighty-one miles. The maintenance will cost about £4,000, but the maintenance on the Cobar line could not be compared with the probable maintenance on this line, because of the waterways and bridges which there will be on this line.
2527. The Committee have ascertained that the cost of the line from Koondrook to Kerang, a distance of 16 miles, with the standard gauge, was £2,028 per mile, and that the working expenses, including salaries, maintenance of permanent way, and everything else, are only £28 a week? I do not know anything about the circumstances of that line.
2528. It only goes to show that light lines can be constructed on the standard gauge? Yes; and I think the Cobar line is another instance to the point.
2529. Since speed will not be a very great consideration on the proposed line, would the Commissioners have any objection to sharpening the curves if that would reduce the cost to the extent of between £2,000 and £3,000 a mile? I do not think they would care to look at anything in the way of a 6-chain curve. It would hardly be safe; an 8-chain curve would be sharp enough.
2530. The 12-chain curve is the sharpest at present? I understand so.
2531. With regard to the breaking of gauge, I presume that the Commissioners anticipate a connection between the proposed line and the table-land at some future date? I do not know if they anticipate such a connection. It is purely a matter for the Government to determine.
2532. If the only object of this line is to bring produce to the port of shipment, and it is to be entirely separated from our main lines, do you think the Commissioners would have any objection to the adoption of the narrow gauge? The Commissioners are strongly against having any narrow-gauge line under their control.
2533. But if it were to be an isolated line, would they still contend that it should be constructed on the standard gauge? Yes. Not only that, but it would establish a precedent, and we should have two different gauges to work throughout the Colony.
2534. We should like the opinion of the Commissioners entirely apart from that consideration, looking at this as an isolated line? They have considered it as an isolated line.
2535. Does the objection still remain? Certainly.
2536. Your old rails are worth £3 a ton? We are offered £3 5s. per ton for re-rolled rails.
2537. What is the cost of new rails? They vary. They have never been lower than they are at present. You may get them at £4 10s. now.
2538. Then your saving in rails would only be about £150 a mile? You are estimating for re-rolled rails. Second-hand rails are worth about £2 5s. a ton.
2539. What is the value of the rails if you dispose of them at Lithgow? Perhaps about £2 5s., and we have been offered £3 5s. a ton for re-rolled rails.
2540. *Mr. McCourt.*] You say that the Commissioners have not taken into consideration the railway construction which is going on in France and in other Continental countries? I said that the general experience of the world seemed to be that narrow-gauge railways were a mistake. Almost the whole of the railways of the world—I daresay 80 per cent. of them—are laid on the standard gauge. There are a number, however, with a broader gauge, and some with a narrower gauge. The experience of the world is that the standard gauge is the best that can be adopted.
2541. If French engineers are now constructing narrow gauge lines, they are, in the opinion of the Commissioners, doing a disastrous thing? The Commissioners are informed of the opinions of most engineers. They have had different gauge railways in England and America, and they have gone to enormous expense to alter them to the standard gauge.
2542. What is the width of the narrow-gauge railways? Three-feet six-inch, principally.
2543. Is it not less than that? I think it is in a few places.
2544. Are you aware that in Sweden and in other countries they are constructing narrow-gauge lines? To a small extent, compared with the total extent of railways.
2545. Those lines are doing good work? I really do not know much about the working of the Continental railways.
2546. The Commissioners have taken their standard from America and England? What I have told you is the experience of railway engineers in England and in America. England has the highest railway standard in the world. The Continental standard is not considered so high.
2547. The Commissioners are of opinion that a standard-gauge line would be too costly in the Bega district, and they are opposed to the construction of a narrow-gauge line, so, therefore, the Bega people must not have a railway at all? That is about their opinion. If you have a cheap line you make the maintenance pay for the saving of capital. You can have as cheap a railway as you like if you do that, but it is very often best to spend a large sum at the commencement.
2548. The Commissioners are of opinion that light lines can be constructed on the present gauge? They say, make the standard lines as cheaply as possible, and the cost in recent extensions has been cheapened. They think that it might be brought down still more. Any construction that it comes within their province to make they have endeavoured to make as economically and as cheaply as possible.

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2549. *Mr. Collins.*] Most of the branch lines would be used for the carriage of live stock? It depends a good deal upon the district. One line may pass through an agricultural district, another through a pastoral district, and another through a mineral district.
2550. If narrow-gauge lines were made to connect with the standard-gauge lines, there would be a considerable expense in re-trucking? Yes.
2551. That would cause a great deal of inconvenience? Yes.
2552. It would be nearly impossible to bring stock to market in the same condition that way as if there were only one gauge? I do not think any stock owner would like to re-truck his stock, because of the loss of time and trouble and the depreciation.
2553. Seeing that the Cobar line is considered very cheap at £3,300 per mile, how are you going to reduce the cost of future lines to £1,750 a mile? Some of the works in the Cobar line have been rather expensive, and the Commissioners in their estimate provide for second-class material, which would make a difference of something a mile.
2554. Do you know the country between Narrabri and Moree? I have been at Narrabri and Inverell, but I do not know the intervening country.
2555. Do you think that the line there could be made for the amount estimated? Leaving out bridge work and using second-hand material, you could lay down a line at about that cost.
2556. The line from Werris Creek to Narrabri cost £7,000 a mile, and it goes over very level country. How is it that it costs so much? There is more than one bridge on that line, and the line is raised.
2557. I suppose that is where the cost comes in? Yes; the Commissioners simply propose to lay the rails on the surface of the ground.
2558. Do you know anything of the country between Coonamble and Walgett? No; I have never been over it.
2559. *Mr. Neild.*] In the information which you have given about the cost of station buildings on three particular lines, do you, in the case of the Wagga Wagga to Albury line, include the cost of the buildings at Albury, and also of the buildings at Wagga Wagga? Yes. I am not certain about the Wagga Wagga buildings.
2560. In the case of the Wallerawang to Mudgee line, do you include the buildings at each terminus? The original Wallerawang buildings are not included.
2561. What about the line from Nyngan to Cobar? The original station at Nyngan is not included.
2562. Between Wagga Wagga and Albury there are eleven stopping-places, and sixteen between Wallerawang and Mudgee, while there are only six between Nyngan and Cobar, according to the time-table. I suppose that is correct? Yes.
2563. Does it not occur to you that it is very unfair, in making a comparison, to take the cost of the buildings at so much per mile instead of at so much per station? If you worked out the cost per mile of the railway you would find that on the Nyngan to Cobar line the cost comes to something under £100, while on the Mudgee line it would come to something like £1,000. One costs ten times more than the other per mile of railway.
2564. But since there are sixteen stopping-places between Wallerawang and Mudgee, and only six between Nyngan and Cobar, is not that a very unfair way to make a comparison? Taking the number of the stopping-places, the cost is about £5,000 compared with £1,000. I am only giving these examples as an indication of what the Commissioners have endeavoured to do in the way of cheapening new lines.
2565. In the opinion of the Railway Commisioners, if a line cannot be made on the standard gauge with a reasonable prospect of paying it ought not to be constructed? They do not want to have anything to do with narrow-gauge lines.
2566. The Commissioners consider that if a line cannot be made fairly profitable on the standard gauge, it ought not to be made at all? Certainly.
2567. I think you have said that you have no knowledge of what is going on in France in the way of railway construction, except so far as the standard-gauge line is concerned? No.
2568. Do you know whether the Commissioners are in possession of that knowledge? I do not know whether they have any particulars with regard to the narrow gauge in France.
2569. It is about two years since the last Paris Exhibition? Yes.
2570. Are you aware that at that exhibition some 60,000,000 people were carried on a 2-ft. gauge railway? What distance?
2571. A matter of about 7 miles, I think? Of course there are many small lines, but they are looked upon in the light of toy railways almost.
2572. Are you aware that during the last two years 360 miles of railway on the 2-ft. gauge have been laid down round about Paris, and are being utilised by the French military authorities for the conveyance of troops and war material, including cannon up to 48 tons weight? I have not heard that.
2573. You are not aware that evidence has been given of the fact that railways of 2-ft. gauge are rapidly being extended in France? No.
2574. If an important nation like France is rapidly laying down narrow-gauge railways in special localities, in order to cope with special classes of traffic, under special circumstances, do you not think the matter of constructing similar railways in parts of New South Wales where the prospective traffic is limited, might fairly be considered by the Commissioners and by the Committee? It might form matter for consideration by the Committee, but it would not affect the Commissioners' opinion as to the undesirability of having narrow-gauge lines here.
2575. I suppose we are to understand that the Commissioners are superior to conviction? Not at all. Their convictions are founded upon experience—in Mr. Eddy's case an experience of thirty years in the best railway working.
2576. You spoke of lines having been altered in England and in America to the standard gauge. Is it not a fact that in England at least the alteration has been in the direction of narrowing the lines? Yes; the latest instances have been where wide-gauge lines were reduced to the standard gauge.
2577. Do you know of any case in England where a railway of less gauge than 4-ft. 8½-in. has been increased to that gauge? No; I think that most of the English railways started with a wider gauge.
2578. Then in England there has been a reduction of gauge rather than an extension of gauge? Yes; but I think in America it has been the other way about.
2579. But in England there has been a reduction? I do not really know the details of the alteration in England. I know that the last case was a reduction.

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2580. Do you know of any case in America where narrow-gauge lines have been widened to the standard gauge? I understand that in most of the Southern States the lines were narrower than 4-ft. 8½-in., and have been widened to that gauge.
2581. Have there not been cases of greater importance where the gauge has been reduced? I think that has also taken place.
2582. Has not the narrowing been more extensive than the widening? I could not say.
2583. Have you in your office any details as to the working expenses of the 3-ft. 6-in. lines of Queensland and South Australia? I do not know if the lines are kept separate in South Australia. We have the details of the working expenses for both colonies.
2584. You stated that it was the desire of the Commissioners to reduce the cost of the lines. In what way has the cost of the Cobar line been reduced—by doing away with fencing and reducing cuttings. Has anything else been done by the Commissioners? Yes.
2585. Has not a great deal been done on the part of the Commissioners to increase the cost of the existing line, by alterations, and so forth? The Commissioners have spent a good deal of money in cutting out sharp curves, and easing off heavy gradients where possible, in order to enable a bigger load to be carried, and consequently a saving in working expenses to be made.
2586. There have been cases where the lines have been raised? We have spent a good deal of money at Maitland in raising the line. We sometimes had the line blocked for some days, so it was raised in order to avoid interruption by floods.
2587. The Commissioners, I understand, not only object to the narrow gauge but also to the introduction of cheapness by means of sharper curves? They would like to have nothing less than 12-chain curves. Where we have had them on the main line we have cut them out.
2588. If we are not to have a narrow gauge, steep gradients, or sharp curves, how is it that there would be any material cheapening in the cost of construction? The Commissioners consider that the line could be laid down for about £2,000 a mile, if not very expensive station buildings are put up, and big cuttings not allowed. It was supposed that there would be a heavy mineral traffic on the Cobar line, and that it might form part of the line to Broken Hill, and therefore it was made as level as possible.
2589. How can you have cheap lines on that principle except on the dead level country in the far interior? They would cheapen the lines as the Cobar line has been cheapened.
2590. It is on a dead level? Yes; but by charging less for the carriage of material they made a reduction of £30,000 there. Then they reduced the average cost of the stations, in indication given, from £5,000 to £1,000, and it will be cheapened further by allocating to it the rolling stock which is a little out of date, but which is still quite serviceable, and by using, as far as possible, second-hand rails for the sidings. These may be little economies in one sense, but they save a good many thousands on the capital cost.
2591. Would you not have a good opening for the second-hand rails in the repair of existing sidings? Not in many instances. The sidings will last forty years, while the main lines will only last twenty years.
2592. Are you not frequently extending your sidings? Not to the extent of using up all the second-hand rails.
2593. There would only be a saving of about £150 a mile with second-hand rails? That would be with re-rolled rails. With second-hand rails there would be a saving of from £300 to £400 a mile, which would make a considerable reduction in 80 miles.
2594. Have you such a quantity of second-hand rails that you could lay down 80 miles of line with them? I think the Commissioners would like to take out 400 miles of old rails.
2595. Are we to understand that if there were a cheap line in course of construction, they would take up that much of the permanent way? We have about 400 miles of iron rails which the Commissioners would like to take up if they could be profitably used.
2596. Would that alteration be in the direction of a reduction in working expenses? No; but the Commissioners think that it would be better to have them up.
2597. In the direction of safety? Well, to some extent.
2598. *Mr. Ewing.*] In the estimate of the traffic on the Kiama line is the suburban traffic included? Yes; that covers the traffic in every requirement.
2599. In the working expenses have you included the cost of coal, coke, and everything? Everything.
2600. That line cost about £30,000 a mile? A total of about £2,000,000 for the whole length. It was a very expensive line to construct. There are some very expensive tunnels and one or two expensive bridges on it.
2601. There is a loss of £53,000 a year on it? Yes, including the interest. The interest amounts to £75,000 per annum.
2602. The Kiama line cost twice as much as the proposed line is estimated to cost? Yes.
2603. If the Kiama line had been built with the estimated cost of the proposed line there would still have been a loss of £15,000 or £16,000 a year on it? Yes.
2604. Notwithstanding that there is a large tourist traffic, a coal traffic, and a dairy traffic on it? Yes; milk and butter are sent up daily.
2605. It is reasonable to suppose that if the proposed line were constructed the estimated loss of £18,000 a year would be realised? The Commissioners went very carefully into the traffic and they think that their figures are accurate. If anything they erred on the side of liberality.
2606. That line would only have a dairy and produce traffic to carry? Yes; and some of the traffic would be lost to the steamers.
2607. It is impossible to build a standard-gauge line down there? The Commissioners are strongly against the line being built.
2608. It all resolves itself into the question of how the country should be developed? Yes.
2609. A narrow-gauge line must do for awhile, and subsequently the standard gauge would be justifiable? The Commissioners would not like a temporary railway of that kind.
2610. You do not want any expediency work? No.
2611. Can you express yourself about the policy of constructing a cheap line? The Commissioners think it would be unwise.
2612. And that it would be inconvenient? Yes, and very expensive, too. You would save a little on the first cost, and put additional expense on to the Commissioners in maintaining it.
2613. You think it is better to wait until the district is sufficiently populous or productive to justify a standard line than to build an expediency line? Yes; the Commissioners are entirely opposed to such a policy.

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2614. *Mr. O'Sullivan.*] You said just now that a number of lines in the Southern States of America have been converted from the narrow gauge to the standard gauge? I said that there were a number of lines which had been converted, and I think many of them were originally narrow-gauge lines. There were 13,000 miles of line converted.

2615. Main lines or branch lines? Many of them would be main lines.

2616. There are still many branch lines laid down under the narrow gauge? There are some; but the great proportion of the lines in America are constructed on the standard gauge.

2617. How is it that the Commissioners are comparatively in conflict with the advanced ideas in railway construction? I think they are in harmony with the general railway policy of the world. Almost the whole of the railways of the world are laid on the gauge that we have adopted. We hear of about 300 miles being laid on the narrow gauge, but there are over 300,000 miles of railway in the world. As a national policy, the Commissioners would be most unmistakably against a narrow-gauge line being constructed in the Bega district.

2618. You have heard that in France they are very much taken up with the construction of narrow-gauge railways, and that they are making similar lines in India, Belgium, and Italy? We hear of a few hundreds of miles of railways being constructed, but each of these countries has from 10,000 to 20,000 miles of line, the greater bulk of which is on the standard gauge.

2619. Does not the adoption of the narrow gauge imply that it is the most modern idea? Certainly not. If the length of narrow-gauge lines being made was equal to the length of the standard-gauge lines there would be something in the contention, but the length of the narrow-gauge lines is infinitesimal as compared with the standard-gauge lines.

2620. I am referring merely to subsidiary lines. I admit that the standard gauge must be adopted for main lines? The Committee should not overlook the fact that the circumstances of this country are different from the circumstances of the countries which have been referred to where there are, perhaps, fifty different railway companies, while here all the railways are under the same management.

2621. There are State railways in France? Not altogether.

2622. They are principally State railways? Many of them are owned by companies, and have, perhaps, a State guarantee.

2623. Still, they are controlled by the State for military purposes? To a certain extent.

2624. There seems to be no possibility of the Commissioners agreeing with this Committee if the Committee recommend the adoption of the narrow gauge for this district? The Commissioners are most decidedly against it.

2625. If we recommended such a line, and the Government carried it out, they would have no objection to work it? They would have to work it if the Government asked them to do so.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Railway from Eden to Bega.

APPENDIX.

A.

[*To Evidence of J. Barling, Esq.*]

TWOFOLD BAY, MERIMBULA BAY, PAMBULA RIVER, AND TATHRA.

The Engineer-in-Chief for Harbours and Rivers to The Under Secretary for Public Works.

Minute Paper.—Tathra, Merimbula, and Twofold Bay.

Department of Public Works, Harbours and Rivers Branch, Sydney, 8th August, 1892.

MR. KIRKWOOD, who had a mill at Merimbula, and resided at Bega thirty years ago, knows all the harbours from Moruya to Eden, having personally examined them. He considers the description given in *Wellbank's Almanac* herewith very reliable.

Mr. Kirkwood thinks there can be no doubt that a railway from Bega to Eden is the best solution of the difficulty of dealing with the export and import trade of this part of the South coast. In 1861, Mr. Kirkwood superintended the erection of the first pier and store at Tathra, the site being selected by him as most convenient for the Bega trade, the distance to Bega was about 6 miles. Communication is so dependent upon the weather that the district must suffer considerably from its uncertainty, and it is only a question of cost as to the connection to Twofold Bay, which is one of the best harbours on the coast.

No reasonable expenditure would make Tathra, Merimbula, and Pambula safe or navigable ports.

C. W. DARLEY.

[*Extracts from Wellbank's Almanac.*]

TWOFOLD BAY.

Twofold Bay, on the shores of which is the first settlement, from the southward is 3 miles wide between Red Point and Worange Point, bearing N. by W. ¾W. from each other from a position midway where 20 fathoms of water will be found, the bay extends 4 miles westward to the head of Nullica Bay. The entrance is free from dangers, with the exception of a sunken rock with 5 fathoms on it, lying N. ¼E., a little more than one-third of a mile from the White Stone Tower situated on Red Head. At a distance of a cable and a half in the same direction from the Tower is a low-water rock always breaking, covered at high water. Between it and the point there are 5 fathoms of water, and between the 5-fathom rock and it there are 7 fathoms. This rock breaks only in very bad weather from the eastward. The west end of the long sandy beach at the entrance to the Walker River, kept in sight clear of Jew's Head, bearing W.S.W., leads half a mile to the northward of this rock in 17 fathoms.

Directions.—Twofold Bay is so open to seaward and so free from detached dangers that there is very little difficulty in entering it. On approaching the bay care should be taken to avoid the sunken rock, which lies nearly one-third of a mile to the northward of Red Point, and having distinctly made out the lighthouse and other objects, the ruins of the tower on the east side of West Boyd, kept on a S.W. by W. bearing, will lead in through the middle of the bay, when a vessel may anchor either in Snug Cove, off the township of Eden, or in either of the anchorages off East or West Boyd—[West Boyd not recommended by resident pilot, 1884.—EDITOR.]—according to the prevailing wind, or as most convenient. In entering Snug Cove with a southerly wind, care must be taken to shorten sail in good time, and to drop the anchor in 6 or 5 fathoms before Red Point comes on with the south extreme of Look-out Point, and in veering cable the lead should be hove over the stern of the vessel. There is room for two or three small vessels in Snug Cove, but not for more. A vessel seeking shelter in Twofold Bay from a south-easterly gale will find the anchorage off East or West Boyd, on the south side of the bay, far preferable to Snug Cove; and it is by no means certain that it is not so even with an easterly gale. Captain Stokes, in H.M.S. "Beagle," found the southern part of Nullica Bay, off West Boyd, a very convenient anchorage, and which, he says, was the constant resort of coasters.

Tides.—It is high water in Twofold Bay, full and change, at 10h. 0m.; springs rise 7 feet, neaps 3 feet.

MERIMBULA BAY.

Merimbula Bay is a moderately deep sandy indent, lying between Toala Point and Merimbula Point, bearing from each other N. by W. W¾., two and three-quarter miles from 16 to 17 fathoms of water, and about one and three-quarter miles deep, shoaling gradually to 8 fathoms within a quarter of a mile of the beach.

PAMBULA RIVER.

Pambula River, one and a half miles N.W. by W. of Toala Point round its north extreme, discharges itself into the S.W. corner of Merimbula Bay, and is accessible only to boats, or very small craft, immediately after floods which sweep the bar away. There is very good anchorage, with shelter from S.W. and southerly winds, off the entrance to this river, in six fathoms of water, with the north tangent of Toala Head bearing E. and Merimbula Point N. ¼E. From the Bluff, at the west head of this river, the coast curves in a long sandy beach in a northerly direction for three miles to Merimbula Creek, running out from the lake in the N.W. corner of the bay.

There is sometimes a seven-foot bar at high-water into this creek. The place is visited by steamers from Sydney, which manage to scrape and warp in through the narrow shoal and tortuous channel, to the small settlement some two miles from the entrance situated nearly at the mouth of the lake. There are several storehouses and a pier comprising the town; and from it good roads extend into the country, along which all the wool, produce, &c., are carted down for export to Sydney, which at one time were all taken to Twofold Bay, a much more accessible and safe port of shipment, the disuse of which at the present time is much to be regretted. Vested interests in other places, combined with bad roads, would seem, however, to have diverted the wealth of the adjacent districts elsewhere. No direction can be given for entering this creek; buoys have to be put down by the captains of the steamers almost every trip for their own guidance; and as the rocks on one side of the entrance and the sand-spit on the other just clear the paddle-wheels, a vessel incurs risk every time she enters it. The place, therefore, cannot be recommended for anything but boats. The steamer is frequently bar-bound for several days together during neaps. It is high water, full and change, at 9h.; rise from four to six feet. There is telegraphic communication with Sydney.

TATHRA.

A small pier has been built out from the south shore of this bight, and moorings laid down by the Government; it is visited by the steamers on their way to Merimbula to pick up produce, &c., and by small schooners, only, however, when the wind is off the land or the weather is very fine. Most of the Bega district market commodities are exported from this place.

A 1.

EDEN TO BEGA RAILWAY—VARIOUS DISTANCES.

Sydney to Cooma	264	miles.
Cooma to Bombala	65	,,
Bombala to Border (Eastern route)	23	,,
Border to Bairnsdale (nearest Victorian station on proposed route)	104	,,
Bairnsdale to Melbourne	170	,,
	626	miles.
Sydney to Melbourne, *via* Albury	576½	miles.
Sydney to Melbourne, *via* Bendock and Bairnsdale	626	,,
Victorian Border to Bairnsdale	104	,,

The distance from the Border to Bairnsdale is only approximate, being scaled from a map. The rest are measured distances.

C. O. BURGE, 10/8/92.

A 2.

A 2.

STATISTICS RELATING TO THE ELECTORATE AND PORT OF EDEN.

Railway from Bega to Eden.

Public Works Department, Sydney, 6 August, 1892.

THE Government Statistician and the Collector of Customs have, as requested, supplied statistics in connection with the above matter.

The returns received from Mr. Coghlan give information in regard to holdings, land under cultivation, live stock, produce, &c., in the electorate of Eden. (*See* A.)

Mr. J. Powell furnishes a statement of imports into, and exports from, the port of Eden for the year 1891. (*See* B.)

The imports are valued at £2,768, and the exports at £20,458.

The vessels entered at the port of Eden in 1891 were seventy in number, with a total tonnage of 60,968. (Coghlan.)

(A.)

Electorate of Eden, 1891.

Total number of holdings, 1,301; area alienated, 531,738 acres; average area of holdings, 409 acres; land under cultivation, 12,076 acres. Live stock.—Horses (including foals), 6,832; dairy cattle, 34,348; ordinary cattle (including calves), 43,729; sheep and lambs, 14,432; swine, 15,321. Value of agricultural implements, £20,813; value of dairy implements, £23,669. Produce.—Butter, 2,143,034 lb.; cheese, 4,830,529 lb.; bacon and ham, 729,434 lb. Number of butter, cheese, and bacon factories, 148; hands employed in same—males, 310; females, 141; total, 451. Steam machinery in factories—value, £19,411; horse-power of same, 306. Slaughtering establishments, 57; sheep slaughtered, 5,215; lambs slaughtered, 309; cattle slaughtered, 3,996; swine slaughtered, 1,523.

Census Population.	Males.	Females.	Total.
Eden	178	181	359
Bega	1,007	1,016	2,023
Pambula	243	179	422
Merimbula	100	84	184
Candelo	236	237	473
Wyndham	232	159	391
			3,852

(B.)

Bega and Eden Railway—Statistics supplied by Collector of Customs.

Eden—Foreign Trade, 1891.

Value of imports, £2,768; value of exports, £20,458. Tathra and Merimbula have no foreign trade. There is no record of trade with New South Wales ports.

GENERAL Exports from the Port of Eden during the year ended 31st December, 1891.

Articles.	Countries whence imported.	Importations. Quantities.	Value.
Agricultural Implements	Victoria	2 packages	£3
Bark	,,	20 tons	200
Bags and Sacks	,,	40 dozen	13
Biscuits	,,	208 lb.	2
Brandy	,,	2 gallons	2
Boots	,,	3 cases	27
Brushware	,,	1 package	1
Baking Powder	,,	112 lb.	5
Chaff	,,	13 cwt.	3
Cheese	,,	230 lb.	6
Cordage	,,	1 cwt.	2
Drapery	,,	5 cases	26
Drugs	,,	1 package	5
Earthenware	,,	1 case	4
Flour	,,	80 cwt.	50
Guns	,,	1 case	5
Hay	Tasmania	16 cwt.	5
Hams	Victoria	240 lb.	12
Hardware	,,	23 cases	66
Iron, Galvanized	,,	22 cwt.	20
Lampware	,,	1 package	1
Live Stock—Cattle	Tasmania	1,016 No.	10,060
Live Stock—Horses	Victoria	9 ,,	540
Live Stock—Pigs	,,	1,434 ,,	3,068
Live Stock—Sheep	Tasmania	8,988 ,,	4,498
Maize	Victoria	— bushels	1
Oats	,,	30 ,,	3
Oars	,,	10 No.	4
Oil, China	,,	29 gallons	5
Onions	,,	3 cwt.	1
Oilmen's Stores	,,	6 packages	34
Paint	,,	1 cwt.	2
Pollard	,,	12 bushels	1
Peas	,,	7 packages	8
Quartz (Gold)	,,	3,041 bags	1,580
Rice	,,	3 cwt.	3
Saddlery	,,	4 packages	20
Salt	,,	60 cwt.	12
Seeds	,,	3 packages	15
Soap	,,	2 cwt.	2
Sugar	,,	55 ,,	76
Tea	,,	296 lb.	20
Tobacco	,,	208 ,,	40
Vestas	,,	2 cases	4
Vinegar	,,	25 gallons	2
		Total Exports ... £	20,458

JAMES POWELL, 3/8/92.

Of this amount the New South Wales produce is valued at ... £20,079
And British and foreign produce at ... 379
£20,458

(Statistical Register for 1891, page 151).

No. 2.—

No. 2.—General Imports into the Port of Eden during the year ended 31st December, 1891.

Articles.	Countries whence imported.	Importations.	
		Quantities.	Value.
Beer in bottle	Tasmania	16 gallons	£3
Beer in wood	,,	18 gallons	1
Bags and sacks	Victoria	20 dozen	4
Bark	,,	13 tons	78
Butter	,,	1,023 lb.	50
	,,	298 lb.	12
Chaff	Tasmania	55 cwt.	11
Cement	Victoria	6 barrels	4
Coke	,,	11 cwt.	1
Dynamite	,,	500 lb.	25
Fruit, green	Tasmania	4 cases	2
Hay	,,	88 cwt.	21
Hardware	Victoria	22 packages	135
Iron, galvanised	,,	31 cwt.	30
Jams	Tasmania	48 lb.	1
Lampware	Victoria	1 package	3
Live Stock: Cattle	,,	54 No.	426
Live Stock: Horses	,,	3 ,,	300
Machinery	,,	10 packages	1,405
Palings	Tasmania	100 No.	1
Quicksilver	Victoria	7 bottles	96
Poultry	Tasmania	2 coops	10
Saddlery	,,	1 package	5
Steel	Victoria	86 cwt.	74
Timber, dressed	,,	7,762 feet	70
	Total imports	£	2,768

JAMES POWELL, 3/8/92.

B.

[To Evidence of H. Deane, Esq.]

Length and Cost per mile of Railways in Tasmania, Victoria, and Queensland.

Sir, Railway Construction Branch, Sydney, 5 October, 1892.

I have the honor to forward herewith for information of the Committee some statements showing the length and cost per mile of railways in Tasmania, Victoria, and Queensland.

I have, &c.,
H. DEANE.

The Secretary, Parliamentary Standing Committee on Public Works.

Tasmanian Railways—3 feet 6 inch Gauge.

Works only.	Miles.	Cost per mile.
		£
Mersey and Deloraine Railway—		
Formby to Ulverstone	48¼	5,479
Scotsdale Railway	47	7,692
Fingal Railway	46¾	3,492
Derwent Valley Railway	21½	7,954
Parattah to Oatlands Railway	4¼	2,231
Chudleigh Railway	12¾	4,961
Green Ponds Railway	26	5,320
Sorell Railway	14¾	7,543
Zeehan Railway	29	6,974
	253½	5,952

Victorian Railways—5 feet 3 inch Gauge.

Works only.	Miles.	Cost per mile.
Northern System—		
Essendon Junction to Sandhurst (double)	100¾	47,624
Sandhurst to Echuca (including bridge)	55¼	12,363
Lancefield Junction to Lancefield	14⅛	4,424
Carlsruhe to Daylesford	22¼	7,224
Castlemaine to Dunolly	47½	7,453
Dunolly to St. Arnaud	33	4,921
St Arnaud to Donald	23¾	4,019
Castlemaine to Maldon	10¼	5,982
Ballarat to Maryborough	42½	6,453
Ballarat (Racecourse Branch)	2	3,681
Maryborough to Avoca	15	4,127
Sandhurst to Inglewood	30	5,438
Inglewood to Charlton	42¾	4,021
Charlton to Wycheproof	16½	5,172
Korong Vale to Boort	18	4,004
Eaglehawk to Kerang	73¼	3,988
Toolamba to Tatura	7	4,003
Wandong, Heathcote, and Sandhurst	68	5,706
Kyneton to Redesdale	16	5,404
Creswick to Daylesford	23½	7,092
Inglewood to Dunolly	24⅝	3,841
Wedderburn Road to Wedderburn	4¾	3,702
Kerang to Swan Hill	35	4,447
Tatura to Echuca	37¾	4,430
Ballarat Racecourse to Waubra	13½	5,015

North-

Works only.	Miles.	Cost per mile.
		£
North-eastern System—		
Essendon Junction to Essendon (double)	5	30,958
Essendon to Wodonga	61 double and 121 single	11,314
Wodonga to River Murray	2¼	16,021
Tallarook to Yea	23¾	6,363
Mangalore to Shepparton	45	5,629
Shepparton to Numurkah	20½	3,798
Benalla to St. James	20½	3,772
Wangaratta to Beechworth	23	6,932
Everton to Myrtleford	16½	4,611
Springs to Wahgunyah	14	4,893
North Melbourne to Coburg	2¾ double 2¼ single	37,440
Murchison to Rushworth	13¼	5,347
Shepparton to Dookie	15	3,549
Numurkah to Cobram	21½	3,725
Numurkah to Nathalia	14	3,675
St. James to Yarrawonga	19¾	4,704
Myrtleford to Bright	18½	5,887
Coburg to Somerton	7½	9,430
Royal Park to Clifton Hill	¾ double 2 single	55,630
Fitzroy to Whittlesea	1¼ ,, 20¾ ,,	10,624
Western System—		
Footscray to Williamstown (double)	6	81,808
Newport to Geelong (including racecourse branch)	39½	29,199
North Geelong to Ballarat (double)	53½	35,199
Geelong to Queenscliff	20¾	5,383
Geelong to Colac	52½	6,164
Colac to Camperdown	28	4,521
Warrenheip to Gordons	13	8,832
Ballarat to Ararat	57	7,009
Ararat to Stawell (including line to quarry)	18¾	8,103
Stawell to Horsham	54	5,838
Horsham to Dimboola	21¼	4,706
Ballarat to Scarsdale	13¼	4,503
Ararat to Hamilton	66½	4,785
Hamilton to Portland	54	5,215
Branxholme to Casterton	32	5,499
Footscray to Bacchus Marsh	21¾	11,596
Bacchus Marsh to Newport	4¾	5,578
Lal Lal Racecourse Branch	2	5,668
Bacchus Marsh to Gordons	27½	12,196
Ballarat East to Buninyong	7½	8,401
Ballarat Cattle Yards Branch	3	4,128
Scarsdale to Lintons	8	8,554
Avoca to Ararat	39½	4,158
Lubeck to Rupanyup	9½	4,633
Murtoa to Warracknabeal	31¼	4,398
Horsham to Noradjuha	20¼	3,949
Dimboola to Serviceton	62	6,026
Mount Moriac to Wensleydale	11¼	3,463
Birregurra to Forest	19¾	6,801
Irrewarra to Beeac	8¾	5,393
Camperdown to Warrnambool	42½	7,850
Terang to Mortlake	13	4,244
Koroit to Warrnambool	9½	8,589
Koroit to Belfast	11¼	7,985
Dunkeld to Koroit	49¼	3,326
Hamilton to Penshurst	12	3,865
Hamilton to Coleraine	23	4,708
Eastern System—		
South Yarra to Oakleigh (double)	6¾	40,611
Oakleigh to Sale	119	8,616
Traralgon to Heyfield	23¼	5,194
Hawthorne to Lilydale	5¾ double 14¼ single	16,181
Caulfield to Frankston	10¼ ,, 9¾ ,,	8,693
Morwell to Mirboo	20	7,648
Frankston to Mornington	7¾	7,419
Frankston to Crib Point	18½	5,377
Moe to Narracan	10¾	10,641
Sale to Stratford	9¼	4,609
Heyfield to Bairnsdale	50¾	5,006
Maffra to Briagolong	12¼	4,219
Ringwood to Ferntree Gully	7½	7,756
Lilydale to Healesville	15¼	13,658
Oakleigh to Alphington	10¼	26,487
Burnley to Outer Circle (Waverley)	7¼	22,056
Hawthorn to Kew	1½	58,172
Brighton to Picnic Point (double)	2	35,885
Collingwood-Heidelberg	5¼	35,755
Hobson's Bay Lines (including works, Prince's Bridge to Chapel-street) double	16½	113,803
QUEENSLAND RAILWAYS—3 FEET 6 INCH GAUGE.		
Southern Division—		
Brisbane to Charleville	485	8,008
Gowrie Junction to Wallangarra	125	8,128
Ipswich to Dugandan	35	4,092
Brisbane Valley Junction to Esk	41	3,927
Pengarry Junction to Crow's Nest	29	3,970
Beawaraba Junction to Pittsworth	16	3,487
Warwick to Killarney	27	4,390
South Brisbane to Cleveland	21	11,228
Brisbane to Cooroy	88	11,272
Cooroy to Maryborough	86	7,407
Kilkivan Junction to Kilkivan	26	6,412
Mungar Junction to Biggenden	42	4,509
Croydon Junction to North Bundaberg	52	5,547
Isis Junction to Childers	12	2,788
North Bundaberg to Mount Perry	67	4,965

Central

Works only.	Miles.	Cost per mile.
		£
Central Division—		
Rockhampton to Longreach	427	4,938
Emerald to Springsure	41	2,675
Emerald to Clermont	62	2,753
North Rockhampton to Emu Park	29	5,168
Northern Division—		
Mackay Railway	31	4,898
Bowen ,,	48	3,360
Townsville to Hughenden	236	3,967
Ravenswood Junction to Ravenswood	24	3,400
Cairns Railway*	24	43,230
Cooktown Railway	68	5,085
Normanton Railway	94	2,670

* Exceptionally high through peculiar circumstances.

SOUTH AUSTRALIAN RAILWAYS.

Works only.	Gauge.	Miles in length.	Cost per mile.
	′ ″	m. c.	£
Midland System—			
Adelaide and Port Adelaide	5 3	7 35	20,370
Port Adelaide and Semaphore	5 3	1 69	42,071
Glanville and Largs Bay (including jetty)	5 3	1 26	8,815
Adelaide and Kapunda	5 3	49 24	10,478
Dry Creek and Port Adelaide	5 3	4 35	4,545
Roseworthy and Tarlee	5 3	23 77	4,744
Tarlee and Burra	5 3	46 70	4,893
Burra and Hallett	5 3	18 36	4,795
Hallet and Terowie	5 3	20 11	5,406
Kapunda and North-west Bend	5 3	56 64	5,238
Gawler Tramway	5 3	1 16	5,184
Southern System—			
Adelaide, Nairne, and Mount Barker	5 3	37 32	17,282
Nairne to Victorian Border (including bridge)	5 3	160 7	6,067
Mount Barker and Strathalbyn	5 3	24 64	8,814
Strathalbyn Railway (including Currency Creek to Goolora)	5 3	30 13	6,202
Western System—			
Port Wakefield and Hoyleton	3 6	28 41	2,940
Hoyleton and Blyth	3 6	13 41	5,350
Port Wakefield and Kadina	3 6	34 55	5,016
Kadina and Barunga Gap	3 6	33 17	3,090
Barunga Gap and Snowtown	3 6		
Hamley Bridge and Balaclava	3 6	22 13	3,963
Kadina, Wallaroo, and Moonta	5 3	20 0	4,293
Moonta and Moonta Bay	5 3		
Kadina and Wallaroo (new line)	3 6	5 66	4,270
Northern System—			
Port Pirie and Gladstone	3 6	32 34	5,736
Gladstone and Jamestown	3 6	19 38	3,864
Terowie and Pichi Richi	3 6	116 23	3,985
Gladstone and Laura	3 6	6 71	3,958
Petersburg and New South Wales Border	3 6	144 62	3,667
Port Augusta and Government Gums	3 6	198 25	4,898
Farina and Hergott Springs	3 6	32 59	4,000
Hergott Springs and Strangeways Springs	3 6	99 35	3,657
Strangeways Springs and Peake	3 6	99 0	3,231
Peake and Angle Pole	3 6	48 35	4,676
South-eastern System—			
Kingston and Narracoorte	3 6	52 32	3,294
Narracoorte and Tatiara	3 6	43 67	3,090
Tatiara and Wolseley	3 6	5 7	2,306
Rivoli Bay and Mount Gambier	3 6	51 16	3,376
Mount Gambier and Narracoorte	3 6	63 36	2,896
Port Broughton and Barunga Range	3 6	10 0	4,357
Wallaroo and Moonta (new line)	3 6	not given.	

Compiled from Commissioners' Report, South Australian Railways, June 30th, 1891.

B 1.

CHEAP RAILWAYS.

Sir, Railway Construction Branch, Sydney, 6 October, 1892.

I enclose copy of Minute Paper forwarded by me to the Under-Secretary to-day for the information of the Committee.

Yours, &c.,

The Secretary, Parliamentary Standing Committee on Public Works. H. DEANE.

Department of Public Works, Railway Construction Branch, Sydney, 6 October, 1892.

Minute Paper.—*Subject*: Cheap Railways.

My attention has been directed to the evidence of the Secretary to the Railway Commissioners before the Public Works Committee yesterday, in which he says the Railway Commissioners advocate the construction of pioneer Railways, to cost not more than £1,750 per mile, exclusive of bridges and land, and refers to the report of the Railway Commissioners for 1891, which I read at the time and made some observations upon.

I consider that the statement that railways can be made to the standard gauge and fit to carry the existing rolling stock at the cost of £1,750, exclusive of bridges and land, may lead to misconception. Even in Queensland, where railways have been made on the cheapest possible principles and the narrow gauge is adopted, it has never been done; the lowest in this Colony is that of the Normanton railway, standing at £2,670 per mile—the next being that from Emerald to Springsure at a cost of £2,675 per mile—and this, it must be remembered, with the narrow gauge, 40 lb. rails, short sleepers, and scant ballast.

There are many items which, divided over the whole line, add materially to the cost per mile; and while the earthworks and the single road of the permanent way can be carried out for something under £2,500 per mile on the standard gauge, there are, in addition, to be reckoned the waterways, station water supply, signals, road diversions, besides fencing and level-crossings, which have to be taken into account.

I.

I furnish herewith a statement showing the expenditure per mile on the Culcairn to Corowa railway, which is the cheapest line hitherto constructed through an agricultural district, and it will be seen how the items are made up. I also add estimates of a line through the easiest possible country,—first, for an agricultural district; secondly, the western district, where fencing can be almost entirely dispensed with. The Nyngan to Cobar line would have been such a line as the latter had the gradients not been interfered with, and had it not been found that large tracts were subject to standing water.

It will be my endeavour in the future, as it has been in the past, to keep expenses down; but unless something really vital is cut out, I do not see how any further reduction can be made. I have included new material for permanent-way in my estimate, for it is evident that old sound material would not be forthcoming for all the lines which have merits, such as Young to Forbes, Parkes to Dubbo, Dubbo to Werris Creek, Dubbo to Coonamble and Walgett, Narrabri to Moree, Byrock to Brewarrina, Nevertire to Warren, &c. In some of these, moreover, the earthworks and bridges cannot be constructed for the amount put down in the estimate.

CULCAIRN TO COROWA RAILWAY.

Statement of cost to date.

	£	
Earthworks	395	per mile.
,, at stations	60	,,
Culverts and bridges	210	,,
Level crossings	103	,,
Road diversions	...	
Fencing	145	,,
Permanent-way—laying, ballast, sleepers	1,156	,,
,, materials, cost in Sydney	697	,,
,, freight	247	,,
Sidings	..	
Water supply	65	,,
Station buildings	300	,,
Miscellaneous—turntables, junctions, expenses, &c.	84	,,
Engines and supervisors	175	,,
Total at present	£3,637	,,
Cost at present	£175,000	
The total cost will be, say	190,000=£4,000	per mile.

Estimate for Economical Construction.

	Agricultural District.	Pastoral District.
	£	£
Earthworks, minimum	300	300
,, at stations	60	42
Culverts and bridges	210	165
Level-crossings and overbridges	100	20
Road diversions	.. ..	.....
Fencing	150	(part) 30
Permanent-way—laying, 1s. 6d. l. yard £132		
,, ballast, 3 in. under sleepers, 3s. 6d. l. yard £308	840	840
,, sleepers, 2,000, 4s. each £400		
,, materials, 60 lb. rails	674	674
,, freight on, say 300 miles, 102 tons, at 1d.	128	128
Sidings, 7½ per cent. and 5 per cent. on above cost (7½%)	123	(5%) 82
Water supply	65	65
Station buildings	300	100
Signal and interlocking turntables, &c.	90	50
Contingencies, 7½ per cent.	228	187
Engineering and supervision	175	125
Total	£3,443	£2,808

H. DEANE,
Engineer-in-Chief.

B 2.

PROPOSED RAILWAY FROM EDEN TO BEGA AS A CHEAP RAILWAY.

6 October, 1892.

Sir,—

Having observed in the *Sydney Morning Herald* of to-day, that Mr. McCourt had given notice of a motion for to-day which terminated as follows:—

"The Committee are of opinion that a cheaply constructed line of railway might be favourably considered," I beg to offer the following remarks,—

It is my opinion that if the resolution is passed in this form, it would be wiser at the present time not to recommend absolutely any particular method of giving effect to it, as the information at hand is not sufficient to form a correct judgment.

As will be gathered from my evidence, there are two ways in which cheaper construction could be effected, (1) by reducing the curves and using special locomotives, (2) by adopting a narrower gauge.

Against the adoption of a narrower gauge there are very great objections. As an isolated line the Eden to Bega line might, without disadvantage, have any suitable gauge, but as it will, no doubt, be some day connected with the Cooma railway, the question of the break of gauge which would then ensue deserves serious consideration—especially if the railway becomes one of the main lines of the Colony.

As regards the other method, viz.: That of reducing the curves and using special locomotives. I had already been looking into the question when the Chairman intimated to me the wish of the Committee to examine me on the subject of narrow gauge railways.

I am not in possession of all particulars, but it is one worth investigating carefully; for if it is shown to be really practicable and economical in working, it would be a means of enormously reducing the cost of some of the proposed railways through rough country without the necessity of altering the gauge.

I am inclined to believe that the difference of cost between such a line and one with a gauge of 3 feet 6 inches would be comparatively small, so that the difference of the amount of interest on capital expended would be more than counterbalanced by the advantages of having one gauge throughout.

In order to arrive at a definite opinion as to the value of this suggestion, it will be necessary to have accurate data from actual working of the locomotives in question, as there are, of course, special mechanical difficulties and expenses involved in their use. These data would take some months to acquire, but I have no doubt this would be obtainable; and what I venture to suggest, therefore, is that no definite conclusion as to method to be recommended should be arrived at until the desired information is to hand.

The Secretary, Parliamentary Standing Committee on Public Works.

H. DEANE.

B 3.

COST OF TRIAL SURVEYS—MONARO DISTRICT.

	£	s.	d.
1. Cooma to Bendock	6	0	0
2. Do. Bombala	3,552	17	0
To connect Bombala with Southern line	1,841	10	0
2. Bombala to Eden, Cathcart, and Great Southern line	2,126	18	11
Bombala to Eden	3,731	0	11
Cooma—Bombala line to Bega district	1,483	4	3
3. Monaro to the coast	604	9	2
4. Eden to Bega, thence to Monaro	593	14	11
Eden to Candelo, thence to Cooma	698	9	2
Wolumla to Bega	8	0	0

C.

[To Evidence of A. C. Turner, Esq.]

WOOL RECEIVED BY THE I.S.N. CO.'S STEAMERS FROM MONARO.

Illawarra Steam Navigation Company.—Quantity of Wool received by steamers for seasons as under.

Month.	1886-7.	1887-8.	1888-9.	1889-90.	1890-1.	1891-2.
	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.
October	53	15	284	77	.....	73
November	1,844	1,131	1,876	1,363	1,478	595
December	2,901	3,865	2,770	2,557	2,844	2,625
January	2,147	1,861	1,636	1,276	1,311	2,072
February	850	367	834	420	331	565
March	177	145	210	153	58	79
	7,972	7,384	7,610	5,846	6,022	6,009
Received at Eden of above quantity	6	11	27	Nil	Nil	10

C 1.

AMOUNTS RECEIVED BY THE I.S.N. CO. FOR PASSAGES AND FREIGHTS AT MERIMBULA, TATHRA, AND EDEN.

AMOUNT received for Passages.

	Merimbula.	Tathra.	Eden.
1891—	£ s. d.	£ s. d.	£ s. d.
April	85 17 6	147 0 0	31 10 0
May	125 12 6	188 5 0	46 10 0
June	88 2 6	155 11 0	46 2 6
July	111 15 0	160 14 6	52 17 6
August	87 7 6	187 12 6	79 10 0
September	159 15 0	168 7 6	50 5 0
October	152 5 0	195 15 0	61 17 6
November	102 0 0	129 7 6	37 2 6
December	184 10 0	251 1 3	99 15 0
1892—			
January	122 12 6	190 14 0	87 0 0
February	152 5 0	171 3 9	72 15 0
March	109 17 6	144 7 6	42 6 0
£	1,482 0 0	2,089 19 6	707 11 0

	£	s.	d.		
Merimbula	1,482	0	0	representing	1,423 Passengers.
Tathra	2,089	19	6	,,	1,838 ,,
Eden	707	11	0	,,	656 ,,
	£4,279	10	6		

AMOUNT received for Freights.

	Merimbula.	Tathra.	Eden.
1891—	£ s. d.	£ s. d.	£ s. d.
April	842 5 3	351 6 6	153 9 9
May	815 0 5	349 6 9	168 0 5
June	573 18 5	308 8 10	127 2 3
July	741 8 9	374 10 7	182 3 7
August	813 16 8	401 3 8	150 11 6
September	983 3 9	457 2 0	161 13 0
October	958 18 9	511 5 11	161 7 6
November	887 0 0	499 14 7	137 8 9
December	1,340 5 8	502 18 4	190 5 0
1892—			
January	1,126 6 4	474 18 2	191 16 3
February	853 9 10	465 10 9	207 7 0
March	696 8 0	482 15 9	158 1 6
£	10,632 1 10	5,179 1 10	1,989 6 6

	£	s.	d.		
Merimbula	10,632	1	10	representing	13,290 tons.
Tathra	5,179	1	10	,,	6,474 ,,
Eden	1,989	6	6	,,	2,486 ,,
	£17,800	10	2		

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

RAILWAY FROM EDEN TO BEGA.

REPORT.

THE Sectional Committee appointed on the 11th of August, 1892, to whom was referred the duty of examining the local witnesses, the inspection of the route of the proposed Railway from Eden to Bega and the country adjacent thereto, have the honor to report to the Parliamentary Standing Committee on Public Works,—

That the Committee, namely, Mr. J. Garrard, M.L.A. (Chairman), the Hon. W. H. Suttor, M.L.C., Mr. T. Ewing, M.L.A., and Mr. W. McCourt, M.L.A., left Sydney by the 9 p.m. train on Saturday, 20th August, 1892, arriving at Bombala (*via* Cooma, Nimitybelle, and Bibbenluke) late on the following evening.

On Monday, 22nd August, at 10 a.m., the Committee opened the inquiry at the local Court House, and examined the following witnesses:—Messrs. H. M. Joseph, Mayor of Bombala; D. Campbell, grazier; Alderman E. Hyde, tanner; and R. W. Dawson, inspector of stock.

At 7 a.m. on Tuesday, 23rd August, the Committee left Bombala by special coach, arriving at Cathcart, about 12 miles from Bombala, at 9 a.m. Examined two witnesses, Messrs. R. Gerathy, hotel proprietor, and W. Baker, road contractor, leaving for Candelo at 10·30 a.m. Two miles east of Cathcart, the road (Big Jack) to Eden *via* Wyndham and Pambula, branches off from the Bombala-Bega Road. About 9 miles from Cathcart the descent of the Tantawanglo Mountain begins, and another 9 miles are traversed before the bottom is reached. The Committee arrived at Candelo (26 miles from Cathcart) at 3·30 p.m., at which place the road to Merimbula and Pambula *via* Wolumla branches off the Bega Road. Four witnesses were examined at the School of Arts, viz.:—Messrs. D. M'Naught, farmer, J. M'Naught, farmer, P. Heffernan, farmer, and C. J. Collins, farmer. Candelo is prettily situated, and is apparently a thriving town, adjoining the well-known Kameruka Estate, through a portion of which the Committee drove. After leaving Candelo, Bega was reached at 8·30 p.m., 14 miles from Candelo and 52 miles from Bombala.

On Wednesday morning, 24th August, the Committee drove to Tathra and back (24 miles), inspected the port and its appliances, also the books of the Illawarra S. N. Co., and examined Mr. Myers, the company's local agent. At 2 o'clock p.m. the Committee continued their inquiry at the Bega Court House, and, with the exception of a short adjournment, sat until 9·45 p.m. The following witnesses (nineteen) were examined:—Messrs. F. Bland, Mayor of Bega; W. H. Braine, proprietor of the *Bega Gazette;* C. W. Macleod, auctioneer; T. Rawlinson, solicitor, and chairman of Railway League; W. W. Wren, manager Kameruka Estate; A. Smith, farmer; W. Hanscombe, farmer; J. Britten, farmer; G. E. Ward, farmer; W. Ramsay, farmer; G. P. Kerrison, President, Bega A. and P. Society; E. H. Scott, company promoter; F. T. Stennett, grazier; H. O. T. Cowdroy, storekeeper; J. Britten, farmer; W. A. Wilson, farmer; W. D. Neilly, proprietor *Bega Standard;* J. N. Postle, resident engineer for roads and bridges; and C. Paul, railway surveyor.

At

At 8 a.m. on Thursday, 25th August, the Committee left Bega for Wolumla (13 miles), this road branches off the Bega to Candelo Road, about 4 miles from the former town. Wolumla was reached about 10·30 a.m. Six witnesses were examined at the local School of Arts, viz.:—Messrs W. J. Morehead, farmer; J. Cockrane, farmer; C. Walsh, cooper; J. Goward, farmer; G. Smith, farmer; H. Fowler, farmer and storekeeper; G. Ireland, dairy farmer; and one—Mr. J. M. Black, dairy farmer, at the Junction Hotel.

Having, in company with Mr. Railway-Engineer Hardy, inspected the site of the proposed tunnel at the Wolumla Gap, also the proposed junction of the Bombala line (Postle's route); the Committee left Wolumla at 1·30 p.m., the land on the southern side of the Wolumla range is generally much inferior to that on the northern side; 3 miles from Wolumla, the road to Merimbula strikes off from the main road. Pambula (14 miles from Wolumla) was reached at 4 p.m., opened inquiry at the Court House and examined nine witnesses:—J. Hamilton, blacksmith; P. Doherty, retired storekeeper; J. Irvine, auctioneer and general agent; J. Davis, farmer and ex-Police Magistrate; S. Gordon, farmer; D. Fraser, storekeeper; M. Roche, mining agent, &c., ex-Inspector of conditional purchases; S. Gordon, junior, sawmill proprietor; S. Woods, senior-sergeant of police.

The Committee then drove to and from Merimbula (8 miles) by the road on the southern side, crossing the lake, and examining on the jetty at the north side, Mr. P. J. Clinch, local agent for the I.S.N. Company.

The Committee left Pambula at 8 p.m., arriving at Eden (12 miles from Pambula, and 39 miles from Bega) at 10·30 p.m. The railway route was fairly under observation from Bega to Pambula, but shortly after leaving the latter place it diverges towards the coast.

On Friday, 26th August, the Committee inspected the deviations that have been surveyed, also the proposed passenger station site and the terminal station at Snug Cove. At 2 p.m., in the Court House, the following witnesses were examined:—Messrs. J. Davidson, whaler; S. Solomon, storekeeper and agent for the Union S.S. Company; H. V. Harrison, sawmill proprietor; T. V. Smith, Collector of Customs; T. Shelly, selector, and canvasser for freezing company; F. T. Thompson, senior-constable; A. W. Aspinall, builder and contractor; H. Hardy, railway engineer; and later on in the evening, Mr. Stiles, grazier and cattle dealer.

On Saturday, 27th August, the Chairman left Eden by the I.S.N. steamer "Bega" for Sydney, *via* Merimbula and Tathra, for the purpose of seeing these ports under working condition, arriving in Sydney on Sunday, 28th August. The other members of the Committee continued their examination of the port of Twofold Bay on its western and southern sides, at the point where the more southern surveys to connect the table-land, *via* Sturt, tap the bay. They left Eden on Sunday, 28th August, by the Union S.S. Co.'s steamer "Flora," and arrived in Sydney on Monday, 29th August. During the inquiry, the Sectional Committee took evidence at nine different places, and examined 56 witnesses.

Thus it will be seen that the inquiry made by the Sectional Committee, embracing some consideration of the views of the inhabitants of Monaro, the situation of that district, the territory lying between the table-land and the coast, together with a searching investigation into the environment of the district immediately concerned, were fairly comprehensive.

Suggestions were made in various parts of the district that the inquiry should be extended further—for instance, to Colombo on the north-west—in order to ensure a fuller examination of the district in detail, but in that opportunities were given at Bombala, Cathcart, Candelo, Tathra, Bega, Wolumla, Pambula, Merimbula, and Eden, for a full expression of public opinion, and these places visited, the Sectional Committee felt that further inquiry would not affect the salient points of the case, and, in fact, are satisfied from the evidence produced that Colombo and other centres particularised in the evidence are places of considerable production and of much genuine settlement.

Possibly the present state of the district, the stability of its enterprises, and its great productiveness may be well explained by the following figures, remembering, however, that they apply to the whole Eden electorate, part of which is not vitally affected by the proposal under consideration :—Area of electorate, 2,287,300 acres; average area of holding, 409 acres; area under cultivation, 12,076 acres; persons employed in dairying, 1,659; persons employed in agriculture, 1,267; total number employed in agricultural pursuits, 3,149 (sixth in the Colony); amount of butter produced last year, 2,143,034 lb. (one of the four districts producing over 2,000,000 lb. annually); amount of cheese produced last year, 4,830,529 lb. (largest in Colony); amount of bacon and hams, 729,423 lb. (second in Colony); number of horses, 6,832; number of dairy cattle, 34,348 (largest in one district in Colony); swine, 15,321 (largest number in one district in the Colony); value of dairy implements, £23,669 (largest amount in one district in New South Wales.)

The present position of the district is the result of steady industry in the past —the future is likely to be still more satisfactory, for although the richest parts of the district are in occupation—there are yet large areas of land—not maybe of first-class quality—which are suitable for dairying and like pursuits which will doubtless be gradually occupied and further increase very considerably the output of the district.

The land may be described generally—making allowance for such exceptions as will reasonably be expected—as

(1.) First-class agricultural land on the banks of some of the rivers and creeks —such as on the Rivers Bega and Pambula, but except on the first-named somewhat limited in extent.

(2.) As good grazing and dairying country over a great area extending to the north, west, and south of Bega and Wolumla, with belts of second-class country intruding.

(3.) Of poor country around Tathra and Eden adjacent to the coast, and on much of the route from Panbula to Eden.

The produce of the district is principally shipped at Tathra and Merimbula, and it must at once be granted—situated as these ports are, exposed to most weather —notwithstanding any efforts the steamship companies may make to give a good and competent service, the trade done, from them especially, with respect to passengers and the perishable produce of this district can never be very satisfactory, still, they do furnish a sufficiently good outlet to provide some competition with the proposed railway, and will prohibit the imposition of high freights for carriage.

The Port of Eden—Twofold Bay—is immeasurably better than either Tathra or Merimbula, and although not so complete as some would claim, still a great and satisfactory trade could be done from it with ease and expedition, and there can be no reasonable doubt that a railway from Bega to Eden would concentrate much of the trade at Eden, be of great benefit to the district, and an advantage to the Colony generally.

Again, in the future, when trade flows unrestricted to the nearest ports, it is almost certain that Twofold Bay will be the outlet for much of the produce of Monaro, of a considerable extent of the South Coast district of New South Wales, and of some of the North Eastern territory of the Colony of Victoria, but because of the sparseness of population and the inaccessibility of the country, it is not probable that it will be readily so widely used in the immediate future.

The expenditure of public money is only justifiable when the result is commensurate with the amount expended, and although the scheme before us, viz., to bring a valuable farming district in touch with a good port, is logically correct, still it would be difficult to justify the expenditure of over half a million of money for such purpose at present—(1) because the population is at present not very great; (2) because there would be a heavier loss on the operations than appears reasonable to ask the Colony to bear; (3) because the present ports do furnish some outlet, and will remain as dangerous competitors for the trade of the district.

The present route appears to have been chosen primarily for its directness, and attains a greater elevation than apparently need be reached, passing through a country with many engineering difficulties. Were the line kept further to the east—see page 9, No. 18, printed papers, in support—it seems highly probable that the cost would be considerably lessened, and as good a result fairly well obtained.

It is apparent, unless some method of cheaper railway construction is possible—if the same expensive work and easy grades which are necessary on main or trunk lines, and which must necessitate heavy expenditure, are adhered to—the cost of railway construction, unless in very favoured districts, will be prohibitive, and many years must elapse before localities, which might be well served under a different system, can have the advantages of railway communication.

It appears possible that a further examination of the country would remove some of the engineering difficulties on the route—that a cheaper system of railway construction might meet all the requirements of this and similar districts for many years to come—and that a just application of the betterment principle would still further reduce the cost, and might render it possible to recommend the construction of a work by which the same result would be obtained as by the proposed expensive line.

Although the work, as submitted to us, cannot in our opinion be recommended, the cost being prohibitive, we would suggest that further consideration be given to the points particularised in the last paragraph.

J. GARRARD,
Chairman.

Sydney, 7th September, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

RAILWAY FROM EDEN TO BEGA.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

MONDAY, 22 *AUGUST*, 1892.

[*The Sectional Committee met at the Court-house, Bombala, at* 10 *a.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor. | Thomas Thomson Ewing, Esq.
William McCourt, Esq.

The Sectional Committee proceeded to consider the proposed Railway from Eden to Bega.

Mr. Hyam Moses Joseph, Mayor of Bombala, sworn, and examined :—

Mr. H. M. Joseph. 22 Aug., 1892.

1. *Chairman.*] You are Mayor of Bombala? Yes.
2. How long have you occupied that position? This is my second year of office.
3. How long have you been connected with the Municipal Council? Since the municipality was created, two years ago.
4. How long have you been a resident of the district? Thirty-two years.
5. You are intimately acquainted with its wants and aspirations? Yes.
6. The Committee understand that there has been an agitation from time to time for a railway to connect Bombala with Twofold Bay. Is that so? No; what we have been wanting is a line to connect us with Cooma.
7. It is an extension of the Cooma line which you are hoping and working for? Yes.
8. Then what is the meaning of the expenditure on trial surveys for a line to connect Bombala with Twofold Bay? They are not the wish of the Bombala people. The only line we should care for, after an extension from Cooma, would be the Bondi line.
9. Why? Because, after a certain distance, it could be connected with the Victorian line, through Gippsland.
10. That connection would be near Delegate? We thought of that at first, but afterwards we found it would be better to go through Bondi, near what they call Wangrabell, and strike through and tap the Victorian line at Bairnsdale.
10½. Is that the nearest point? Yes; and the line would be a better one.
11. Delegate, I understand, would be too far to the west—you want to go further east? It would be too expensive to go to the west.
12. Your objection to the route is not that it is too long, but that it is too expensive? Yes.
13. If we have been informed by the Works Department that they have decided that any future connection with the Victorian system should be at Delegate, how do you account for that decision? Mr. Davies, the Victorian surveyor, who came round that way, recommended the Bondi route. He said it would be cheaper and better.
14. If the people of Bombala are to be connected with Eden they would rather have the connection by the Bondi route, inasmuch as it would go near the Victorian border at a point where the Victorian system could easily connect with it? Yes.
15. But that would be a very expensive route, would it not? No.
16. We understand from you that the people of Bombala are really not anxious—hardly desirous—of a connection with Twofold Bay? No.
17. What they desire, and are anxious for, is an extension of the Cooma line to Bombala? Yes.
18. Any further extension to connect with the Victorian system, or to go to Twofold Bay, may be left over to the dim future? Yes.
19. Do you know anything of the routes that have been surveyed *via* Cathcart to Wolumla? No.
20. What is the population of your municipality? About 1,200.
21. What area does it embrace? Two miles square.
22. What is your revenue for this year? It will be about £600.
23. Is that merely the municipal rate? Only the municipal rate.
24. You have no other rate—no lighting rate? We have a lighting rate.
25. What is it? It brings us in about £75.
26. That is not included in the amount you gave us just now? No.
27. Has there been any marked increase on last year? No, I do not think so.
28. Has the population of Bombala increased very much during the last few years? Yes.
29. Has it increased 25 per cent. during the last ten years? Fully that. I think there were only about 700 people here ten years ago, and now there are about 1,200.

Mr. H. M. Joseph. 22 Aug., 1892.

30. Without railway communication do you anticipate any marked increase in the immediate future? Yes.
31. What is going to give the impetus? A company is taking up a lot of alluvial ground in the district, which they are going to work. That will bring population.
32. A mining company? Yes.
33. Rather a weak reed to lean upon, is it not? It is alluvial ground they are working. They have spent £30,000 on machinery. They are a Melbourne company.
34. Is it a public company, or are there only two or three interested in it? There are only a few interested in it.
35. And you think they know what they are about? Yes. One of them is a well-known man—Mr. J. S. Read. He made a great deal of money in the Broken Hill mines.
36. You think they would not have invested their money unless they saw that it was a good thing? Yes.
37. They are using their own money—they have not borrowed other people's? Yes.
38. And you think there is a big future before them? Yes. There is a great deal of other alluvial ground that could be worked.
39. How far from here is the scene of the company's operations? About 14 miles—between here and Delegate.
40. Are they ready to commence proceedings? I think they will start about the end of the month. They have nearly all their machinery ready.
41. Putting aside the possible advantage to be derived from mining, is there likely to be much increase in farming and other agricultural operations? Yes. A new mill has just started, making the second mill in the district. A lot of people are going in for farming, and a great deal of land on the common is to be cut up.
42. Is the common a large one? Between 8,000 and 9,000 acres.
43. Does the district provide its own breadstuffs? No, we have to get them from Wagga Wagga. I daresay £5,000 or £6,000 per annum are spent in importing breadstuffs.
44. Is the district capable of growing wheat? Yes.
45. There is no rust? Occasionally they get rust.
46. Do you know of your own knowledge if the farmers are putting larger areas under wheat this year than they have done before? Yes.
47. Can you give us any idea of the acreage under wheat? No; but I estimate that there will be 40,000 or 50,000 bushels more this year than last.
48. Is that new land or land that has been occupied for grazing? Land that has been used for grazing.
49. Can you tell us whether there is much Crown land in the immediate neighbourhood of Bombala, or in the district generally, of a quality sufficiently good to entice men of small means to take it up? The only Crown land available is the common, and some of it is pretty fair. There is, however, a great deal of freehold land that would be let for farming if we had railway communiction with Cooma. I think there would be at the least 50,000 acres.
50. What is the distance by road and railway from Bombala to Sydney? Fifty-four miles to Cooma, and 254 from Cooma to Sydney—about 314.
51. Supposing the people of Bombala were meeting their own wants so far as breadstuffs are concerned, and had to find a market for their surplus, would they be able to face 314 miles of railway carriage to Sydney? That would depend upon the rates. If they were to charge at the same rate as from Sydney to Wagga Wagga, it would pay us to send our produce to Sydney.
52. Wagga Wagga is nearer? There is only a difference of a few miles. It is about 308 miles from Sydney to Wagga Wagga.
53. What is your average yield of wheat? I suppose the average would be from 15 to 20 bushels.
54. If Wagga Wagga could beat you in the yield per acre she would beat you out of the market altogether? I do not think she would if we used the same appliances.
55. If you had a large surplus of wheat to export would it not be better for you to have a connection with the coast than to have 300 miles of railway carriage to Sydney? No. It costs us now, I think, for oats alone 1s. 6d. per bushel *via* Twofold Bay to Sydney.
56. But if you were going to export to Europe, would it not be better to ship at Twofold Bay than to ship from Sydney? No; it would be better to send direct to Sydney, as we could make our own arrangements for freight.
57. Then in your opinion the utilisation of Twofold Bay as a port of shipment for surplus produce is very far away in the future? Yes. Even in wool alone, if we had a railway from here to Sydney, we would save from 4s. 6d. to 5s. a bale in the carriage.
58. Then the people who have been responsible for getting large sums of money expended on trial surveys for a line to connect Bombala with Eden have not been patriots? No. I know that that line is not the wish of the Bombala people.
59. It is not the people of Bombala who have run the country into that expense? No.
60. As a matter of fact, do you not get all your goods by road *via* Eden and Merimbula? Yes.
61. Do you think that if a railway were made from Cooma to Bombala all the goods that now go through those ports would go through Cooma? I am almost sure they would.
62. What does it cost per ton to bring your goods from those ports? About £4 a ton.
63. And what does it cost to send produce there? If the carriers get return loading they charge a little less.
64. Which is your port? Merimbula.
65. If you had a connection with Cooma the present expenditure upon the roads connecting you with Tathra and Merimbula, and the existing machinery for bringing your goods from those ports, could be dispensed with? Yes.
66. The crying and only want of Bombala is a connection with the metropolis, *via* Cooma? Yes.
67. *Mr. Suttor.*] If a line were made from Cooma to Bombala, what would feed it intermediately? There is lots of country which could be put under cultivation. A great deal of the stock that is now sent to Gippsland would go that way to Sydney.
68. There is no cultivation along the road, as far as we could see yesterday? Because of the present difficulty of carriage.
69. Is much wool produced between here and Cooma? A great deal. I kept an account of it once, and I think that there were between 8,000 and 9,000 bales of wool sent away.

70.

Mr. H. M. Joseph. 22 Aug., 1892.

70. Have you any fat stock which are likely to use the line? Yes. The other day I had to sell 800 head of cattle. Had there been a railway I should have sent them to Sydney, but as it was they were forced to go to Gippsland.
71. Can you give me an idea as to how many fat stock it is likely would be sent to Sydney? No.
72. You are quite sure a great deal of wool would go along the line? I am positive of it. According to the Stock Board there are about 420,000 sheep, and about 20,000 head of cattle in the district. I am Chairmam of the Stock Board.
73. *Mr. Ewing.*] Have you seen the sketch of the proposed routes to the coast? Yes.
74. And you believe that the right line to construct, if any, is the Bondi line, marked No. 1? Yes.
75. That line runs rather to the south of Twofold Bay, and would have no effect whatever upon the line from Bega to Eden? Yes.
76. Really what you look for is a connection with Sydney direct by rail, and a connection with Melbourne direct by rail. You do not regard a route to Twofold Bay as of much importance to you? No.
77. You are in business here? I am connected with a station.
78. What is the freight from Cooma to Sydney, averaging it at so many pounds per ton? I do not know.
79. What is the freight from Bombala to Cooma? £2 per ton.
80. And 30s. per passenger? Yes.
81. What is the freight per ton from Merimbula to Bombala? £3.
82. What is the passenger rate from here to Merimbula? About 25s.
83. Your goods reach Cooma £1 cheaper than it costs to take them to Merimbula, while the passenger fare from Merimbula is 5s. less? Yes.
84. And to make a comparison you have to consider the freight from Cooma to Sydney by rail, and from the coast to Sydney by sea? Yes.
85. I suppose you send your goods the cheapest way? Yes.
86. Have you had any trouble in getting goods away from Merimbula? Not for some years.
87. As a rule, you find the sea service from Merimbula sufficient? Yes.
88. You do not advocate a line to the coast? No.
89. Do you know anything of the coast district from Bega to Eden? I have travelled through it a few times, but I do not know much about it.
90. Can you express any opinion with regard to the probable traffic on a line through that district? I do not think it would pay.
91. And, therefore, the country ought not to build it? No.
92. If you lived in Eden or Bega, would you think it should be built? No, it would be of no advantage to the Eden people.
93. Do you think the farmers and producers in this part of Monaro will require to send their goods abroad? If they have more than can be consumed locally.
94. You think that New South Wales will have over-production presently? Yes.
95. And that then our produce must be sent out of the country? Yes.
96. Would you send four times as far to get to Sydney as to get to Twofold Bay, if you could obtain a good boat at Twofold Bay? If we sent to Sydney we should have the advantage of other markets.
97. I am dealing with the case of over-production. Most of what New South Wales produces must be exported. You grant that? Yes.
98. Places nearer Sydney than this would be likely to supply the local market, so why would it be a good thing to travel 320 miles to get to Sydney when you could get to Twofold Bay in a little over 60 miles? Well, you have to consider the question of freight. Suppose we got a ship at Twofold Bay, we should have to guarantee her a certain freight. If we sent our produce to Sydney, and could not sell it there, we should have a chance of getting a lower rate of freight elsewhere than from Eden.
99. The freight depends upon the volume of trade? Yes.
100. Do you not think that Monaro could grow enough mutton and wheat to load a ship? I think so.
101. Do you not think that if the land through which we came yesterday were put under cultivation, and the people were intelligent enough to have a system of co-operation, you could load in Twofold Bay. Can you tell me anything that would prevent it? It would certainly be safer to send from Cooma.
102. You think there is a reasonable chance of getting a line from Bombala to Cooma, and you do not see a chance of getting a line to the coast? No.
103. Would a line from here to Cooma be a costly one to construct? I do not think so. I think there would be only the one large bridge over the McLachlan—the others would be very small.
104. It would cost about £10,000 a mile? I do not think it would cost more than £5,000 per mile.
105. That would be £400,000 or £500,000? Yes.
106. Do you think the Government would be justified in spending that money? Yes.
107. What revenue would they get from the line. There is hardly any settlement on the land? You cannot see it from the road. There are a great number of people living further back.
108. Is the land held in large estates? Some of it is.
109. Do you hold land between here and Cooma? No.
110. If the line was about to be constructed, do you think that the owners of the land which would be benefited thereby would be willing to contribute half the cost? I do not know. Some time ago they said they would give the land for nothing.
111. That would be a mere bagatelle. Would the owners of land within 10 miles of the railway be willing to contribute half the cost of construction? I could not answer that.
112. *Chairman.*] Is there any point we have not touched upon on which you desire to give evidence? I do not think so.

Mr. Ronald Campbell, grazier, near Bombala, sworn, and examined:—

Mr. R. Campbell. 22 Aug., 1892.

113. *Chairman.*] What is your occupation? Grazier.
114. *Mr. Suttor.*] Where is your home? About 8 miles from Bombala.
115. Did we pass by it near Nimitybelle? No, it lies more to the west.
116. What is the extent of your holding? About 20,000 acres.
117. Do you breed sheep on it? Yes, I use it for grazing chiefly.
118. Have you considered the question of a railway line at all? Yes, like everyone else in the district.

Mr. R. Campbell. 22 Aug., 1892.

119. Which line do you think would benefit the district most? I am in favour of the Cooma line. That line would suit stock breeders best. They could take their live stock to market that way—they could not take it on the Eden line.
120. They could not send their stock by steamer to Sydney? No; they would get too much knocked about. If the line was continued to Bombala, stock could be put into the trucks in the immediate neighbourhood of their paddocks, and not taken out until they reached Sydney. There would only be the one expense.
121. What would feed a line from Cooma to Bombala. Would much wool go along it? That I could not answer. Of course, a great number of fat stock could be produced, and would be produced, if we could get them away. At present we cannot get our fat stock away.
122. How many bales of wool would you be prepared to send away? About 400.
123. Would you be prepared to send any fat stock as well? Decidedly. Now we are precluded from sending fat stock to Sydney, because they lose a lot of condition in being driven to Cooma.
124. Are many bales of wool likely to be sent from the different stations between here and Cooma? A great many. The wool would all be sent then.
125. Can you give us any idea of the quantity of wool grown between here and Cooma? No, I have not gone into figures, as I did not expect to be called upon to give evidence.
126. What is the country generally between here and Cooma. Is it very fit for stock? Yes, it would all go ahead. A great deal of it is fit for agriculture, too. The coach does not go through the best of it. The good country is more to the west. The road skirts, as it were, the best of the country.
127. We saw no agriculture yesterday; do you know where there is any? There is a great area which could be cultivated, but there is not much market for the produce.
128. That is the reason why the land is not cultivated? I think so.
129. *Mr. Ewing.*] Where do send your wool to now? To the coast.
130. What does it cost to get it to Sydney? Four pounds a ton.
131. How much is that a bale? Four shillings or 5s. by the steamer.
132. You get it into Sydney for £4 a ton? Yes.
133. How much is that a bale? A bale is about 4 cwt.
134. Sixteen shillings a bale? Yes.
135. What is your port? Merimbula.
136. Have you found any difficulty in getting your wool taken from Merimbula to Sydney? Very often. It is a bar harbour there, and our goods get very much knocked about in consequence. Sometimes we cannot get them away at all. The steamer does not come up to the wharf. She used to do formerly, but she got stuck so often that she gave it up, and a steam drogher now takes everything over the bar. Sometimes our goods get wet crossing the bar, and at other times the place is blocked up with wool. We have had it lying there with slabs under it and tarpaulins over it to keep it dry.
137. How long have you had it lying there? Some weeks.
138. How frequently? One season I think everyone in Monaro had their wool left like that. A few years back it was a very common occurrence. Since they have sent the wool out in a steam punt they have not found so much inconvenience, though things got knocked about by so much handling.
139. How far is it from Pambula to Merimbula? Twelve miles.
140. And from Pambula to Eden? About 14 miles.
141. Eden has a good port, and you go through Pambula to get to either Merimbula or Eden? Yes; but we find a difficulty in inducing carriers to go to Eden. There are no conveniences for stock on the road. There is no water and no grass.
142. But after all if it is only 12 miles a team would do it in a day and a half? Yes; but they do not like going without food and water.
143. In lots of places the carriers have to take their own feed? Yes; but in that country very often they cannot get water. It is celebrated for its want of fresh water.
144. If you have so much trouble at Merimbula it seems strange that you do not go to Eden, notwithstanding the want of water? For some years I always sent my wool there, but I found so much difficulty in getting carriers to go through to Eden, that I had to give it up.
145. They would go if you paid them? Yes.
146. How much extra would you have to pay? One shilling a cwt. more, I think.
147. About 4s. a bale? Yes, about that, I suppose.
148. Would your stock going through Cooma come to Bombala? Mine would not.
149. You would go over the McLachlan River some way? Yes, or strike the coast road the other side of Bibbenluke.
150. Your trouble as a grazier is the difficulty of getting goods loaded at Merimbula, and the fact that you have to take your fat stock 50 miles before you can load them? Seventy miles.
151. *Mr. McCourt.*] How far is it from your place to Merimbula? I think about 70 miles. It is about 60 miles from here, and I am 8 miles further away.
152. And it is 54 miles from here to Cooma? Yes.
153. Why do you not send there? The road is so very bad in wet weather. After a shower you cannot get along. The carriers prefer the other road because it is gravelly.
154. If the road were a good one you would go to Cooma? Yes.
155. If the road were made a really good one, would any stuff go to Merimbula? Yes, I think a good deal of it would, on account of the cheap water carriage.
156. What is the difference in freight between rail and water carriage? I have never got goods by rail, so I do not know.
157. Water carriage must be cheaper or they would not use it? Yes.
158. Have you any idea how much cheaper it is? No. Water carriage mostly always is cheaper.
159. If the railway were brought here, you might still continue to go by steamer? I do not think so, as we could get our goods away so much sooner by rail, and we should be sure of their arriving at a certain time. Of course, passengers would never go by steamer.
160. I am speaking of wool? I think most of it would go by rail, because we could be sure that it would get to Sydney at a certain time, to meet a sale, perhaps.
161. Suppose you were shipping direct to England, would it be better to go to Twofold Bay? Decidedly, if

Mr. R. Campbell. 22 Aug., 1892.

if you could get ships there. The wool might be lying there a good while before there would be a sufficient quantity to form a cargo.
162. There is a difficulty about regular shipment from there? I think there would be a good deal of difficulty about it.
163. You are in favour of an extension from Cooma to Bombala? Yes, because I think it would eventually lead to a connection with Melbourne.
164. Are you aware that there is a loss on the line between Cooma and Goulburn of £46,000 a year? There is said to be, but I do not know that that estimate is correct. They do not take into account the saving on the roads, or the extra traffic from Goulburn to Sydney, on the main trunk line, which they would not have without it. That line opens the country more, but for that it is not credited.
165. Is there any saving on the road; is not the annual grant the same as it was before the construction of the line? I cannot say. At all events the expenditure of the money is quite unnecessary.
166. Still it has been going on? Very likely, but it could be done away with.
167. What about people living along the road? Very few would use it at all. They go straight across the country towards the different stations, without travelling along the road.
168. If the line were constructed to Bombala, would much be sent along it—merely wool and live stock? Principally wool and live stock. Any perishable goods would go by the line, but I do not know about heavy goods. I think all the wool would go by rail.
169. Do you think the land-owners, whose property would be benefited by the construction of the line, would be willing to contribute a share towards its cost? I do not think so; or that the land-owners in any other district in Australia would.
170. Not voluntarily? It never has been done.
171. If the line were proposed to be constructed on the betterment principle, would you be in favour of it? Yes.
172. That is that the land within 10 miles on each side of the line benefited by the railway, should contribute half its cost? I do not say half the cost. I think they could contribute something.
173. Well, say it would cost £500,000, how much do you think the district benefited ought to pay of that? That needs rather an intricate calculation.
174. If the railway were continued to Bombala, how much would it increase the value of your land per acre? Four shillings or 5s., I suppose.
175. Would you be willing to contribute half of that towards its cost? Yes, I think I should.
176. Do you think the other land-holders would do the same? I think some of them would; some might not.
177. Do you think it is a fair principle to apply compulsorily? I think so, if their property is benefited by the line.
178. *Chairman.*] Is there anything else you desire to bring before us? No; I do not think so.

Mr. Edmund Hyde, Alderman, Borough of Bombala, sworn, and examined:—

Mr. E. Hyde. 22 Aug., 1892.

179. *Chairman.*] You are an alderman of the borough? Yes.
180. Engaged in business here? Yes.
181. For how long? Thirty years.
182. What is the nature of your business? I am a tanner and saddler.
183. *Mr. Ewing.*] Do you work to supply a local demand? No; to supply the Sydney market.
184. By what route do you send the articles you produce to market? By the Illawarra boats.
185. To what port? Sometimes to Eden and sometimes to Merimbula.
186. Do you find that the freight to Eden is greater than the freight to Merimbula? The freight is the same. The carriers carry for the same price.
187. Therefore you think the difficulty in obtaining grass and water between Pambula and Eden has been somewhat over-rated? Yes; there is no difficulty. There are some very good turnouts.
188. If a Bombala man wishes to send to Eden he can send there? Yes.
189. What is the freight from Cooma to Sydney. Is it greater or less than from Eden? It is greater—much greater.
190. The distance from Bombala to Eden is practically the same as from Bombala to Cooma? It is 54 miles to Cooma, 61 to Eden.
191. What is the freight from Bombala to Cooma? Four shillings a cwt.
192. Four pounds a ton? Yes. We have a difficulty in getting carriers to go to Cooma on account of the black mud on the road.
193. If there were a good road, such as you will have from Bombala to Cooma, you would prefer to send to Eden? Yes.
194. Partly because the freight from Eden to Sydney is less than from Cooma to Sydney? Yes.
195. What is the difference? I think the freight from Cooma to Sydney is from 4s. to 5s. a cwt.
196. For your particular products? Yes.
197. And from Eden to Sydney? Leather, £1 a ton. Other goods—butter, cheese, wattle bark—you can send for 15s.
198. Your products cost about one-fourth? Yes.
199. The freight from here to Eden is what? We get things taken down from 2s. a cwt.
200. Two pounds a ton? Yes; as against £4 from here to Cooma.
201. The freight from Bombala to Cooma is twice as much as from Bombala to Eden? Yes.
202. Therefore you find it cheaper to approach the metropolis through Eden? Yes. Freight by sea is always less than by train.
203. If the railway were continued from Cooma to Bombala, it is possible that the water carriage from Eden would compete with it. It is possible that you would be able to send your goods as cheaply *via* Eden as direct by railway? Yes; unless the Railway Commissioners reduced their freights.
204. Do you regard the difficulties with reference to shipping as very great? No.
205. You get your produce away in a fairly satisfactory manner? Yes; the only difficulty is the nature of the port at Merimbula. You have to go over the bar in a drogher to meet the steamer, and goods get knocked about.
206. But you are not bound to go to Merimbula? No; we can go to Eden.

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207. And if there were a sufficient volume of trade, goods could go there continually? Yes.
208. In the future, when New South Wales is exporting, do you think you will pay freight to travel 50 miles to the coast, rather than go round by Sydney? I should think the best way would be to go to Eden, unless the Railway Commissioners reduced their freights.
209. Unless the people of the Colony, by differential rates, paid part of the carriage of your goods? Yes.
210. Do you approve of the line from Bombala to the coast? Yes.
211. Have you considered the various routes? Yes.
212. Which do you think is the best? I think the best route to Eden would be through Cathcart; thence to Wolumla; and thence to Eden. Such a line would connect with the Bega line, and open up a lot of country between here and the mountains, and under the mountain.
213. You have a fair knowledge of the country? Yes.
214. How would that route compare with the Bondi route? The Bondi line would no doubt be the shortest, but after you got to the top of the mountain, and from there to Eden, it would pass through nothing but barren country. It would be very difficult to make the railway, and the line would not open up any good country.
215. The line you suggest would go through the best country, and would tap the Bega to Eden line half way? Yes.
216. Why do you think there should be a connection between here and the coast? It would open up a lot of agricultural country, and bring into existence a lot of dairies. If we did not care about sending our produce to Sydney, we should then be able to export to Tasmania and other places. There is a lot of beautiful dairy country about here, which I think is only standing idle.
217. Twofold Bay seems to you a reasonable port to trade from, either to intercolonial or outside markets? Yes.
218. *Mr. McCourt.*] You heard the Mayor's evidence? Yes.
219. In your opinion, the people of Bega are not unanimous in wishing for the construction of a line from here to Cooma, as against a line to the coast? Yes.
220. Some are in favour of the connection with Cooma? Yes. I am quite in favour of an extension from Cooma here, because such a line might connect at Delegate with Melbourne.
221. Are the people evenly divided on the question? I could not say that.
222. Who are in the majority? I do not know.
223. What do you think public opinion is in Bombala? Some are in favour of having the line extended from Cooma, down Bondi, to Eden; others are in favour of taking the line through Wolumla. I am only speaking of what I know myself.
224. *Chairman.*] Do you think the majority of the people would rather have a connection with Cooma than with Eden? I think the majority of the people would sooner have a line from Cooma to Bombala, to be continued on through Wolumla to Eden. Such a line would open up splendid country.
225. Where is the splendid country—between here and Wolumla? There is splendid land from Cooma to here.
226. And you think if that country were devoted to dairying, the trade would go to the coast? Yes.
227. It would not feed the main line? I do not think so, unless the railway freights were reduced.
228. Is much butter and dairy produce made about here? A good deal.
229. Do they send it to Merimbula? Yes.
230. Do they send it direct, or sell it to the local storekeepers, who afterwards forward it? They send it direct.
231. They can all stand their money being out. They do not use the local storekeepers? Only for local wants.
232. The storekeepers do not act as agents for Sydney firms? No.
233. *Mr. Ewing.*] Does much butter go from here to the coast? Yes; and if there were a railway from Cooma to the coast, more butter and dairy produce would be made.
234. It pays people better to send to the coast than to Sydney direct? Yes.
235. There is no local market here? No.
236. Each maker of dairy produce has to arrange for himself about sending to Merimbula, and for a sale in Sydney? Yes. Beyond what is used for local consumption, every dairy farmer has to send his produce to Sydney.

Mr. Robert Weston Dawson, Inspector of Stock, Bombala, sworn, and examined:—

Mr. R. W. Dawson. 22 Aug., 1892.

237. *Chairman.*] You are Inspector of Stock? Yes; for the Bombala and Eden district.
238. *Mr. McCourt.*] What is the number of cattle in the Bombala district? Nineteen thousand five hundred and nineteen.
239. Sheep? Four hundred and forty-two thousand seven hundred and eighty-six.
240. Horses? Three thousand six hundred and forty.
241. What does the Eden district embrace—Bega? Bega is about the centre of it.
242. What is the number of stock in Bega? In round numbers about 4,000 horses, 60,000 head of cattle, and 7,000 sheep.
243. Have you got the figures for pigs? There are from 8,000 to 10,000 pigs in the two districts.
244. *Mr. Ewing.*] They are mostly on the coast? Yes; there are 7,000 on the coast.
245. *Mr. McCourt.*] Which way are stock sent from here to Sydney? Fat stock go to Tasmania.
246. From Eden? Yes.
247. They do not go to Sydney from Bombala? They go more frequently to Tasmania.*
248. Both sheep and cattle? Yes; they are about equally divided.
249. Can you give us the quantity that would go down in the month, or in the year? About 30,000 fat sheep a year at present.
250. And how many fat cattle? From 7,000, or 8,000, to 10,000.
251. If there was a railway connection would that increase? It would increase very much.
252. By which route is stock driven down? It goes from here to Eden direct. Several lots of fat sheep have gone this year to Melbourne.
253. Stock go to Eden by the Big Jack route? Yes.

254.

* Note (*on revision*):—Sheep are equally divided in going to Tasmania and by road and rail to Sydney.

Mr. R.W.Dawson. 22 Aug., 1892.

254. Do you know the country along the various routes? Yes; I know all that country.
255. Which do you think the best route for a railway? From here to Eden?
256. Yes? I think the Bondi route is the best.
257. You are in favour of the Bondi route? Yes.
258. Why? It opens up a lot of good country about Bondi. There is a lot of good country between Bondi and Eden held under lease.
259. You think that route would open up the best country? It would open up more unalienated country than the others. The land is alienated now on the other routes.
260. It is all Crown land between the top of the mountain and Eden? Yes, principally.
261. Is it good enough to be taken up for selections? I think so.
262. *Mr. Ewing.*] Does your district go to Cooma? Only to Nimitybelle.
263. How many sheep are there in the Cooma district? One million.
264. Roughly, how many cattle are there in the two districts? Seventy thousand or eighty thousand head in Cooma and Bombala.
265. What effect has the Victorian stock-tax had on the cattle and sheep? It has blocked stock going there. Before, many fat cattle went to the Gippsland market as stores.
266. Through Bendock and Delegate? Yes.
267. Has the trade between the colonies as regards cattle and sheep absolutely stopped? Yes.
268. What are we going to do with our cattle and sheep? I do not know.
269. You have not thought it out? No. Hitherto many fat cattle have gone there as stores for the want of a better market. They were not able to get to a market—and had to be sold as fats.
270. The whole trade has now ceased? Yes.
271. And you do not see what the future will be? I do not see what the future will be.
272. *Chairman.*] You said just now, in answer to Mr. McCourt, that the Bondi route would open up a larger area of good country than the Wolumla route. Where is the good country you refer to, on the Bondi route? In Yambulla and Sturt.
273. Is that good country? Ordinary grazing country.
274. Is it not fit for agriculture? Very little of it is.
275. None of the land on the route to which you refer is agricultural country. It is all grazing country? It is all grazing country, that is the unalienated country.
276. There is no agricultural country at all? No.
277. There is more agricultural country on the road from Bombala through Wolumla? No.
278. Is it only grazing country? Yes.
279. If the previous witness said that in his opinion there is better country between Bombala and Wolumla and thence to Eden than on the road from Bombala through Bondi to Eden, he is incorrect? ——
280. The nature of your business compels you to go over the country? Yes.
281. How is it that the good country in Yambulla and Sturt is not taken up? A small portion of it has been alienated.
282. The map I hold has been charted up to date, and shows not one alienation in either of those parishes? The alienation might not be in those parishes, but it is in that neighbourhood.
283. It may be further north and west? Yes. I think the country I refer to must be in the parish of Pobico.
284. What has it been taken up for? Grazing.
285. You are aware that as a rule grazing country does not contribute very much to railway traffic? Not unless it is good grazing country.
286. Agriculture combined with dairying would contribute more? Yes.
287. What sort of a road is it between here and Twofold Bay? Not a very good road by the proposed railway route, but by Big Jack first-class.
288. Is that land on the mountain or below the mountain? Below the mountain.
289. Can you give us an idea as to where the mountain comes out? The mountain range runs out west of the parishes of Bondi, Nalbaugh, and Kanoonah.
290. All the land you have been referring to is down on the coast? Yes; more on the coast.
291. If that is such good land and not inaccessible from Twofold Bay, why has it not been taken up before this? It has been too expensive to select.
292. Do you think a railway there would develop it? Yes.
293. On that route we should be making a railway to serve a possible population, as against an existing population on the other routes? Yes.
294. What is your idea of the proposal before the Committee—the Bega to Eden railway. Do you think that that is likely to be a paying line? I do not think so.
295. You do not think there is sufficient good country to make it pay? The country is good enough, but it is all taken up. I think the people would take their produce across the railway line to the seaboard.
296. Do you think the country as far as 10 miles north of Bega, and 10 miles west of the proposed railway is as fully developed as it possibly can be? Yes.
297. And utilised to the best advantage? Yes.
298. So that if the railway could only draw traffic from within that area there would be no increase upon the present traffic? None whatever.
299. If the railway was in existence now there would be no extension of trade? None whatever.
300. If it is estimated that there will be a loss of £18,000 per annum upon the line, you think that loss would continue for ever, and that the people of the Colony would have to pay it? Yes, I think so.

Mr. Hyam Moses Joseph, Mayor of Bombala, sworn, and further examined:—

Mr. H. M. Joseph. 22 Aug., 1892.

301. *Chairman.*] The Committee understand that you are interested in a cheese factory some little distance west of Bombala? Yes.
302. What quantity of cheese do you produce? We sent away about 30 tons of cheese during the year.
303. Where do you find a market? In Sydney.
304. How do you send it? *Via* Merimbula.
305. Will you continue to send it *via* Merimbula if the line is constructed from Cooma to Bombala? No.
306. You are sure of that, by a comparison of the railway freights? Yes.

307.

Mr. H. M. Joseph. 22 Aug., 1892.

307. Is the production of cheese likely to increase? Yes; there are two other factories in the district. Mr. Johnson makes cheese and butter, too.
308. Would what he sends away equal your output? I fancy so, with the butter.
309. Do the people who make dairy produce send it away direct, or through the local storekeepers? A few sell to the storekeepers.
310. Do the storekeepers buy merely for local consumption? Yes.
311. Not in order to send away again? Yes. There are very few making cheese, excepting Mr. Johnston and myself.

TUESDAY, 23 AUGUST, 1892.

[*The Sectional Committee met at Gerathy's Hotel, Cathcart, at 10 a.m.*]

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR. | THOMAS THOMSON EWING, Esq.
WILLIAM McCOURT, Esq.

The Sectional Committee further considered the proposed Railway from Eden to Bega.

Mr. James Gerathy, hotelkeeper, Cathcart, sworn, and examined:—

Mr. J. Gerathy. 23 Aug., 1892.

312. *Chairman.*] You are an hotel proprietor, residing at Cathcart? Yes.
313. How long have you resided here? Thirty-two years.
314. Do you know the district well between Bombala and Bega? Not too well from here to Bega. I do not know the country except along the main road.
315. Do you know anything about the various proposed railway routes between Bombala and Wolumla? Not far from here.
316. From here towards Bega? I know Arnheim's route, 5 miles out.
317. Does it run through fairly good country? As far as I have been.
318. Do you know anything of the country from report? Of course the mountain part is not very much until you get to the foot, then I believe it is good.
319. Do you know anything about the Bondi route? No.
320. About the Big Jack route? No.
321. Which route goes through the best country—Darragh's, Arnheim's or Postle's—is it all about the same? It is much about the same. Postle's appears to be the straighter line, but it runs through better country.
322. The country is similar to that on Arnheim's route, but the line is shorter? Yes.
323. Has Cathcart grown much of late? Not a great deal.
324. What about the district between this and Wolumla? There are a great many selectors on it.
325. You only know the country on the top of the mountain? Yes.
326. Has there not been any increase in the settlement here? All the available land has been taken up. There are good places all through until you get to the mountain, then there is nothing from there to the foot, except perhaps half-way down, near Candelo.
327. All the good land between here and Bombala, and between the mountain has been taken up? Yes.
328. What is it used for? At present for stock. Only enough is cultivated to meet the wants of the owners.
329. There is no dairy farming? Yes, about four or five have started dairies about here.
330. Where did they get rid of their produce? They took it to Sydney.
331. *Via* Merimbula? *Via* Eden and Merimbula.
332. They bring it to the main road, and then teams take it along? Yes.
333. Has there been any increase in the amount produced? Yes, during the last three or four years. Before that there was nothing, except what was consumed in Monaro.
334. Any Crown land left in this part of the district is not much good? Very little.
335. The land alienated, and in the hands of selectors, is not now fully utilised, and you think that if greater facilities for sending produce away were given by a railway, more land would be brought under cultivation? A great deal more, and there would be more dairying too, I think.
336. What is the land good for? Wheat, oats, potatoes, and barley.
337. Do you know the yield of wheat on the table-land? It will average 20 bushels. I have taken 40 bushels to the acre off 15 acres.
338. Is it subject to rust? If it goes in early you do not get rust; but if put in in the winter it is not safe.
339. Where do you get rid of your wheat? I have had it ground at Bombala and sold as flour.
340. You have never sent any away to the coast? No. The land will grow 2½ tons of hay to the acre in a good season.
341. And what about potatoes? It will grow about 10 tons to the acre. The land is very rich.
342. Are you speaking of the land generally, taking the hills with the flats? Of the flats. The hills will grow good wheat; but they will not grow potatoes.
343. Are the potatoes grown here good? Very good.
344. They are consumed locally—you do not send them away? As far as Bega, perhaps.
345. Not further than that? No.
346. Do you know the yield there? Sometimes if they have a good crop there it is heavier.
347. Your potatoes are only grown for local consumption? Yes.
348. If you were competing for an outside market Bega would cut you out? They have not as much land. They have only the flats. They grow maize. Their best land is on the flats on the banks of the creeks.
349. You do not know much of the country from Bega to Eden? No.
350. Do you think the country would be justified in going in for a railway which would incur an annual loss of £19,000? No.
351. That district is pretty well served by Tathra? Yes.
352. It is well served? Yes.

Mr. J. Gerathy. 23 Aug., 1892.

353. Have you heard anything of Tathra being a defective port? I have not heard anything of Tathra. They have sent produce from Merimbula sometimes, but not often.
354. Where do the Bibbenluke people send to? The wool goes down there.
355. Bibbenluke is only a large station? Yes. Goods for all the stations this side of Nimitybelle come through Eden or other ports on the coast. The rest send to Cooma.
356. Do you think there is likely to be sufficient production to justify the making of a railway from Bombala to Wolumla? If there would be a loss on the Bega line, I do not think that line would pay, unless it would open up something wonderful.
357. You know the country;—would it not be an expensive line coming down the mountain? Yes.
358. Perhaps more expensive than the Bega-Eden line? Yes; the country is more level about Bega.
359. *Mr. Ewing.*] Is there any more trouble in getting to Eden than in getting to Merimbula. Would a carrier take things as readily to Eden as to Merimbula? Sometimes they would. Goods are sometimes delayed at Merimbula; but there is no delay at Eden. A vessel there comes right up to the wharf and can be loaded easily. Eden is a bit further.
360. Suppose you wanted loading sent through Eden, would you have any trouble in getting someone to take it? No.
361. Would there be any difference in the charge? There would be no difference in the charge. At one time I used to trade a good deal to Eden. There was a great objection to going there, but that has disappeared, and they have been carrying from there all the winter. Merimbula, however, is shorter and they have better turn-outs there. I believe that if the carriers had their choice they would prefer going to Merimbula.
362. *Chairman.*] If it was of as much importance to the shipper to get to Eden the carriers would not make much difficulty about going there? If goods came to Eden they would go there just as readily, and charge next to nothing extra. The crossing at Saltwater Creek used to be a bit objected to, because they used to have to wait for the tide to go out before they could cross.
363. Do you think there is sufficient trade to justify an extension of the Cooma line to Bombala—would it be used? There is a lot of good country from Cooma to Bombala.
364. If it were worked and people put on it, it would produce something? Yes.
365. But there is not much population on it? No.
366. *Mr. McCourt.*] If the line were continued to Bombala, which way would this part of the country trade—to Eden or to Bombala? It would just depend upon the expense.
367. Which place do you think you would trade with? Bombala, if it would not be too expensive. Bombala would be handier and quicker, but I do not know what the relative expense would be. People would go in for the least expensive route.
368. If the expenses were equal which way would they go? To Bombala.
369. If freights that way were a little dearer they would go to Eden? Yes.
370. *Chairman.*] Is there any other point which we have not touched upon about which you would like to give us information? I do not think so. I have told you all I can.
371. You look upon Bombala as your town? Yes.
372. And has there been a large increase in population during the last few years? Not a very large increase—it seems to be about the same.
373. Does all the loading going down from Monaro to the coast come along the road on which we are now? No; a little of it goes through Nimitybelle, but not much. I think most of it comes through here, though some of it goes by a road that turns off 6 or 7 miles away, and comes out on the other side of Holt's Flat.
374. Nothing comes up Big Jack? That is the way loading goes to Eden. One objection to going to Eden would be the Big Jack Mountain.
375. Then in going to Eden, teams do not go through Pambula? They go through Pambula, but not through Candelo and Wolumla.
376. Coming back would they? Yes. The pipes which were brought up here all came from Eden.
377. And that is the direct road to Eden? Yes. It is a few links over 50 miles from here to Eden.
378. But that is a steeper grade, and not so good a road as the other? Yes; the turns are a bit short, though they are improving the road every year. At one time it was a very nasty mountain to come up, but a great many teams came up it this winter. Before that it was not used much.

Mr. William Baker, grazier. Cathcart, sworn, and examined (at his own residence):—

Mr. W. Baker. 23 Aug, 1892.

379. *Chairman.*] What is your occupation? Grazier.
380. You are a resident of Cathcart? I have resided here seventeen years, and I have lived in the district for twenty-five years.
381. You are familiar with the whole of the country between here and Bega? With pretty well all of it. I have followed for years the business of road contracting.
382. You are aware that for some years past numerous surveys have been made with a view to connecting Bombala with Eden? Yes.
383. Do you know the Bondi route? Yes.
384. Do you know anything of the country along there? Pretty well. I have always been under the impression that the Bondi route was the fairest route.
385. The most direct? Yes; and the best for the district. Not only that, but it would open up a lot of country which is now in its native state.
386. On the range? Some on the table-land, and some on the coast.
387. How far is it from Bombala by the Bondi route before you descend the mountain—5 or 6 miles? More than that.
388. Is the rest of the country from down the mountain to Eden good? Fair grazing country, and rich flats on the rivers.
389. The flats would be for grazing purposes? Yes. The country has been locked up because the people there have had no means of getting their stuff away.
390. Has not some of the country been taken up? A great deal of it has been taken up in large blocks, but small men could not go there, because of the impossibility of getting produce away.
391. You think that that would be a good route for connecting Monaro with the sea coast, but that at present there would be nothing to feed the line? Only the traffic from Monaro.

Mr. W. Baker. 23 Aug., 1892.

392. But nothing along the line? There are settlements.
393. But very little to feed a line of railway? Yes. At the same time it would get the same amount of traffic as would be got on the line passing here.
394. But is there not much more population between Bombala and Pambula than on the Bondi route? Yes, but the country is not so good.
395. The country on the Bondi route is capable of carrying a larger population than this is? Yes, and knowing the engineering difficulties to be contended with on these mountains, I think the Bondi route is much easier than the others.
396. And you think there is more good country on that route? Yes, than on the Big Jack or Pambula routes.
397. There is a very steep grade on the Big Jack route? Yes.
398. You have been comparing the Bondi route with the Big Jack route? Yes.
399. And the Bondi route is very much superior because of the possible expansion of traffic? Yes.
400. I suppose Postle's, Arnheim's, and Darragh's routes go through similar country? Yes. I think Arnheim's keeps more to the main line of road.
401. The road we shall travel to Candelo? Yes, you will be closer to Arnheim's route than to any of the others. They come out at the top of the mountain, nearer towards the top of the Big Jack Mountain.
402. Postle's, Darragh's, and Arnheim's routes go through the same kind of country? Exactly. The only thing is that Darragh's and Postle's routes have an easier gradient.
403. One would open up as much country as the other? Yes.
404. Is the land which would be equally well served by any of these three routes pretty well alienated? Not on the mountain—all down below is.
405. Not on the top here? Yes; but not on the mountain. There are 9 miles on the mountain.*
406. We are to understand that the best of the country on the mountain and below it is alienated? Yes; except on the top of the mountain. There are 9 miles on the Tantawangalo Mountain.
407. The land is not used to its full capacity? It is used merely for grazing purposes.
408. Do you think that if a line were constructed to Bombala by either of these routes, it would lead to any great increase in the production? No; it is merely pastoral and dairying country. Up here on Monaro it might lead to cultivation.
409. But not along the route? No. There are very rich flats on Monaro, but down there the country is only adapted for grazing. It is mountainous.
410. Do you know anything of the country 10 miles north of Arnheim's route? It is similar to the country I have described. We have another mountain from Nimitybelle to Bega—it is similar country all through—granite boulders.
411. Do you know the country between Bega and Eden? Yes.
412. Fine country, is it not? Between Bega and Wolumla, and good about Pambula. From Pambula to Eden is very barren.
413. Do you think the country would be justified in making a railway from Bega to Eden, with a probable loss of £19,000 per annum staring us in the face? I have always considered that line a huge white elephant, unless it is connected right round the coast. As a separate line I consider it a huge white elephant.
414. Unless the South Coast line is extended from Nowra? Yes, and a connection made right through. As a circular line I could understand it, but I am under the impression that it may be a greater loss than you think.
415. You can see no justification for the construction of that line, unless it is to form part of the continuation of the South Coast line, and also of a connection with the table-land? Yes: that is my opinion.
416. The Bega people are fairly well served by the port of Tathra? Yes. Tathra is only an open roadstead, and it is a pity to see a beautiful harbour like Twofold Bay passed over for such holes as Tathra and Merimbula. All our produce goes to Merimbula. The last 10 miles from Pambula to Eden is so hard and stony, that the carriers cannot get any feed along the road. People would send produce to Eden but for the hardships which the carriers have to undergo during the last 10 miles.
417. We have been informed that during last season more carriers have been going to Eden than before? That is simply because a great deal of machinery has been unshipped there from the Melbourne and Tasmanian boats, and they could not get to Merimbula because that is a private wharf belonging to the Illawarra Company.
418. They are the only people who have any conveniences there for loading? They own all the land about there.
419. If it were not for the bad supply of water and feed on the Eden Road carriers would have no more difficulty in going there than in going to Merimbula? There are facilities for shipping at Eden—a vessel can go there at any time.
420. But the carriers? The carriers would have no objection to going there. I know that Mr. Edwards and others would send their wool to Eden; but there was so much trouble in the past that they stopped doing it. The people up here tried once or twice to give Eden a start, but they failed.
421. You know the country between Cooma, Bombala, and Delegate? Yes.
422. Do you think it is sufficiently good to justify the continuation of the Cooma line to Bombala? I think so, as a connection with the Victorian line. I think it would be one of the best things out—from a national point of view.
423. But putting that aside, do you think the railway would pay? It is very difficult to say.
424. There is no population there at present, but there may be in the future? There may be in the future, though so far as that goes I do not see much difference in making either Bombala or Cooma the terminus. The Cooma line does not pay. A light line to Bombala would be very easy to construct, because it would be all on the table-land.
425. But you could not have a light line connecting with the railways of another colony? No.
426. *Mr. Suttor.*] We were told in Sydney the other day that there was a loss of £42,000 per annum on the Cooma line? Yes; I heard that there is a loss.

427.

* Note (*on revision*):—I mean that all land on the top of the mountain and at the foot that is any good is alienated.

427. Do you think there would be any chance of making up that loss if the railway were continued to Bombala? It is very difficult for me to say. I should hardly think so. The Cooma end of the district is larger than this, and they have more sheep and cattle than we have. We have a lot of grazing land at this end, and we are perfectly isolated at present from any market. It is no good growing for anything but our own consumption. In one or two years when we had a surplus here I bought wheat at 12s. 6d. a bag. I hardly think, however, that the line would pay. Mr. W. Baker. 23 Aug., 1892.

428. Where does most of the wool on the Monaro Plains go to? To Merimbula.

429. Not to Cooma? Only at the Cooma end. We have lost a lot of the Cooma traffic and a lot of the traffic out from towards the Snowy River. Before the railway was made, half the Cooma traffic came here and half went to Goulburn. A lot of teams were employed then that are not used now-a-days.

430. *Chairman.*] Is there any other point to which you would like to refer? Once before, when the Bega line was being agitated for, I saw a statement to the effect that Monaro wool would be transhipped at Wolumla—a ridiculous statement, because there is no fear of their unloading it there and sending it on by railway.

TUESDAY, 23 AUGUST, 1892.

[*The Sectional Committee met at the School of Arts, Candelo, at 3.40 p.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor. | Thomas Thomson Ewing, Esq.
William McCourt, Esq.

The Sectional Committee further considered the proposed Railway from Eden to Bega.

Mr. Douglas Duncan McNaught, dairy farmer, near Candelo, sworn, and examined:—

431. *Chairman.*] What is your occupation Dairy farmer. Mr. D. D. McNaught. 23 Aug., 1892.

432. Residing near Candelo? About 3 miles distant.

433. How long have you resided there? I am a native of the place.

434. You are therefore familiar with it? Yes.

435. You know the proposal to construct a line of railway from Bega to Eden, and it is estimated that there will be a loss of £19,000 per annum if the line is constructed. Do you think that it should be constructed? That I can hardly answer directly; I believe there are benefits to be derived from it. I think it would benefit the district, especially if the proposed freezing works go ahead.

436. You think the line would benefit the district if it were made? Yes.

437. But do you think the country ought to be taxed to the extent of £19,000 per annum to provide railway communication between Bega and Eden? If the country can afford it, I think the people are justified in having it.

438. Will you tell us where the produce of the Bega district now finds a market? In Sydney mostly.

439. By what port does it go to reach Sydney? Through Eden, Merimbula, and Tathra.

440. How far is Tathra? Twelve miles from Bega.

441. Is it a good road? Yes.

442. How far is Merimbula? About 30 miles.

443. A good road? I think so—I have not travelled it much.

444. And to Eden it is about 36 miles? I think it is more.

445. Where does the principal portion of the trade go? I think it is about fairly divided. It would go to Eden if there were a better road. I think the produce from this district goes through Tathra principally, but the wool from Monaro goes through Merimbula and Eden.

446. Taking the Bega district alone, do you think the principal portion of the produce goes through Tathra? I think so.

447. Do you think 12 miles an excessive distance to carry produce? It is not a very great distance, but that is only from the township. Produce comes from 20 and 30 miles back in the country. I take my stuff 26 miles.

448. To Tathra? Yes.

449. Through Bega or through Wolumla? Through a by-road between them.

450. If the Bega to Eden railway were constructed, would you tap the line, or continue to go to Tathra? No; I would tap the railway. I would get a saving of £3 per ton.

451. What is the cost per ton from Tathra? Butter, from £3 6s. to £3 10s.; other goods according to measurement and weight.

452. What is the cost from Eden? About £2 for butter, and for other goods about 12s. 6d.

453. How much would it cost to run the butter by railway to Eden? That I cannot tell you. I am not used to the railway freights. I should say it would cost 1s. by train from Wolumla.

454. One shilling a ton? One shilling a hundredweight.

455. That is £1 a ton? Yes.

456. Have you ever sent any freight *via* Eden? No.

457. You think that if you were able to get to Eden you would entice larger boats there, and get your stuff carried for less than from Tathra or Merimbula? Yes.

458. Even if you had to pay £1 a ton for freight on a short length of line? Yes.

459. Does it matter very much to you, once you have got your loading on for a long distance, whether you go an extra half dozen miles? I think it does materially.

460. Do you think boats would come to Eden more regularly? I never knew a boat unable to get into Twofold Bay in any sort of weather. The same cannot be said of the other ports. At Merimbula the produce has to be shipped into a drogher, and stuff getting there in the early morning lies about till 4 in the afternoon before it is transhipped into the steamer. This extra handling is damaging.

461. Do the same remarks apply to Tathra? No; but Tathra is a very unsafe port.

462. If we have it in evidence that during the last five years the steamers only had to pass there two or three times, that does not show that it is a very bad port? Quite so, but I believe that produce has been lying there more frequently than that.

463. How long have you been going there? Two years.

464. Have you had any stoppages? No.

Mr. D. D. McNaught. 23 Aug., 1892.

465. You have not had any inconvenience? No, except last time. I do not know whether the steamer left her cargo then.*

466. Is cargo very often left at Merimbula? No, I do not think so. I think that when they can call at one port they can call at the other.

467. Do you think the country should be prepared to lose £19,000 per annum in order to allow you and the other people in this district to take their butter to a better port than they have now? The advantage the people would derive from this railway justifies them in asking for it. The produce of the district, as far as agriculture is concerned, would be doubled. There are at present about 6,000 acres under cultivation, yielding 2 tons to the acre—12,000 tons in all. If the production was doubled that is the quantity which would have to find its way to the Sydney market.

468. Do you think the production would be doubled? In all honour and truth I believe it would.

469. All the good country is taken up? Yes.

470. Your contention is that it is not fully utilised owing to the difficulty of getting to a market? That is quite true.

471. And if facilities for getting to Twofold Bay were offered the production would be doubled? If the freights justified it.

472. You have not found out what the freights would be? No, I do not know what the Government would charge.

473. Do you know the present railway freight? Not for that distance.

474. Do you not think it would have been well for the people of this district before they began to saddle themselves with a railway to find out what it would cost, and whether they could make use of it? We trusted that that information would be given you by the Railway League.

475. In Bega? Yes.

476. *Mr. Sutton.*] If the railway were made, how much stuff would you be likely to send by it? That I really could not tell you. I suppose about 18 tons in dairy produce, making up about 30 tons altogether.

477. For how long? For the twelve months.

478. What cultivation is principally carried on here? Three crops are principally grown—hay, potatoes, and maize.

479. What do they do with their maize now? They send some to Sydney, and some to Monaro and the table-land.

480. And their hay—is that sent to Sydney? Very little hay is sent. It is grown more for local consumption. The freight on trussed hay to Sydney would be too expensive; it would not allow any profit.

481. You think that at this distance from Sydney you will be able to compete with other parts of the country in growing maize? They do now on the Bega flats. Of course I do not allude to Candelo.

482. What price do you get for it? About 4s. 6d. a bushel.

483. Do you get that price for it in Sydney as a rule? No; I could not say exactly what they get in Sydney for it.

484. *Mr. McCourt.*] What is the size of your holding? About 1,000 acres.

485. How far is it from the proposed line? The nearest place, I suppose, would be Wolumla, about 14 miles. If the line went to Monaro we should be closer.

486. Which would you favour—a connection with Monaro, or a line from Bega to Eden? I should say that the line from Bega to Eden would be the more likely to pay.

487. I suppose the construction of that line would increase the value of property here? It must do so. With lower freights people could get to market easier.

488. To what extent do you think the value of your property would be increased? The railway would have very little influence on our property. The only thing that would make it more valuable in rent is that we should have an outlet for any surplus we could grow.

489. Would it not put a greater value on your freehold land? It might a little; but I do not think it would affect the value much.

490. Would it increase the value of land along the line of route? Certainly.

491. To what extent—£1 an acre? Fully.

492. Do you think the people whose land would be benefited by the construction of the railway would be willing to contribute towards its cost on the betterment principle—that is, if their land were increased in value by £1 an acre, would they contribute 10s. an acre towards the cost of the line? That I could not say. There are such a number of people to be considered. One man might, and a dozen might not.

493. If the betterment principle were applied, a railway district would be proclaimed, and all would have to pay in proportion to the benefit they received;—do you think that that would be fair? It might be, if there was a guarantee that the benefit existed. If the Government sent down a valuator, he might put a value on the land which it would not have, as far as we were concerned. We would derive the advantages of the railway only by throwing more energy into production.

494. But surely, the construction of the line would benefit the district? Quite true.

495. And it must increase the value of property in the district? Yes.

496. Do you not think that some of the increased value should go towards the cost of the line, and that the Government should not bear the whole cost for the benefit of the district? The principle would be very hard to apply.

497. You do not think the people would be willing to apply that principle to the construction of this line? I am afraid not.

498. Supposing the Government determined to apply the betterment principle to the construction of all future railway lines, do you think the people of Bega would be in favour of a line from Bega to Eden? I could not say.

499. *Mr. Ewing.*] In which direction is your land from here? North-west.

500. Do you know any of the railway surveys from the table-land? Yes.

501. Is your land on Arnheim's route? It is very close to it. It is within a mile from where it comes down the mountain.

502. You mentioned 6,000 acres of land—did you say that that land was cultivated or that it was occupied? That it was cultivated. There are about 300 land owners west of the line and under the range, and I think they have 250,000 acres of land of which only 6,000 are cultivated, to grow produce for home consumption.

503. Do you know the rainfall here? No.

504.

* NOTE (*on revision*):—She did.

504. Your argument is this—Sydney is your port, and by getting there more easily than at present you will be able to produce more than you produce now? Yes. Mr. D. D. McNaught
505. You want the easiest way to market you can get? Yes.
506 To get rid of the friction between producer and consumer? Yes. 23 Aug., 1892
507. I suppose you can form a good estimate of the possible production? Yes.
508. I suppose you have some cattle? Yes.
509 A few sheep? Yes.
510. You produce butter and bacon? Yes.
511. Cheese? No; I have no cheese.
512. Do they make no cheese—I am talking of the district? Yes.
513. Do they grow maize? There is no maize sent from here.
514. Do you think such things as butter and cheese are considerably depreciated by the delay in getting to market? Yes.
515. You believe that if the railway were made there would be more products than we have mentioned grown? Yes; there would be greater agricultural production, and, I think, greater dairying production. The agricultural production would increase if the railway was constructed.
516. In what time? In twelve months. That is, supposing the freights were cheaper. If you could carry hay for 8s. a ton to Eden an inducement would be offered to produce it.
517. Have you any knowledge of other parts of the country? A little.
518. Is your land as good as the Kiama land? Not for dairying; but I think it is equal to the Shoalhaven land for agriculture.
519. You think that it is not as good for dairying because you have not got artificial grasses? Yes.
520. If you had artificial grasses would you do more? We have larger areas.
521. The soil is drier, is it not? Yes.
522. You do not produce sheep here? Mr. Wren and others go in largely for them.
523. Cattle do not go to Sydney from here? A large number of calves and pigs do.
524. Where do the horned stock go to? Hitherto they have gone to Gippsland; but now there is no outlet for them.
525. Do none go to Tasmania? Yes.
526. That is your market for cattle? Yes.
527. *Chairman.*] Do you know anything about the table-land? A little.
528. Do you know the various surveys for connecting the table-land with the coast? I have been over portions of what are called Postle's, Darragh's and Arnheim's routes. I know them perfectly.
529. Which do you think would go through the best country? By all means Arnheim's route.
530. Which do you think would serve the largest number of people? I think Arnheim's line would serve the largest number of people, and the largest amount of land. It goes through the best land, and would drain the whole country under the mountain range.
531. It goes within a mile of your holding? About a mile.
532. If it is much longer and more costly than the others that would go against it? Quite so.
533. Do you think a line through that difficult country would pay. Is there likely to be much increase in the trade to Monaro—or does very much come from Monaro to the coast? Nearly all the goods and machinery come from the coast. Arnheim's line will take all the Wolumla and Bega traffic.
534. Does the road by which we have come from Cathcart here run between Postle's and Arnheim's routes? Yes.
535. Darragh's route and Postle's route are about the same? Darragh's comes in among the settlers, and Postle's leaves the settlers to the right. There are very few inhabitants near it. Arnheim's runs through the centre of the population.
536. Do you know anything of the Bondi route? No.
537. Do you know anything of the country through which it runs? No; I have only ridden through it once.
538. Do you know anything of the Big Jack route? No.
539. Do you know the country there at all? I have been to Rocky Hall, but not up the mountain.
540. It is very difficult country? Yes.
541. Is there anything else you would like to state? No. The notes I made were irrelevant to the question. Captain Turner stated that the capabilities of the district were fully developed, but that I really think it is not the case. I think the dairying industry, and I am sure the agricultural industry can be increased. I think that the agricultural industry can be doubled.
542. If it is paying them now to go into dairying with a certain area, why should it not pay them to go into it with a larger area? All the land is taken up, and, therefore, they must utilise it for agriculture. In reporting to the Agricultural Department I took down 300 land-holders, and I found that in about 20 square miles each cultivated on the average 20 acres of land. Some may cultivate 5 acres, others 10—just for home consumption. If, however, the advantage of cheap freights between here and Eden and thence to Sydney were offered them the people would certainly double their efforts, and send away a great deal that they do not trouble to raise now.
543. You said that within twelve months the agricultural products would be doubled. Do you not think that that is a very short notice? That is embracing the coming harvest.
544. Does it not seem a short time in which to double your output? What I call twelve months would embrace two harvests. We are just coming into the seed-time now, and I think the 1893 harvest would be doubled if the railway were constructed, though of course it could not be constructed in that year. I mean it would be doubled twelve months after the railway was opened.
545. Have you anything else to say? No.

Mr. James McNaught, dairy farmer, near Candelo, sworn, and examined:—

546. *Chairman.*] What is your occupation? Dairy farming. Mr. J. McNaught.
547. You reside in the Candelo district? In the parish of Candelo. 23 Aug., 1892.
548. *Mr. Suttor.*] Do you and your brother, the last witness, farm together? Yes; we are partly in partnership.

Mr. J. McNaught. 23 Aug., 1892.

549. You have heard his evidence. Do you agree with what he said about the productiveness of the district? In some respects; but I do not think he conveyed to you, gentlemen, the disadvantages under which we, as farmers, are labouring. The farm with which I am connected has been used for dairing for over thirty years. My late father laboured under the same difficulties as the present farmers suffer. We produce up to the local consumption, but we are at a disadvantage, through the cost of land carriage, in disposing of any surplus. Eden is the only good port in the south—only small boats can go to Tathra and Merimbula. Tathra is a mere bight, Merimbula is a lake. The good we derive from a railway is this: our average crop of wheat is 15 bushels to the acre. We can get all our produce away in bulk, giving us a power to call in competition with water carriage.

550. Have you many acres under wheat? We had to give up growing wheat on account of the several pests and the inconvenience of getting it to market. All our produce had to travel 26 miles, and that took up two or three days in the week. The steamship company trading here makes us pay high freight, and we cannot get a suitable ship until the railway is constructed to Eden. If we could go to Eden we could call in competition. Until we have Eden as a port it is no use producing anything except bacon, butter, and cheese. Horticulture is dead, and agriculture is languishing because we cannot dispose of our surplus produce. Our average crop of wheat is 15 bushels per acre and 10 cwt. of straw per acre, which is a dead loss, and if we could get it to market it would cover a great deal of expense. Oats average about 30 bushels an acre, giving an average of from 9 to 10 cwt. of marketable straw per acre. Barley averages 40 bushels per acre. Hay crops, including wheaten, oaten, and lucerne, give an average of 2 tons an acre. Cultivation is not carried on systematically, as it should be, because the land carriage is too expensive, coupled with the high freights, which take away all profits and retard the progress of the district. We could annually send by railway from 40 to 50 tons of dairy and farm produce.

551. Produced off what? Forty or 50 acres; but we could not get teams to convey it away under £2 a ton. The carriage to a place like Tathra runs up to £3 per ton; but if there were a railway we should save about 16 miles on the road, and could convey our goods to the stations very cheaply. The farmers could also unite and get the steamship companies to carry for lower freights. At present we cannot combine to get our produce away in large quantities to the coast. It is not by the present condition of the dairying industry that you should judge, but by the increased productions which the railway would stimulate. The agricultural production would also greatly increase, and a large quantity of waste land would be utilised for fruit-growing. The agricultural industry would go a long way towards supporting the railway, and I do not think that after the second year there would be a loss of £19,000 with the present production; but if there were adverse seasons, no doubt there would be a greater loss than that. The barley crop gives us about 40 bushels to the acre.*

552. *Mr. Ewing.*] You think there would be a sufficient volume of trade to keep a large boat going? I do.

553. You believe the present volume of trade is not sufficient, because of the difficulty in taking produce to a suitable port? Yes.

554. You believe that Eden is a suitable port, and that Tathra is not? Precisely. Tathra is only an inlet. No large vessels could come there with safety.

555. At Eden, competition would become possible, though it is not possible now? Yes.

556. You agree that there would be an increase in the production of the district? Yes; I believe the district is now in its infancy. Production does not increase because there is nothing to stimulate it. We cannot get our produce away in bulk. When a man has to hire ten or fifteen teams it eats away the profits; but if he had only to go a short distance, his own horses would do the work. Eden is the only harbour we have, and we must go there if we want the district to progress.

Mr. Patrick Heffernan, farmer, near Candelo, sworn, and examined:—

Mr. P. Heffernan. 23 Aug., 1892.

557. *Chairman.*] What is your occupation? I am a farmer.

558. Whereabouts are you residing? Adjacent to Candelo.

559. *Mr. McCourt.*] Are the people of Candelo in favour of the construction of this line? I think so. I am for one.

560. You think it would benefit the place? I think so.

561. In what way? In several ways. The district is capable of large production. It is already producing largely, and would be capable of much larger production if we had railway communication with Eden.

562. What about the passenger traffic which would go over the line? I could not say as regards the passenger traffic. I have not a very exact idea, but if other traffic increased passenger traffic would increase also.

563. Do you think that if it is estimated that every man, woman, and child would take two journeys over the line in a year, that is a fair estimate of the passenger traffic, or is it excessive? I could not say, but I daresay you might strike that as an average.

564. It would not be an excessive average? I do not think it would.

565. In what way would you use the railway? I would use it for conveying my produce, and for visiting other colonies. I have no facilities for doing so at present.

566. Do you produce largely? Fairly.

567. Would you send to Eden? I will tell you why I would send to Eden. Every man who has visited Eden, including the Railway officials, acknowledges that it is a very fine port, and that this is one of the most productive districts that he has ever travelled through. We are, however, retarded in a great measure by not having an outlet for our production. We only produce up to a certain extent, and have only one market at Sydney. We have to put up with whatever prices we can get, and with whatever freights the Illawarra Company like to charge. All we require are conveniences to enable us to reach Eden. If we got there and our produce was a drug in the market at Sydney we should have an opportunity of availing ourselves of any other market.

568. What other markets? The various intercolonial markets.

569. You would send to Melbourne? To Melbourne, Adelaide, Queensland, and New Caledonia perhaps.

570. Have you ever tried the Melbourne market? I have.

571.

* Note (*on revision*).—The following is a list of cereals and roots not mentioned before:—Maize, from 50 to 80 bushels an acre; turnips, about 4 tons an acre; potatoes, from 2 to 4 tons an acre; field peas and beans also grow well in this district, and could be cultivated with commercial success.

Mr. P. Heffernan. 23 Aug., 1892.

571. How did you get on there? I got a better price there than I would get in Sydney at the same time. It was only by a mere chance that I got the opportunity.
572. Had you to pay duty? Yes.
573. If we had intercolonial freetrade, would that open up the Melbourne market to you and cause great production in your district? Under the circumstances, I could not say whether it would or would not.
574. Are you aware that the construction of this line would cost between £16,000 and £17,000 a mile? I see by the statistics of the Department that it would.
575. Do you think that within ten years of its construction it would pay interest on capital and working expenses? I could not say as to whether it would or would not. It might under some circumstances pay three times the cost of construction, or it might, on the other hand, be a long way out.
575½. We want some evidence to justify its construction. Would it pay, say within ten years? In my opinion the district is capable of producing considerably more than it produces at present, and would do so if the railway were constructed, and we had a market for our produce. At present we are at a standstill.
576. Do you think the line would pay within ten years—yes or no? I should not be justified in saying "yes," or "no." If we had droughts or pestilences ——
577. With ordinarily good seasons do you think it would pay within ten years? I consider that if it paid within twenty years, we should be entitled to it.
578. Do you think it would pay within twenty years? I would not swear that it would.
579. Well, it is merely a matter of opinion. You are in favour of the construction of the line? I am.
580. Of the Government constructing it themselves—the people benefited contributing nothing towards the cost? On the lines on which railways have been constructed in other parts of the country.
581. *Mr. Ewing.*] You think there would be increased production if you got better facilities for travelling? Yes.
582. At present you are under certain disabilities, partly from your land carriage and partly from the inferior boats which take your produce? Yes. We are confined to a monopoly. We only get boats suited to the harbours to which our trade goes. The trade has been in the hands of one company for twenty-five or thirty years, and their boats are only tinkering boats. No vessel worthy of the name would come to these ports. We, however, have no alternative, and are actually tied to a stake.
583. How far are you from Tathra? Twenty-one or 22 miles.
584. How far from Eden? About 32 miles.
585. Ten miles further? Yes.
586. You think that if the proposed railway were constructed you could reach it at a point ten miles distant, so that you would only have ten miles land carriage, together with railway carriage and water carriage by good boats, to get to Sydney? We want something better than a good boat to Sydney. Our object is to get to other ports besides.
587. What are those other ports? The various intercolonial ports.
588. You would like to trade to other ports; but you do not know whether it would pay you? We know very well that it would pay. I and several others have tried it.
589. And you would like an opportunity to be given to boats from other colonies to call here? At present, if we require a boat to go to Melbourne, we have to give eighteen or twenty days' notice, and guarantee a certain amount of freight. If I have 20 tons of freight sent to Melbourne it will not pay me to do that.
590. *Chairman.*] Can you give us any idea of the total quantity of produce sent from this district to Tathra, Merimbula, and Eden during the year? I could not give it to you from memory.
591. Approximately? I had an opportunity of seeing the figures some few years back. I think you will find them with the Railway League in Bega.
592. Did I understand you to say that you thought the produce of the district would be doubled or trebled within a given time, if facilities were offered to get to Eden? I have no hesitation in saying that if we had an outlet by rail our produce would be doubled.
593. In twelve months? I could not say. If we paid for the railway in twenty years, I think you ought to give us ten years to double our output. I am quite sure it would double itself in less than ten years.
594. You do not agree with the evidence of the last two witnesses that the produce of the district would be doubled in two years if the railway were constructed? It might be.
595. You have expressed the opinion that ten years would be a fair limit of time? Well, five years. I believe it would be doubled in five years.
596. What did you say you produced? My principal products are bacon, butter, and cheese.
597. Your present market, except on special occasions, is Sydney? Yes.
598. What amount during the past year have you sent to any other place than Sydney? During the past twelve months I did not get an opportunity to send elsewhere, or I should have done so many times.
599. How much in tons have you sent to Sydney this year approximately? I think I should not be overstating the mark if I said that I sent 20 tons of butter.
600. How much of other products? That is my principal product.
601. Thirty tons would cover your whole production? Yes. That quantity is produced from one-third of the whole area.
602. It is all shipped from Tathra? None of it goes from Tathra.
603. It all goes from Merimbula? Yes. We have been so hampered at Tathra that we had to leave off going there.
604. Do you think that if the railway were constructed you would be sending 60 tons a year by it within 5 years? I am sure I should—twice 60 tons.
605. That is not very far from what Mr. McNaught stated;—how long would it take you if the railway were constructed to Eden to double your present output? I believe I could double it in two years or less.
606. And you think all the other producers in your district would do the same? It is reasonable to suppose that they would.
607. What you are capable of doing they are capable of doing? I believe so.
608-9. What is the area of your holding? About 1,500 acres; the amount of produce is from one-third of the whole of the area of my land.
610. You employ labour, of course? Yes.
611. Have you held your land long? About eighteen years, some a bit longer.
612. Did you buy it in one lump? No; some here and some there.

Mr. James Joseph Collins, dairy farmer, near Candelo, sworn, and examined:—

Mr. J. J. Collins. 23 Aug., 1892.

613. *Chairman.*] What is your occupation? I am a dairy farmer.
614. Residing near Candelo? About 5 miles from here.
615. How long have you resided in the district? Twenty-nine years.
616. *Mr. Ewing.*] What is the distance to Tathra from here? I think 22 miles.
617. How far is it to Merimbula? Eighteen miles.
618. Is one road as good as another? I think the road to Tathra is the better.
619. Is the extra distance made up by the goodness of the road? No.
620. Could you get to Tathra more easily than to Merimbula from Candelo? It is a better road to Tathra.
621. And if the ports were equally good the trend of the traffic would be there? Yes.
622. What do you produce? Only butter at present, and pigs.
623. Where is your market for butter? In Sydney.
624. And for pigs? Sometimes I ship them away; sometimes I sell them to local buyers.
625. Do they make bacon here? Yes.
626. Would you increase your production if the railway were constructed? I could increase it a little in dairying produce and pigs, and a good deal in agricultural produce by growing hay and potatoes.
627. What area have you? Seven hundred and fifty acres.
628. You believe you could increase your production considerably? I can grow hay on all of my land.
629. What advantage would the railway be to you? I could grow hay on half my land, and it would pay me to do so if I had ready access to market. I could also make a great deal more than I do at present by dairying.
630. You believe the railway would give you ready access to market? Yes.
631. Where do you expect to send your hay? Wherever I can get a market.
632. I suppose you would not mind where you sent it? No.
633. You would not object to go to Melbourne if you got a good price there? Certainly not.
634. You believe that the railway will bring the district more in touch with other parts of the Colony and with the other colonies than it is at present, and that it will give you a ready access to market? Yes. Instead of having to send our butter to Sydney and having it shipped from there by commission agents we could ship it away ourselves.
635. When the volume of your trade is sufficiently great? That time will not be very long distant.
636. You think the railway would give you easy carriage to Eden, and that from there you would get better water carriage than you have at present? Yes. The present steamers are not fit to carry perishable stuff such as butter and cheese. They are terribly dirty, and our produce is easily injured by contact with dirt.
637. You would get better boats at Eden than you have now? Yes.
638. *Mr. Suttor.*] You send your stuff to Merimbula now? Yes.
639. Would you be likely to use the railway to get to Merimbula from Bega? I would use it from Wolumla to Eden.
640. You would not ship to Merimbula at all if you had a railway? Not if I could avoid doing so at a little extra expense.
641. You would have to use the railway for the distance you have mentioned? Yes.
642. Would it be any extra expense to use the railway? I do not know what the railway would cost, but we should derive such an advantage from having a choice of steamers at Eden that, supposing the railway freight cost a little more, we could pay it.
643. What is the disadvantage of shipping at Merimbula? Our butter is taken out over the bar on a drogher, and in the summer months it lies about on the drogher until it has pretty well melted. It is then transhipped to the steamer, and by the time it gets to Sydney it is only fit for cart grease. The same remarks apply to cheese. I have seen the cheeses burst.
644. Eden is your best port? Certainly.
645. And in preference to shipping at Merimbula you would use the railway from Wolumla to get to Eden? Yes.
646. *Chairman.*] If you can get your produce carried so much more cheaply and by larger boats from Eden than from Tathra or Merimbula, why do you not send it there now? The saving is not sufficient, and the steamers will not call there regularly. The land carriage there would kill us altogether.
647. The extra land carriage would more than counterbalance the saving in the freight. What do you pay now to get your stuff to Sydney? About 3s. 6d. a cwt. for butter from Merimbula.
648. And from Eden? I do not know.
649. Until the productiveness of this district has increased twofold you would not give sufficient trade for larger boats? If all the produce from this district were sent to Eden there would be enough to entice large boats there.
650. Then why is it not sent there now? Because the land carriage is too great.
651. But if the saving in freight on the larger boats would more than counterbalance it, why do you not club together to send your stuff there? It would be too long on the road.
652. How much longer would it be on the road? A day.
653. How far is it from Wolumla to Eden—24 miles? Yes.
654. Would it take more than a day to do that? Yes; with the heavy teams that we have here.
655. But you tell us that your stuff has lain at Merimbula for days together sometimes? So it has—not for days. It lies for hours in the drogher out on the ocean.
656. And then you get so small a price for it owing to its coming into contact with pigs that you can only sell it as cart grease. If by sending it to Eden you could escape this contamination by pigs, and deliver your butter in Sydney in first-class order, would that not counterbalance the extra land carriage? We have to consider the time it takes a team to go down. There is a creek to cross.
657. How many miles is it from Wolumla to Merimbula? Nine miles.
658. And to Eden? Twenty-four miles.
659. So that 15 miles make all the difference? Yes.
660. What does it cost to send from Wolumla to Eden? I do not know. It costs 1s. 6d. from Wolumla to Merimbula.

661. Do you know the route which the proposed line takes? No. I know the towns it would strike.
662. Do you think it is the best route we could adopt to secure the trade of the Bega and Eden districts? Yes. It would strike the towns in those districts.
663. And would it be convenient for the people of Candelo and other places? Yes, I think so.
664. Do you know anything about the surveys connecting the table-land with the coast? Only from hearsay.
665. Do you know anything at all about the table-land? No.
666. You have quite enough to do to mind your own business below? Yes.
667. Do you know Eden? I have been there.
668. Have you been there in heavy weather? No.
669. How do you know that it is a good port in heavy weather? I do not know that it is.
670. Suppose there were any difficulty in the way of shipping there, you would be no better off than at Merimbula? I do not think there would be any such difficulty.
671. Do you think the country ought to build railways, at an annual loss of £19,000, on a mere supposition? There is no guarantee that we are going to lose £19,000 per annum.
672. Will you kindly show us how the country is going to produce more? The estimate is framed upon the present production of the district.
673. No, a liberal alllowance has been made in framing it;—would you travel over the line twice a year? Yes.
674. Would your wife? Quite likely.
675. And the children? Quite likely.
676. Do you think that the Railway Commissioners, in making allowance for each man, woman, and child in the district travelling twice a year, have gone under or over the mark? I think under it, if anything.
677. The better price you would get for your butter would enable you to do a little more travelling? Yes.
678. Is there anything else that you would like to state? No.

Mr. J. J. Collins. 23 Aug., 1892.

WEDNESDAY, 24 AUGUST, 1892.

[*The Sectional Committee met at the Wharf, Tathra, at 10·30 a.m.*]

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).
The Hon. WILLIAM HENRY SUTTOR. | THOMAS THOMSON EWING, Esq.
WILLIAM McCOURT, Esq.

The Sectional Committee further considered the proposed Railway from Eden to Bega.

Mr. Charles B. Myers, wharfinger, Tathra, sworn, and examined:—

679. *Chairman.*] You are the wharfinger here? I am agent here for the Illawarra Steam Navigation Company.
680. How long have you been here? Fifteen years and three months.
681. At one time you also had the oversight of the Government property here? Yes.
682. And received a small salary in consequence? Yes.
683. How long is it since your work was discontinued? When the Parkes Government got in; when the retrenchment was made.
684. How many years ago? It must be seven or eight years ago.
685. What was the nature of your Government duties? I was pilot and harbour master.
686. Had you at that time moorings down to allow of vessels being laid alongside the wharf? Yes.
687. Were they removed immediately after the discontinuance of your office? Yes.
688. Were they found to be of any use in handling vessels? Yes, of very much use for sailing vessels, and in heavy weather for steamers.
689. What was the reason for their removal? I cannot tell you.
690. How many times do the steamers of the company which you represent call here during the week? Twice.
691. On what days, coming from Sydney? On Sundays and Thursdays.
692. Do the same boats go right on to Merimbula and Eden? Yes.
693. They also call here on the return trip? Yes.
694. They only land cargo from Sydney here on the down trip, and call for cargo on their return? Yes.
695. Is it a fact that last week and this week two of your vessels have not been able to call? Yes.
696. Owing to the swell? Owing to the heavy swell.
697. Did they take passengers? Yes.
698. On both occasions? There were none yesterday—they were too late.
699. The steamer could have taken them yesterday, but they were too late in getting down? Yes.
700. But on both occasions the steamer was not able to take cargo? It was not able to take cargo.
701. Do you know whether they took cargo at Merimbula and Eden? They landed and took in cargo at both places.
702. Weather which prevents them landing here will not prevent them landing at Merimbula? No.
703. How many times has it occurred during the last five years that vessels could not take either passengers or cargo from here? About three or four times in the year.
704. They could not take cargo from here? Neither cargo nor passengers.
705. I understand that the steamer goes on to Eden? To Merimbula.
706. And then calls back here to unload? To see what she can do.
707. How often have the steamers had to take their cargo back to Sydney? Once in five years.
708. But sometimes they have had to pass by this port going south and have been able to land their cargo here coming back? Yes.
709. That occurs two or three times a year? Yes, at the utmost.
710. They may miss this port going down but they pick it up coming back? Yes.

Mr. C. B. Myers. 24 Aug., 1892.

Mr. C. B. Myers. 24 Aug., 1892.

711. You only know of one occasion during the last five years when they had to take cargo back to Sydney? Yes.
712. The manifest which you made out for the vessel that called here yesterday, which would have taken a double cargo, comprises about 1,100 cheeses, about 88 kegs of butter, about 180 bags of corn, 5 bags of bacon, 4 bales of leather, 4 cases of eggs, and one crate of turkeys? That went to Sydney. There were only two turkeys in a box.
713. There was also a crate of game? That went in the boat, too.
714. That was the cargo for the vessels calling here on the 20th and 23rd instant? Yes.
715. And it is now in your store, except the two small packages which were got off? Yes.
716. Does that manifest show an average week's shipment? Barring the corn. We had not a bag of corn before, this twelve months. The corn is exceptional, as the price is up in Sydney.
717. Do you not very often ship a large quantity of pigs and other animals? Yes.
718. You have none down in the manifest? No, and none here.
719. How many do you send away on an average? Just according to the market in Sydney.
720. How many have you known to be shipped at one time? One hundred and thirty—that is the utmost.
721. Can you give us any idea of the quantity of goods inwards in a week, roughly. Are there more going in than coming out? They are about the same.
722. How many drays come down here in a week bringing produce? Two large teams and three small ones.
723. Is that a good average for a week? That is the average for a week.
724. Do they all get back loading? Sometimes.
725. Sometimes they come down empty to take loading up? Yes.
726. Is the trade increasing at all. Has it increased during the last three years? It has been on a wave for these four or five years.
727. Up and down—there has been no material increase? No material increase.
728. Do you know if there is more trade done with Merimbula now than there used to be? It is just as here. The trade has been wavering, especially since the railway to Cooma was opened.
729. Do you know anything about Twofold Bay? Yes.
730. Are there times when they cannot land there? When it is too rough to land here it is generally too rough to land at Eden.
731. The same remark applies to Merimbula? No. There they work with a drogher, and if the drogher can cross the bar she is able to get the cargo It is only with an easterly gale that she cannot cross.
732. What would be the total freight charged on the goods, already enumerated, as a week's shipment? £37 8s. 10d.
733. The number of individual shippers is about forty? Yes, about that.
734. And there are about thirteen consignees? Yes.
735. *Mr. Ewing.*] When you say that there are three small drays and two large ones constantly trading here, what do you mean? They go twice a week to Bega and back.
736. Do any of the farmers bring their own stuff down? Mostly all of them.
737. Therefore two large teams and three small ones do not give us a correct idea of the traffic? The general traffic from Sydney is mostly done by teams, but a great deal of the goods are carried privately.
738. Can you form any idea as to the number of people who come down here themselves? I can give you the number of shippers.
739. You mentioned just now that corn did not go down much. I suppose when it does not go to Sydney, it is used for fattening pigs? Yes. If once corn goes over 3s. 6d. they commence to ship it away. Under other circumstances they do not.
740. You can send passengers away when you cannot send cargo? Yes.
741. You put them into a boat and take them alongside the steamer? Yes; and I am answerable for their lives. I would not send them away unless I saw it was safe.
742. People prefer a wetting to losing the boat? Yes.
743. How often in a year have you taken passengers on and off the steamer in a boat? Say, five times.
744. The traffic you speak of is not the average for a week throughout the year? Yes, right through.
745. Is it not a fact that this is the worst time in the year for production? It has been bad for the last five years.
746. But would not a week in January, say, be better than a week in the present time in the year? Not on the average. In summer, when they make no butter, they make more cheese. There is very little butter shipped in the month of January, but there is more cheese made then. They go in for cheese when the price of butter is down, so that there is then more cheese and less butter made. I have seen trips made in January with four kegs of butter, and probably 1,500 cheeses.
747. According to you, there is as much traffic in the winter as in summer? Taking it right through.
748. Are they sending as much now as usual? No.
749. Therefore, what we have seen on your books is not as much as always goes from your ports? The difference is very small—it might be a keg of butter in a week. A man who makes four kegs now, might make six in the summer.
750. Are things better since you extended the wharf. Is that an improvement? Yes; a great improvement.

WEDNESDAY,

WEDNESDAY, 24 *AUGUST*, 1892.

[*The Sectional Committee met at the Court-house, Bega, at 2 p.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor. | Thomas Thomson Ewing, Esq.
William McCourt, Esq.

The Sectional Committee further considered the proposed Railway from Eden to Bega.

Mr. Frederick Bland, Mayor of Bega, sworn, and examined :—

Mr. F. Bland. 24 Aug., 1892.

751. *Chairman.*] You are Mayor of Bega? I am.
752. How long have you held that position? This is my third year of office.
753. Is that the length of the existence of the municipality? Oh! no.
754. How long has this place been incorporated? Seven or eight years.
755. Have you been an alderman longer than three years? Yes; I was an alderman about two years, prior to becoming mayor.
756. Do you desire to make any general statement in connection with your municipality and the subject under consideration, or do you desire the Committee to at once proceed to examine you on various points? I wish to give the Committee information as to the area and population of the municipality. I have taken these figures from the municipal directory for this year. The approximate area of the municipal district of Bega is 2,300 acres; the number of houses, 420; the number of ratepayers on the roll, 554; the capital value of property, £312,178 10s.; the revenue from rates, £803 8s. 10d.; from the lighting rate £267 2s. 4d.; Government endowment, £694 9s. 1d; and from miscellaneous sources, £193 16s. 9d. Our estimated population is 2,200.
757. What debt has the municipality? Our only debt is that upon the gasworks—£8,000.
758. What asset have you against that? The gasworks and our rates.
759. What is the value of your assets in connection with the gasworks? I should think about £10,000.
760. How does this year compare with others. Has there been an increase in the population and ratable value of property? A decided decrease.
761. How do you account for it? It is owing to the general depression throughout the Colony. So much building has not been going on, because of the decrease in rents.
762. Did the fall in land values affect this district? To a certain extent.
763. Can you give us the figures for three years back? No, I cannot; but I could ascertain them for you.
764. There has been a decrease as compared with last year? Yes.
765. Do you think that that decrease is likely to continue? I do not. I think we are on the turn now. I think there is likely to be a large increase.
766. Formerly, was there a decrease or an increase? I think there has been a decrease from the time of the drought.
767. How long is that? About three years.
768. Was last year a droughty year? No; we are only feeling the effects of the drought now. We did not feel it immediately.
769. Have you any other information to give us in reference to municipal matters? No.
770. Do you know the length and estimated cost of this railway line? Yes.
771. Do you know whether the grade could be improved in any way—you are familiar with the country, and may perhaps know some better routes? I believe there are two difficult places. One is at Bellbird Creek, and the other at Wolumla. I believe the grade at both those places could be improved by slight deviations.
772. If we have been informed by the Department that the line has been very carefully surveyed and checked, and that they do not think it could be improved, would you accept their statement? I am not prepared to accept their statement absolutely. They are not infallible.
773. You are not an engineer? Quite so; but Government officials are difficult to approach sometimes, and if they hold a certain idea you cannot get them to alter it.
774. Is there not an impression abroad that a bridge somewhere near Pambula will cost £90,000? Some such impression has got abroad.
775. Would you be surprised to learn that the cost will be only £8,621? I have heard that the other figures were wrong.
776. The estimate for bridges along the whole length of the line is something like £90,000, and it is possible that people have thought that that was for one bridge? Quite so.
777. Do you agree with the estimate of the Railway Commissioners as to the probable traffic over this line? I think it is considerably under the mark. Further than that, I consider that if the railway were constructed the traffic would be considerably increased, and that the produce of the district would also be increased.
778. You think that the district is not at present producing up to its full capabilities? Not within 50 per cent.
779. It could, if put to the test, produce 50 per cent. more than it produces now? I believe that the land is capable of producing fifty times more than it is now producing.
780. Fifty times more? Well, 50 per cent.
781. The 50 per cent. increase would not meet the loss on the line? Perhaps not. When I said fifty times more, I meant that it could produce many times as much as it is producing at present.
782. If you had a market, which you think you would have if you could get to Eden? Yes.
783. The present port of Bega is Tathra? Yes.
784. We have been informed that only on one occasion during the last five years had goods sent to Tathra to be carried back to Sydney, because of the bad weather. Do you think that that is correct? As to their actually being carried back to Sydney I cannot speak; but I have been informed that the steamer passes the port many times every year.

Mr. F. Bland. 21 Aug., 1892.

785. We were informed in Sydney by the general manager of the Illawarra Company, and also by their agents at Tathra, that during a period of 5 years, on only one occasion have the goods sent from Sydney to Tathra been returned to Sydney, because of the impossibility of landing them; and that on three or four occasions during the year the steamers have had to pass Tathra on the down trip, but have been able to land their cargo on the up trip. If that statement is correct, it does not show any great hardship? It all depends upon when the return trip is made. It might be made a week later than the down trip. They might do as they have done this week—come back on the Monday, go away again, and then come back a second time. They have not been able to land goods yet this week.
786. The steamer which should have left here on Sunday, had to pass by and go to Eden, and then came back on Monday, and could not land her cargo, and passed again yesterday? Yes.
787. That occurs frequently? Yes, several times during the year. It is a matter of frequent occurrence in heavy weather.
788. Is it a fact that no other vessels will trade here? I understand that the insurance companies will not cover any other than the Illawarra Company's boats.
789. The people of this district look to Eden as their natural port? They do.
790. Tathra and Merimbula are mere make-shifts? Quite so—mere open roadsteads.
791. Is more cargo shipped from Tathra than from Merimbula? I should think there is more shipped at Tathra; that is not taking into consideration the wool.
792. Where does that go to? Some, I understand, goes to Eden, but most to Merimbula.
793. No wool is produced in the Bega district? Only a small quantity.
794. The wool to which you refer comes from Monaro? Yes.
795. It would not make use of the railway? If we were connected with a railway it would; but if we looked upon this as an isolated line, we should only get it from Pambula or Wolumla to Eden.
796. Do you think it likely that squatters, after conveying their wool in drays for 100 or 200 miles, will, for the sake of running it over a railway for 20 miles, go to the bother of unloading it? The railway would save five days for the carriers. There is a difficulty in getting water and feed for horses towards Eden. If there were a railway, wool could be carried more cheaply, because the drays would make three trips, where otherwise they would only make two.
797. Do you know how the wool teams from Monaro go to Eden; do they go *via* Wolumla, *via* Pambula, or *via* Big Jack? Some go *via* Big Jack, and some *via* Candelo and Wolumla.
798. Then, in all probability, if the railway were constructed, the wool that now comes down Big Jack would continue to come that way? As far as Pambula. If the wool could be taken to Eden, there is no reason why it could not be hydraulically pressed there, and shipped direct to England.
799. Do the pastoralists send their wool to the Sydney market to be sold, or do they send it direct to England? That I do not know.
800. It would only be in cases where wool was being shipped direct to England that these wool warehouses would be used? I do not think so altogether. People who had a lien upon the wool or who purchased it at Eden might ship home from there.
801. At all events it is problematical whether any of that traffic would come on this railway line? It is only a matter of opinion.
802. All we can depend upon is the local traffic? Yes; provided that the line is entirely isolated.
803. How far north do you think the railway would drain the traffic of the district? Under ordinary circumstances, taking Sydney as our market, I think about 15 miles north.
804. People at that distance out would come this way rather than go to Bermagui? Yes. The monopoly of the Illawarra Company would be broken up, and freights would be so much cheaper that it would pay to go to Eden by railway, and ship from there.
805. You think that cheaper transit by steamer from Eden to Sydney would more than compensate for the cost of carting 15 miles to a railway station, loading goods into the trucks, carrying them 36 miles by railway, unloading at Eden, and putting them aboard the ship? Yes. They would not have to consider the 36 miles of railway carriage except in the matter of freight.
806. How far west do you think the railway would drain this district? About 30 miles.
807. That is right to the mountain? To the foot of the mountain.
808. You think there is no doubt about that? I am positive of it. It all comes this way now.
809. A man 30 miles west of here when he gets to Bega has only 12 miles more to go to get to Tathra. Do you think that under those circumstances he would take the trouble to use the railway to Eden? I think that if a man had any appreciation of the value of time he would use the railway, and prevent the extra wear and tear on his vehicles, and avoid any uncertainty about getting his goods away.
810. Do people generally bring their own produce in here, or do they send it here by carriers? The majority bring their own produce. There are carriers running direct to Merimbula and Tathra, but most people carry for themselves.
811. How far from towards the coast would people come to this line? I know that if I were a producer myself I should prefer to send by railway up to a certain point.
812. Who owns the estate furthest east towards Tathra? There are several estates out there. There is Mr. Manning's, Mr. Gowing's, and Mr. Ritchie's.
813. Who is furthest from Bega? I think Mr. Ritchie is.
814. How far is he from Bega? About 6 miles.
815. He is half-way between Bega and Tathra, and at present sends to Tathra? I presume so.
816. Do you think he would bring his produce to Bega, and send it on by railway? I am sure I do not know.
817. The Railway Commissioners have made an estimate of the whole of the traffic through Tathra and Merimbula, and I want to see how much would be drawn from Tathra to the railway? There would only be six or eight people out there to give traffic to the railway out of some thousands in the district.
818. Has there ever been a time when vessels could not call in at Eden for cargo? Sometimes there is a swell there which makes it difficult to load close to the jetty, but Twofold Bay is a magnificent port, with a very large and good anchorage. Vessels could always get in there, but whether they could lie at the jetty during an easterly gale is another question.
819. Do you know of any occasion when produce has been waiting at Twofold Bay because the large steamers could not take it on board? I do not.

820.

Mr. F. Bland. 24 Aug., 1892.

820. You consider that Eden would be a good port in any weather, and that there would be no block there in the shipping of produce? I consider that Eden would be a perfect harbour if a small breakwater were put there.
821. If the port is at all defective now, we should have to consider not only the cost of the railway, but also the cost of harbour works there? Yes, but they would really need only a trivial sum—their cost would be very small.
822. And you think that they would be effective? Yes. I have had the opinion of practical seamen on this point. The late harbour-master, Captain Russell, is one of those whom I consulted.
823. *Mr. Suttor.*] Can you give us any idea of the amount of goods inwards from Tathra? I cannot speak specifically as to that. There are others who can give you an estimate.
824. *Mr. Ewing.*] Would Candelo make this place its depôt? I expect they would go to Wolumla.
825. You have told the Chairman that you thought the departmental estimate of cost was too high? Yes.
826. Upon what do you base that opinion? I believe that experienced people who have been consulted have given it as their opinion that the railway could be constructed for very much less.
827. How much less? Something like £200,000 less than the official estimate.
828. Do you know the official estimate? Yes.
829. Speaking from memory, you believe it has been said that the line could be constructed for £364,000? Yes, something about it
830. I presume you have no very definite statement to place before us? Not so far as my own personal knowledge goes.
831. You do not believe that Tathra is a fit port for shipping your produce from? Yes.
832. You believe that Eden is? Yes.
833. Therefore, you want to go there the easiest way? Yes.
834. You believe that if a good port were made at Eden, and you were given proper communication with it by means of a railway, the trade would go there instead of to Tathra or Merimbula? I do.
835. You believe that would be a good thing for commercial reasons? Yes. I believe that the passenger traffic on the railway would be much in excess of the estimate..
836. At present the traffic goes through Merimbula and Tathra, and not through Twofold Bay? Yes.
837. Where would they land heavy stuff like machinery? Anything like heavy machinery is landed at Eden. I do not know that any has come here, but machinery has been taken to other places. The freight from Eden to Sydney is the same as from Tathra to Sydney. There is no saving on the lesser distance.
838. You believe that heavy machinery would be landed at Eden? I believe that that is the only place where it could be landed with safety. We use about 300 tons of coal at our municipal gasworks, and we have had great difficulty in getting it unloaded here. We have had to make special arrangements, and to get men to work night and day for fear the weather should become boisterous, and the vessel be cast adrift. If the railway were made we should save 15s. a ton on the cost of our coal, and that would enable us to reduce the cost of gas, which is at present 12s. 6d. a thousand feet, and thus increase the consumption.
839. Do you think that the importance of the district entitles you to better communication than you have at present? Unquestionably.
840. You believe that that communication would be furnished by a railway? Yes.
841. *Mr. Suttor.*] How long does it take you to use 300 tons of coal? A year.
842. *Chairman.*] Is there anything else you would like to state? No.

Mr. William Henry Braine, proprietor of the *Bega Gazette*, sworn, and examined:—

Mr. W. H. Braine. 24 Aug., 1892.

843. *Chairman.*] You are proprietor of the *Bega Gazette*? Yes.
844. *Mr. Suttor.*] You desire to furnish statistics with regard to the land revenue? I have very little to add to what Mr. Bland has given for the town. I should like to bring under the notice of the Committee the land revenue of the district. I have obtained my figures from the Lands Office during the last few days, and from previous records which I have kept. The land revenue has varied from £9,000 up to £15,000 per annum, and the total for the nine years—1883 to 1891—has been £118,317. I quote those figures for the purpose of using them in this way: Although an agitation was started for the line from Eden to Bega, and that line steadily kept in view, matters have so developed within the last two or three years that it looks to be a certainty that Monaro will be tapped from Eden, and therefore I think we in Bega should be responsible only for that portion of the line going as far as Wolumla. I believe the land revenue in five or six years would pay for that portion of the line. My figures do not take in Eden or Monaro—they are simply for the district which has its centre at the town of Bega.
845. What are the boundaries of the land district? I do not know them exactly. There is a lands office at Eden, and the district extends about 20 miles north.
846. How far west? To the range.
847. Have you any knowledge of the production of the district? It is very difficult to get accurate figures showing the production of the district. It has been estimated that we send out between 3,000 and 4,000 tons of butter, and rather more cheese. That is a rough estimate, and I could not vouch for the figures.
848. Have you any idea of the quantity of corn grown, and of the area of land under corn? There is a local market at present for nearly all our corn, and of late years very little has gone to Sydney. I believe certain purchases are made for the maizena works, but a great deal of it is used locally for horses and pigs.
849. I suppose, from the conversations you have had with farmers, you know what is the average yield per acre? Well, Mr. Gowing informs me that he has had 104 bushels per acre. Some of the witnesses who follow me will perhaps be able to give you more reliable evidence on that point. The land at present under cultivation is simply what may be regarded as the pick of the district, and we know very well from the experience of other countries that corn could be grown in many places in this district not now under cultivation.
850. *Mr. Ewing.*] You say you think that Bega should only be considered responsible for one-third of the length of the railway? I think so.
851. You believe that the land from Bombala to Eden, and about Wolumla, should be charged with the other two-thirds? Yes; it could be calculated that way. We have only given you the figures for our own district.
852. Of course that contention depends upon something approaching the certainty that the line will go *via* Wolumla to Bombala? As far as we know—and I daresay professional gentlemen will give you evidence on the point—the line must pass within some little distance of Wolumla.

Mr. W. H. Braine. 24 Aug., 1892.

853. Your contention is, that this is a line partly from the table-land and partly from Bega, and that Bega should not be called upon to pay for the whole of it? Yes.

854. *Chairman.*] Have you anything else to say? The line from here to Wolumla could be built for £5,000 or £6,000 a mile, and that would make a wonderful difference in the interest chargeable. If we connected Bega with Wolumla, and the line goes on to Cooma, it would do away with the isolation of the line. A line to Bombala joining with Cooma, would only be the work of perhaps a year or two, and then you would have a complete connection, which would do away with the extra expense for separate rolling stock, &c., put down by the Commissioners.

855. Would not a line from Cooma to Bombala be at least equal in cost to a line from Bega to Eden, without taking into consideration the costly line on the mountain. You would be spending £2,000,000 right off? I do not think that it would be right to put it exactly in that light. No doubt a line up the mountain would be costly, but through Monaro the cost of construction would be very light.

856. Would you be suprised to learn that the line from Cooma would cost quite as much, if not more, than the line from Eden to Bega? I should. We have had so many wild official statements in this district, that official statements are now subject to be taxed.

857. That is the opinion of engineers, which you and I are not? Exactly; but figures can be quoted for various purposes.

858. You look upon the portion from Bega to Wolumla as the only portion which should be charged against your district. Would you be content with that portion of the line until the Cooma line is finished? Of course not. It would be no use. I think that is drawing a rather absurd conclusion.

859. You say that you would put it off for some time to come? The line from Eden to Monaro will have to be constructed, and if you then carry a line here from Wolumla, we shall be very content to hitch on to the Eden and Monaro line.

860. Then if I understand you aright, it would be better to postpone the inquiry until we had a connection from Bombala? I do not think that that would exactly fall in with my views. We know that we should develop the country. The statement that this district is producing up to its limit I know is not correct. Thousands of pounds worth of waste material are lost every year on account of the cost of carriage to market. Scrap-iron, hoofs, horns, rags, and other things.

861. How many tons of scrap-iron go from the district in the year? I cannot give you the quantity in tons. That is one article which I know goes to waste.

862. I am afraid you would not get 2 tons of scrap-iron in the whole district in the year. You think that so far as natural products are concerned they would be largely increased if you had means for getting to Eden? I am sure of it.

863. Like the previous witness, you are of opinion that Tathra and Merimbula are make-shifts? Sir John Robertson called them tinkering ports, and my opinion coincides with his.

864. Do you know anything of Twofold Bay as a port? Not much.

865. You do not know whether vessels have been unable to load there through stress of weather? I cannot say.

866. As a journalist and a man who takes an interest in the whole Colony, without respect to this particular district, do you think this is a proper time to face an expenditure of £2,000,000, in order to make the railways to which you have referred? We know that in other countries—in America, for example—they construct the railways and population follows. Our lines are, or should be, national conveniences for conveying produce to market.

867. But there do not the people who construct the lines hold the land? They build their railways on a different system, of course. They are in the hands of companies.

868. You would urge the construction of a line from Bega to Eden, and early connection with the Monaro line? Yes; that is my idea.

869. And the country should be prepared to suffer whatever loss there might be on the Bega to Eden line, pending the construction of the Cooma line, when two-thirds of the cost of the Bega line could be put against it? Yes.

870. You spoke of the revenue derived from the sale of land in this district? Yes.

871. Do you look upon the land in any particular district as belonging to the people of that district, and that the people of the Colony generally have no interest in it. You treat the land here as if the people of this district were the proprietors of it? I think that if a certain amount of Government revenue is derived from a district that district should get some of it back again.

872. But is it derived from the district? Certainly. It is revenue derived from land sold by the Government, and now in the occupation of private individuals. Most of our people are producers. We have very few land speculators among us. As far as the revenue of the Bega Land Office for this year goes, if the arrears were paid up, it would be nearer £20,000 than £15,000.

Mr. C. W. Macleod, auctioneer, Bega, sworn, and examined:—

Mr. C. W. Macleod. 24 Aug., 1892.

873. *Chairman.*] You are a resident of Bega, engaged in an auctioneering business? Yes, I have been here about 15 years.

874. *Mr. McCourt.*] Perhaps you would like to make a statement? One of the reasons in my opinion for the construction of this railway is the probable large increase of heavy traffic, such as potatoes and hay, in the district. It is now useless to produce these things because of the cost of taking them to market. I have frequently heard from different farmers that if potatoes or hay could be landed at Sydney at £1 a ton they would be largely cultivated, but the present cost of £2 to £2 5s. a ton is prohibitory.

875. Would the railway be of benefit in any other way? I think that that would be its principal benefit. It would enormously increase the production of heavy stuff in the district.

876. What is the present production of potatoes? Very small indeed. We grow only enough for local consumption. The only heavy crop is maize, and that is grown to be used in the district.

877. Could potatoes be landed in Sydney at £1 a ton if the railway were constructed? I think so. The present freight from Merimbula and Tathra is 15s. they say, but for all practical purposes it is £1, and on butter £3. If the bulk of the produce were concentrated at the deepwater of Twofold Bay that would encourage other steamers to compete for the freight, and would reduce it 7s. or 8s. a ton.

878. What amount of passenger traffic would go over this line? I am not in a position to form an estimate, but I think the passenger traffic would increase enormously. Mr. C. W. Macleod.
879. You saw the Commissioners' estimate? Yes, I think that that would be largely increased. 24 Aug., 1892.
880. The Commissioners estimate the revenue at £11,000, and the Railway Committee here at £26,000, which do you think is the correct estimate? I should think about midway between the two.
881. Eighteen thousand pounds? Yes, about that. I have no particular data by which to fix it.
882. Do you know the district well? Yes.
883. Do you know the route that has been surveyed? Yes, fairly well.
884. Do you think there would be any possibility of bringing the line closer to Candelo? I have not a sufficiently good knowledge of that portion of the line between Candelo and Wolumla to say.
885. Could it be taken nearer to Candelo? I daresay it could—it would alter the cost a little.
886. But it would suit the people better if it could? Probably.
887. And make sure of getting the traffic? Probably. It is 8 miles from the nearest point on the railway—Candelo.
888. Are you a large landholder here? Not a very large holder. I have land in various parts of the district.
889. I suppose the construction of the line would increase the value of your land? In some parts I think it would, no doubt.
890. Do you think the people here would be willing to apply the betterment principle to this proposal, that is, would they contribute one-half towards the construction of the railway? I think they would be very foolish if they did not. If they had land worth £4 and it increased in value to £6 an acre, they would only be very sensible in contributing £1 per acre.
891. You think that is the proper principle to apply? I think so, decidedly.
892. If the Government decided that all future lines should be constructed on that basis, do you think the people would want this line? I think so.
893. *Mr. Ewing.*] You are able to express a definite opinion with regard to the production of the district? Not in figures.
894. In general terms, what do you produce? Cheese, butter, bacon, and maize—those are the main products. The maize is used to fatten pigs.
895. Any wattle bark? Yes.
896. Fat cattle? Yes.
897. In fattening pigs on the river flats you turn them into the corn? Yes.
898. What return do you get on an acre in fair times? We get from 60 to 100 bushels of corn to the acre.
899. What return would that give you in pigs? We reckon about eight pigs to the acre.
900. And what is the profit from fattening a pig—what is a store pig worth? On the average 24s. or 25s.; that is a yearling.
901. What is he worth when you are going to make bacon of him? Forty-two or 45s.
902. You make £2 on him? A little over £1.
903. During the time that the land is fattening pigs, which is only a few months ——? Two months.
904. During that time you get a return of £8 an acre? Yes; including the time that the corn has been growing.
905. About five and a half months? Perhaps more. They put it in in August or September, and the pigs are turned out upon it in the beginning of May.
906. For nine months you think you ought to get a return of £8 an acre in corn land? Yes.
907. How many cows to the acre will a flat run? About a beast to the acre.
908. The hilly land? One beast to 3 or 4 acres.
909. I suppose you get about the same quantity of milk here as anywhere else? About the same.
910. Do you believe that Tathra and Merimbula are unsuitable ports? They are not ports at all—they are only open roadsteads. The only place that can be called a port is Eden.
911. You want to get to Eden? Yes.
912. You believe that if a railway is made there, the traffic of the district will go along it to Twofold Bay? I have not the slightest doubt of it.
913. You believe that Merimbula and Tathra will be practically abandoned? I have no doubt about it. Nineteen-twentieths of the produce will go to Eden.
914. For commercial reasons, because it would pay? Yes. It could be sent there much more cheaply, and would reach a better market.

Mr. Thomas Rawlinson, solicitor, Bega, sworn, and examined:—

915. *Chairman.*] You are a solicitor? Yes. Mr. T. Rawlinson.
916. You have been a resident of Bega for some time? For twenty-one years—from shortly after the time when I was admitted a solicitor. 24 Aug., 1892.
917. *Mr. Ewing.*] What do you want to give evidence with regard to specially? As to what, generally speaking, I consider to be the claims of this district to a railway. In the first place I contend that the importance of the district gives it a very strong claim. As the Committee are aware, between 1880 and 1884 a commission, consisting of Messrs. Rankin and Morris, was appointed for the purpose of inquiring into the working of the land law. Attached to their report was a map of Monaro which shows, as they say, the most *bona fide* selection for settlement in the Colony. The whole of this land will be benefited by the railway. They say that there is no district in the Colony which shows a greater amount of land selected *bona fide* than the district of Bega. They say that in an annexure to their report. This district is not like other districts where land has been purchased out-and-out from the Crown. The whole of the district has been selected, and, of course, it consequently pays a large amount of revenue annually to the Government. I was not present when the last witness gave his evidence, but we have ascertained that the interest from this district alone is something like £20,000 a year.
918. There is no reserved land of very much value left? There is some reserved land which is valuable. As an instance I can quote a place here a little while ago—that is, last year. There was a large area of land adjoining the town, and on the other side of the river, which was thrown open for selection last year as a special area. I think the limit was 135 acres, and the price was £5 an acre. Some of the blocks were balloted for by, I think, in the greater number of instances, as many as twenty persons.

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919. Is the land outside the population boundary? No, within the population boundary. It formed part of the temporary common.
920. Around Bega the common is sufficiently contracted—the Government could not well sell any more;—is that your opinion? Of course they could sell some, but not much. Nearly all the land is taken up.
921. Is there much Government land in the town of Bega proper? I do not think there is a foot. I know that the Government had to purchase the land on which this building stands. There is a reserve on the bank of the river.
922. But none available for sale? No.
923. What were the terms of this sale? Ten shillings an acre deposit.
924. For how many years? The original conditional purchase.
925. Immediately to the north and also to the south of Bega the land is alienated for settlement. I do not think there is any doubt as to the genuineness of the settlement. Then, further down, towards Pambula there is a considerable quantity of land open for selection and for sale;—if the railway were constructed would that land be taken up? I believe it would. The land all about Pambula contains very good timber.
926. Do you think a timber trade would be established? I am perfectly certain that there would be a large trade in timber to Eden. As a matter of fact, I know that large contracts have been let within the last few years for taking timber from the vicinity of Eden to Melbourne to be used in the works on the Yarra.
927. What sort of timber? Hardwood and box.
928. You think a good deal of timber country which cannot be touched at present would be developed by the railway? Yes.
929. You were going to make a statement? I should like first to contradict Captain Turner's statement. Of course I am labouring under a disadvantage. All we know of his evidence is what we read in the Sydney press, but according to the Sydney papers he said that the freight charged by his steamers was 15s. a ton. I have here the table of rates of freights issued by the Illawarra Company on the 1st January, 1891, and signed by Captain Turner himself. The only instance where they carry for 15s. a ton is when they have goods in quantity. Deadweight per ton is 15s. The farmers pay from £3 6s. 6d. to £4 a ton for their butter. I hand in a copy of the rates. Those rates are charged at the present time. It is a reduced scale of freight which was issued because some opposition was feared at the time. The people here were endeavouring to get another steamer, and the Illawarra Company endeavoured to meet them by reducing their freights. Butter is charged £3 6s. 6d. per ton or £4 4s. a ton on that tariff. Cheese is considerably over £2 a ton, and everything else is charged in the same proportion.
930. If Captain Turner said he carried a 50-lb. keg for 1s., that is a freight of about £2 a ton for butter, he is making a mistake? Yes. In some cases they are not very particular as to the weight. Perhaps they will charge at the rate for kegs over 80 lb. in weight when the quantity is under that, because they will not weigh it always. I have here an account dated 9th July, in which the freight on forty cheeses is put down at 10s. and on five kegs of butter at 13s. 6d.
931. *Chairman.*] The bill which you have is not from the Illawarra Steam Navigation Company—it is from a commission agent? I do not doubt the fact that the man to whom it was sent had to pay that amount. I cannot say whether the commission agents are swindlers or not.
932. *Mr. Ewing.*] You would find it out if they were? Yes. I do not think it would be to their interest to swindle the people for the sake of a few pounds.
933. *Chairman.*] But the account which you hold is not from the Illawarra Steam Navigation Company—it is from some third person? Well, I say that the shipper pays so-and-so, and as a proof that what I say is correct I produce this account. If the account is not correct, of course the commission agent has swindled his customer.
934. *Mr. Ewing.*] You think the freights are too high? Yes; any person at the present time can get freight carried from Eden to Sydney at a cheaper rate than from Tathra or Bermagui.
935. You believe that if the trade went to Eden there would be competition which would enable you to participate in lower freights? I am certain of it.
936. Why do you think the volume of trade will go to Eden and not to Tathra or Merimbula? I feel sure about it. I do not consider that it is a matter of doubt at all. I look upon it as a certainty that the farmers and dairying men in this district must necessarily find another market besides Sydney for their produce. They can produce more than they produce at present and they will produce more. The increase in population will require them to do more in the future than they have done in the past, unless they send their families away somewhere else. We find that it is necessary to get another market besides Sydney, and to do that we must discover some means of sending our stuff away as cheaply as possible. If it is sent from this district to Tathra and then to Sydney there is the double carriage and the expense in Sydney for storage, cartage, and so forth. I think we shall be able to prove, however, that if there were facilities, as there no doubt will be, for storing produce at Eden, it would go direct from Eden to England. This would improve the Sydney market by preventing a glut. I may state that I have to-day received information as to the number of stock in the Bega district returned and paid for.
937. *Chairman.*] Will you give us the boundaries of that district? It includes Eden on the south, the foot of the mountain on the west, and goes to Cobargo on the north. Bermagui is the northern boundary. It is estimated roughly that the total number of stock in that district is 72,000. When people are taxed they do not send in returns in excess of what they really own. I saw a return this morning for 250 head of cattle when I know very well that the party who owns those cattle could sell 200 fat bullocks to-day.
938. How many horses have you got in the district? Three thousand six hundred.
939. How many pigs? I have not got the figures.
940. How many sheep? A few; not many.
941. You look upon Twofold Bay as a great port, not only for the trade of this Colony, but also for intercolonial trade and for trade with the outside world? Yes.
942. You cannot get large steamers there until you have a volume of trade? No.
943. Where is the volume of trade to come from? From the whole district.
944. Do you think the Bega district alone, even if we go 15 or 20 miles north of Bega, will furnish sufficient trade to induce large boats to come to Twofold Bay;—as far as the Sydney trade is concerned, what would justify a large boat in coming to Twofold Bay? Let us take the butter industry. Other witnesses will go into the actual number of pounds which could be taken away. I merely wish to point out

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out that a very large quantity could be sent to Eden, and shipped from there either to Sydney or to other markets, presumably to England, when the output is very great. That is one of our products. It is also proposed, without any reference to the construction of the railway, to establish freezing works at Eden, and to take fat stock from the district and from Monaro. Our statistics show that we have not got a market for fat stock, and consequently the farmers here kill their calves rather than go to the expense of rearing them. It is estimated that fully 75 per cent. of the calves born here are killed; but if there was any encouragement to take them away they would be reared, and sent out of the district. Another industry that would be the source of very large traffic is fruit. This district is suitable for growing fruit of all kinds, except tropical fruit. Those who have visited our agricultural shows know that no better fruit is seen in the whole Colony than is exhibited here; but the experience of our people is that it does not pay to ship fruit to Sydney. A man who holds 120 acres near Bega, within 4 or 5 miles of the town, and who has reared a family upon his land, and has built a good homestead there—in short, a very well-to-do man—told me that he produced more than was required for the local supply. I said to him, "Why do you not ship the surplus to Sydney?" "Well," he said, "I did once, and this is my experience: The fruit cost me in freight and commission 2s. 6d. a case, and I only got a return of 4s. a case. I made another experiment by sending six cases to England under the same conditions, and I got a return of 17s. a case. I could produce a good deal if I could send it away."

945. What kind of fruit was he referring to? Apples, pears, and fruit of that kind. Since then his son has gone into business on his own account, and is getting a good living for himself and his family on 24 or 25 acres of not particularly good ground. Another brother also gets his living by fruit-growing. This district is in every way most suitable for fruit. Another thing that I think could be grown here is potatoes, together with hay and crops of that kind. Those things could be and would be grown here in large quantities, if they could be sent away; but at present it would cost a man about £2 a ton to land potatoes in Sydney.

946. The reason why you would abandon a small port for a large port, or a small boat for a large boat is because of the increased volume of trade? That is one reason.

947. That brings with it the advantages which you have pointed out—cheap freights, and so on;—do you think there is any reason to suppose that Eden will be the depôt for a sufficient quantity of wool, butter, &c., to justify a larger boat coming there? I do.

948. When? As soon as ever the railway was completed, I believe there would be sufficient trade.

949. Looking fairly at it? I do look at it fairly. As soon as ever the railway was determined upon the people of this district would go in for increasing their productions.

950. A railway from Twofold Bay to Bega could only incidentally affect a railway connection with Bombala; you tell us that the wool and mutton are to come by this line to Eden;—why are not the freezing works being erected irrespective of the railway? The project is being carried out entirely irrespective of the railway.

951. Do you know that for a fact? Yes; I believe it is an assured success. A meeting was to have been held this afternoon to deal with the matter.

952. The project is to freeze sheep when they are brought from the Monaro table-land? Yes, and to ship them to England. I also wish to draw the attention of the Committee to the timber trade. I am given to understand that a large quantity of timber was taken to Eden last year, in order to be shipped to Melbourne. That was during the last nine months.

953. Which way? It went from this side of Eden, near Pambula.

954. *Mr. Suttor.*] Do you think that it is at all likely that cattle would use the line from Bega to Eden? Fat cattle?

955. Yes? I believe so.

956. Would not the owners rather drive them than risk the knocking about in the trucks? I have no experience in the matter, but I think they would go by rail, because the owners would be able to send them down to meet the boat more quickly. They might, of course, prefer to drive them overland; but I fancy that very often it would be preferable to truck them. Of course, it must be remembered that the road between Pambula and Eden is one of the worst roads in the district. You cannot get a drink of water for miles and miles often, and when you get to Eden you are just as badly off. It would be to their advantage to send cattle by rail; and I believe that they would be sent from this end in small quantities.

957. Where is the fruit grown? North of Bega.

958. How far out? About 4 miles.

959. Is very much fruit grown in the district? No; in the cases to which I referred, the people were getting a living by it solely.

960. The large land-owners do not grow much? No, they are very dilatory. A great number of them do not produce their own vegetables.

961. *Chairman.*] Is there anything else you would like to state? No, I think not, except about the estimated loss on the line. When Mr. Crawford was down here he went very carefully into that matter, and I think, from knowledge which I have gained from various sources, and from my own personal observation, that his estimate is a very fair and a very reasonable one. It would not bear out the loss on the line estimated by the Commissioners.

962. But if the Commissioners have based their estimate of the traffic on Mr. Crawford's report, aided by their own observation, do you not think that it should be pretty correct? I think the least said about their personal inspection the better. I do not think they based their estimate on Mr. Crawford's report. His estimate of the traffic is considerably in excess of the amount put down by them, and his estimated expenditure is considerably less. He estimates the expenditure on the line at £5,005. The Commissioners' inspection was a very trifling affair; in fact it was a perfect farce. They saw nothing of the district.

963. You would not have them go into every farm house;—if men go through a place with their eyes open they can form a good estimate? No; they could not, because they went through a part of the country where they gained no information. If you came to Bega from Eden by the main road and went out by another main road, I do not think you would see much of the district.

964. If a subordinate officer had preceded them and had gone into the out of the way places to which you refer, should they not be in a fairly good position to estimate the traffic? Yes; but they did not base it upon their own observations.

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965. *Mr. McCourt.*] When did the agitation for this railway commence—in 1881? About twelve years ago.
966. The people then presented a memorial to the Government? Yes.
967. Were you secretary to the Railway League then? No.
968. Do you know anything of the statements made in that memorial? Only from what I have seen since. I do not remember it.
969. You have read it since? Yes.
970. Have you read the synopsis of returns? Yes, but I do not know how those were arrived at. I have never attempted to verify them.
971. You do not know if they are correct? I do not know, as a matter of fact, if I have read them.
972. The total traffic is there estimated at £26,000 per annum? Yes; but I do not know that those figures are by any means right. For instance, they put down hay, straw, timber, fruits, &c., at £500. I do not think that that is anything like what it would be.
973. It would be more than that? Yes.
974. Is there anything else wrong that you would like to point out? I think the production of corn is under-estimated.
975. It is estimated at £900? No; I am referring to the item, "500 tons corn, Bega to port at 5s., £125." I also think that the item, "Corn, flour, potatoes, bran, pollard, and cereals between Bega and Bombala and Bombala and Candelo, £900," is under-estimated.
976. Do you think there is anything over-estimated. Is the 10,000 tons of mixed freight over-estimated? I do not know, I do not think it is. I consider that it is under-estimated.
977. Are the 10,000 pigs under-estimated? There are not so many pigs as that going away live now.
978. That is over-estimated? In that way it would be; but on the other hand, a great many would be sent as bacon. I do not think that there would be 10,000 pigs, though there might be.
979. Then they have 1,000 tons of bacon. Would that quantity be increased? That would be increased.
980. There are also 2,000 tons of dairy produce—is that a fair estimate? That is an under-estimate.
981. How much would you estimate? It is very hard to say.
982. But taking the whole estimate of £26,000? You see the mixed freight is put down at a mean rate of 18s. 10d. a ton. That is a great deal more than would be charged.
983. Taking the Commissioners' estimate of £11,000 and the 1881 estimate of £26,000, which do you think is correct? The 1881 estimate was based on figures amounting to twice as much as the figures on which the Commissioners based their estimate. I presume that the freight charged would be less than half of 18s. 10d. a ton.
984. I want to get at your estimate of the revenue that the railway would derive? Roughly, from what I have been told, I should say that it would be about £15,000.
985. You think that that would be a fair thing? Yes, not speaking of the increase that would be brought about by the construction of the line. I consider that the increase of production would at the very least be fourfold.
986. Do you think that the line would pay interest and working expenses within seven or ten years from the time of its construction? I do.

Mr. William W. Wren, general manager of the Kameruka Estate, sworn, and examined:—

Mr. W. W. Wren. 24 Aug., 1892.

987. *Chairman.*] You are general manager of the Kameruka Estate? I am.
988. How many acres are there in the estate? About 18,000.
989. Is it all freehold? All but a small portion.
990. What is the estate used for? Principally for dairying.
991. And for fattening stock? Yes; and there is also some cultivation.
992. What do you estimate your production at per annum? Can you give us the figures for last year? Do you mean the number of tons of stuff for marketing?
993. Yes? Upwards of 140 tons of cheese, and 40 tons of butter.
994. Where is your market? Sydney; though some of that went to Melbourne.
995. From what port was it sent to Sydney? I usually send from both Merimbula and Tathra. The estate is so situated that Tathra is nearer to some parts of it, and Merimbula to other parts of it. We have three separate factories.
996. Is your production increasing in volume each year? Yes; we are increasing the number of stock.
997. How does last year's production compare with that of previous years? It is very much greater, and as far as this year has gone there is a still further increase.
998. Has it increased 10 per cent.? In the early months of this year we had a peculiarly good season, so that the increase was more than 10 per cent.
999. Is your production likely to go on increasing? Yes; with good seasons, because I am increasing the number of my stock.
1000. But sooner or later you will reach the limit? Yes.
1001. That is a long way off? Yes. Not more than one-third of the land has been devoted to dairying. That is our most profitable industry.
1002. May we take it that for some years to come there will be a 10 per cent. increase? I hope so. That is my opinion.
1003. It might go at least ten or twelve years? Until the other two-thirds of the estate are brought into use.
1004. How long will that take? It depends upon the amount of capital set apart for the purpose.
1005. What other industries do you pursue? We fatten stock, sheep, and lambs.
1006. Where do you find a market for the sheep? Recently in Sydney, and I also sold a few in Hobart. Nearly all the cattle go to Hobart.
1007. How many have you been sending to market? I have not fattened sheep before this year—about 2,000 head.
1008. What port did you ship them from? The sheep from Tathra, principally. I send one or two shipments to Hobart.
1009. How many fat cattle did you send away last year? About 500.
1010. From Eden? Yes, to Hobart.
1011. Is that trade increasing? No; I think not.

Mr. W. W. Wren. 24 Aug., 1892.

1012. You are not likely to increase your production? No; we have not been increasing the number of our cattle, because we are going in more for dairying.
1013. Is there likely to be a decrease in the number of your cattle? No; I shall not decrease the cattle to less than about 500 fats.
1014. The number will be about stationary? Yes. I have no intention of increasing them, though I could do so.
1015. You drive your sheep to Tathra or Merimbula? Yes.
1016. What would be the nearest point at which you would tap the railway? I think Wolumla.
1017. Would you, if the line were constructed, send the whole of your produce to Eden by it? If the expense warranted it, and I should expect it would.
1018. What does it cost at present to send butter and cheese from your estate to Merimbula or Tathra? About 30s. a ton—1s. 6d. a cwt.
1019. Do you employ outside carriers? No; but that is the price charged by outside carriers. I use my own teams, and it costs me about the same. We estimate the cost at 30s. a ton.
1020. How far would you be from Wolumla? The outside factory is about 26 miles from Merimbula, and we are about the same distance from Tathra. Wolumla, I suppose, would be about 10 miles nearer.
1021. Would it be worth while, when you had your loading on, to take it off at Wolumla? If the steamer accommodation were more reasonable, certainly.
1022. If you had larger steamers and lower freights from Eden, you would use the railway, always supposing that it would not cost you more than to go *via* Tathra? Yes.
1023. You have not gone into the matter at all? No; but I believe the cost would be less.
1024. Do you know the present freight from Eden to Sydney? The Illawarra boats take most of it.
1025. You have not used any of the other boats? I have not been sending by the other boats.
1026. Supposing it cost you 6s. a ton by railway from Wolumla to Eden, would you use the railway? I should expect to get my produce carried for very much less from a port like Eden than we have to pay under the present monopoly.
1027. Is it not a fact that the Illawarra Company now charge more from Eden than the Union Company do? I do not know, but the Eden people get their stuff carried more cheaply than we do, though it has to go a longer distance.
1028. If you were charged 6s. a ton from Wolumla to Eden, for ordinary produce, would that allow you to avail yourselves of the railway, or would you continue to go to Merimbula and Tathra? I should send my produce to Eden, knowing that it would be landed in Sydney at a more reasonable rate.
1029. What would it cost to get to Wolumla with teams? The other two factories are much nearer Wolumla. I should use a lighter trap than I use now, and send more frequently.
1030. If you were not charged more than 6s. a ton from Wolumla to Eden, all your produce would go that way? I think so.
1031. Have you ever suffered any inconvenience through your produce being left at Tathra or Merimbula, because the steamer was not able to call there? Only last week I had my butter left, and that will probably depreciate it several pence in the pound.
1032. Have you ever heard of vessels being prevented from calling at Eden? No.
1033. Therefore your produce would not run the risk of being depreciated if it went there? If it were not too rough to go to sea, I think they would take produce from there at any time.
1034. Do you know anything about the production of other portions of the district? A little, but I am not so well acquainted with it as with the production of the country which I occupy.
1035. Do you think that other people who are now going in for dairying would increase their production if the railway were constructed? I know that the possibilities of the district are very great. I could not venture an opinion as to whether people would be willing to avail themselves of the benefit of the railway.
1036. Do you think the district is working up to half its capability? I do not think so, as far as agriculture is concerned. I do not think we are doing one-tenth of what we could do within a very short time.
1037. If you went in for agriculture would not that diminish the dairying? The bulky nature of agricultural produce would tell very much on the railway revenue. We cannot make so much per acre with dairy produce as agricultural produce, supposing the latter is carried at a reasonable rate.
1038. Is it not a fact that a great deal of land in this district has only a very thin coating of soil—that it is chiefly decomposed granite underneath, so that much cultivation would exhaust it? I have a paddock off which they have been cutting hay for 20 years. It is of course pretty well farmed, and has a little manure given to it.
1039. Do you think the farmers outside your estate are as careful as you are in feeding the soil? Some of them are—some farm better than I do.
1040. Is the paddock you speak of on the hill side? Yes, it is very light soil, not more than 3 or 4 inches thick, and rests on decomposed granite. We do not look upon that as bad soil, as it is very rich in mineral constituents.
1041. And you think that if reasonably fed it will last for a considerable time? Yes.
1042. If there were a large increase in agricultural produce what would you estimate that in three or four years' time? I think it would increase ten-fold easily. I know that I could increase my own production thirty-fold, if necessary.
1043. Do you send much bacon away? Not a great deal. I sell fat pigs to the local bacon curers.
1044. Have you heard anything of the project to establish meat-freezing works at Eden? Yes.
1045. Do you think it is likely to be successful? I think so, and I think that if it were to fail we would shortly have others. I received a telegram from the D'Arcy Company, offering to erect works there if the local people would subscribe 5,000 shares.
1046. How long is it since the present proposal originated? I think it has been working for the last six months. I think that if Mr. Scott fails a large company will establish works there.
1047. What number of fat cattle are grown here? I think they would depend at present more on fat sheep. All our land would fatten sheep very quickly. A great many would buy sheep on Monaro to fatten.
1048. You have told us that you are not increasing the number of fat stock, and that you are going into dairy produce. Does it not pay you better than fattening stock? There are always certain portions of an estate which are unsuitable for dairying, and they could be utilised for fattening lambs and other stock.

Mr. W. W. Wren. 24 Aug., 1892.

1049. The great breeding ground would be Monaro? That would be the source of our supply.
1050. You will not be able to produce sufficient to load a ship with mutton? Not without the assistance of Monaro.
1051. How would it go from there—would it be driven? Either that, or if the line were continued from Cooma, it might be sent in refrigerating cars.
1052. Perhaps they would not avail themselves of the Bega line at all. The Cooma line might go direct to Eden. Suppose the Bega to Eden railway were constructed, do you think people would drive their stock from Monaro Plains to Wolumla, and there truck them to Eden? I do not think so.
1053. They would go down by the Big Jack route? Yes.
1054. Therefore, unless there is railway connection with the table-land, this railway will get no Monaro traffic? I do not think it would get the live stock. It might get heavy traffic, because the road between Wolumla and Eden is so bad.
1055. Is it likely that after travelling 200 miles they would avail themselves of the railway for 20 odd miles? I do not think the carriers would take it. They go to Merimbula now, and if they could get direct shipment to Eden it would pay them better.
1056. We have heard that all the machinery for the big mines on Monaro has been landed at Eden, and that the carriers are beginning to like the road? I do not know that. Perhaps they take their own hay. I know that when we have taken cattle to Eden, and the vessel did not turn up, we have had to bring them back again because the country was so poor.
1057. That point will have to be taken into consideration in establishing freezing works? The cattle would be slaughtered as soon as they arrived.
1058. You know that the Commissioners estimate a loss of £19,000 per annum on this line. Have you given any thought as to whether that is an under-estimate or an over-estimate? I really have no knowledge on the subject, so I cannot say.
1059. As a colonist, I suppose you would hardly feel justified in recommending a line which would lose £19,000 per annum unless the loss were likely to be made up almost in the immediate future? I do not think there is likely to be a permanent loss.
1060. How long do you think it would be before the increased production of the district would overcome that loss? I only know that six or seven years is about the time that most of the railways take to pay. I do not think we should exceed that.
1061. You think that irrespective of any Monaro connection the line would pay in that time? I have no idea of the expense of running a detached line. I think it would be a mistake.
1062. But if the line is to be connected with the Monaro line it will mean a probable expenditure of £2,000,000? Is the estimated loss of £19,000 on the Bega to Eden line alone.
1063. Yes? What is the supposed loss on the other line?
1064. No estimate has been made. You think that irrespective of the Monaro connection, the Bega to Eden railway would pay for itself within nine years? I think so.
1065. *Mr. Sutton.*] Would you be likely to truck your cattle from Wolumla to Eden? I do not think so. We generally know the time at which a steamer will arrive, and I think cattle would suffer more by trucking than if we continued to drive them.
1066. You would send your own produce? All the dead weight would go by the train for the sake of getting a port.
1067. *Mr. McCourt.*] Are you in favour of the betterment principle being applied to this line? I should not object to its being applied all over the country. I should object to its being applied to this railway alone.
1068. You think the people of the district would still be in favour of the railway? Yes; I do. How would you arrive at the basis of taxation?
1069. All the land in the district benefited by the railway might have to pay half the cost of the construction of the line? There would be a dispute as to the area benefited.
1070. Would the construction of this railway increase the value of your holding? If my returns for the year showed better it certainly would, but only to the amount of the saving on market expenses.
1071. Supposing it increased the value of your land by £1 an acre? I cannot see how it would do that.
1072. Supposing it did, would you be willing to contribute half that increase towards the cost of construction? I do not happen to own the estate, but if it were my own estate I should.
1073. You think that that principle should be applied throughout the Colony? I do not think that the people would submit to it, though I do not object to it.
1074. You do not think they would want a railway if that principle were applied to it? I think that they would have the railway just the same. They would look upon it as their own money, and if there were any loss they would sooner pay it through the ordinary taxation than allow a few individuals to contribute to what would be a national benefit.
1075. But suppose the betterment principle were applied throughout the Colony? I do not think it would be a bad thing. I think it would stop a great many lines that ought not to be made.
1076. You think that if the principle were applied in this case the people of Bega would be in favour of the line? I could not speak for them—I speak for myself.
1077. *Chairman.*] Have you anything else to say that you have not touched upon? I have not.

Mr. Andrew Smith, farmer, Numbugga, sworn, and examined:—

Mr. A. Smith. 24 Aug., 1892.

1078. *Chairman.*] What are you? I am a farmer.
1079. Residing near Bega? Within about 8 miles of Bega. I reside at Numbugga.
1080. In which direction does Numbugga lie? Due west from here. It is a locality in which there are a good number of farms.
1081. On the Nimitybelle Road? Yes.
1082. *Mr. Sutton.*] What is the size of your holding? I am working 500 acres.
1083. What do you use the land for? Dairying purposes at present.
1084. How much butter and cheese do you make? I must speak approximately. I should say from 10 to 25 tons annually.
1085. Of both? Of cheese and butter.
1086. How many cows do you milk? I work from about 100 cows.

1087.

Mr. A. Smith. 24 Aug., 1892.

1087. What do you do with your produce? Send it to the Sydney market generally. I may sell a hundredweight or so in the local market.
1088. Where do you ship it from? Tathra.
1089. How much is charged per ton? From £2 to £3 5s. per ton for butter, and 25s. a ton for cheese. I am speaking of the net weight of butter. If I sent a hundredweight of butter to Sydney, the kegs containing it would weigh one-third more. I pay sufficient freight to fetch the empty kegs back. That means double freight.
1090. Do they not send back your empties free of charge? No. We pay sufficient in the first freight to cover the return of the empties.
1091. Do you use your land for anything else? Not at present.
1092. You do not cultivate any of it? It would be useless to cultivate at present.
1093. I understand that you can give some evidence with reference to the number of calves killed. Why are the calves killed. Simply to get rid of them? Yes, to get rid of them, because at present they are an encumbrance. We have no market to which to send them.
1094. You do not fatten calves for Sydney? We could not do it. The carriage to market is not quick enough under the present circumstances.
1095. You kill the calves and keep the cows to make butter and cheese? Yes. In place of the calves we rear a large number of pigs.
1096. What do you feed the pigs on? On the skimmed milk or whey. As far as I am concerned, that is about all I feed on. I do not fatten my pigs. I sell them as store pigs generally.
1097. What do you do with the calves when they are killed? We give them to the pigs.
1098. *Mr. McCourt.*] How much does it cost you per ton to get from your place to Tathra wharf? When I paid for the carriage of the kegs that you saw on the account produced, I was charged 2s. 6d. each, and for cheese 4d. each—about £2 5s. a ton for butter, and about 30s. a ton for cheese.
1099. Suppose you had to deliver it at the railway station at Bega, what would it cost you? That would fetch the railway very convenient to us.
1100. How much would you save? I should save immensely.
1101. Would it not cost you just the same? No. I come through Bega in delivering my produce at Tathra, and it would save me 12 miles. The difference in cost would be immense.
1102. How much per ton would you save? About two-thirds. I would get my carrying done for one-third of what I am paying now.
1103. Would you save £1 a ton? Fully.
1104. And you would probably pay less from Eden to Sydney than you pay from Tathra to Sydney? I am very sure we should.
1105. Do you know the number of dairy cows in the district? We have no figures that we could quote that would be anywhere near the mark. The figures supplied to the police and to the local stock board are not reliable.
1106. Would it be 30,000? I think fully that.
1107. What percentage of calves are now killed in the district? I could not swear to it, but taking my own farm into consideration, I should think about 60 per cent.
1108. If the railway were constructed they would be sent to Sydney? They would not be killed, but would be sent to Sydney.
1109. Do you know the line of route of this railway? I think I have a pretty good knowledge of it.
1110. Do you think it is clearly the best that could be obtained:—does it fairly serve the farming population? I think it would. I do not think any route could be chosen which would serve the farmers better.
1111. *Mr. Ewing.*] Are the pigs a great source of revenue? Yes.
1112. Could you tell us how much you make out of them a year? Last year when the calves were a little better in price, what few I did rear, together with the pigs, realised about £120.
1113. You think that off your 500 acres you could clear £600 a year? Yes.
1114. Do you think that an ordinary farmer could do that here? Do you mean that as the net return?
1115. The total amount? Yes.
1116. Any farmer with 500 acres of ordinary land could gross £600? Yes; I could show you figures for it. I think my own returns this year are £620 or £630.
1117. What would your expenses be out of that? Including rent?
1118. Let that stand out? Am I to count the labour of my own family?
1119. What do you consider that you have left for yourself? About £300.
1120. Approximately, half of it is profit and rent? Yes.
1121. *Chairman.*] Is there anything else you would like to say? Yes. I should like to state that I have travelled over a good deal of New South Wales. I have been dairy-farming and following agriculture for about twenty-four years, and I think that, as a hay-producing district, Bega has no superior in New South Wales.
1122. Where would you find a market for your hay? I presume that if we had a railway we should find it at Sydney. I should get very fair returns from £4 a ton.
1123. It would cost you 10s. a ton to bring it into Bega? Hay is different from dairy produce.
1124. How much would hay cost to get it into Bega? Seven shillings and sixpence.
1125. Have you any idea what the railway carriage would be? From 8s. to 10s.
1126. You could suffer that? Yes.
1127. And the freight to Sydney? That would probably be 10s. more.
1128. What are you paying now? That is considerably under it.
1129. You are reasoning on the supposition that the rates will come down? Yes; because we should have a port to which large vessels could come, and there would be competition.
1130. Large vessels would not come unless there was enough trade to make it worth their while. Do you think the trade would be sufficient to entice them to Eden? I think it would.
1131. You would be prepared to pay 10s. a ton for your hay on the line between Bega and Eden? I should be prepared to pay 10s.
1132. You think that if you paid that amount on the railway you would still be able to compete in the Sydney market with those who are nearer at present? Yes.

Mr. A. Smith. 24 Aug, 1892.

1133. That is so far as hay is concerned. Could you compete with anything else? I know that there are, roughly, 30,000 acres of land, some of which is capable of producing any sort of agricultural produce, and could be worked with great profit by combining dairying with agriculture, which does not pay at present.*

1134. All your energies are devoted to dairying, while the best results would be got by the combination of dairying with agriculture? Yes.

1135. The reason why agriculture is not gone into at present. is the difficulty of getting produce away? Yes. The Illawarra Steam Navigation Company never kept faith with the people.

1136. What other agricultural produce is there which you think if you had the railway you would go in for. You cannot grow wheat here? Yes; I think that there is a man in this room who can state that he grew very good wheat this year.

1137. Is there no rust down here? I think wheat is now grown in the district clear of rust.

1138. Have you grown any? No; but I have seen it grown as an experiment.

1139. Experiments sometimes are successful when a real venture is not? On the whole, I think it would grow well on the hills. I think on the flats it would still be attacked by rust.

1140. Would wheat bear 10s. a ton freight between Bega and Eden? Yes; I think it would.

1141. What other industry do you think could be gone into successfully if you had the railway? I might state broadly that various agricultural products could be raised; for instance, corn, potatoes, beans, peas, and anything like that. The district is capable of producing any agricultural products that the climate will suit.

1142. Supposing the contract for the railway were let to-morrow, what would you commence to do with your land which is now wholly given up to dairying. How much would you put down in hay; how much in wheat, and so on? I should commence hay growing. Of course, I should not go in heavily for it at first.

1143. How much would you be prepared to risk? It would be no trouble to me to grow 10 acres as an experiment.

1144. How much would that produce? About 25 tons with a successful season.

1145. What else would you put in;—how much wheat? I should leave that to somebody else.

1146. What else would you put in? I should try oats as an experiment. I think oats could be successfully and profitably grown in this district.

1147. How many acres of oats would you put in? I should certainly try oats as an experiment, but probably not more than an acre or two.

1148. How much would you get from that? That is a difficult question to answer. I have seen as much as 50 bushels to the acre—not in this district, though I think this district is capable of yielding as much as any other. I have seen crops as low as 20 bushels to the acre. The average would be between 20 and 50 bushels.

1149. At the end of the year, supposing the railway could then be ready for your use, what tonnage would you have for it? Well, I have from 20 to 25 tons now, and I daresay by that time I could send from 50 to 60 tons.

1150. You, at all events, would more than double your present output? Yes.

1151. And would you, upon all those products, be able to pay 10s. a ton for carriage? Yes.

1152. So that you would contribute to the railway £30 per annum at the end of the first twelve months? Yes.

1153. How many men are there in the district, who would be served by the railway, in a similar position to your own? I presume there are at least 1,000, and *bona fide* selectors, too. But that is a mere guess.

1154. If you are right, £30,000 would come to the railway right off? I think the district is capable of sending 5 tons, where it only sends 1 now.

1155. If the Commissioners have estimated a return of £7,000 from goods and live stock, they are a long way out? They would be a long way out.

1156. Instead of having a loss upon the railway, it would pay its expenses at the least? Yes. It is stated broadly that at least 3,500,000 lb. of butter goes from this district. I suppose the Commissioners did not take that into consideration.

1157. Do you wish to correct your statement that there are 1,000 men in the district who would use this railway, and who would be in the same position as yourself; if your statement is correct every difficulty is cleared away? Well, I have not taken the census, but I do not think I am far out. I have been given to understand that there are about 1,800 land-owners in the district, so that I cannot be far out.

1158. What do you understand by the district;—how far north does it go from here? I am speaking of the land district, which would extend to Cobargo, and I am speaking of the probable number of people who would use the railway.

1159. You think your estimate is not very far out? I think it is not.

1160. Is it a fact that the people of the Bega district are pretty shrewd, and at the same time speculative; would they, like yourself, test the market with different products if the railway were constructed? I think so. You have only to look round the district to see what they have done in fifteen years. If you did so you would come to the conclusion that they were shrewd enough, and had energy enough to advance themselves.

1161. In what other parts of the Colony were you engaged in farming pursuits? In the Goulburn district.

1162. How does this district compare with it? There is no comparison whatever.

1163. For or against Goulburn? In favour of the Bega district.

1164. Your only difficulty is your distance from a market? That is the main thing.

1165. Have you anything else that you would like to state? I cannot remember anything.

Mr. William Hanscombe, farmer, Numbugga, sworn, and examined:—

Mr. W. Hanscombe. 24 Aug., 1892.

1166. *Chairman.*] What is your occupation? I am a farmer.

1167. Where do you reside? At Numbugga, about 8 miles from here.

1168. What is the extent of your holding? One thousand two hundred and eighty acres.

1169. *Mr. McCourt.*] What do you produce? At present cheese and butter.

1170. How many tons a year do you send away? About 50 altogether.

1171. If the railway were constructed would you use it from Bega? Yes.

1172. Instead of sending to Tathra? Yes.

1173.

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* NOTE (*on revision*):—In my answer to this question I referred to the land around Numbugga, and did not include any of the land extending from the southern bank of the Bega River. The land on the southern side of that river would be superior for cultivation.

Mr. W. Hanscombe. 24 Aug., 1892.

1173. Would not that entail extra handling? It would; but I could produce a great many more things besides cheese and butter, which do not pay me now.
1174. But it is objectionable to have extra handling with butter? I do not think it is with butter.
1175. What extra produce could you send? Hay, for one thing.
1176. You think you could get a profitable market for it? In Sydney or elsewhere.
1177. What would you get hay sent to Tathra now for from your place? I suppose about 25s. a ton. I have paid from £2 a ton to Tathra; but I reckon about 25s. or 30s. a ton.
1178. That would be the carriage of hay now? Yes.
1179. What would be the carriage to Bega? I suppose about 10s. I could drive in and out in a day. Ten shillings is the very utmost. I do not know if it would be that.
1180. Could you pay 10s. for carriage to Eden? Yes.
1181. What would be the carriage to Sydney? I do not know. I expect it would be less from Eden than it is at present from Tathra. I have never sent hay to Sydney.
1182. Would the freight come down to 15s. a ton? I think it might.
1183. Then it would cost you 35s. a ton to get to Sydney? Yes.
1184. What would it cost you to grow an acre of hay? The ploughing and sowing would come to about 13s., the seed would cost about 8s., and mowing by machinery would cost about 5s.
1185. Would there be any other expenses? I could not exactly say what the pressing would be.
1186. It would be something? It would be something.
1187. Five shillings a ton? I think more—not much more.
1188. What would be the commission on the sale and so on? Hay mostly runs from £3 15s to £5 5s. in Sydney.
1189. The commission would be 5s. a ton? About that.
1190. You think with those charges you could compete with the other parts of the Colony that are growing hay? I think so at £4. I did not reckon it up myself, but I think that that is what it would be. We should grow from 2½ tons to 3 tons an acre. I have grown over that.
1191. Is there any other produce you could profitably grow? Yes, very fair wheat, and rye and corn. I have 10 or 12 acres of corn, with an average yield of 60 bushels an acre.
1192. Is there anything else? I have not grown potatoes. The price always kept me away from the Sydney market.
1193. How many tons did you get per acre? Really I could not say.
1194. From 4 to 5 tons would be a fair average? I suppose it would.
1195. I suppose that if you had the convenience of a railway you would go more often to Sydney? I suppose one would if he could go comfortably.
1196. *Mr. Ewing.*] You say you produce about 50 tons? Yes.
1197. If the railway were made, and you had a proper port, would you ship more? I should have 50 tons more of hay. I have grown hay, but have had it wasted because of the difficulty of getting to market.
1198. Is the soil good for the production of hay, maize, and potatoes? Yes.
1199. Do you think other people would do the same as you are doing? I think pretty nearly 30,000 acres would produce as much as I produce. It is the same class of land as mine.
1200. Is there anything else which you would like to state? No, I think not.
1201. I suppose you are perfectly sure that you would be able to afford 10s. a ton for carriage on the railway from Bega to Eden? Yes, I think we could pay that, and get to market more cheaply than at present.
1202. If 10s. a ton was more than is being paid on the other railway lines, you would not grumble? Not unless the Government charge as the company is charging, more than the stuff is worth.
1203. Suppose the rates on the main line were 7s. 6d. a ton, and to give you railway communication it would be necessary to go to considerable expense, and to charge 10s. a ton on your particular line, would you be prepared to pay that freight without grumbling? I do not say that I should. So long as a man gets his produce to market he ought not to grumble.
1204. Supposing the railway cannot be constructed unless the people of the district agree to adopt the betterment principle, would they be in favour of it. Do you think it is a correct principle to act upon when making a railway—that is to force the owners of land, within a certain distance of a railway, which would be benefited by it, to contribute something towards its cost? For myself, I should. I would not go beyond that.
1205. If your land were increased in value £2 an acre, would you be prepared to pay £1 an acre to the Crown? Certainly.
1206. You think that if there was a proved increase of value to that amount it would only be fair that you should contribute £1 per acre? Yes.
1207. As long as all railways in the future were to be constructed on the same principle? Yes, but that is only my opinion. Of course, if you increased the value of my land by £2 an acre, I could afford to pay £1 an acre.
1208. You do not know what the feeling of the people about here is on the point? No; I cannot say what it is. They all seem anxious for a railway.
1209. They are all fairly level-headed men, and men with some conscience, like yourself. Do you think there would be much difficulty in getting them to agree to it? I should not like to say.

Mr. John Britten, farmer and grazier, Numbugga, sworn, and examined:—

Mr. J. Britten. 24 Aug., 1892.

1210. *Chairman.*] What is your occupation? I am a farmer and grazier.
1211. Whereabouts is your holding? At Numbugga.
1212. *Mr. Ewing.*] What area have you? Between 700 and 800 acres.
1213. You use part of it for pastoral purposes, and part for dairying? Some of the land I lease; the rest of it I work myself.
1214. What do you produce yourself? I fatten and deal generally. I buy and sell cattle.
1215. What do you do with your fat stock?—sell them locally? Yes.
1216. You have not exported any? No.
1217. What effect would your operations have on the railway—how would you furnish any traffic for it? We should go in more for farming if we had a railway.

1218.

Mr. J. Britten. 24 Aug., 1892.

1218. Your present operations, however, would not furnish a great amount of freight? No. I wish to contradict Captain Turner's statement, that the farms here are fully worked.
1219. Is there a possibility of largely extending the productiveness of the district—could a great deal more be grown than is grown at present? It could.
1220. You believe that if you had better communication more would be grown? Yes.
1221. At present you go to Tathra? Yes.
1222. You believe that you would cease to do so if you had a railway to Eden, and got better boats to Sydney? Yes; we have, I believe, the best land in Australia for the area. We have a good climate, and we can grow anything that is put in. I think that if we had a railway we could go in for agriculture.
1223. You would not use the railway to Eden if it were cheaper to go to Tathra by road? Yes.
1224. Why? It would take us to a better port—a port from which we should be sure to get our produce away.
1225. You think the certainty of communication is worth paying a little extra for? Yes; and in my opinion the railway would be cheaper.
1226. But if it were not it would be better? Yes.
1227. *Chairman.*] Is there anything else you would like to state? I should like to contradict Captain Turner's statement, that our produce is carried by the company for 15s. a ton. We are paying from £3 10s. to £4 a ton.
1228. *Mr. Ewing,*] You are working under the tariff sheet which has been handed in to us? Yes.
1229. It is dated 1st January, 1891. Are you working under it now? Yes.
1230. It is really the basis of your relations with the company? Yes.
1231. You think, of course, that that is too much? I do; I do not think they are paying such a freight in any other part of the world.
1232. You believe that a good boat trading from Eden would take it much more cheaply? Yes. They carry potatoes from Warrnambool for 7s. or 8s., and we have to pay £3 or £4 to get to Sydney.
1233. But there must be enough to load a boat before you can get a cheap freight? Yes; but they have to leave the loading behind now sometimes. It is only the freights that keep the country back. The people are making up cheese and bacon so as to be able to use these boats. If freights were cheaper they would go in for agriculture.
1234. You believe the railway would enormously increase the production of the district? Yes; and I believe it would pay as well as any railway in the Colony.
1235. *Mr. McCourt.*] What applies to the goods traffic would apply also to the passenger traffic. Would you get to Sydney for half the present rates? Yes.
1236. What are the present rates? Thirty shillings, single fare.
1237. If the railway were constructed, do you think that the steamer competition would reduce the fare by one half? Yes, it would.
1238. I suppose if the rates were reduced one half the people would travel more often than they do now? Yes; if there were a better class of boats they would. Many people are afraid of these boats.

Mr. George Ernest Ward, dairy farmer and grazier, Bembooka, sworn, and examined:—

Mr. G. E. Ward. 24 Aug., 1892.

1239. *Chairman.*] What are you? A dairy farmer and grazier.
1240. Where do you reside? At Bembooka.
1241. What is the extent of your holding? One thousand acres.
1242. Is it freehold? A portion of it is.
1243. How much? One hundred and thirty acres.
1244. Is the rest under lease? Under conditional lease.
1245. What stock have you now? I have about 200 head.
1246. All milking? I have about 100 milking.
1247. What is your production of butter per year, or per month? I have not reckoned it up. I can give you an idea as to its value. My butter and cheese return about £700 a year. I do not work the place myself. I have a family working it.
1248. £700 is the gross return? Yes.
1249. What do you think it costs you, may I ask, to get that return? About £270.
1250. More than half is profit then? Yes.
1251. You are producing somewhere about the same quantity as Mr. Smith? My farm would be somewhat similar to his.
1252. If he produced about 25 tons per annum you would produce about the same? Yes. Of course there is a great deal of difference sometimes—one man often produces more than another.
1253. Are you producing more than he produces? I think I could produce a great deal more than I do.
1254. Where do you send your stuff to? Tathra.
1255. Do you cart it yourself? Yes.
1256. If the railway were constructed do you think you could pay 10s. a ton for the conveyance of produce from Bega to Eden? Yes; I could very well afford to pay 10s. a ton from my place to Eden.
1257. Does it make much difference, once a dray is loaded, whether it has to go 10 miles further or not. Would it not suit you to go on to Tathra? It would not, for many reasons. My produce may lie there perhaps week after week and be destroyed, besides there is no feed for the cattle.
1258. What do you think it costs you per ton to take produce from your place to Tathra? About 30s.
1259. How much would it cost you to bring it to Bega? I should not come to Bega, I should go to Wolumla. That would be my nearest point.
1260. How much would it cost you to carry produce from your place to Wolumla—10s. a ton? No; about 7s. 6d. We have a very good road, and we could take our stuff down and come back again in a day. That makes a considerable difference.
1261. You think that if you tapped the railway at Wolumla you could afford to pay 10s. a ton to have your produce conveyed to Eden? Yes.
1262. Because you think that at Eden there would be less risk of your produce being knocked about? Yes. There would be no delay there, and I should have it carried more cheaply from Wolumla to Sydney, *via* Eden, than from Tathra to Sydney.

Mr. G. E. Ward. 24 Aug., 1892.

1263. The rates now are the same from Eden as from Tathra to Sydney? I think not. As to butter and cheese, I am not quite sure; but for heavy freights it is cheaper. I am informed that you can send by the company's boats for 10s. a ton.
1264. Suppose we have it in evidence that the charge is the same by the Union Company as it is by the Illawarra Company? That is for cheese and butter.
1265. Is it not reasonable to suppose that if the charges were the same for one kind of produce they would be the same for other kinds of produce? I do not think so. The space taken up by cheese and butter is different from that taken up by other produce.
1266. You would not entice these boats here unless you had a large quantity of produce? My experience of thirty years is that they would come for 25 or 30 tons.
1267. If the line were constructed, do you think there would be a large increase in the production of the district? I do.
1268. Suppose the railway could be finished in twelve months, what would you do to increase your production? I should employ labour immediately to cultivate a large area of land. I should increase the butter and cheese, and also the hay and potatoes.
1269. If you are using your land for grazing now and took away some for agriculture, that would be burning both ends of the stick? If I used the plough and grew green fodder, I could produce more from 100 acres than from 300 acres in its natural state.
1270. Irrespective of that, what agricultural pursuits would you go in for? My chief business would be to increase the output of butter and cheese.
1271. You would rather go in for dairying than for agriculture pure and simple? Yes; I think it would pay better.
1272. If you are sending away 25 tons of dairy produce now, do you think that you could double that within twelve months? Yes; I think I could do that very easily.
1273. How would you do it? By growing green fodder, ensilage, and so forth. At present I destroy 50 per cent. of the progeny of my cattle, because I have no market for calves.
1274. And you feed your pigs on them? No; I burn them. If I had a railway I could drive my calves to Wolumla, and ship them by it. I would send them to Eden, and thence to Sydney.
1275. Do you think that people engaged in the same pursuit as yourself would do just as you do? I think a large percentage of them would.
1276. Do you know anything of the betterment principle? I have heard of it.
1277. Do you think that it is a fair principle to adopt? I do.
1278. If your land were brought within the betterment area, and it was proved conclusively to your satisfaction, and to that of the Government officer, that it had been improved to the extent of £2 an acre by the line, would you be prepared to contribute £1 an acre to the Government for that improvement? I should; I think it would pay me to do so.
1279. And you think other people would do so also? I think they should do so—not only those who would be near the line, but the district generally.
1280. At present the principle is applied only to those whose land the railway touches? I think that the man within 4 or 5 miles is in quite as good a position.
1281. You would be prepared to loyally carry out the principle? I should, and I am 14 miles away.
1282. *Mr. McCourt.*] You live near Colombo? Yes, in the Tantawangalo district.
1283. How far is it from your farm to Wolumla? About 14 miles.
1284. How far from Colombo to Wolumla? About 20 miles.
1285. *Chairman.*] You have prepared a statement showing the exports from certain districts;—how have you arrived at your figures? They show the number of stock now grazing and worked upon within certain boundaries. I take all within the western side of the Tantawangalo River, right down to the Bega River—an area of 60,000 acres.
1286. How did you get your figures? I know every farm.
1287. You have got them from actual inquiry and observation? Yes; that is a correct statement.
1288. You desire to put in that statement as an appendix? I do. I know that that land would carry at least half as much more if required in stock. As to butter, cheese, and bacon, I am sure it could produce at least one-third more without any very great effort. At present we cannot afford to pay for labour, because we have no market.

Mr. William Ramsay, farmer and grazier, Double Creek, near Bega, sworn, and examined:—

Mr. W. Ramsay. 24 Aug., 1892.

1289. *Chairman.*] What is your occupation? I am a farmer and grazier.
1290. Where do you reside? At Double Creek, 6 miles north from here.
1291. What is the extent of your holding? Four hundred acres.
1292. *Mr. Sutton.*] What do you do on your farm? Dairy farming principally. I cultivate a little, not much.
1293. What are the principal productions of your farm in the way of dairy stuff? Cheese, butter, and bacon.
1294. How much of each? I just took a rough sketch of it last night. From the 7th January to the 5th July the quantity of cheese produced was 8 tons 17 cwt. 3 qrs. 7 lb.; of butter, 9 tons 2 qrs. 11 lb.; 13 cwt. of bacon, some bags of wool, a few bundles of sheepskins, 16 calves, and 16 pigs.
1295. How many cows do you milk? From sixty to ninety; sometimes as few as fifty. It is just according to the season of the year.
1296. What do you do with your young stock? I rear it generally if we have room. I have another place for the young stock.
1297. You do not kill them, as many of your neighbours do? I rear most of my stock. We get from £3 10s to £5 for heifers, and from £5 to £6 for bulls.
1298. The heifers are what age? From 2 to 3, and from 3 to 4.
1298½. Springers? Yes.
1299. It is better to keep them if you have grass? Yes, if you have plenty of room. There are many things we could go in for if we had encouragement.
1300. At what point would you use the railway if it were constructed? At Bega.

Mr. W Ramsay. 4 Aug., 1892.

1301. Would you send all your stuff from Bega to Eden? Certainly.
1302. Do you deal in fat stock at all? We think, of course, that the freights would not be so heavy, and I expect we shall have better accommodation on the steamers. Of course that would induce us to produce other things besides cattle and pigs.
1303. I suppose the best place for fat stock hitherto has been Tasmania? I have not shipped any. We sell them to buyers through the yards.
1304. What do the buyers do with them? Some are shipped away to other parts, I suppose.
1305. *Mr. Ewing.*] Double Creek runs into the Brogo River, and that runs into the Bega River? Yes.
1306. You come by road direct south to reach Bega? Yes.
1307. You would use the railway for its whole length? Certainly.
1308. *Chairman.*] Where do you take the stuff to now? To Tathra, because it is the nearest port.
1309. What has it cost you? We send it by our own teams. I have not made any estimate. It used to cost 2s. 6d. a keg for butter, and 3d. for cheese.
1310. You think you could afford 10s. a ton for railway carriage? That would have to be considered. I suppose it would be as much as that.
1311. Suppose it were? The people seem to think they would support it anyhow.
1312. Suppose the railway were constructed and people then changed their minds about sending along it? I hope they would not do that.
1313. It would be rather awkward for the country? Yes; but I am sure I do not think they would do it.
1314. You think they would use the line? Certainly; I have no doubt about it.
1315. Suppose a tender were accepted for the line, how would you start about increasing your production? Well, you have to send to other places for various goods, and you could grow much more.
1316. What would you grow? You could grow oats and potatoes.
1317. What would you grow? I should be prepared to grow those things and many others.
1318. Would you be prepared to give us a guarantee that you would double your tonnage within twelve months? I should not like to say that.
1319. Would you increase it by 50 per cent.? Well, you see we must creep before we jump.
1320. Would you increase it by 25 per cent.? No doubt you could.
1321. You would be perfectly safe in guaranteeing an increase of 25 per cent.? No doubt—more.
1322. Would you bring about that increase? I should.
1323. You think others are in as good a position as yourself? No doubt; there are scores of people in a position to do it.
1324. If the estimate of the Railway Commissioners is correct, unless there is a large increase the railway cannot pay;—you think you would increase your output 25 per cent.? I think I should.
1325. If your land were increased in value to £2 an acre, do you think it would be fair for the Government to take £1 per acre for the benefits conferred? I think so.
1326. The farmer would be the better by £1 an acre through the increased facility he would have for getting to market? Yes.
1327. If the railway could not be constructed without that principle, you would say "adopt it"? I think it would be the right thing.
1328. Have you anything else to say? Nothing at present.

Mr. George P. Kerrison, landowner, near Bega, sworn, and examined:—

Mr. G. P. Kerrison. 24 Aug., 1892.

1329. *Chairman.*] What is your occupation? I am a landowner.
1330. Are you using your land? Partly. I have 160 acres.
1331. Whereabouts is your land situated? I have 740 acres at Wyndham.
1332. You are out of the line of running, so far as the railway is concerned? I am 8 or 9 miles from Pambula. I have also land at Bega. I have 100 acres leased at Bega.
1333. What do you use your land for? I let some of it, and use the other.
1334. What amount of produce comes from your estate in the matter of butter and cheese? Very little. I keep horses and cows, and breed them.
1335. If the line were constructed, would you contribute towards the traffic on it? Yes; in the usual way, by sending what produce I had.
1336. Whereabouts will you tap the line? At the nearest station I could, or at Bega itself.
1337. Did I not understand you to say that your property was at Wyndham? I let that.
1338. Your other property is near Bega? Yes.
1339. You would contribute to the railway as a landowner in the vicinity of Bega. The Wyndham property would not contribute towards the railway traffic? The tenant might use it near Pambula. I am President of the Agricultural Society here. I have been President of that society for eight years, and a member of it for twenty years. I have been here for thirty-two years, and I have had great opportunities for seeing the district. Formerly, I had 1,300 acres of land at Candelo.
1340. You think your tenant might possibly use the railway, and that the best place at which to tap the line would be Pambula? He could not tap it anywhere else.
1341. How far are you from Eden? He would have to send 10 miles from Pambula.
1342. How far is he from the proposed line? Twenty miles.
1343. Do you desire to make a statement to the Committee? The only statement I can make is this: During my long residence in the district I have observed that every improvement made in the method of conveying produce has had a beneficial effect. Whenever there has been a reduction in freight, production has been increased in quality and quantity, and if further conveniences are offered to the district, production will increase in proportion to the benefits conferred. Thirty-two years ago there was only one house in Bega, and now it is a municipality.
1344. *Mr. McCourt.*] Do you think that if the railway were constructed within five or seven years the production of the district would be doubled? I do not say there would not be a loss at first; but it would be quickly overtaken.
1345. Do you think the production of the district would double itself in five or seven years? I think it would double itself in seven years. I do not refer to heavy produce; but a great deal of passenger traffic would spring up, and industries like the fruit-growing industry would come to the front. A great deal has

has been said in Sydney with regard to the production of fruits in the coastal districts. Now this is one of the best districts that there is for producing fruit, and perhaps some of the finest exhibits of fruit in Australia have been produced here. The people are only waiting for some speedy means of communication before extending their operations. There are a number of large orchards here. I have been inspecting some lately. In one instance they have planted 10 acres in the hope that additional accommodation will be given.

1346. You think that in seven years the railway would pay? Yes. I should expect a loss for a time, but it would gradually decrease.

1347. Would it pay in ten years? I think it would.

1348. Have you anything else to say? No; that is all I have to say.

1349. How many members are there in the Agricultural Society? One hundred and seventy members at £1 a year.

1350. Do you have good shows here? Yes.

1351. Exhibits of agricultural produce? Yes; very good shows indeed. We disbursed the Government prizes last year, and the exhibits put in for the trophies numbered 102 each. Before you go away I will furnish you with a catalogue showing what has been done and the number of exhibits. There is no place in Australia where as much cheese is put on exhibition as here. In Sydney there is not one-fifth of the quantity.

1352. Do you know the number of exhibits at the last show? There were from 1,300 to 1,674. We discourage fictitious entries, because they only increase expense without giving any other result.

1353. What would be the attendance on the second day of the show? In fine weather about 2,000. Last year the attendance was bad, because we had a flood then. But we took from £160 to £170 in shillings at the gates.

1354. *Mr. Ewing.*] Is there an experimental farm here? Professor Pudney came down to examine the place, but I believe that so many applications have been made, and Bega is so far away, that it was not decided to have one here. In addition to the 170 members on our books, 10 miles away at Candelo they have another 100 members, and there is a third society at Cobargo. Eight years ago we could only muster, at the very most, 100 members, but since the Candelo and Cobargo societies started the members have numbered nearly 400 for the three districts. The three societies are working almost as one.

1355. How far is Cobargo from here? Twenty-four miles, as near as can be. All the way between here and there the land is under occupation.

WEDNESDAY, 24 AUGUST, 1892.

[*The Sectional Committee met at the Court-house, Bega, at 7·30 p.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor. | Thomas Thomson Ewing, Esq.

William McCourt, Esq.

The Sectional Committee further considered the proposed Railway from Eden to Bega.

Mr. Edren Herbert Scott, company promoter, sworn, and examined:—

Mr. E. H. Scott. 24 Aug., 1892.

1356. *Chairman.*] What is your occupation? I am a company promoter.

1357. The Committee understand that you are in the district with the view to starting a company to commence meat-chilling operations? Yes; I have gone through the whole district from Eden to Moruya, and all through the Monaro district from the Victorian border to Buckley's Crossing. The whole of that district is to be included in the operations of this company. Taking the whole district, I have estimated that, with the station-owners of Monaro and the farmers of this part of the country, there will be at least 30,000 fat stock for export per annum from the Bega portion of the Monaro district. That does not include Cooma.

1358. How far north do you go? To the Snowy Mountains.

1359. And how far towards Cooma? To Buckley's Crossing. A certain number of gentlemen in Cooma are taking the matter up. At the present time there is a slight opposition in the form of a scheme for Sydney, but as far as I can ascertain there is not the smallest chance of the opposition project coming off, for the simple reason that to bring stock from Monaro to Eden will cost at least £40 a thousand less than to take them to Sydney. I might tell the Committee that the movement which I am directing has been very largely taken up down on the Victorian border by the selectors and other people running stock and sheep over the border, and the successful floating of the company is absolutely certain. I have arranged in the preliminary stage with Sydney shipping firms to call at Eden for produce.

1360. I have a few questions to ask before you proceed further. Have you any objection to state your principal? I am the principal.

1361. You have been in communication with various stock-owners with a view to establishing a company whose operations will be at Eden? Exactly.

1362. There is another proposed company whose operations will be elsewhere? For the Cooma district alone. They have not entered this district nor the Bombala district.

1363. You are the originator and principal in this matter. How many stock-owners in this and the Cooma district have signified their willingness to join with you? If you asked how many have refused I could tell you. I cannot tell you how many have accepted because there are very few who are not going into it.

1364. Have you got tangible securities from them or merely their promises? I have their applications lodged with the bank.

1365. What is your scheme—to establish chilling works at Eden? That is it.

1366. Your project is to take the surplus stock of the Monaro and Bombala districts, bring it to Eden, and there kill it and chill the meat for exportation to whatever market may be available? Not exactly. The company will deal with more than the surplus stock. New Zealand at the present time is exporting the

Mr. E. H. Scott. 24 Aug., 1892.

the whole of her produce, whether it be flesh, butter, or dairy produce. It is sent away chilled, because in that way it gets on to the market in a better state. Our company will take the produce of this and the Monaro districts, either for export to foreign markets or for sale in the Sydney markets.

1367. If prices are bad in the Colonial market, you will keep the meat in your cooling chambers until prices get better, and so on? Exactly. We should take the place of the middlemen in Sydney.

1368. And you are going to do all this on a capital of £36,000? Yes. The capital might seem rather small to you, but we are going to start on a small scale at first. We can always increase our capital if we want to go into very large figures.

1369. Will you give us the names, if possible, of the men in the Monaro district who have applied for shares? I will put the provisional directors before you. I can say that I do not know a single individual in the large area which I have before referred to who is not taking shares.

1370. You consider the floating of the company an assured thing? Certainly. I received a telegram to-day from one of my agents, and he says, "Almost 2,000 shares taken. Working towards Wolumla." I have been down in this district a little over a fortnight, and I have taken individual applications for nearly 3,000 shares. In the Monaro district, although the shareholders are not quite so numerous, the shares are being taken up quite as fast, but in larger numbers.

1371. Are the applications for shares all accompanied by cheques covering the application fee? Certainly, and they are lodged with the banks.

1372. If your company were established, would it be a large contributor to the line which we have under consideration? I do not see how the company itself could possibly be a contributor to the line, except in an indirect way. The company is working with the producer, and it is the producer who will support the railway—not the company. The company will only support it indirectly.

1373. The company will be the receiving and distributing agents, producers sending their produce to your central works at Eden? Exactly.

1374. Having gone carefully through the district and knowing its capabilities, do you think that this line would facilitate the transactions of your company? Unquestionably. I have never seen a port in the whole of my travels—and I have been over a few countries in different parts of the world—like Eden without a railway. As soon as a port is opened for international shipping, a net-work of railways is made to drain the produce from the interior. Eden is the natural outlet for the whole of this district—for the whole of the Monaro district running right back to Queanbeyan, and on to Yass. I believe that a survey has been made for a line of railway from Queanbeyan to Yass. In my opinion, squatters and others will send their produce to the nearest port. They do not want to send it 254 miles when they need send only 154 miles.

1375. What proportion of trade do you expect will come from the Bega district as compared with the Monaro district—about half? No. I think the Bega district will contribute in the same ratio as the Monaro district. I think there will certainly be 3,000 fat sheep for export in the district, and I have not had my figures challenged at any of the public meetings which I have held here.

1376. The calves that now come to an untimely end would be allowed to grow up, and would be shipped away as fat cattle? They will go to other districts to be sold as stores. I do not think this district will keep them, but the Monaro district will be only too glad to purchase them, as it did in years gone by, when they had a market. This district at present has no market, and that is why such a vast number of the calves are killed.

1377. The operations of your company will be about equally divided between the Monaro and the Bega districts? Certainly.

1378. And the products of the Bega district will, in a very large measure, make use of this railway to reach Eden? I am quite certain that as soon as a railway is constructed from Bega to Eden, and Eden becomes an intercolonial port, which will be consequent upon the construction of the railway—they will ship from there. At Tathra they are at present dependent upon the weather, and, as has been our experience during the last four or five days, it is often impossible either to land or to take in cargo at Tathra.

1379. Would any portion of the Monaro traffic make use of the line? It depends upon where the railway comes in. If it came in through Rocky Hall and Wyndham it would.

1380. You are talking of a possible connection with Monaro? Yes.

1381. Suppose there were no connection with the table-land, would the Monaro produce make use of this line? I rather doubt it. At present the carriers prefer the Tantawangalo route to the other routes. If they could take their produce to the railway and then truck it to an international shipping port, the railway would be used.

1382. Where would be the nearest point at which they would tap the line in that case? Between Pambula and Wolumla.

1383. Would they use the railway merely for the sake of going 15 miles? It would depend upon the cost. I am certain that they would avail themselves of the railway.

1384. Is it not unlikely that they would use it for that short distance? If there were a fraction of a penny profit in using the railway I should advise them to use it.

1385. As a matter of fact, do not all the fat stock at present shipped at Eden from Monaro come down the Big Jack route? Certainly not. There is an infinitely better route from Cooma down the Brown Mountain.

1386. But you place Cooma outside the sphere of your operations? Not altogether. Nimitybelle is heart and soul with the Eden scheme.

1387. The northern portion of Monaro would come *via* Nimitybelle to get to Eden? Certainly.

1388. And all south of Bibbenluke will come down Big Jack? Yes, or Tantawanglo.

1389. It is only the northern portion of that district to which the railway would be of any benefit. The traffic from the rest of the district would go straight to Eden? You must not look upon the northern portion of the district as a small one; it is certainly one of the richest and one of the best for fattening stock.

1390. Do you know if steamers calling at Eden have ever been unable through stress of weather to unship their goods or produce? I have heard it stated that they have had to lie off the jetty, but having seen exactly the same thing in Sydney I did not take particular note of it. I remember distinctly seeing the ships at Circular Quay keeping off from the wharf when a very heavy gale of wind was blowing. The steamers had to hold off the Quay.

Mr. E. H. Scott. 24 Aug., 1892.

1391. How long do you expect it will be before your company is prepared to take active steps to obtain the end they have in view? Inside of four months.
1392. You expect to see the foundation stone laid within that time? I expect to get the first shipment nearly away by then. As there may be some doubts as to ships being willing to call at Eden I will just read a letter which I have received from a prominent shipping firm:—

I am in receipt of your letter of the 28th instant, making inquiries as to the export of meat from Eden, and in reply I have to say that when the company of which you speak is prepared to make regular shipments I have no doubt that we shall be able to make arrangements for the carriage, which would be satisfactory to the trade. I shall be glad to be furnished with further particulars as to the company to which you allude.

I do not give the name of my correspondents for obvious reasons.
1393. As soon as the volume of trade is sufficient the vessels of a certain company will call there? Yes. Here is another letter:—

I wrote you on the 5th instant, and have not received any reply from you. I have made inquiries respecting the port of Eden, and I do not think there would be any difficulty as to sending steamers there. I shall be glad to hear from you as soon as possible, and shall be pleased to meet you at Goulburn ——

You see that the writer is anxious to secure the trade ——

at any time convenient to you. In the event of business between us time is required to fit extra steamers which will probably be necessary for your trade. I shall be glad if you can meet at an early date and so put some proposition before my London office.

I have similar letters from other companies, so that there will be no difficulty about the shipping. There is not the smallest doubt that if the Bega to Eden railway were constructed the rates of freight between Eden and Sydney would be materially reduced for the benefit of the district. The people here could thoroughly afford to pay a higher rate for the transit of their goods from Bega to Eden if they had it taken off between Eden and Sydney.
1394. Suppose this line is not constructed and you commence operations at Eden, do you think you will be able to entice the productions of the district—butter, and so on—to Eden by the ordinary carriage? I can only say that if you offer a man 9d. per lb. for his butter and he could put it into storage chambers and get 1s. 2d. for it he would be induced to come here.
1395. But there would be 36 miles of carriage to enable a man to get from Bega as against 12 miles to Tathra? Exactly. The company will undertake the carriage of produce from Bega and distant centres in their own waggons if necessary.
1396. *Mr. Ewing.*] You have already said that the Bombala district, the north-east part of Victoria, and the coast district is the basis of your supply? You might say from Delegate to Buckley's Crossing, from the Victorian border and over to Cooma, from the Victorian border and over and from Eden to Moruya—an area, roughly speaking, of 100 miles square.
1397. How many horned stock are there in that district? About 57,000. That is my estimate, and in all my estimates I have gone under, rather than over, the mark.
1398. How many sheep are there? There are very few sheep in this district.
1399. I am speaking of the whole district on which you intend to operate? The horned stock, including Monaro, would be between 80,000 and 90,000.
1400. How many sheep are there? The sheep in the same area, I should say, would number about 600,000.
1401. You consider that that is ample? That is not including Cooma, because the Cooma district alone has 1,000,000.
1402. Do you consider that ample for the basis of such operations as you anticipate carrying out? Unquestionably as a backbone.
1403. You spoke of New Zealand just now? Yes.
1404. In various parts of New Zealand they are loading frozen mutton without sending it to any of the big towns? Yes; there are no less than eleven ports of export there at the present time. As far as I can understand it is only by a judicious exportation that New Zealand has obtained the financial position which she holds to-day.
1405. She has been lifted by her freezing chambers? Unquestionably—by judicious exportations throughout the country.
1406. Supposing a district in New Zealand had a port like Twofold Bay, and the same quantity of horned stock as this district has, would they export direct to England? I have not the slightest doubt about it. They would export with a far less number of stock in the district.
1407. Are our sheep as suitable as theirs? Theirs are larger; but we have the same class of sheep in the district as they have in New Zealand.
1408. Will those sheep do as well in the market as the New Zealand sheep? The larger class certainly will.
1409. Do you think there will be no trouble at all? Not the smallest.
1410. You know that they load in New Zealand from coastal jetties? They load anywhere where they can get a freight.
1411. How does the price of pork in England compare with the price here? I would not exactly advise the exportation of pork, because the American pork is detrimental to exportation from Australia.
1412. You do not see much in exporting pork? Pork is one of the only things I think it is not worth while to export; but it would be better to send it to Sydney in carcass than to send it alive.
1413. Your operations will consist in drawing supplies from certain districts and taking them to freezing works at Twofold Bay? Supplies from Bega will come along the railway line or the best way they can.
1414. And you think that will give you a volume of trade which will enable large boats to come here? Unquestionably. There is another important point in connection with that port. When I left Sydney on Friday fortnight, I received the first reply to letters which I had sent to various woolbroking firms. It stated that a certain firm was quite willing to export wool intended for the London market direct from Eden and to make some advance against it just as if it were shipped from Sydney.
1415. Have the intercolonial boats freezing chambers? Not the intercolonial. Most of the international boats have. They say that they will fit up the intercolonial boats with them.
1416. Have Howard Smith's boats? No.
1417. Have the Gulf Line? Some of them.
1418. *Mr. McCourt.*] How long have you been endeavouring to float this company? Well, I have been working it up for the last six months, and it is only within the last three weeks that the prospectus has been before the public in a tangible state.

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1419. You say that when 12,000 shares are applied for you will register the company? Yes.
1420. That number has not been applied for? Between 5,000 and 6,000 have been applied for.
1421. You have fifty-six names in the Monaro and south coast districts. I suppose they have all taken shares? So far as I know they have all done so. Not a single man mentioned in the prospectus has been given a single paid-up share as a professional director, and it was carefully explained to all of them that they would have to take contributing shares in the company. That, I think, is a little unique.
1422. Every one of those gentlemen will take or has taken shares? Yes.
1423. *Chairman.*] Will the provisional directors get any benefit apart from the benefit given to the producers of the district? Yes, if they take contributing shares; but not in the way of paid-up shares. If they do not take shares in the company they will not receive any benefit from the company.
1424. They have given their names through a desire to benefit the district, and they reap no pecuniary benefit themselves? Certainly. Some gentlemen are mentioned there who are not producers; but they are taking a large number of shares simply to encourage an export trade, and to open up the port at Eden.
1425. I suppose the qualification of a director has not been considered? That will be considered at the first meeting of shareholders. Another thing I should like to state is that as promoter I have entered into no contracts, and I will get no benefit from the sale of land or from anything else. What I know has made me take up the project in the warm way I have, and for six months, as many gentlemen will tell you, I have been travelling all over the district, so as to make myself thoroughly conversant with it and with its productions. I can certainly state that no one going along the road—I do not mind which road you take—from Monaro could form the slightest conception of the richness of the valleys off the road. You want to get behind some of the hills, where you think there is an end to the rich country. If you go through the belt of timber you find flat after flat on the other side. There are hundreds of settlers on the country.
1426. *Mr. Ewing.*] You would be prepared to use the railway to carry your produce if it suited you? Unquestionably. I take it that the producer will certainly send by railway. I may tell you that before I took any very active steps in regard to the floating of this company, I held one or two conversations with the Minister for Lands. I went into the matter very carefully with him, and it was certainly his influence in a small measure that made me take up the project so heartily. He knows the Monaro district and its richness. So soon as this district has a market for its produce, its output will not increase two-fold, but six-fold, just as the output has increased in New Zealand. In 1880 New Zealand exported only 13,000 carcasses, and in 1891 she exported 1,486,000 sheep, and 300,000 lambs, and 11,000,000 lb. of beef. I had that exportation in view when I began to work up this district. Sydney produce in London and elsewhere is ¾d. per lb. lower than New Zealand produce; but this district and Monaro can certainly produce as fine sheep as any in New Zealand, and I contend that the same thing will occur with regard to our products as with regard to the exportation from Canterbury. Canterbury would not agree to mix her exports with the exports of the other ten shipping places in New Zealand, and I hope that the exports from Eden will be kept entirely separate from Sydney exports.

Mr. Frederick Thomas Stennett, grazier, Bega, sworn, and examined :—

Mr. F. T. Stennett. 24 Aug., 1892.

1427. *Chairman.*] What is your occupation? Grazier and stock owner.
1428. Residing where? At Bega.
1429. Where is your land situated? About 15 miles north from here.
1430. What is the area of your holding? About 942 acres.
1431. How many cattle have you? I have a lot of rented paddocks besides that. I am only speaking of the land I own. I have about 2,480 acres rented.
1432. Do you know the number of cattle in the district altogether? I know the number from the stock books. At one time I was a director of the Stock Board, and I know exactly the number of cattle from the books.
1433. What is it? About 70,000.
1434. That is the number of cattle that were ratable? There were supposed to be about 10,000 head of cattle owned in small numbers, and not ratable.
1435. In what parish are you situated? The parish of Murrabrine. I think some of my land is in Cadjangarry.
1436. What part of the railway would you use? I should use it either at Bega or at Wolumla.
1437. How far are you from Bermagui? About 20 miles.
1438. *Mr. McCourt.*] How far are you from Bega? About 16 miles.
1439. You would go to Bega? It would depend whether by going to Bega I could make use of a better market than the Sydney market. In all probability if there were a railway to Eden other markets would be opened, and perhaps more profitable ones, and in that case I should use the railway.
1440. For stock? For produce and dairy stuff.
1441. Do you think there would be an increase of produce if the railway were made? I do not think that the district has been developed up to one-tenth of its capabilities.
1442. You think that a railway would stimulate an increase? I have not the slightest doubt about it. I know that some of the evidence taken in Sydney made out that the district was producing as much as it is capable of producing, but that is altogether an error. The person who made that statement knows nothing about it. There is a lot of land here not cleared yet.
1443. Do you look forward to having Melbourne as your market? Yes, if it should be a profitable market.
1444. Do you get a better price, as a rule, in Melbourne than in Sydney? Yes, in some cases, but at present we have to pay heavy duties.
1445. If those duties were removed would you not have a second market in Melbourne? No doubt we should.
1446. And if the stock duties were removed would you send your stock to Melbourne that way? Only if there were a greater profit attached to it. There are very few stock shipped from this district. There is hardly a week when I do not go out and shoot a lot of calves, because it does not pay to send them away. I tried it two or three times, but the company charged me 5s. per head to take calves to Sydney.

Mr. F. T. Stennett. 24 Aug., 1892.

1447. If the railway stimulated the production of the district, population would increase? Undoubtedly. There are a good many farmers in the district at present. One thousand or 1,200 acres are, perhaps, held by the original selector, who has four or five sons, and there is no doubt that when he dies the land will be cut up and each son will produce on his portion quite as much as the whole farm is now producing, because it would be better worked.
1448. Is there anything else that you would like to state in regard to the advisability of constructing this line? I have been living here for twenty-four years, and, knowing the district, I can give you some idea as to the extent of the good land. I daresay the width of the good land from the coast would be 20 miles, and from north to south about 50 miles.
1449. What do you mean by the good land? Land available for dairying.
1450. How much is there available for agriculture? That would be impossible to say. There are patches of good land throughout the district which are now producing nothing, because they are covered with fern.
1451. Would one-third be available? Perhaps not one-third—one-fourth.
1452. And the rest could be used for grazing? For dairying purposes. There are thousands of acres in the district which are only used for fattening cattle. That is not as profitable as dairying would be.
1453. Have you thought out the application of the betterment principle to railways;—do you understand it? Yes.
1454. Do you think it a proper principle? I do not see why the land-holder should not contribute something if his land is improved.
1455. Providing the principle is generally applied? Yes.
1456. If it were applied to this district you think the people of Bega would still ask for the line? I think the majority of the people would agree to its being applied here.
1457. Have you anything else you would like to state? No.
1458. Do you live between the Brogo and the Murrah Rivers? My land is on the upper part of the Murrah. I have some land on the Upper Brogo, 5 or 6 miles this side.
1459. You say that the area of good land is 30 miles by 50? Twenty by 50.
1460. That would be 640,000 acres? That is about it. Other parts of the country are covered with timber at present. I do not call that good land.
1461. You say that about one-fourth of the land is fit for cultivation? Yes.
1462. You would get 100,000 acres of good land anyhow? I should think more than that.

Mr. Henry O. T. Cowdroy, storekeeper, Bega, sworn, and examined:—

Mr. H. O. T. Cowdroy. 24 Aug., 1892.

1463. *Chairman.*] You are a member of the Municipal Council? I have been, but I am not at present.
1464. Were you at one time Mayor of the borough? Yes.
1465. You are also in business here as a storekeeper? I have been for the past eight years.
1466. *Mr. Ewing.*] I suppose you have come to speak mainly of the commercial relations of Bega? I suppose so.
1467. At present, how do you get your goods? Through Tathra.
1468. By the Illawarra boats to Tathra, and thence by road to Bega? Yes.
1469. Have you experienced any difficulty in getting your stores here? Yes; we have had occasionally to let them go past. Stores which ought to have arrived on Monday have not reached here until the following Thursday—a delay of three or four days.
1470. Do you consider the service of the Illawarra Company's boats to Tathra satisfactory? Not by any means.
1471. To what do you attribute the unsatisfactoriness of it? The freights are very high. The freights are killing, and the passenger accommodation is bad.
1472. To what do you attribute that—to the unsuitability of the port? To the unsuitability of the port. A better class of steamers could not call.
1473. What do you pay per ton from Bega to Tathra? Fifteen shillings.
1474. Would you use the railway to Bega in preference? Undoubtedly. The cost of bringing goods from Tathra here would cover the cost of taking them right through to Sydney if we had the railway.
1475. What do you think would be the charge from Bega to Eden? I understand from Mr. Crawford that the highest charge would be 7s. 6d., and I think another 7s. 6d. would take it to Sydney.
1476. At present you pay how much to get from Tathra to Sydney? Fifteen shillings for dead weight, and we can hardly say what it is for other things.
1477. Supposing you found that the railway freight was so high that it cost you 30s. to get to Sydney *via* Eden, which way would you go? I should still prefer it. We should get a better class of boats at Eden, and we should be more certain of getting our produce safely landed.
1478. Do you believe that the storekeepers of Bega would use the line? I think so.
1479. Do you believe that they would abandon Tathra? That is my strong impression.
1480. You would at least do so? Undoubtedly.
1481. Are there any other reasons, beyond the commercial reasons, why the line should be made? There is the general future of the district. The Commissioners' estimate shows a loss on working expenses and interest on capital, but the production of a district like this must increase in the future. The land is comparatively scarcely worked at all now. I have some experience in the matter and I think that the district is capable of a very much larger output than it has at present. I think that in ten years the trade ought to expand fourfold or fivefold.
1482. You believe that the railway would be the means of causing that expansion? Yes, for the simple reason that it would give people an outlet to a safe port. Eden will some day be the port for the whole of the southern portion of the Colony, and we shall have an outlet from there to other places besides Sydney. For instance, if we could get over the distance between here and Eden easily, we could deliver flour £2 cheaper than we can deliver it now. Our usual price is £1 per ton advance on cost. We could sell it at £2 a ton cheaper and have as great a profit.
1483. That is if the freight were low enough? Yes.
1484. If 7s. 6d. would bring you to Eden, and 7s. 6d. take you from Eden to Sydney? Yes. Flour goes from Adelaide to Eden for 8s., including insurance.

Mr. H. O. T. Cowdroy. 24 Aug., 1892.

1485. If good flour is delivered so cheaply at Eden, do you think there is any likelihood of the people in the district growing wheat and competing successfully with foreign breadstuffs? I cannot say about the wheat. Wheat was grown very successfully here years ago. I believe it gave large returns, almost fabulous returns, but the rust affected it and it did not pay. I believe the industry will come round again. In my opinion a large area of land here is capable of growing wheat.
1486. What is the almost fabulous return? I am almost afraid to mention it—70 bushels to the acre.
1487. That must have been some special ground? Even so, the return was enormous.
1488. How many years ago was it? A good many.
1489. Rust came in very badly, and wheat-growing was given up? Yes.
1490. Do you think the causes which contribute to the rust are removed now? I saw some very good samples at the last Agricultural Show.
1491. Perhaps grown in some particular spot where there was not a large area available? I think there is a large area of country here on the high land. Where you get off the bare granite on to the volcanic soil the land is quite fit for wheat-growing.
1492. Do you think it at all probable that the people of the Bega district will be able to grow wheat to compete against Adelaide and other places like that? I am not capable of giving an opinion on the subject.
1493. All you know is that at one time wheat was grown here successfully, when rust came and the attempt was given up? Yes.
1494. Is there anything else you desire to state? No.
1495. *Mr. Ewing.*] Do you know the rainfall of the district? No; but I could get it for you.

Mr. J. Britten. 24 Aug., 1892.

Mr. Joshua Britten, dairyman, Double Creek, near Bega, sworn, and examined:—

1496. *Chairman.*] What is your occupation? I am a dairyman.
1497. Where is your holding situated? At Double Creek.
1498. That is north of Bega? Yes.
1499. How far north? Seven miles.
1500. What is the extent of your holding? Eight hundred and twenty-six acres.
1501. Is it devoted to dairying? Yes.
1502. You do no agriculture at all? No.
1503. What quantity of produce do you send away in the year? About 20 tons of cheese.
1504. About how much butter? I make no butter.
1505. Is your output increasing, or is it at a standstill? I have only been dairying four years, and I make just about the same each year.
1506. Where do you ship? At Tathra.
1507. To Sydney? Yes.
1508. Have you ever been put to any inconvenience through boats not calling? Yes.
1509. Does it matter very much if cheese lies in the store? No.
1510. But you do not get your return quite so quickly? No.
1511. If the railway were constructed, would you continue to go to Tathra or would you make Eden your port? It depends upon whether I could go there more cheaply.
1512. How much do you pay to have your produce conveyed to Tathra? I carry it myself to Tathra. Sometimes I pay 33s. 4d. from Tathra to Sydney per ton, and at other times I pay 34s. It is according to the size of the cheeses.
1513. Suppose you had to employ carriers, what would they charge to take your produce to Tathra? About the same as from Tathra to Sydney—3d. a cheese for small cheeses, and 4d. a cheese for large cheeses.
1514. So you could afford to pay 2d. a cheese from Bega to Eden? Yes.
1515. You think you could pay 10s. a ton to have your stuff taken to Eden? Yes.
1516. Because you could get larger boats and a cheaper freight from there? Yes.
1517. Suppose you found that the steam companies would not reduce the freight from Eden to Sydney, would you send your produce along the railway to Eden? If I could not get it away otherwise.
1518. If we constructed a railway on the supposition that we should secure 20 or 30 tons of cheese as traffic from here, and you found that you would save 1s. by going another way, we should be out in our calculations? Yes.
1519. A man's patriotism is confined to his breeches pocket? Exactly.
1520. If the railway were constructed, and your anticipation of a cheaper freight between Eden and Sydney were realised, would you be likely to increase your production? I do not know that I could. I could make more if I liked to cultivate the land and grow hay; but I do not know that I should.
1521. You would continue cheese-making? Yes.
1522. And you do not think you could increase the amount of cheese which you make under the present system? I do not think so.
1523–4. So we could only depend upon your present production for traffic? Exactly.
1525. Do you think other people are in a similar position to yourself? I think there are any number of people in the same position as I am, who would carry on the same old score.
1526. If what you say is correct, there is no likelihood of the loss of £19,000 per annum being wiped off in a year or two? I do not know anything about that.
1527. The Commissioners estimate that there will be a loss on this railway of nearly £19,000 per annum, and if the production of the district does not increase, that loss would continue;—do you think the country would be justified in making the railway under those circumstances? No; I do not.
1528. You think the people should give some earnest of their intention of increasing their output, if the country commits itself to the expense? I do.
1529. What is your view of the proposal to establish freezing works at Eden;—do you think it will do the district any good? I believe that they will be a fine thing for the district. They will give us a market for our surplus stock.

Mr. J. Britten. 24 Aug., 1892.

1530. Are you going to take shares in the company? I am; we have no market at the present time, but the company will give us a market.
1531. Its operations will have a tendency to increase the production of the district? Yes.
1532. What you recommend is that the people themselves should, by the aid of this freezing establishment, increase the production of the district, and then review the question of giving railway communication afterwards? Yes.
1533. It is well to make haste slowly in these matters sometimes? Yes.
1534. Have you been residing in the district long? Thirty-six years.
1535. But you have only been engaged in your present business for the last four years? Yes.
1536. You intend to remain here? I have no idea of shifting.
1537. Is there anything else you would like to state? No.

Mr. William Arthur Wilson, farmer, Colombo, sworn and examined:—

Mr. W. A. Wilson. 24 Aug., 1892.

1538. *Chairman.*] What is your occupation? I am a farmer.
1539. Where do you reside? At Colombo.
1540. On the Nimitybelle Road, this side of Brown's Mountain? Yes.
1541. How far from Bega? Thirty miles.
1542. *Mr. McCourt.*] What is the area of your holding? Two thousand acres.
1543. What do you produce? Butter.
1544. Where do you send it to? Sydney.
1545. What ports? Tathra and Merimbula.
1546. Which is your best port? Tathra.
1547. If the railway were constructed where would you join it? At Wolumla.
1548. Do you think the railway ought to be constructed? I should think it ought.
1549. Do you think it would pay if it were constructed? That depends.
1550. What would the paying depend upon? Upon every person sending by it.
1551. You think it would pay? I have no doubt about it.
1552. Do you think every person would send by it? That is a thing I could not say.
1553. You yourself would send by it? Certainly.
1554. Would the people in your neighbourhood send by it? Yes; the people in my neighbourhood would go from Colombo to Wolumla and back again in a day.
1555. How much butter do you produce in a year? About half a ton a week in the summer time.
1556. Twenty-six tons a year? Yes.
1557. Have you anything else to state in favour of the construction of this line? There are several things which it would pay to produce if we had means of getting them away—fowls and other things. We could get nothing out of these things if we sent them by the Illawarra boats, because the freight is too high.
1558. If you had cheap sea freight without the railway would that do as well? It all depends upon where from.
1559. Suppose the road from Tathra were reduced one-half, would that suit you as well as a railway would? Land carriage is a lot.
1560. What is it from your place? Four and threepence per cwt. keg of butter.
1561. Where to? Merimbula.
1562. Suppose you took it to Wolumla? You could get it there for about one-half.
1563. *Chairman.*] Is there anything else you desire to say? No.

Mr. William D. Neilley, editor and proprietor of the *Bega Standard*, sworn, and examined:—

Mr. W. D. Neilley. 24 Aug., 1892.

1564. *Chairman.*] What is your occupation? Editor and proprietor of the *Bega Standard.*
1565. Have you resided in the district long? About sixteen years.
1566. Your duties as proprietor of one of the local papers, place you in a very good position for obtaining information as to the productions of the district? Yes.
1567. You desire to make a statement to the Committee? Yes; in support of the line. I should like, first of all, to refer to the evidence given before the Committee in Sydney by Captain Turner, the manager of the monopolist company that has been crushing the life out of this district. With regard to the statement that the Illawarra steamers have only passed Tathra once in five years, I know that during the last three weeks the steamer has not been able to come there on two or three occasions.
1568. What Captain Turner said was that only on one occasion during the last five years, did the steamer have to bring her Tathra cargo back to Sydney. He admitted that sometimes, when the steamer could not land goods on her way out, she landed them on her return trip? Last Saturday she had to pass Tathra, and yesterday she had to return with her cargo, and leave a lot of passengers. As to the agricultural capabilities of the district, I believe our output would be increased at least sixfold if the railway were constructed to Eden. The railway would give us cheaper freights, and better carriage by steamer than we have now, and the rates which we should have to bear would be in proportion to those charged on goods coming from other colonies. I know one farm—Mr. Howard's—that has been cultivated for the last twelve or thirteen years, and I do not think a ton of manure has been put on to that land. Splendid crops of hay have been taken off it, and I have seen grand crops of maize growing on the hilltops. It has been said that boats have not been able to lie alongside the wharf at Eden, but I remember being there on two occasions when the roughest gales I ever saw were blowing, and the Tasmanian Company's steamer "Flora" was able to lie alongside the wharf, and take in cargo.
1569. A south-west gale would not make any very great difference on the coast? When you look at Eden, you will see that I am right. I never saw a boat compelled to cast off from the wharf, and I have been there several times.
1570. Would increased production follow the opening of the railway? I think we should be able to send our butter away in large vessels, having cooling chambers on board. Our present vessels, which carry pigs and passengers all mixed up together, cannot give us that convenience. As to the visit of the Railway Commissioners here, we were undoubtedly at a disadvantage, because they made quite a flying

Mr. W. D. Neilley. 24 Aug., 1892.

fox trip, and travelled through the district mostly at night. They made a very hurried visit, and could not see the capabilities of the land. They skirted the district, and did not see the most productive part of it.

1571. You think that their estimate of the probable traffic is under the mark? That is my opinion, so far as a layman is able to judge. Cheaper freight would largely increase the trade.

1572. Would you say that their estimate is correct, so far as the present trade of the district is concerned? I hardly know. I have not studied the thing in its entirety.

1573. They have estimated goods and live stock at £7,062—do you think that that is under the mark? I think that is a fair estimate.

1574. They estimate the passenger traffic at £3,937 10s.? I think we could spring a bit on that.

1575. They say that the passenger traffic has been based upon the population of the district, which is 1,200;—is that correct? No.

1576. It has been assumed that each adult would make two double journeys, and each child one double journey? I consider—and I suppose it has been proved—that where railway facilities are afforded the travelling population increases.

1577. But do you not think that these men, one of whom, at all events, has spent the whole of his life in managing railways, should know what portion of the population would travel;—they tell us that they have made very liberal allowance;—do you not think they should know better than you do? The gentleman to whom you allude possibly came from a very thickly populated portion of the globe, and might base his present calculations upon his experience there, where perhaps people do not travel so much as they do in this country.

1578. How many times in the year do you think you would travel up and down the line? I suppose about twenty or thirty times.

1579. Everyone is not the proprietor of a newspaper;—do you think your printer's devil would travel so frequently? I do not know. He would travel as often as he could afford to do so.

1580. Do you think he would take two trips a year? I certainly think he would.

1581. Do you think that the estimate is probably under the mark? I think there should certainly be more than that earned.

1582. Well suppose we put it down as £5,000;—then they estimate a revenue of £443 for mails? That is about a fair thing.

1583. Then, on your own statement, giving you credit for another £1,000, there would be a loss of £18,000 upon this line? I think before many years are over the line would do what many other railways have not done—pay interest on capital.

1584. How many years would you give it? I suppose about seven years. I should think about that.

1585. The capital cost of this line would be increased very considerably by the loss of £19,000 per annum for seven years? I think the whole estimate has been put in the blackest light.

1586. What makes you think that;—according to your own showing there would be a loss of £18,000 per annum? I believe there would be a loss, but in a few years—possibly less than seven years—the line would pay interest on the working expenses.

1587. In five years the capital cost of the line would be increased by £100,000? This is a national undertaking, and the country could well afford it.

1588. You think the nation is intensely interested in the construction of 36 miles of railway between Bega and Eden? I think the nation is intensely interested in the opening up of one of the finest ports in the Colony.

1589. And would cheerfully bear this loss on the railway? I think so.

1590. Or, if they would not, they ought to? I think so, looking at it as a national undertaking.

1591. Have you given any thought to a connection with Monaro? That is why I speak of the line as a national undertaking. Eden will eventually be the outlet for Monaro; it is the outlet now.

1592. Do you think it is desirable to continue the south coast line this way? No; I think it would be the greatest nonsense perpetrated. It would simply be running a costly railway in competition with steam companies.

1593. Is not that what you propose to do now? No; the line under consideration would open up a port and would not compete with the steamers. As a matter of fact, we have now to pay £2 or £3 a ton from Tathra, and if we want to send a ton of stuff from Tathra to Eden it would cost 10s. or £1. The railway could do it cheaper than that.

1594. Do you think that if a connection were made with the Monaro table-land, it should go *via* Cathcart and Bombala, or should it go by some other route? I really could not say, but, looking at the map before me, I think that if possible the line should go by Arnheim's route.

1595. You know that a number of routes have been surveyed? Yes.

1596. Which do you think would be the best in the interests of the people of Monaro and Bega, putting aside the engineering aspects of the question? I take it that they would all serve the Monaro district equally well, but Mr. Postle's route is the shortest, though it does not take in as much country as Arnheim's route. If the cost were not too great I should prefer Arnheim's route.

1597. You believe that in the near future connection with the Monaro table-land could be made; but you would disagree with any proposal to continue the line from Nowra south? Certainly.

1598. Is there anything else you desire to say? No.

1599. *Mr. Ewing.*] Do you think the line between Eden and Bega is in the best position? Some thousands of pounds have been spent on the survey, and that is a matter upon which only a professional man could give an opinion.

1600. Do you think it traverses the country in the direction which will best develop it? So far as I am able to judge I believe it does.

1601. From a local stand-point it is in as good a position as may be? Yes.

Mr. John Davy Postle, Assoc. M. Inst. C.E., Resident Engineer at Bega, sworn, and examined:— Mr. J. D. Postle, Assoc. M. Inst. C.E. 24 Aug., 1892.

1602. *Chairman.*] You are Resident Engineer at Bega, and are connected with the Roads and Bridges Department? Yes; I am an Associate Member of the Institution of Civil Engineers.
1603. How long have you been in charge of this district? For ten years.
1604. How far does your district extend towards Monaro? To the foot of the Tantawangalo Mountain and to the top of the Brown Mountain, about 10 miles from Nimitybelle, and eastward to the coast from Pambula.
1605. You are familiar with the mountain range between here and Bombala? Yes.
1606. You are the discoverer or suggestor of a route known by your name, which is intended to give access from the table-land of Monaro to the coast? Yes.
1607. How does your proposed route run with regard to the road which comes down the mountain from Bombala;—is it to the south of that road? It is between the Tantawangalo Road and the Big Jack Road.
1608. What is the ruling grade? About 1 in 50.
1609. Did you make a very careful examination of the route, and has it since been examined by the railway surveyors? I was authorised, in 1890, to examine the country with a view to locating a route to connect Monaro with the coast. I devoted about two months to the work, and plotted the general position of the line on the county map. My report was forwarded to Mr. Deane, and the line has subsequently been surveyed by Mr. Paul.
1610. The Railway Construction Department availed themselves of your local professional knowledge to find a line from the table-land; and the route which you suggested has since been particularly inquired into and surveyed by an officer of the Department? By Mr. Paul, who has given a great deal of time, attention, and ability to the work.
1611. What is the difference between your route and Arnheim's route;—yours would go on one side of the range and his on the other? I have not been over Arnheim's route, but the ruling grade is 1 in 40. His route is generally to the north of the route I propose. It is much longer, and it reaches the Monaro plateau at a much higher elevation.
1612. But you both start from Cathcart? Yes; Arnheim's route is very circuitous. Of course the object of a main trunk line is to connect the Monaro country with the coast in the cheapest and most direct manner possible.
1613. You both terminate at Wolumla? Yes.
1614. Arnheim's route goes further north, is more circuitous, and has a severer grade than yours? Yes, and for that reason it was, I think, objected to by the Engineer-in-Chief.
1615. What about Darragh's route, which seems to be a deviation of your route? I know the general direction of that line, because I explored the country before Mr. Darragh located it. He commences near Candelo, and joins the route I suggest, near a place called Wood's selection.
1616. Where is that—west of Candelo? Yes. The merits of this deviation have been fully gone into by the Engineer-in-Chief, who is in possession of all the plans and traverses in connection with it, and, of course, is in a better position to give a professional opinion on it than I am. I know thoroughly the nature of the country, and I did not suggest it, although I had an opportunity of doing so.
1617. You have heard of nothing since you suggested your route to lead you to alter the opinion that it is the best, the most direct, and the cheapest line to construct? I know of no reason why this other line should be constructed; it would not be the cheapest, and, in my opinion, it is not the best. It starts from a much lower elevation than Wolumla. The leading feature of my line is that it starts from the highest elevation on the Bega-Eden line about 700 feet above sea-level, which is so much gained. Then I reach Monaro, near Cathcart, the lowest point on the range. Mr. Darragh starts from an elevation of about 300 feet less, and has, necessarily, to lengthen his line to get a suitable grade. He has lengthened his line in a circuitous manner among hills which are generally unfit for cultivation, and where settlement is comparatively scarce.
1618. Do you know generally the line between Bega and Eden? I know the general direction of it, but I am unable to give a professional opinion on it, not having seen the plans and section.
1619. You have never been engaged yourself on railway work? I received my earliest training as an engineer at Robert Stephenson and Company's works. I was connected with the manufacture of locomotives. I was in the Railway Department here for a short time, designing rolling-stock, before I joined the Roads Department.
1620. Do you know anything of the country through which the Bondi route passes? I have some knowledge of the general direction of that line, but it seems to me that it is geographically in the wrong position; it is too far south.
1621. Do you know whether the country is good or bad? Some of it is good.
1622. It is not thickly populated at present? It is not so thickly populated as this district is.
1623. You do not think that that line would be a better one than the line which you have suggested? I do not think so.
1624. You are familiar with that portion of the district, as well as with the country through which your line goes? Yes.
1625. Since you have been in this district have you noticed any considerable advance in its productiveness? I am not in possession of any statistics with reference to the local output, and, not having that information, I can hardly venture to give an opinion. Of course I have formed a general idea that the local output is not at all what it might be under more favourable conditions.
1626. Are you of opinion that the principal thing that retards the production of the district is the want of a more suitable port than the present ports? The fact remains that Eden is the only port in the Colony south of Sydney. It is a magnificent port, and the question is how to utilise it.
1627. Do you think that if the line were constructed we might reasonably suppose that a very large increase in the production of the district would almost immediately take place? That is not an engineering question, and I am not now speaking of the commercial aspect of the case, but simply of the direction of the line.
1628. Do you know anything of the country north of Bega through which a possible extension of the south coast line would come? I know something of it.
1629. Is it difficult country for railway construction? It is fairly difficult country; but there are no insuperable difficulties.

Mr. J. D. Postle, Assoc.M.Inst. C.E. 24 Aug., 1892.

1630. Is it good country from an agricultural point of view? Portions of it are good.
1631. Somewhat similar to the country round Bega? Yes.
1632. How far does it extend north—much further than Cobargo? Yes; Tilba is very rich indeed.
1633. I suppose the coast range pinches in towards the sea as you go north;—it might pinch in to 10 miles? Yes; in some places. It is somewhat narrow at Tilba.
1634. What is the total annual grant for your roads? About £20,000, including bridges and special grants.*
1635. Would the construction of this line lessen that expense? It might; but it might also necessitate the construction of roads of access to the railway.
1636. Then it might increase it? Yes. The tendency of an improvement is to cause other improvements to be required; but these roads would not be made unless it seemed likely that the prosperity of the district would justify them. If construction were justifiable it would be desirable to make them.
1637. If the annual revenue from this district is from £15,000 to £20,000, that money is returned to the district in the shape of a road grant? That is the amount that comes out of the consolidated revenue, and the return from land goes into the consolidated revenue, so you may say that one pays for the other if you like.
1638. If the land revenue is £20,000 per annum and the road grant about the same, the land revenue is returned to the district? Yes.
1639. *Mr. Ewing.*] How far do you know the country along the coast north of Bega? I know the country up to Bodalla.
1640. You do not know as far as Jervis Bay? No; I went as far as Milton many years ago, but I am not familiar with that part of the country.
1641. Do you think there is any possibility of the line from Bega being connected with the south coast line? That is a matter of railway policy. It would depend upon the view of the Ministers of the day. If you want my individual opinion on the question I do not see the urgent necessity for its construction.
1642. Do you see the necessity for its construction in the immediate future? It entirely depends upon the views of the Ministers of the day.
1643. The dominating thing to be kept in view is the wise development of the country;—would a line from Bega to Shoalhaven be a wise expenditure of public money? That is a very important question, and before I could give an answer to it it would be necessary for me to obtain a variety of information. I should want to go into statistics, and to carefully examine the district before I could say definitely yes or no.
1644. You know of no strong controlling fact which would enable you to express an opinion one way or another at present? None at present.
1645. You mentioned that the reason why you favoured the Wolumla to Bombala route was that you commenced at an elevation of 700 feet on the Bega to Eden line;—did anything else cause you to select that route? I considered that its geographical position was the best. It occupies a central position, and it appears to me that the features of the country indicate it as the most suitable from an engineering point of view.
1646. You are guided by the opinion that it would form part of the Eden to Bega line? Yes. That line must eventually be constructed, and by connecting Wolumla with Monaro a considerable saving would be made.
1647. *Chairman.*] Your district is not the same as the land district of Bega and Eden? I do not think so.
1648. Your district is more extensive? Not necessarily. It has been contracted. My district at present stops at Pambula on the south and Wagonga Heads on the north.
1649. How far north of Bega? About 50 miles.
1650. And bounded on the west by the mountain ranges? By the Tantawangalo and Mount Brown Range, and by the ocean on the east.
1651. You do not know the boundaries of the Bega land district? No.

Mr. Carrick Paul, engineer, Railway Survey Branch, Department of Public Works, sworn, and examined:—

Mr. C. Paul. 24 Aug., 1892.

1652. *Chairman.*] You are an engineer, employed by the Construction Branch of the Railway Department? By the Survey Branch.
1653. How long have you been connected with the Department? Two and a half years.
1654. You are now engaged upon a detailed survey of what is known as Postle's route? I am.
1655. How long have you been engaged on that work? About five months.
1656. Is anyone associated with you in it? No.
1657. What are you aiming at in your work? To locate the line, and to prove that what Mr. Postle has suggested is correct.
1658. Where was your starting point? Wolumla.
1659. How far have you got from Wolumla? About 16 miles.
1660. That would be about half-way? Yes; the balance has been practically surveyed. We have information as to the line beyond that, because Darragh's route from Woods' selection takes the same line as Postle's route.
1661. As far as you have gone you have found the line as practicable as Mr. Postle thought it would be? Yes.
1662. What is your ruling grade? One in 50.
1663. Do you anticipate any difficulty from the remaining portion of the line? No; on the contrary, I am in easy country now. The difficulty lies between Wolumla and the crossing of the Wyndham Road, as the country is broken.
1664. You can get a 1 in 50 grade? Yes.
1665. Will it be very expensive? About 7 miles of it will be. 1666.

* Note (*on revision*):—The total amount on my list for expenditure this year is £13,858. This comprises two distinct amounts, namely, £8,015 for classified roads and £5,843 for special road and bridge grants, not including Taraganda bridge vote, which was voted in a preceding year but is being expended this year.

Mr. C. Paul. 24 Aug., 1892.

1666. Can you give the cost per mile, approximately? No; no estimate has been made.
1667. These details are worked out in the Sydney office? Yes.
1668. You have been engaged in other surveys? Yes.
1669. On what others? On the line from Molong to Parkes, and on the line from Nowra to Jervis Bay
1670. Is the country on the last-named line as difficult country as this? No, comparatively easy.
1671. And upon the other line? That is also easy.
1672. The country upon neither line is as difficult as that upon which you are at present working? No; there would not be such heavy work there.
1673. Can you give us any idea of the relative cost of the Nowra to Jervis Bay line and of this line? I should think this line, taking it from Wolumla to Cathcart, will cost something about the same as the Bega to Eden line, except for the 7 miles I have mentioned.
1674. Those 7 miles would be pretty warm? I think so.
1675. Are there many streams to cross? Yes; there would be a good few culverts.
1676. That is where the cost would come in? Yes; there is no great engineering difficulty—it is just a question of cost. I was on the other route—the route suggested by Mr. Darragh.
1677. It is a deviation? Yes; though he starts from Candelo, and Mr. Postle starts from Wolumla. On the plan they have shown Mr. Darragh's route as also starting from Wolumla, but nothing has been done to connect Wolumla and Candelo. The mileage of that connection would have to be added to Mr. Darragh's line before it could be compared with Mr. Postle's line.
1678. Darragh's line goes from Postle's line to Candelo? Yes.
1679. Have you any instructions to deal with it? Yes.
1680. Your instructions are to carefully examine Postle's route? Yes.
1681. Have you any instructions about Kirby's route? Yes; I went over a portion of the line with Mr. Kirby, and reported upon it.
1682. Your report was adverse to the line? Yes. I stated the levels as they stood, and the probability of a tunnel. Mr. Kirby anticipated getting over the Wyndham route at a higher point than I had been able to get on Mr. Postle's route, but he would not be able to reach that point, because there is a gap missing.
1683. Is Mr. Kirby an engineer? No; a resident of the district.
1684. What would we gain by his route—only a more direct line between the Monaro table-land and Bega? I do not know that it would be more direct. The point I was instructed to make sure about was whether he could get carrying country. He thought he could reach a point on the Wyndham Road which it was impossible for him to reach.
1685. Do you know anything about any of the other routes? No; I know nothing of either the Bondi or Arnheim's routes.
1686. How long will it be before you have finished your work on Postle's route? About two months I expect.
1687. Knowing something of the country, do you think that Postle's is the best route for connecting the table-land with Bega? I think it is on the north side of the Wolumla Range, but I know nothing of the country on the Bondi side. I do not think we shall get a cheaper route on this side.
1688. Have you been over what is known as Arnheim's route? No; I have not.
1689. You do not know the country up there? I know the country fairly well.
1690. It is very much longer than Postle's route? Yes; and his grade is 1 in 40. If I had been permitted to work the line I am on at 1 in 40, I could have reduced it very considerably—1 in 50 makes a very great difference.
1691. You started from the Bega-Eden line at Wolumla? Yes.
1692. Have you got a good point to join on there? Yes.
1693. You do not care about offering an opinion as to the Bega-Eden line, say, between Wolumla and Bega? No; I cannot.
1694. You are camped at Candelo? Yes, near there.
1695. Do the Candelo people seem dissatisfied that the line goes so far from them, or are they content to abide as they are? I can hardly give you an opinion about that.
1696. Is there anything else you think we ought to know? I do not think so. Of course, you understand that I have sent down all the plans and sections that I can, and the estimate of cost will be gone into in town. I can only speak with regard to the portion of the line on which I am working. I do not know what results other officers have got. I know that 14 miles of Darragh's line is heavier than the line I am on.
1697. Do you know the line from Bombala to Cathcart? I have driven over it.
1698. How far is it from Cathcart before you commence to descend from the table-land on Arnheim's route? I have nothing to do with that line, but I suppose about 4 miles.
1699. Then your survey is on the Monaro table-land for 14 or 16 miles? Rather more I think.
1700. What do you think the line would cost? I am afraid to commit myself on that point. I have never been over the Bega-Eden line.
1701. You think the whole length to Bombala would cost about the same as the Bega-Eden line? Yes; except for 7 miles. I cannot give you much of an opinion about the line between Cathcart and Bombala, but that, I think, will be very moderate.
1702. In 65 miles you could form a very fair idea of what the connection with the table-land would cost? Yes. I think with the information they have got of the line between Bombala and Cathcart, and with Mr. Darragh's survey, together with what I have done, they should have a very fair idea of the cost.

THURSDAY,

THURSDAY, 25 *AUGUST*, 1892.

[*The Sectional Committee met at the School of Arts, Wolumla, at* 13·30 *a.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Sutton. | Thomas Thomson Ewing, Esq.
William McCourt, Esq.

The Sectional Committee further considered the proposed Railway from Eden to Bega.

Mr. William John Morehead, dairy farmer, near Wolumla, sworn, and examined :—

Mr. W. J. Morehead. 25 Aug., 1892.

1703. *Chairman.*] What is your occupation? I am a dairy farmer.
1704. Residing near Wolumla? Within 3 miles of Wolumla.
1705. On the Bega side? On the Bega Road.
1706. What is the extent of your holding? 2881 acres.
1707. Is it freehold? Freehold and conditional purchase.
1708. What are you using your land for? A portion of it for dairying purposes, and the balance for fattening, and rearing young stock.
1709. What quantity of dairy produce have you in a year? I only use about 700 acres for dairying purposes, and from that area I produce about 14 tons—I make butter.
1710. That is your principal produce. You make no cheese? No; only butter. I also keep pigs. My output has been 20,804 lb. of butter, the product of, on the average, 100 milking cows. Pigs (in pork) 7,680 lb., and 12 fat calves sold in Sydney, 1,800 lb., an average of 150 lb. each. Out of 150 calves dropped last year I only raised 30. I tried the Sydney market with the 12 fat calves, but the expenses were so great as not to leave me sufficient profit to induce me to continue sending. I kill the calves and sell the skins, for which I get 9d. each. The carcases I throw to the pigs. My output in hides and calf-skins, by weight, has been 1,420 lb., making in all 14 tons 6 cwt 2 qr. 16 lb.
1711. Where do you send all this? I ship the live stock at Tathra, and the butter at Merimbula.
1712. Is Merimbula your nearest port? It is only 12 miles distant. If I ship live stock from there they have to go down on Monday to be ready for shipment on to the drogher on Tuesday morning. After they are put on board the steamer, they will probably be delayed at Tathra until 4 or 5 o'clock on Tuesday, and as the sale day is Wednesday and Friday, the last feed that the calves would get between Monday and Friday would be on leaving home on Monday morning. They would be almost starving on Friday.
1713. How far is it to Tathra? Eighteen miles from my farm.
1714. And the people make Merimbula their port of shipment except for live stock? Yes; it is difficult to ship live stock at Merimbula.
1715. Have you increased the products which you have been sending to Sydney during the last few years? Yes; during the last two years I have added fifty cows, and in the next twelve months I shall add 110 more. I am going in for the making of cheese, as my land will produce nearly three times the quantity in that that it would in butter. I am putting up buildings now for the purpose.
1716. So that you expect to have something like 40 tons of freight to send away? I expect to have from 20 to 25 tons of cheese in excess of the 14 tons of butter which I produced this year.
1717. If the railway were constructed would that lead you to a still larger output? Not in dairying produce, but I should go in more for cultivation. I should use any land that I have fit for cultivation.
1718. What proportion of the land in this district is fit for cultivation? I think that, taking the hilly country, at least 10 per cent. of the land could be put under cultivation—chiefly for hay.
1719. That is 10 miles from here? Throughout the whole district—I am not including flats.
1720. We have had ample evidence about the capability of the Bega district, so I think that it would be better if you confined your remarks to the country within a radius of 10 miles from Wolumla? The area of good country would be considerably increased if you took Wolumla only.
1721. What percentage of it would be fit for agricultural purposes? I believe 25 per cent. of the land might be put under agriculture if it were desirable.
1722. What would be the nature of the production from that 25 per cent.? Chiefly oaten hay and potatoes. I believe turnips would be a very remunerative crop to grow.
1723. What would oaten hay bring you per acre? I think that I hold about the poorest farm in Wolumla, and I have been growing off the piece of land—which you might have seen coming along—for the last 15 years. I have grown hay in the same place for year after year, and the last crop was better than the first. The land has shown no signs of exhaustion though it has not had any manure. I get an average crop of a ton and a half per acre.
1724. You think that if the railway were constructed you would be able to send agricultural produce to Sydney and compete with that sent from other places? I think they could afford to pay a freight of 10s. a ton on the railway. Last year I shipped 40 tons of wattle bark from Eden by the Tasmanian steamers for 10s. a ton.
1725. And you think other produce would be carried at the same rate? Yes, and I could well afford to give £1 to get produce carried from my farm to Sydney, and in that case I should grow 100 tons where I now grow 5.
1726. With a freight of 10s. from here to Eden, and 10s. thence to Sydney, you could very profitably engage in hay-growing? I could always put 50 or 60 acres under hay. If it were a hard year I could use the hay myself, and if it were a good year I could send the hay to Sydney.
1727. But if you had a bad year the railway would not get the freight? No, because I should want the hay myself.
1728. What would the land about here yield in potatoes? I consider that it would yield from 4 to 10 tons per acre. Those are actual results which I have myself. Less than 4 tons I do not consider a crop.
1729. You think, taking a rate of 10s. to Eden and 10s. to Sydney, you could profitably compete in the Sydney market? I am sure of it, more especially as we now have protection. It seemed to me a great pity to have so much produce landed from Tasmania and Victoria, and to have oaten hay brought to Sydney from Adelaide. I was told that it was brought round for 4s. 6d. a ton, and that chaff from Tasmania

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Tasmania was landed at 12s. a ton, yet we in this district, who are so much nearer, cannot get into our own market. Now that we have protection, however, whether a railway is made or not, I intend to start and grow something.

1730. Supposing the contract for the railway had been let, and the work was to be completed within twelve months, what would you commence to do;—how much land would you put under oaten hay, and how much would you put under potatoes and other produce which you are not now growing? I have a small farm—64 acres, at Boggy Creek, 3 miles from Pambula—and I am willing to give a bond to the Government that if the railway is made within three years I shall contribute to it from 40 acres of that land, from which I do not now get 1 lb. of produce, 100 tons. That will be apart from what goes from the rest of my land.

1731. What will go from the rest of your land? The land I refer to is particularly suitable for agriculture, but the greater part of it is under scrub. Some of this scrub land contains very good soil, but it will not pay to clear it for grazing purposes. The suckers and seedlings keep us fighting for five or ten years. If we took crops off the land, however, one or two years would pay for the clearing, and we could then continue cropping, and afterwards lay down in grass. At present it is almost impossible to clear coast land for grazing owing to the expense of keeping down the scrub.

1732. This land, from which you expect to produce so much, is close to Pambula? Yes.

1733. The railway would only get the benefit of produce from it for 15 miles? I am willing to pay the same rate as from Bega—10s. It would pay me if I could get to the Sydney market for £1 a ton.

1734. Do you think that your experience and determination is shared by other people in the district? I do not say that it is by all; but it is by a good many. At a place near here they are growing beautiful rye, and this is the second crop they have grown this season. A man named Longhurst has, to my knowledge, taken 10 tons per acre off his land, and he got a good price for his produce. He then ploughed up the land and put in rye, and he has had two crops in one season.

1735. Have you suffered any inconvenience through having to ship at Tathra or Merimbula? Personally, I never suffered any inconvenience at Tathra, because I know by the way the wind is blowing here if the steamer can call, and if there is any risk I do not send my stuff down. If there is a fresh north-east wind I do not send it; but if the wind is from the west or from the south I send it.

1736. Do you sometimes keep back your butter on that account? No; I send my butter to Merimbula. It can go pretty well in all weathers.

1737. You do not suffer any inconvenience? Yes, I do. My butter has to be put on the dregher, and is then left on the deck waiting till the steamer comes. It has to lie about for hours sometimes, and often becomes melted by the heat of the sun and depreciated, and is therefore unfit to compete with butter from other localities.

1738. Could you not overcome that difficulty by sending to Tathra, where there is a store? But it might have to lie there, and in a falling market I might lose some pence per lb.

1739. I suppose people here look upon Eden as their natural port? I do.

1740. Do you know anything about the route of this railway? Yes.

1741. Do you think that it is the best that could be obtained? I think so, taking into consideration the fact that it is the shortest and cheapest route. Other routes might perhaps go nearer Candelo.

1742. Do you think the people of Wolumla would very largely increase their output if the railway were constructed? I do.

1743. What do you think the increase would be in the first year—25 or 50 per cent.? Not 50 per cent.; but I believe it would increase. I believe the production of the district is becoming greater every year—5 per cent.

1744. If the railway were constructed the increase would be greater? I believe that the imports and exports would increase 30 per cent.

1745. The first year? I do not say that. I say within three years.

1746. You know that it is estimated that there will be a loss of £19,000 upon this line? Yes; but I have some idea of how that estimate was arrived at. I presume it was based on Mr. Crawford's estimate. Well, he only put me down as producing 15 or 20 tons of butter from off all my land, whereas last year I produced 93 tons 2 cwt. 2 qr. 2 lb. in all. He took a great deal of pains in making his calculations; but there was not sufficient allowed for wattle bark. Last year I shipped away 40 tons of it, and I intend to continue to do the same for some years. The people of this district are going in largely for bark, and are largely growing wattle. Grass will grow under the wattle, if the wattle is not sown too thickly

1747. Mr. Crawford has generally been thought too sanguine as to the trade? It may have been my fault. I milk only 100 cows, and he said from that number of cows I could only produce so much. It was my fault for neglecting to tell him what other produce I took off the land. I did not speak of fat cattle or wattle bark.

1748. You do not know whether the other people of the district were more gushing? Perhaps they were—I cannot tell. Then again, I do not know whether anything was allowed for district traffic, which I know would be very considerable—traffic from one part of the district to another. I think it was only on the export and import from Sydney that the calculation was made.

1749. Is there likely to be very much traffic of that kind? I think so.

1750. Excepting passengers, where will it come from? The line here runs through beautiful freestone, which would be splendid for building purposes. I look upon the days of wood as nearly done. A good deal of stone may be required for Bega, and if the line were made to Eden, Eden would not be contented with the few rookeries that she has now. There is very little timber throughout the Bega district—it has all been killed, though there is splendid timber between here and Eden, on both sides of the line.

1751. Do you know any place in the Colony, or in any other part of the world, where it pays to carry stone for building purposes? Stone and bricks must come along the line. Bricks are now taken from Tathra by dray, but they would come here by rail if the railway were constructed. I think there would be a great trade in timber for firewood, fencing, and building purposes.

1752. Where is that great trade to come from? We require the wood now. We have to bring it on ordinary drays at present.

1753. You get your firewood, I suppose, off your land? In Bega they do not. They are drawing it 3 miles from here to Bega.

1754. Do you think that firewood would go by the railway for a distance of 12 miles, considering the double handling it would get? I think so.

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1755. Do you think it would pay to bring wood from the bush, put it on board the trucks, take it 12 miles by train, unload it again, take it to a wood depôt, and then cart it away to the consumers? I believe so.
1756. It would be very expensive? It would pay better than hauling it for 12 or 13 miles—you would have no horses to feed.
1757. What do you estimate the passenger traffic would be? I think it would be considerably increased. Most of the land in the district was selected in the early days, and the children who came here then with their parents have since parted from their fathers, and consequently five families have to live where perhaps only one lived before, so they must turn their land to other uses in order to make it remunerative.
1758. What has that to do with the passenger traffic? I believe that a great many of the old people will go out of dairying. Many of them are going out of it now, and are living in Bega or Sydney. I believe many of them would go and live at Eden, and leave the young people to manage the dairies. I have done that some years, and after another couple of years I intend to retire and live at Eden permanently. You will see from this that there will be a large amount of passenger traffic backwards and forwards, caused by the visiting amongst families.
1759. The Commissioners say that they have made a most liberal estimate. They have allowed for each adult two double journeys and for each child one double journey a year? I think that, considering that Eden is the only watering-place this district has, the estimate is a good deal under the mark. In the summer-time Eden will be a great watering-place, and a great many well-to-do people from the country districts will go down there to spend the summer months.
1760. One, at all events, of the Commissioners has had long experience in his profession, and ought to be an authority as to the possible or probable passenger traffic? They have no doubt based their estimate on the population, which I am not in a position to dispute. I simply give you my reason for believing that traffic would be increased.
1761. How long do you think it would be before the line paid interest on capital and working expenses? A very short time. I look upon the railway in the same way as you might look upon a bridge. Nearly the whole of the traffic will pass along the whole length of the line. There are a great many reserves between here and Eden, most of them containing good arable land, and I believe that if they were thrown open for settlement a dense population would take possession of them. They cannot take them up for pastoral purposes. They must use them for agricultural purposes, owing to the great cost of clearing the scrub land.
1762. Where are these reserves? There is the Pambula reserve.
1763. What is the area of it? I cannot tell you. Then there is the Wolumla reserve, and there is a large railway reserve. The land on the coast between Pambula and Eden is largely made up of reserves.
1764. What kind of land is it? Some of it is inferior and some of it is very good land. Some of the land in the Wolumla population reserve is very good, and the land west of Pambula is all good arable land, while that to the east of Pambula is not so good, though it is covered with good timber.
1765. We have been informed that teamsters look with considerable disfavour upon loading for Twofold Bay, owing to the want of feed below Wolumla? The soil is good, but it is covered with dense scrub, and produces no grass fit for bullocks to eat.
1766. You think that if the reserves were thrown open there would be a large amount of settlement? I do. Near the Merimbula Lake you will see a small portion of land which was once under scrub. The owner of it, while the railway was being permanently staked out, bought it in its natural state at £10 per acre. It has now been beautifully cleared, and there is plenty of such land which could be brought under cultivation. That land was bought purely because the railway was surveyed through it, the purchaser thinking in his innocence that the line would be made within twelve months.
1767. What about the forest reserve—is there good timber on it? Yes.
1768. Do you not think that it is desirable that it should be retained as a forest reserve? If the Government got a good price for it, I do not see why it should not go into private hands.
1769. What will you do a few years hence for fences? There is plenty more wood growing in other places which are not fit for cultivation.
1770. Do you know anything of the routes to connect with the table-land? Yes; I know three of them.
1771. Do you know Postle's line? Yes.
1772. Do you think it would be the best? I do not.
1773. Which do you think would be the best route? The Bondi route.
1774. That would not in any way affect this district? It is a question of opening up country, and that route would open up a district only second to the Bega district.
1775. There is very little population there now? Because one man, Sir William Manning, owns about 16,000 acres of it. I believe that he is now offering it for sale.
1776. In view of the difficulty that we have in giving railway communication to the districts where there is population, do you not think that it would be unwise to construct a line where there is now no population? I think there should be no hesitation about running a railway through good land when the grade is easy, as population would soon follow.
1777. Do you know that the Bondi route would be 5 miles longer than Postle's route? Yes, but I believe that the line would be worth making if it were 25 miles longer, because of the country that would be opened up by it.
1778. Do you not think it would be better to try and serve existing populations before we commence to cater for the future? I think the Bega line would serve this district. Then why not run the other line through where there is a good district?
1779. You think because there is good country on the other route that is the best place to make a connection with the table-land? Yes.
1780. Suppose Parliament said that the Bega to Eden line could not be constructed for many years, on account of the probable large loss upon it, unless it formed a connection with the Monaro table-land, which route would you advocate—Postle's or the Bondi route? I know where Postle's route runs, but I believe that it would be very expensive, because it goes along a chain of mountains and crosses a number of spurs. I believe it would be a far more expensive line than the other.
1781. Have you ever been through the country from Bombala to Eden? I think I know every mile of the country between Cathcart and the sea, but I do not know beyond that.
1782. Have you ever been on the Bondi route? Only as far as Bondi.
1783. How far from Eden? Fifty-five miles.

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1784. Two-thirds of the way? Yes.
1785. Is Bondi on the low-land? It is at the foot of a mountain.
1786. The descent from the coast to the table-land of Monaro will have to be made in the last 20 miles? Yes, but that is the easiest grade.
1787. How do you know that? I know it from the surveyors who are running out the line. I was with a party who explored the country to give the surveyors some information.
1788. *Mr. Sutton.*] Have you ever sent any potatoes or hay to Sydney? I have sent potatoes—not hay.
1789. What price did you get for them? That was many years ago. I only got 25s. for them, and I never sent any more. At present they are £3 a ton—a remunerative price.
1790. Speaking of the increase of agricultural produce in this district, did you take into consideration the fact that there would probably be a large increase of production all over the Colony within a few years? I do not think that that would affect the Sydney market.
1791. Why? Because there are such large quantities coming in now from intercolonial ports. This produce would then have to find other markets.
1792. I see by the newspapers this morning that hay is £5 a ton? That is a fair price.
1793. Two years ago you could not get more than £2 or £3 a ton? That would not pay.
1794. Do you think that the time will never come when we shall have an over-supply? In that case, produce from Tasmania and Adelaide would not be sent here. If we were in as good a position as they are it would be different. If we could get our produce delivered for £1 a ton, I believe that we could compete against the world in Sydney.
1795. At what price in Sydney would it pay to send chaff from here? I could sell it as low as £3 a ton.
1796. *Mr. Ewing.*] What is the value of the land we came through, in its natural state? It is all private land that you came through.
1797. Supposing a person wanted to sell 300 or 400 acres, what would he get for it? The improved land is valued at about £5 an acre.
1798. I suppose the value of a farm would be £3 an acre, plus something like the value of improvements? It very much depends on the locality. Cleared land about here is worth about £4 an acre.
1799. Can you clear land for £1? Yes; in the way it is cleared here, by ringbarking the timber and keeping the scrub down.
1800. The disabilities under which the district labours are, a bad port at Tathra and Merimbula, and no ready despatch? Yes.
1801. You believe that that would be remedied by a railway to Twofold Bay? I do.
1802. You wish to go there in order to get a good port? Yes.
1803. Do you think the produce of the district will ever be sent anywhere else than to Sydney? I believe the time will come when we shall be able to produce more butter than can be sold in Sydney, and it will have to be shipped to England to relieve the glut in the summer months. Butter could be shipped direct from Twofold Bay.
1804. I heard you make a remark about a falling market. What causes a market to fall? Over-production.
1805. So that if New South Wales produces more butter than she can use, the article will become very cheap unless it can be sent elsewhere? The supply in New South Wales during the summer months is greater than the consumption, and in winter it is below the consumption.
1806. Do you think New South Wales is producing as much butter now as she will produce? I believe there will be three times as much butter produced in the future. There is no prospect of the London market being over-supplied; and if our butter is exported, our dairymen will have an inducement to go on producing as much as they can.
1807. Do you think that New South Wales could produce thirty times as much butter as she is producing at present? I do not think so.
1808. If she did produce that quantity, butter would become very low in the market unless it could be sent elsewhere? It would be unsaleable. I have sold it myself at 3d. per lb. before the export market opened.
1809. If New South Wales produced thirty times as much as she wants, I do not see how her dairymen would benefit by having control of the local market? We shall ship direct from Twofold Bay to London at remunerative prices.
1810. The farming interest here is not absolutely dependent upon the Sydney market, but upon the fact that there are people in other parts of the world who will take your produce? Certainly.
1811. You believe that from Eden you will be able to trade with the other colonies? Yes.
1812. And if there were a good price to be obtained for butter in Tasmania or Victoria, you could send there? You would be in a better position to take advantage of the market.
1813. And you want to do so? Yes.
1814. You regard the local market as too contracted? Yes; and at the present time we have to send our produce to Sydney, and we are sometimes in the hands of a ring, so that the middlemen get a great advantage over the producer.
1815. You believe that people would produce a good deal more if the railway were opened? I do. And I believe that all the produce would go to Twofold Bay, and none to Tathra or Merimbula. Competition at Twofold Bay would be so keen that vessels would have to go direct to Sydney, and none of them would call south of Bermagui. I believe that the vessels now trading here would trade north of Bermagui.
1816. So you will commence by destroying the trade at Tathra and Merimbula? For the last two years the rate of freight to Eden by the Union steamers has been 10s. a ton, by the Illawarra Company's steamers it was £1 a ton up to the 1st January last year. I believe their freights were reduced in order to stop the agitation for a railway to Eden, and also to prevent an opposition steamer coming here, which the district was going to try for. If this railway was shelved for a time, and there was no opposition, we have no guarantee that freights would not go back to the old thing.
1817. *Mr. McCourt.*] Is the Candelo traffic shipped through Wolumla? Yes; some of it is, the rest goes to Tathra.
1818. What other traffic comes through here? All from Colombo right away to the mountains, and all the southern portion of Monaro. A great deal of Monaro produce now goes to Twofold Bay, and the squatters at Monaro frequently pay 6d. a cwt.—10s. a ton—to get their stuff delivered at Twofold Bay.

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1819. I want to know what produce they ship through Wolumla? If you follow the Bega River right up, all that country, and a portion of the country on the east side of the Bega River, you would find, comes here.
1820. A large quantity of traffic comes through Wolumla? Yes. Some of the Candelo people, however, go to Tathra.
1821. It is 12 miles from here to Bega? Thirteen.
1822. And 12 from Tathra to Bega? Yes.
1823. If Postle's or Arnheim's routes were constructed they would junction with the Bega line at Wolumla? Yes.
1824. In that case do you think that a line from Wolumla to Eden would suit all purposes—you would want to go on to Bega? Well, half a loaf is better than no bread.
1825. Would it not suit the Bega people better to come here rather than to go on to Tathra? Yes.
1826. If the line stops here we should save £200,000, and the district would be just as well served? I think it would be false economy, if, having gone over the rougher part of the road, you stopped here.
1827. It is not very level between here and Bega? Yes; it is.
1828. Then the other part of the country must be very rough? Yes.
1829. Supposing that Parliament thought that £560,000 was too much to spend on this railway, but were willing to spend £360,000 in constructing a line from Wolumla to Eden, would that serve the district pretty well? I should be willing to accept the line on the condition that the Government should allow us to continue it to Bega.
1830. Do you think that a line here would suit all purposes? No; I think the railway should go to Bega. A railway here would suit the Monaro passengers well.
1831. There is no line from Monaro to Bega? A great deal of the Monaro traffic comes through Wolumla.
1832. If the line were constructed do you not think that the Bega people would bring their produce to Wolumla, rather than take it to Tathra? I do not know.
1833. You do not think they would? I do not think all would.
1834. Do you not think that it would be better for them to go to the grand port of Eden rather than to Tathra? Some would rather go to Tathra, I think. If they went to Eden they would have to drive their produce 13 miles, and then have the railway freight in addition to the water carriage.
1835. But if they got a cheaper freight from Eden, could that not be set off against the railway freight? A cheap water freight, together with a railway freight, would make up as much as the freight from Tathra. I believe the line would lose a considerable amount of revenue if it only went to Wolumla. If you take the line from Bega you secure the whole of the traffic of the district. If you stop at Wolumla you divide it, and the railway will then not pay.
1836. You are not in favour of a line stopping at Wolumla? I am not.
1837. You stated that if the railway were constructed you would grow hay and potatoes? Yes, and other agricultural produce.
1838. As a matter of fact, is not dairying more profitable than agriculture? Certainly not. I can only get 20s. per acre gross from dairying, whereas from hay I can get £8 an acre.
1839. That would only be from a special piece of land? Yes; but one would make use of that land.
1840. If farmers near Sydney, within 5 miles of a railway station, and on as rich land as you have here, say that dairying pays them better than agriculture, you are of a different opinion? I do not think there is any good agricultural land within that distance of a railway near Sydney. I have farmed myself on the Nepean.
1841. There is perhaps better land around Kangaloon and Robertson—will your land carry a cow to the acre? No. Some of it is what is called poor land, and requires 4 acres to a beast, but it will produce from 30 cwt. to 2 tons of hay without being exhausted for 10 years.
1842. Can any of your rich land carry a cow to the acre? I have no rich land.
1843. If it has been stated that when you cannot get from Tathra you cannot get from Eden—is that correct? It is false. I lived there seven years. Illawarra steamers go there for shelter. They call at Tathra on Sundays and Thursdays, and discharge any passengers they have, weather permitting. They then go on to Eden, and lie there for shelter, and go back to Tathra early in the morning—as soon as they can in the summer-time, so as to get there before the north-east wind rises, when they have to return to Eden again for shelter. It would not be safe to let steam down at the other places. We can never expect produce to be carried from Tathra and Merimbula as cheaply as from Eden.
1844. Eden is always safe? Yes, in any weather, and without the necessity for a breakwater, which I have heard some people talk about. The reason that one or two large vessels did not lie alongside the wharf was that the wharf needed to be lengthened. Howard Smith's boats refused to go alongside the wharf until it was lengthened, and hence the rumour arose that they could not get alongside. The Illawarra boats make fast to the wharf in the roughest weather. The only thing that annoys them is the south-west wind straight across the harbour, but the same thing occurs at Sydney.
1845. The railway runs through your land? Yes.
1846. It will increase the value of your land? I think so, to the amount that it would reduce freight.
1847. Have you considered the betterment principle as applied to the construction of railways? Only since the Committee has been sitting.
1848. What do you think of it—is it a good principle? Yes; if it could be universally adopted, but we are now in the very last stages of railway construction.
1849. What do you mean by its being applied universally;—do you speak of its application to all future railways? Yes.
1850. If your land were increased £1 an acre in value by the railway, would you be willing to pay half that amount towards the cost of its construction? Yes.
1851. Do you think other people here would do the same? Yes; of course disputes might occur as to whether there really was that increase in value. I believe the principle would be a good one to apply.
1852. You think that land 10 miles away should contribute its proportion? Yes.
1853. You are of opinion that it would not be wise to terminate the line at Wolumla? I think it would not be wise.
1854. If it were found too expensive to construct the railway to Bega, would you take the half loaf? Yes, for the present, but I do not think it would cost the amount estimated.

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1855. But if it were found to be too expensive? I should be willing to accept that portion of the line if I could not get the whole of it.
1856. Do you think the district would be fairly well served by it? Yes; it would serve Candelo quite as well as the Bega line.
1857. And Colombo? No.
1858. It would serve a district which produces largely? It would serve a great portion of the district, but I believe that the most important part of the district would be left at a great disadvantage. I cannot see why 13 miles of flat country should be cut off.
1859. But if Parliament determined to save £200,000, the district would be fairly well served by it? Yes.
1860. Why do you call this the junction township? Because we thought we should have a railway years ago.
1861. What would the junction be with—the line from Bombala? Yes. At present we have to pay 1s. per ton a mile for ordinary carriage, and on by-roads a higher rate, and I cannot see why the Government, if they made the railway, need charge us uniform rates. I should be willing to pay 1s. a ton—a special rate.
1862. A high rate? Yes; I believe we could afford to do so. If we do not get a railway for twenty-five years, we shall have to pay 1s. per ton for the carriage of our goods on the ordinary drays, and why not pay 6d. or 9d. a ton per mile on the railway. If the Commissioners have based their estimate of the revenue at £11,000 on a freight of 3d. a ton, a freight of 6d. a ton would make that revenue £22,000, and a rate of 9d. would do away with the estimated loss altogether. Even with a rate of 9d. the district would save 3d. over the dray rate.
1863. Yes; but then the water carriage might compete with the railway? I do not think so.
1864. Would you pay 6d. per mile per ton to Eden? That would be 12s. a ton—making the freight to Sydney about 22s. 6d.
1865. What do you pay for butter now per keg? Two shillings for a 50-lb. keg.

Mr. James Cochrane, farmer, near Wolumla, sworn, and examined:—

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1866. *Chairman.*] Where do you reside? About 2½ miles on the Candelo side of Wolumla.
1867. What is the extent of your holding? I have 505 acres there and 384 acres at Candelo.
1868. *Mr. Suttor.*] What is the general production of this district? I never bothered much about my neighbours, but I can state what I do myself. I dairy on 505 acres, and in the year ending 31st June last I produced 394 kegs of butter. I also grew 25 tons of chaff, and shipped 97 pigs to Sydney. I sold two or three lots to a dealer, but they went to Sydney just as those I shipped myself did.
1869. What did you do with the chaff? I sold it locally
1870. What price did you get for it? £5.
1871. That is better than sending to Sydney? I was offered £5 10s. in Sydney.
1872. But what would the expenses be? I do not know what the freight would be. The company advertise it at 15s. a ton, but I pay at the rate of £2 a ton. If I send a pig by the steamer they charge me 3s., and 2s. for a 70-lb. keg of butter.
1873. Can you give us any idea of the area of country that would contribute to the railway traffic? The year before last I grew 2,100 bushels of corn.
1874. Would you send your corn to Sydney? If I found it paid. It would depend on the price.
1875. What do people do with their corn when they do not send it to Sydney? I turned pigs into one paddock. I find that pays as well as anything else.
1876. What do you do with your bacon? I send it to Sydney. Sometimes we sell the pigs alive and send them to Eden. I sent eighteen in one shipment to Sydney from Merimbula, but five of them were smothered on the trip. I was only paid for thirteen.
1877. The general rule is to use a great deal of the maize for feeding pigs? Of late years pigs have been found to pay as well as anything else. They need the employment of less labour. If it were not for that they would not pay so well. Bacon is very cheap this year, and I think pigs have been a failure.
1878. *Mr. Ewing.*] You heard Mr. Morehead's opinion with regard to the disabilities under which you labour, and the superiority of Eden as a port? Yes.
1879. You agree with him? I agree with him that Eden is our proper port. I ship my butter from Merimbula. It goes out in the drogher and has to stop in the sun.
1880. You agree with Mr. Morehead as to the disabilities under which you labour at Tathra;—you are certain that that is not a good port? Yes.
1881. And that Merimbula is not? Yes.
1882. If a railway were made to Eden, you would have access to as good a port as you require? Yes.
1883. The railway would increase the productiveness of the district and liberate your energies? Yes.
1884. Therefore you agree with him in general terms? Yes; the district will produce a lot more now that the freezing works have started.
1885. *Mr. McCourt.*] Do you think the line will pay within seven years? I am pretty well sure it would. My farm has increased 100 per cent. I think the district would produce 100 per cent. more than it is producing now.
1886. Do you think the railway ought to stop for the present at Wolumla? It would be a great convenience to have a railway from Wolumla. Such a railway would serve me.
1887. Would it serve Candelo? It would serve Candelo as well as the proposed line would, but it would leave out Bega.
1888. Do you think a line as far as Wolumla would do for the present? I think it would, in a manner of speaking; but it would not suit the whole district.
1889. But it would suit producers in Candelo, and round that way? Yes. If it went further on to Monaro it would eventually go that way I think.
1890. You think it would do for the present to leave the line at Wolumla? Yes, for a few years.
1891. Do I understand that if the railway were constructed the production of the district would, within three or four years, be increased 100 per cent.? I think so. I have increased my farm to that extent.
1892. You would go in for agriculture more than you do now, if the line were constructed;—would you keep on dairying? Yes, I would grow more if I found that it would pay.
1893. Suppose the line was to be finished within twelve months, would you at once set about growing various things with a view to testing the market? Yes.

Mr. J. Cochrane. 25 Aug., 1892.

1894. What would you grow? Corn and potatoes.
1895. How much more corn would you sow than you sow now? I could grow more for my cattle. I would cultivate more, and make the cattle produce more.
1896. You would increase your dairying more than your agriculture? I would go in for both.
1897. What increase would there be in your dairy produce? I reckon that if all the land were cultivated and laid down in English grasses, I could increase my output 50 per cent. easily.
1898. Not within a year? Yes, if I had the capital, but I have not got the capital.
1899. Do I understand that if the railway was in course of construction you would commence to increase your dairying output rather than go in for agriculture? I would go in for increasing my output in both industries. I would lay down some paddocks in grass seed, and cultivate the rest of my land.
1900. How much would you put under corn? The year before last I had 40 acres under corn, but I found that it did not pay.
1901. Would you put 40 acres under corn if the railway were in course of construction, either with a view to using it yourself or in order to send it to Sydney? I think I should.
1902. Would you go in for potato growing or for anything like that? Yes.
1903. How much would you put down in potatoes? Well, you cannot do everything in a year or two.
1904. What would you as a common-sense man put in, if the railway were in course of construction? I think I could cultivate 50 or 60 acres. I have 200 acres of good flat land, as good soil as there is in the country.
1905. If the railway were to be finished within twelve months, your output in dairying and agricultural produce would be at least doubled? It would be increased at least 50 per cent.
1906. And you would go on increasing it? I think so.
1907. You think the general run of farmers would do the same? Yes. I am certain the district would produce 50 per cent. more.
1908. Do you think you would be able to pay 10s. freight between Wolumla and Eden? I would sooner pay £1 than put up with our present disabilities.
1909. Do you take your produce to Merimbula yourself? Yes. If I send it by the carriers I pay 1s. 6d. a keg for the butter.
1910. Do you agree with Mr. Morehead that carriage, taking it all round, costs £1 a mile per ton? We are paying 1s. 6d. a keg, which would weigh about a cwt.
1911. Do they bring you back the empty kegs? Yes, the freight includes that.

Mr. Charles Walsh, cooper, Wolumla, sworn, and examined:—

Mr. C. Walsh. 25 Aug., 1892.

1912. *Chairman.*] How long have you resided here? For sixteen years.
1913. And have you been engaged in your present trade all that time? Yes.
1914. *Mr. Ewing.*] You have a full knowledge of the timbers of the district? I have.
1915. What woods do you generally use in your work? Monntain ash and woollybutt.
1916. Tbey are both hardwoods? Yes.
1917. What do you use the mountain ash for? It can be used for any coopering work—wine-cases, butter-kegs, or anything else. It is the best timber in Australia for our work.
1918. The wood does not taint the butter? No.
1919. What do you use woollybutt for, principally? It is a good useful timber for any purpose. It will stand water beautifully. The ash is superior to the Tasmanian timber. A gentleman in Sydney, Mr. M'Cormack, of Darling Harbour, having used this timber, wrote to me asking me to send him 100,000 staves. I told him that I would deliver the staves at Merimbula, if he would arrange with the Illawarra Company to carry them; but when he found out what the freight would be, he discovered that it was more than the Tasmanian staves were being sold for in Sydney. The Tasmanian steamers pass by Twofold Bay loaded with timber which is inferior to ours. We have thousands of acres of this timber unused.
1920. There is a large extent of mountain ash? Yes.
1921. And a great extent of woollybutt? Yes.
1922. How far is that country from the proposed line? It starts from the top of the Tantawangalo Mountain, and it keeps the ranges right down to Twofold Bay. Woollybutt is found all along the coast.
1923. Does this timber grow principally in reserves? Some of it grows in reserves, and some on private land.
1924. I presume that you do not exactly know the boundaries of the reserves? Yes; I know that there is one large reserve on the top of the mountain.
1925. Is there any timber in that? Yes.
1926. Is there much other good hardwood? There is splendid blackbutt.
1927. A large quantity of it? Yes.
1928. Any ironbark? Yes.
1929. A large quantity? Yes. On the range from here to Bega woollybutt is the principal timber; but from Pambula to Twofold Bay and along the coast the timber is principally blackbutt. Further inland there is a good deal of ironbark and stringybark.
1930. So there is a lot of valuable hardwood in the district, and you believe that there will be a large trade in it? Yes.
1931. What do you do with the timber you make up? I sell it.
1932. Do you make the butter-kegs here? Yes.
1933. They all use locally-made kegs here? Generally.
1934. Do you think you could get into the Sydney market if the freights were sufficiently low? Yes.
1935. You feel sure that your timber is quite as good as, or better than, the Tasmanian timber? Yes; our timber is better than any we get from Sydney.
1936. Could there be a large trade in hardwood from here to Sydney? Yes.
1937. You know that there is a large quantity of hardwood on the Clarence and in other places? Yes; but there you have to go further inland to get it.
1938. Is there not good spotted gum and ironbark there? We have plenty of spotted gum here.
1939. Is spotted gum a good timber? If the sap is taken off.
1940. Have you much of it? The Nelson Ranges, near Bega, are full of it.

Mr. C. Walsh. 25 Aug., 1892.

1941. What else do you work up here? In my trade ash is the principal wood used, but there is plenty of stringybark and ironbark. Ironbark was taken from Wolumla to the new bridge at Bombala.
1942. Do you know that they are taking timber from Cooma for a bridge at Bombala? No; but a lot of ironbark has been taken out of the range within 2 miles of Wolumla during the last six months. Most of the timber for the last bridge built at Bombala was taken out of the range here.
1943. I presume you regard yourself as shut out from any but a local market, because Merimbula is not a sufficiently good port for you? Yes.
1944. What are the freights by the Illawarra Company's boats? They wanted £1 2s. per 1,000 to take staves to Sydney, and since the meat-freezing companies have started there I suppose they use 70 per cent. more staves than were used before.
1945. What is the freight from Tasmania? 4s. per 1,000.
1946. What is the value of staves per 1,000? £8.
1947. Tasmanian staves come here for 4s., plus the duty, and you pay £1 2s. to send staves from Merimbula to Sydney? Yes—18s. more.
1948. What does it cost you to get to Merimbula? If I could get staves carried at the same rate as is charged on staves from Tasmania, I suppose I could send them down for £1 5s. per 1,000. I can bring them from where they are growing to this place for £1 5s. per 1,000.
1949. If the railway were constructed to Eden, would you send them there? Yes.
1950. You believe they would pick up a good boat there? I believe there would be a good trade in both timbers.
1951. There is a large quantity of hardwood in this district, and you believe that with a good port and a railway the timber trade would be developed? I do.

Mr. James Wright Goward, farmer, Wolumla, sworn, and examined:—

Mr. J. W. Goward. 25 Aug., 1892.

1952. *Chairman.*] How far do you live from this township? Five miles, Candelo way.
1953. What is the extent of your holding? Three hundred and one acres.
1954. *Mr. McCourt.*] What do you produce? Dairy produce.
1955. How much per annum? One hundred and nineteen kegs of butter—5 tons.
1956. Can you grow wheat? I have not grown it of late years. Thirty-five years ago I grew all wheat.
1957. Why did you leave off growing it? Because the rust came.
1958. Do you think it is possible to grow wheat to any extent now? I think so. It was grown last year, and a very good sample obtained.
1959. If it could be grown here, would it be a profitable crop? I do not know. I think dairying would be profitable in this district.
1960. Would dairying be more profitable than potatoes or hay? They would be profitable for supplying the district.
1961. Do you not think that dairying is the most profitable pursuit? Yes, at present.
1962. That is why you go in for it? Yes.
1963. The principal industry of the district is the dairying industry? Yes; what I get is obtained from 200 acres. [*Witness here handed to the Chairman a return showing the results obtained from his farm.*]
1964. You milk seventy-eight cows in the year? Yes.
1965. You had twenty calves? Yes.
1966. You have thirty-seven pigs and seven horses? Yes.
1967. And you hold 301 acres of land? Yes. I have more pigs now.
1968. I suppose your neighbours produce as much as you do? Yes.
1969. You would all use the railway? I think so; I should.
1970. You would come to Wolumla? Of course, that would be the nearest place.
1971. If the railway were constructed, do you think the produce of the district would increase very largely and rapidly? Yes.
1972. And you think that within a reasonable time—say, within seven years—the railway would pay? I believe so.
1973. Is there anything else you would like to say? I think the district requires a railway, and that it would pay well if it were constructed. The population of the district would greatly increase in seven years if we had railway communication.
1974. Would it be pretty nearly doubled in seven years? I think so, because of the different industries that would spring up.
1975. The land here, as a rule, is held in large areas? No; Mr. Tooth has a large block of land.
1976. I mean as a general rule? Well, I have 300 acres; other people have 400, and some have 500.
1977. Taking land of an average quality, could a man with a moderate family make a living on 100 acres of it? I have made a living on my land with a family of twelve.
1978. And you think that a railway would increase the population? Yes; but then they could produce more.
1979. If the land were held in smaller areas the production would be larger? Yes.
1980. Is there anything else you would like to say? I think there would be a great trade in timber if the railway were made. The population would increase, and more labour would be employed in the district. Inland the timber is all killed, and within a few years we shall have to bring it some distance.
1981. You think that if the railway were constructed there would be a great future before the district? Yes; I have seen a great increase during the time I have been here.

Mr. George Smith, dairy farmer, near Wolumla, sworn, and examined:—

Mr. G. Smith. 25 Aug., 1892.

1982. *Chairman.*] You reside near Wolumla? Yes, 3 miles towards Candelo.
1983. How long have you been living here? Three years.
1984. What is the area of your holding? Four hundred and eighty-two acres.
1985. What do you use the land for? Dairying purposes.
1986. Do you grow agricultural produce? A small quantity of it.
1987. Where do you take your produce to? Merimbula.
1988. All of it? Yes.

Mr. G. Smith. 25 Aug., 1892.

1989. Have you found any inconvenience in shipping produce at Merimbula? When I am making butter I have to work it up on Thursday, take it away on Friday, and it does not leave Merimbula till Saturday, and sometimes not then, never getting into Sydney before Monday, when it is four days old.
1990. If you could ship from Eden, could you get to market more quickly? I believe it would be in Sydney in three days from the time it left the homestead.
1991. That would only come about if the volume of trade was sufficiently large to allow of larger vessels calling at Eden? Yes; some of the large vessels call there now, but they do not get patronised to an extent that would justify them in calling there more often.
1992. You think that if the railway were constructed the trade would come to Eden, instead of going to Tathra and Merimbula? Yes; there is no doubt about it.
1993. Would you send all your produce over the line? I would.
1994. How much could you afford to pay for railway communication between Wolumla and Eden? I have to pay 1s. 6d. per keg to take my produce 12 or 13 miles now—that is a 70-lb. keg. I could well afford to pay as much on the railway. I should lose nothing, and would be benefited by getting my produce into the market in about half as much time, while it would be carried from Eden for considerably less than from Merimbula.
1995. If the line were constructed, would you grow any more than you are growing now? I could not give you a positive answer to that question. I am only a tenant-farmer, with two years of my lease run, but if I was sure of retaining my present, or any other farm where I could grow produce it would be to my interest to do it.
1996. You think you would be able to compete in Sydney and in other markets with produce grown elsewhere? To a fair extent. We have to be guided by circumstances to a considerable degree. Of course, all years are not equally good.
1997. Do you think that those who are in a better position than yourself, and who have freehold land instead of leasehold, could easily go into agricultural pursuits? I do. Those who have land adapted for cereals will go in for growing them.
1998. You heard one witness say that 10 miles from Wolumla 25 per cent. of the land is fit for agriculture;—do you agree with him? I do, qualifying my answer to this extent, that with regard to oaten hay you might increase the percentage considerably; but if you speak with regard to other cereals, I think 25 per cent. is the greatest area that you could get.
1999. And you think that a large number of farmers would go in for agriculture if railway communication were given to them? If they saw their own interests as I see mine, I say that they would.
2000. You would have no hesitation, if your tenure was more safe, in doing it yourself? No, certainly not.
2001. If the line were constructed, do you think your dairying output would be increased to any appreciable extent during the next two years of your tenure? I can afford to run barely 100 dry and milch cows on 500 acres. I allow 5 acres per head for all my cattle. My return last year was 30,000 lb. of cheese—that is, 15 tons.
2002. No butter? I made a little butter, but I have been making butter only during the last few weeks.
2003. Your particular produce is cheese? Yes; because I have not the facilities for making butter of first quality. I had to make my butter by hand, but now the district is using separators. Butter made by the separators commands 2d. per lb. more in the Sydney market than hand-made butter. I put in 20 acres of oats, and ate it down twice with the cattle, and then allowed it to grow for a few months. When I mowed it, about Christmas-time, I got 20 tons off the 20 acres.
2004. So that, in all probability, with cheaper communication your output would be largely increased? Yes, it would be increased. If we paid the same rate for carriage on the railway that we have to pay now we should still derive a very great benefit from the railway, because the freight from Eden would not be greater than the freight we have to pay at present. The Illawarra Company charge the same freight from Eden as from Bega or Bermagui. When I came here, three years ago, I asked the Illawarra Company what they would charge to bring down five horses, a dray, about 4 tons of goods, four men, and myself, and they asked me 30s. per head for the horses, and £2 per ton for the goods. I went to the agents of the Tasmanian Company, and they brought my horses to Eden for 15s. each, and my goods for £1 per ton, and I saved £7 on the transaction.
2005. It is estimated that there will be a loss on this railway, if constructed, of £19,000 per annum. Presuming that that estimate is based upon the present production of the district, can you give us any idea as to how long you think it will be before the increased production of the country will make the line pay? That is a question to which I should not like to give an answer. I think it depends upon circumstances. There is no doubt that if we had a railway every man would, in his own interest, consider it his duty to increase his production as much as possible.
2006. You think the district is capable of very great expansion? I do. I think it is not worked up to one-fourth of its capability.
2007. Do you agree with the previous witness that only 5 per cent. of the land is given up to agriculture? Only 5 per cent. of the land is worked at present. I think he has given you a full estimate.
2008. The produce from that land is used for home consumption? Yes, speaking generally. Of course, if a farmer has a little to spare, and he can command a good price in a distant market, it is to his interest to send his produce away.
2009. Have you seen any potatoes grown this year? I have grown some.
2010. What yield do you get per acre? I have never had more than a quarter of an acre in myself, but I believe that others—for instance, Mr. Cochrane—had an abundant crop.
2011. How much did your quarter of an acre yield? I could not say exactly. We simply used them as we dug them.
2012. What was the cause of the crop failing? It did not fail. We ate them ourselves. We got, I suppose, five bags—about half a ton—from that little patch.
2013. Is your land exceptionally good for potatoes, or is it the reverse of good? No; mine is but a very ordinary farm, but for oaten hay I suppose the land is as good as most.
2014. Have you gone in for fruit production? No. I cannot speak from experience in regard to fruit production beyond this, that I have a little orchard myself, and what I get from a few trees is simply astonishing.

2014½. What kind of trees are they? There are a few plum-trees of two or three kinds, some apple-trees, and some quince-trees. Mr. G. Smith.
2015. There is no blight on your apples? None whatever. 25 Aug., 1892.
2016. Is there any blight in the district? I could not say that there is.
2017. Any blight on the other fruit trees? Not on mine.
2018. Have you heard of any in the district? No.
2019. You think from your slight experiments that there would be a very good yield of fruit? From my limited experience I think that if attention were given to it the district would be unsurpassed in Australia for fruit-growing.
2020–21. Is there anything else you would like to state? Yes, there is one thing. I think that those who have been examined before me have made a great mistake in reference to this railway. You have asked some of them if the railway should terminate at Wolumla. I think it would be a decided advantage to the whole district from here right back to the top of the mountain to have a railway even to Wolumla.
2022. The Monaro traffic would tap the railway at Wolumla even if the line were continued on to Bega? As far back as the Maharatta Station, they bring their goods to Merimbula. The whole of the back-lying district comes straight to Merimbula.
2023. You think that if the railway were brought to Wolumla from Eden it would serve the district for a time at all events? I do. I am not going to presume to question the Commissioners' estimate, but I rather think that they have under-estimated the cost of carriage—that is considering what the district could afford to pay as compared with what they are paying now. I think the estimated loss could be considerably reduced.
2024. You do not think that if the railway were constructed and a higher freight charged here than elsewhere, there would be deputations to the Commissioners about it? I should not take part in them, and I should discountenance them. If we only saved 3d. out of a 1s. that would be something.
2025. But is it not unfortunately the invariable custom? I am sorry to say that it is.
2026. Having such an experience to guide us, it is rather a sorry thing to take promises of this kind? Yes.
2027. *Mr. Ewing.*] How far are you by road from here to Eden? About 24 miles.
2028. *Chairman.*] Have you given any consideration to the betterment principle? I have not paid any attention to it.
2029. Do you not think that if a person's land is increased in value (say) £2 an acre, by Government expenditure, he should contribute half of that increase to the State? I should consider him a fool if he objected to do so. If he gave half of the increased value of his land he would still be the other half in pocket. I should like to state a few things in reference to the passenger traffic. I have travelled as often from Eden and Merimbula to Sydney, as any one. On one occasion, coming to Sydney, we had to be put off from the steamer at Merimbula into a small boat, and landed at the risk of our lives. We were taken across a nasty bar where the breakers were 4 or 5 feet high. On another occasion, a few weeks ago, coming from Sydney, there was not a single port between Sydney and Eden where goods could be landed, and my wife's sister, and other ladies, had to run the risk and discomfort of landing in the way to which I have just referred. On another occasion we had to remain outside Merimbula from Sunday night until Monday morning, before we could get ashore. With regard to Captain Turner's estimate of tonnage, I consider it very much under-rated. Looking at it from the common-sense point of view, it seems to me that no gentleman would run two boats of 500 tons register to carry 189 tons each trip.
2030. The Committee were down at Tathra yesterday, and saw in the store the amount of produce which the steamer would have taken on two trips if she had been able to call in. I do not think there were more than 30 tons altogether? That may be; but at present, I am only producing two and a-half kegs of butter with the separator, while in the summer time I daresay I would make six. The grass fails very much in the winter.
2031. But will you not produce very much less of something else in the summer? No.
2032. If a large quantity of the loading to which I refer were corn, it would not be sent away in the summer time? That can only be sent away in one season of the year—when it is ripe. In the summer time, for a number of months, I was making seven cheeses a day, but during the winter I have come down to two.
2033. You contend that this is about the slackest time of the year? Without a doubt.

Mr. Henry Fowler, storekeeper, tanner, and currier, Wolumla, sworn, and examined:—

2033¼. *Chairman.*] How long have you been in business here? Twenty-two years, and I have been in the district thirty years. Mr. H. Fowler
2034. What do you do with your products? I send them to Sydney. 25 Aug., 1892
2035. Do you send much to Sydney? A regular shipment of leather once a week.
2036. How much? It is according to the sort of leather we are making. Sometimes with sole leather it would be very much more than with dress leather.
2037. About what quantity do you send? Twenty or thirty tons a year, and in our store business I think we get about 80 tons inwards.
2038. Where is it landed? At Merimbula at the present time.
2039. Do you think that the production from tanneries would be increased? I could not say. If there were sufficient sale for the leather perhaps other tanyards would start, and in that way there might be an increased production.
2040. Where do you get your hides from now? Sometimes from the district and sometimes from Sydney. We cannot get heavy hides here.
2041. You have sent for hides from Sydney? Yes, frequently.
2042. What does it cost? About 1s. each lands them.
2043. If the railway were made would you send all your stuff along the line to Eden? Yes.
2044. And all your goods would come along the line? Yes. I think it is a national undertaking to open up Twofold Bay for this district. I am a nautical man, and I know Merimbula and Tathra well. I kept a store at the latter place, and have seen the steamer outside for a week.
2045. You regard Tathra and Merimbula as inferior ports? Tinkering ports.
2046. And Eden as a good port? Yes, and it is the only natural outlet for the southern end of Monaro.

Mr. H. Fowler. 25 Aug., 1892.

2047. Do you think the progress of the district is being retarded at present? Yes; by the monopoly which exists.
2048. If the railway were constructed you would contribute to its support? Yes; and be prepared to pay a special rate if it were levied. I think most of the people in the district would be prepared to do the same.
2049. You believe that Twofold Bay will be the port for southern Monaro and a considerable part of the coast district? Yes; eventually we must send all our produce afloat at Eden.
2050-1. Send it out of the Colony? Yes; to any other colony.
2052. Do you think that Twofold Bay is a great port, and that the attention of the Colony should be directed towards giving the people access to it? Yes; I think the district is handicapped by the way we are treated now. You can get stuff from New Zealand cheaper than you can from here.
2053. Have you anything else to add? I should like to state that if the Government are not prepared to construct the whole of the line, I believe that a line to Wolumla would serve the main portion of the district. Wolumla is very near the centre of the district and the trade from Colombo and back-lying places would come here. All their produce comes through here to Merimbula.
2054. *Mr. McCourt.*] Do you think the Bega people would use the line if it only came to Wolumla? Yes; and if I were a squatter who had wool to send away it is not likely that I should pay 4s. to send it to Sydney when it could be dumped at Eden.
2055. *Chairman,*] Suppose a man wanted to sell his wool at Sydney in order to get his money? He could sell it at Eden.
2056. *Mr. McCourt.*] Do you think it would be a wise thing to bring the line as far as Wolumla; do you think that such a line would serve the whole of the back district? Yes; the whole of the trade from the back district comes through here.
2057. And the Bega people would use the line in preference to going to Tathra? I believe so. There would be a difference in freight and in cartage right through.

Mr. George Ireland, dairy farmer, near Wolumla, sworn, and examined:—

Mr. G. Ireland. 25 Aug., 1892.

2057½. *Chairman.*] Whereabouts is your holding? I live 2 miles towards Candelo.
2058. What is the extent of the holding? I hold land in three different places—about 1,000 acres.
2059. You engage principally in dairy-farming? On part of it only.
2060-1. What is the production of your farm? I have not reckoned it out, but it ought to be equal to that of the adjacent farmers. Mine is good dairy land.
2062. You ship your produce at Merimbula? Yes.
2063. If the railway were constructed would you use the line from Wolumla to go to Eden? Yes.
2064. Would you be prepared to pay a special rate—10s. a ton? Yes.
2065. What do you desire to tell us? I wish to make some remarks with regard to Captain Turner's statement before the Works Committee in Sydney. The statement was such an absurd one that I could not leave without giving my opinion with regard to it. He said that he thought the farms in the Bega district were at the height of their carrying capacity. Such an absurd statement by a man of sense was never made. As for myself, up to the present year I have never dairied more than between sixty and seventy cows. I have dairied on 320 acres. This year I have dairied up to about 110 cows, and the present season I have over 160 cows. I intend to dairy on nearly all of my land. Next year I will be in a position to produce double as much as I produced the year before last.
2066. So you confirm the evidence of other witnesses that the district is not worked up to its full capability? Not nearly. I certainly know a great deal more about the matter than Captain Turner does.
2067. You will double your output whether the railway is made or not? Yes.
2068. Would you go in for agriculture more if the railway were constructed? I cannot say that I should, but I could send away a lot more pigs. It is a common thing to keep a lot of pigs on dairy-farms. They are put into the corn paddocks when they are 12 or 15 months old, and then they are sold. We are glad to get rid of them at any price which will bring us 18s. or £1. These pigs, in Sydney, could be sold when they were 7 or 8 months old, and if we could sell our pigs at that age, we could rear twice as many as we rear now.
2069. Would you send your porkers to Eden by the railway? Yes.
2070. Would it pay you to do so? It would. Last year a man tried to send fat pigs from Merimbula, but several died on the road there, and others died on the steamer.
2071. The export of pigs has not been taken into calculation, and it would bring grist to the mill? In my opinion it would. Then we could rear a lot more calves if we had a railway. This season I have killed a good many more than a dozen calves.
2072. You think those calves would go by the railway? Yes; last season I sold between forty and fifty steers, which were from 12 to 15 months old, at 15s. a head, but in Sydney they would bring as much if they were only one-third that age.
2073. How much would they charge to take calves from Eden? Three shillings or 3s. 6d. from Merimbula.
2074. How much from Eden? I do not know.
2075. Then how do you know it would pay? I know from the way the calves sell in Sydney, and the conveniences which we should have for getting them away.
2076. If you do not know what it would cost to take them to Sydney, how can you tell whether it would pay to send them? Would it not pay better than killing them?
2077. To know if it will pay you must deduct the charges from the price? If we could ship live pigs we could ship live calves. I do not see any more difficulty in shipping calves than in shipping pigs.
2078. Do you know what they charge to ship live pigs from Eden? I know what they charge from Merimbula.
2079. The railway is not going there? If they charged as much from Eden as from Merimbula we could send the pigs there.
2080. What are you allowing for the railway charge? Anything at all to get them away. It is very expensive to send them now.

Mr.

Mr. John Marshall Black, dairy farmer, Wolumla, sworn, and examined:—

Mr. J. M. Black. 25 Aug., 1892.

2081. *Chairman.*] How far do you live from Wolumla? Four and a half miles, in the direction of Candelo.
2082. Where do you ship your produce? From Merimbula and Tathra.
2083. What is the extent of your holding? One thousand eight hundred and one acres in three separate places.
2084. Within convenient distance of each other? Yes.
2085. What amount of produce do you send away? Twenty-five tons.
2086. That all goes to Merimbula? Chiefly.
2087. If the line were constructed, would you still send to Merimbula or would you send by railway to Eden? I think I should continue to send to Merimbula.
2088. Would you not pay less for freight from Eden to Sydney than from Merimbula? No; I think the freight would be about the same.
2089. What would it cost now to send stuff from your farm to Merimbula? I daresay it costs me £50 a year to keep the horses up. That includes the labour. The carting takes up one day a week.
2090. Suppose you had to send your produce by the ordinary teamster, how much would it cost you? It would cost me about £1 per ton.
2091. If you used the railway you would tap it at Wolumla? Yes.
2092. Would it not therefore be cheaper to send to Eden and thence to Sydney by a larger boat, than to send from Merimbula? I do not think so.
2093. You think that if the railway were constructed you would continue to send to Merimbula? Yes.
2094. Have you suffered very great inconvenience because Merimbula is a defective port? Occasionally, not often.
2095. Have you not had your produce lying there for days baking in the sun and missing the market? Only on one or two occasions.
2096. How long have you been in the district? Thirty years.
2097. Is it your intention in the immediate future to put your land under agriculture? No. I had it under agriculture and it did not pay.
2098. Owing to the cost of carriage? I never tried to send it away; I always fed it off.
2099. You look upon this as a dairying district, pure and simple? Yes.
2100. Do you believe that 25 per cent. of the land here is suitable for agriculture? Yes.
2101. If it is suitable for agriculture and that pays best, why should it not be used in that way? The cost of getting to Sydney would be too much, and competition in Sydney is too keen.
2102. Suppose it cost you £1 a ton to get from Wolumla to Sydney, would that enable you to compete there with other produce? No; it would not. I could not grow potatoes for £3 a ton, which is the present market price.
2103. If it is to cost you 10s to get from Wolumla to Eden, and 10s. to get from Eden to Sydney, you do not see how agriculture is going to pay? No.
2104 You have had a large experience? A fair experience.
2105. Your land is equal to other land about here? Yes, somewhat similar. It is certainly not such a farm as Mr. Cochrane's.
2106. That is a superior farm? Yes.
2107. Yours can be taken as an average farm? Yes.
2108. Do you think the Railway Commissioners' estimate as to the probable traffic is pretty fair? I have not given it a thought.
2109. If they estimate that there will be a loss of £19,000 per annum on the line, do you think that that loss will be overtaken in a few years by the increased production of the district? I do not.
2110. You do not think the district is capable of paying? No.
2111. The loss might continue for many years? For a good few years.
2112. You are not a shareholder in the Illawarra Company? I hold no shares in any company.
2113. You have no interest in putting this statement before the Committee, other than the interest of the general public? No.
2114. You furnish a statement which you swear is a complete return of your production during the time you have been here? Yes.
2115. You desire to have it attached to your evidence? Yes.
2116. Is there nothing else you would like to state? No.
2117. *Mr. Sutter.*] The general tenor of your evidence is that the railway would not benefit the district? The produce would still have to go by steamer.
2118. *Mr. Ewing.*] Do you believe it is better to send by a large boat or a small boat? I think it is immaterial.
2119. Supposing you were going to Sydney, would you rather travel in a boat that went 14 miles an hour, or in a boat that went 8 miles an hour? I should go in the fast boat.
2120. Would you send your produce by the fast boat, or by the slow boat? I should not care very much. It would depend upon the freight.
2121. Does not the butter depreciate by travelling? Not in the time it takes to reach Sydney.
2122. Do you think a road is as good a means of access to a port as a railway is? No.
2123. You believe in railway construction? Yes.
2124. But you do not think that a railway ought to be made in this district? Yes; but it is a railway to Sydney we want, not a railway to Eden.
2125. In what way would you like it to go? Anyway it liked, so long as it got there.
2126. You do not want a railway to a port, but direct communication with Sydney? Yes.
2127. Have you any idea what such a line would cost? No.
2128. If 34 miles of railway would not pay, it is not reasonable to suppose that a line which would be infinitely longer would pay? We could get our produce more quickly to market if we had direct communication with Sydney.
2129. Do you think the Government ought to make a railway from here to Sydney? Most undoubtedly.
2130. But you do not think that they ought to make the proposed line? They can if they like.
2131. You think they ought not? I think it will not pay.

Mr. J. M Black. 25 Aug., 1892.

2132. But you think a direct railway would? Yes.
2133. *Mr. McCourt.*] What would it cost per ton to get your produce to Sydney? Fifteen shillings.
2134. If you had direct railway communication with Sydney, what do you think you would have to pay? I should not grudge £2 per ton.
2135. Could you compete in the Sydney market if you had to pay £2 a ton for railway carriage, instead of 15s. a ton for water carriage? Yes.
2136. Has any meeting been held in favour of the line? Yes, a great number.
2137. Have you attended them? No.
2138. You have not signed any requisition with regard to it? No.
2139. Do you generally work in harmony with the people here? As a rule.
2140. Do you join in the co-operative companies which they have established here? No.
2141. You are opposed to a co-operative company? No.
2142. Your opinions are in accord with the people here? Sometimes.
2143. On this question you are opposed to the opinion of the people generally. Are there many more of your way of thinking in the neighbourhood? Very few.
2144. How many, two more? There are three more.
2145. Three people together with yourself are opposed to the railway? More than that.
2146. Could you mention their names? I do not care to, but there are others.
2147. Do you think that you could get your produce here cheaper by a direct railway, than by a railway to Eden and the steamer? My produce—butter and cheese—would go more cheaply because it would go daily. If the railway went to Eden it would go no faster than it does now.
2148. If 90 per cent. of the people in the district are in favour of this railway they are wrong? Well, they all have their own axes to grind.
2149. They may not be wrong? They may not be wrong.
2150. They have the same motive in view as you have? Yes, to sell their produce.
2151. You have no other motive? No, none whatever.
2152. How much do you pay per ton to get your cheese taken to Sydney? Threepence a cheese, about 20s. a ton.
2153. Not more? No.
2154. *Chairman.*] Have you a serious objection to mentioning the names of the gentlemen who agree with you in your views with regard to this railway? Their opinions have been brought out in argument, and I would rather not.
2155. Do you not think that if the country is about to be loaded with an annual loss of £19,000, mere sentiment should be put on one side and the names given? Well, you see they would not care for their names to be published.
2156. Do you not think that if that aspect of the case were put before them they would be prepared to express their views, irrespective of the flood of opinion against them? I will write to them.
2157. They are men tilling the soil like yourself? Yes.
2158. Do any of them reside in the Wolumla or Bega district? They are residents of this district. They hold land here.
2159. Although they are not actual residents they own estates and have an interest in this district? Yes.
2160. *Mr. McCourt.*] Your statement that three or four of the residents of the district were against the railway was not true? When I spoke of residents I meant property holders.
2161. They do not reside in the district? No.
2162. Then you alone, of those residing in the district, are opposed to the railway? Yes. I am not actually opposed to the railway.
2163. *Chairman.*] The only thing is that you do not think it will pay? No, or that it will be used after it is constructed.

THURSDAY, 25 AUGUST, 1892.

[*The Sectional Committee met at the Court-house, Pambula, at 3·30 p.m.*]

Present:—

JACOB GARRARD, Esq. (CHAIRMAN.)

The Hon. WILLIAM HENRY SUTTOR. | THOMAS THOMSON EWING, Esq.
WILLIAM McCOURT, Esq.

The Sectional Committee further considered the proposed railway from Eden to Bega.

Mr. John Hamilton, blacksmith, Pambula, sworn, and examined:—

Mr. J. Hamilton. 25 Aug., 1892.

2164. *Chairman.*] How long have you lived here? About six years.
2165. Do you desire to make a statement in connection with this proposed railway? I desire to say a few words. Since I have been it the district I have travelled about it a good deal. I am a great one for driving about on Sunday. I ride round to see the country. It is a hobby of mine. My experience is that in travelling along the main roads you pass through the especially barren country. There is a very good belt of country west of Pambula. There are thousands of acres of the most fertile chocolate basalt soil there.
2166. Is that land all alienated, or does it still belong to the Crown? It evidently belongs to the Crown yet. Patches here and there are alienated, but there are thousands of acres not taken up.
2167. Why is that? I cannot understand it. It is a puzzle to me. But I will tell you what is a little against it. The country is broken, something like the back country at Kiama, and difficult of access. I went up the Whipstick to look at the field, and I saw land there fit to produce anything that the climate will suit. It extends all out west as far as the Wolumla Creek, and back as far as the Old Hat.
2168. Am I to understand that if the railway were constructed this would be at once taken up? I think the railway would have that effect.
2169. Why do they not take it up now since Pambula is only 12 miles from a port? The country I allude to commences some 3 miles out.

2170.

Mr. J. Hamilton. 25 Aug, 1892.

2170. Pambula would be perhaps the nearest point on the railway line from the country to which you refer, but if you are within 12 on 14 miles of Twofold Bay, how is it that the country has not been taken up before. Why should the railway bring it into more prominence? I think the tendency of the railway would be to cause people to produce other things.
2171. They are producing nothing at present? Only what they make from milk.
2172. But the land to which you refer is not occupied at all? Not in the strict sense of the word, but people who own stock take advantage of all this unoccupied land.
2173. Is there good grass on it? Yes.
2174. Do you think the railway is needed for the purpose of developing that land? I think the railway would have a tendency to do that.
2175. Do you know that it is expected that there will be a loss of £19,000 per annum on the railway. Do you think we should be justified in recommending such a line, because of the probability of people taking up land here? I simply give my opinion on the matter.
2176. And if anything—even balloon communication—would develop the land you would advocate it? I think a railway would do. I think you could get to the land without a balloon. I have gone through some splendid country without using a balloon.
2177. Where were you engaged in business before you came here? I have been a travelling character, and have gone pretty well all over the country. I spent seven years in Penrith. That was my longest stay in one place. From there I went to work on the railway between Sydney and Newcastle. I then tried to get work on the railway at Kiama, but I failed in that, and got other jobs, so I stayed there a while. I afterwards came to Bega, and then to Pambula.
2178. The country to which you refer is equal to anything you have seen in any other part of New South Wales? You cannot compare it with anything on the river-flats of the Manning, the Macleay, or the Clarence. You have depth there. This ground, I think, will do for potatoes and for vines.
2179. But if it is basaltic soil, it ought to be pretty deep? Basaltic country generally is pretty deep, but not so deep as river-flats. There is generally a rock or a clay underlying.
2180 Has the trade of this place increased much since you have been here? Very considerably.
2181. Is the country likely to go ahead more rapidly in the future? I have every hope of it.
2182. What has given the impetus? The mining, principally.
2183. Is that at a standstill? Not by any means.
2184. Is it developing? Scarcely. Capital is tight, and consequently a good many things that would pay are standing still.
2185. Is not that a very unusual thing? The difficulty is to find capital. Capital does not look for an outlet now; we have to look for capital.
2186. Is there anything else you would like to state? I do not think so.
2187. *Mr. McCourt.*] Do you know the route of the proposed railway as surveyed between here and Twofold Bay? Roughly; I have not been all along it. I have a good idea of the bearings of it; I have touched it.
2188. Do you think it is about the best line that could be got? I think it is a very good line.
2189. Do you think that if the railway were constructed, the population and productiveness of the place would increase? Yes.
2190. And eventually it would pay? Yes.
2191. How far are you from Merimbula? I think they call it 4 miles.
2192. You would rather go by railway from Twofold Bay and get a ship there, than go 3 miles to Merimbula to get a boat? Yes; so much so, that there has been an agitation here on several occasions to get all our stuff shipped from Eden instead of from Merimbula, but we cannot arrive at sufficient unanimity to carry out the project. Carriers would go to Eden for a trifle more, and goods would be delivered there more cheaply than at Merimbula. Goods get knocked about at Merimbula by the present mode of landing them; there is so much transhipping to do. Things have to be taken out to the steamer in a drogher, and are considerably knocked about, whereas at Eden they would be treated much better.

Mr. Patrick Doherty, retired storekeeper, Pambula, sworn, and examined :—

Mr. P. Doherty. 25 Aug., 1892.

2193. *Chairman.*] How long have you resided here? Close on thirty-four years.
2194. Has there been much advance in Pambula during your residence here? Yes.
2195. Has the progress of the district been more rapid during the last year or two than previously? Yes, during the last two or three years.
2196. To what do you attribute that? A good deal of the progress during the last two years has been due to the mines.
2197. Have they panned out? No.
2198. Is the increase in population still going on? Yes. Of course there are only a few claims now at work, but what are at work are good.
2199. Why are the others not working? Some of them have got a suspension of labour because they are waiting for machinery.
2200. Has there been any very great development in dairying or agriculture? Yes. There are a good many more small dairies than there were here formerly. There are no large dairies.
2201. How many cows are there in milk within 5 miles of Pambula? I could not tell you.
2202. How many stores are there here? There are four stores and two shops.
2203. How many of these stores were established during the last 3 years? Only two.
2204. The others were in existence before the gold-fields assumed any importance? Yes, years before.
2205. You made your competency under the the old style of things? I did not make much.
2206. *Mr. Sutton.*] How are the gold-fields getting on? Some of the claims are very good—Faulkner's, Pambula, and others.
2207. Do you know what they are getting? I think the last return from the Mount Gahan was 67 tons and 167 ozs.
2208. Is the mining likely to be permanent? I think so.
2209. Can you tell us anything about the other industries in the district—the farming industry? It is chiefly maize that is grown in Pambula now.
2210. Is there much of it? Yes.

Mr. P. Doherty. 25 Aug., 1892.

2211. Can you give us any idea of the quantity? No; I know that when I came here it was all potatoes and wheat, but of course the carriage on potatoes was too much.
2212. When was wheat grown here? Most of the land was under potatoes. Wheat was growing in the district when I came here, but there was no maize.
2213. There is no wheat growing here now? No; the wheat took the rust. I have seen in my time—I think in 1864 or 1865—three schooners in the river loading potatoes.
2214. *Mr. Ewing.*] Did you experience much difficulty in getting your goods by way of Merimbula? Yes. I could not get them sometimes. The steamer often could not land them, and took them back to Sydney.
2215. Did you ever get any goods from Eden? Yes.
2216. But as a rule you got them through Merimbula and often experienced considerable difficulty? Yes.
2217. *Chairman.*] Are you a large landowner in the district? I have some land, not very much.
2218. How many acres? I should think 7 or 8.
2219. Close to the railway? No. I have some few blocks of a sub-division close to the railway.
2220. Do you think the railway should be constructed? I think it would be a very good thing. I think there is sufficient to pay for its construction. I think the Government have sufficient inducement for constructing it.
2221. If the Commissioners, who ought to know their business, say that after making a liberal allowance they consider that there will be a loss of £19,000 per annum on the line, do you think that its construction would be justifiable? I do not think it would be. A few years ago I was one of a deputation who went to Sydney about this railway. The Hon. John Sutherland was Minister for Works then, and I think it was proved then that the estimate the Engineer-in-Chief gave us was out altogether.
2222. How long ago is that? Six or seven years.
2223. Since your deputation waited upon the Minister, the survey has been very carefully checked, and reduced a little in cost. Do you think from your knowledge of the district that the country should be loaded with a railway which will lose £19,000 per annum? I do not think the Government would be justified in laying out so much every year unless there was some hope of the railway paying in the future.
2224. Do you think that there is a reasonable chance of its paying within a few years? I think so.
2225. In how many years? Mr. Hamilton, speaking about the land out west, asked why it was not opened up. To my knowledge, and to the knowledge of every person in Pambula, the Government has measured 3,000 or 4,000 acres into farms and has not sold the land, and that blocks the land at the back.
2226. Why has it not been opened up? The land I refer to is within the population boundary.
2227. You think that if that were thrown open it would do? If it were thrown open the people would buy it.
2228. What is it worth? The upset price is 25s. per acre.
2229. That is what you would put on it as a special area? It is worth more than that.
2230. No price was offered for it? No.
2231. It would be treated as a special area? I am sure I do not know.
2232. Is it worth treating as a special area? It is worth more than the price I have named.
2233. What do you think it is worth an acre? Taking it all together, good and bad, it is worth 25s. or 30s. an acre.
2234. The Government would only get £5,000 out of it? That would give access to the land at the back.
2235. Suppose that land was sold and settled upon and cultivated, how long do you think it would be before the loss of £19,000 per annum would be wiped out? I cannot say.
2236. You have no idea? Not the slightest.
2237. You cannot give us any hope of its being wiped out within five or ten years? I cannot tell you when it would pay.
2238. Under those circumstances do you think we should be justified in constructing it? Pambula is not the principal part of the district; other parts of the district are far before Pambula. Pambula is only a small place compared with other parts of the district.
2239. But the whole district has been taken into consideration? Yes; but it is the other parts of the district that would support the railway.
2240. Do you often come to Sydney? Not very often.
2241. Twice a year? I used to, but not lately.
2242. Do the people, as a rule, travel once or twice a year? Oftener.
2243. If the Commissioners have estimated that each adult in the district would travel over the line twice a year, do you think that they have under-estimated the traffic? I know that they would all go to Eden. Last time I went I went that way, and I know that others have hired buggies to go there.
2244. You can give us no idea as to when the loss on the line is likely to be wiped off? I cannot.

Mr. John Irvine, auctioneer and general agent, Pambula, sworn, and examined:—

Mr. J. Irvine. 25 Aug., 1892.

2245. *Chairman.*] How many years have you resided here? Two years.
2246. *Mr. McCourt.*] Do you think that this line should be constructed? I do.
2247. For what reason? I think that the character of the district would justify it.
2248. In what way? The district is certainly a fertile one, although the best portions of it cannot be seen from the road. The best land is principally confined to a belt of chocolate soil that runs from Boggy Creek through the back country down near Eden, west from Pambula. There are some 30,000 acres of this land which at present is either not being used or is producing up to only a third of its capability.
2249. What is the population of the country within 5 miles of Pambula, including the town? Something over 1,000. Perhaps 1,200.
2250. What is the number of stock within that area—horses and cattle? Altogether about 500.
2251. Do you know the whole of the country between here and Bega that is traversed by the line? Yes.
2252. Do you think that the line as a whole would pay? Yes.
2253. Within what time? Within say 5 years.
2254. Do you think that the passenger traffic on the line would be considerable? I do.
2255. Would there be any passenger traffic between here and Bega? Not so much, though there would be a certain amount. The principal trade from here would be done with Eden. I have had an opportunity of learning that. I know that many people now travel by the steamers for which I am agent in preference to those calling at Merimbula, because the Merimbula steamers are inferior and that port uncertain.

Mr. J. Irvine. 25 Aug., 1892.

2256. Do you think the people of Bega would make Eden a summer resort and a place for holiday excursions? I have no doubt of it, and I have every reason to believe, from conversations which I had with people in Sydney lately, that a good many would go there from Sydney.
2257. And they would use the line from Bega? Yes.
2258. Have you any other reasons for desiring the construction of the line, which you wish to give to the Committee? I have given my principal reasons in outline. I consider the district a really fertile one and capable of producing very much more largely than it produces at present, and, therefore, of carrying a larger population.
2259. Has the population of the place increased very much since you have been here? Not very much.

Mr. John Davis, late Police Magistrate, Bega, sworn, and examined:—

Mr. J. Davis. 25 Aug., 1892.

2260. *Chairman.*] You are a resident of Bega? No; Pambula—Lochiel.
2261. You were for some time Police Magistrate of the Bega district? I was.
2262. How long were you residing in the Bega district? About thirty years.
2263. *Mr. Ewing.*] What are you doing now? I am farming. I am a pensioner.
2264. How far do you live from here? Four miles.
2265. You have had considerable experience of the ports on the south coast—Tathra, Merimbula, and Eden? I have.
2266. What do you consider the right port for the district? Eden.
2267. Nothwithstanding that you are residing within 3 miles of Merimbula, you regard Eden as your proper port? I would neither go by steamer from Merimbula, nor send there.
2268. Everything you have to do is done through Eden? Yes; when I lived in Bega I used to go to Eden in preference to going to Tathra or Merimbula.
2269. If the railway were made, the progress of the district would be increased? It would be doubled in a short time.
2270. It is a very rich district? Yes.
2271. Is it producing as much as it can produce? Not one-third as much.
2272. To what do you attribute that? Want of proper carriage.
2273. You believe that the railway would remove the disability? I do.
2274. And you think that nothwithstanding that this place is within 3 miles of Merimbula, the people would prefer to take their produce 14 miles to Eden? I would go by coach rather than go to Merimbula.
2275. Still, as a rule the Pambula people ship at Merimbula? They do, because they cannot help it.
2276. There is a weekly boat from Eden, is that used? Yes; those boats are being more used every day.
2277. Do you think that eventually they will wholly use those boats? I am sure they will.
2278. *Mr. Sutton.*] What is the general character of the traffic through Eden now? I could not tell you.
2279. You cannot say what the principal productions shipped there are? Cattle and sheep are shipped from there to Hobart, but I cannot tell you much about the shipping generally.
2280. Do you not think that if the railway were constructed the population of the district would probably be largely increased? I feel certain it would.
2281. Where do you suppose people would come from? They would come from all parts. The place is isolated now, it is shut out from the world altogether.
2282. You think the construction of the railway would induce people to settle in the district? It would alter the district altogether. It would completely revolutionise the place.
2283. *Chairman.*] What is the extent of your holding? The holding belongs to a son of mine. He rents 300 acres.
2284. Is it under cultivation? Partly.
2285. For dairying purposes? Yes.
2286. Will his produce be sent to Merimbula? It is sold in Pambula, it is very small. He is only just commencing.
2287. Are there many dairy farmers in and about this portion of the district? There are splendid farms.
2288. In what direction? West from here.
2289. Is the Lochiel country as good as has been described to us? Yes; it is very rich chocolate soil. Any amount of it is lying idle.
2290. But it is not entirely unused—you are there for one? Yes.
2291. Are there several others? Yes.
2292. Are they all settled on this volcanic soil? Yes; it is all chocolate soil.
2293. Do you know whether there is any large area of Crown land there for sale? I believe there is. I feel certain that there is.
2294. Are there any large reserves about this district other than the reserve at Lochiel? I really do not know; but I know that there is plenty of splendid land which is perfectly useless now.
2295. While in the Government service were you located in any other part of the Colony? No.
2296. You do not know how the selections taken up in this district compare in *bona-fides* with other portions of the Colony? I believe they compare very well.
2297. You have no actual knowledge except from report? No; except from my own experience and knowing the land books.
2298. You think generally that the people who have taken up land here have been *bona-fide* settlers? Yes.
2299. There have been very few dummies? Very few. In the early times I daresay there were a few.
2300. What is your opinion with reference to the future of the Pambula gold-fields? I think they are likely to last.
2301. Have you any personal interest in them? Yes.
2302. They are rather stagnant now? Yes; I attribute that to bad management.
2303. Is it all reef work? Yes. It is an extraordinary gold-field; it puzzles the most knowing miners.
2304. You think that if the railway were constructed those now engaged in dairying would increase their output? I believe they would. There is no doubt of it.
2305. How much would you send away from the neighbourhood of Lochiel to Merimbula? I think it is about 2s. a cwt. to Merimbula. I paid 2s. a bag for stuff from Merimbula the other day.

Mr. J. Davis. 25 Aug., 1892.

2306. And if people could put their stuff on the railway and pay only 5s. a ton freight, they would save a considerable sum of money? Yes; we have been robbed by the company ever since we have had it.
2307. Knowing the loss which the Commissioners estimate that there will be on the line, can you form any idea as to when the extra productiveness of the district will overcome it? I should first of all like to know whether there will be any such loss.
2308. We must regard the Commissioners as experts, and they say they have made a very liberal estimate of the traffic? Yes; but a great many other railways are losing quite as much, and they do not go through half so good a district.
2309. Two wrongs do not make a right. You have expressed the opinion that the district will produce a great deal more if the railway is constructed, and I want to know whether the loss would be overcome in three or seven or ten years? I think it would be overcome in five years.
2310. People engaged in agriculture and dairying would increase their production, and more people would come to settle here? Yes.
2311. The loss would be wiped out in five years? Yes; and not only that, but we should also have connection with the Monaro line.
2312. How is that? A good grade has been found, and there is every prospect of the line being made.
2313. I wish you to confine your evidence to the Bega-Eden line. Do you think that if there were a connection with that line it would pay? I do.
2314. If this line is to cost £564,000, and the Department estimate that the line from Cooma to Bombala would cost the same amount per mile, which would bring it up to about £700,000, and if, as we know, the Bombala to Wolumla line would be very expensive, do you think the connection should be made? They have a very good grade, I believe.
2315. We should have to face an expenditure of £2,000,000 in order to connect the Monaro and Bega districts with Eden? I consider that we are as much entitled to a railway as any other district in the Colony.
2316. Have you given any consideration to the betterment principle? No.
2317. If a person's land is increased in value £2 an acre by the construction of a railway, do you think it would be fair to ask him to give back half the value to the State? I should like to consider it a bit.
2318. Does not the owner obtain £1 an acre besides having the increased advantages offered by the railway? Fifty per cent. is rather much to give.
2319. Do you think that more of the unearned increment should go into the pocket of the private owner? I do not think that the State has a right to as much as that.
2320. How much—25 per cent.? I would give them something.
2321. Do you not think that the principle might very equitably and fairly be incorporated in the future carrying out of any public work? I think so.
2322. If you were living within an area which was affected by the betterment principle, you would be quite content to take your share? If my land was increased by a certain amount I should be quite prepared to give back a portion of it.

Mr. Simon Gordon, retired dairy farmer, Pambula, sworn, and examined:—

Mr. S. Gordon. 25 Aug., 1892.

2323. *Chairman.*] How long have you been residing in this district? Thirty years in May last.
2324. How long have you been living in this particular part of the district? Not quite two years.
2325. Where were you residing before? Wolumla. I had a small farm within 5 miles of Pambula.
2326. You are devoting your attention to that small farm now? I came here to try my luck.
2327. On the diggings, or with the people who went digging? With the people who went digging.
2328. What do you say is the area of the land you have got here? Forty acres.
2329. What are you using it for? I dairy and grow some hay and potatoes upon it. It is beautiful chocolate land, and I am sorry I have not enough of it.
2330. Is it out Lochiel way? Yes.
2331. Where do you find a market for your produce? I can sell anything I grow in Pambula or in the district.
2332. You have not shipped anything to Sydney or elsewhere? Not since I came here. I did ship very heavily from Wolumla to Merimbula.
2333. To Merimbula? Unfortunately, to Merimbula.
2334. That was your shipping place? I term it nothing but a duck-hole. I got nearly drowned there last time I went.
2335. But it was your port of shipment? It was the only place I shipped from.
2336. Did you ever ship at Twofold Bay? No; it was too far away.
2337. If you had produce to send away now would you send it from Merimbula? Well, yes; we should be compelled to send it from Merimbula. It is 14 or 16 miles from our place to the Bay.
2338. And how far to Merimbula? Eight miles.
2339. And you would send to Merimbula, though it is only a little farther to Eden? Yes.
2340. Could you not send away from Eden more cheaply? Yes; but it would cost us more to carry to Eden.
2341. Are there many farmers out Lochiel way? A good few.
2342. Can you give us any idea of the number of cows in milk in that part of the country? I think within a radius of 5 miles of Pambula, south-west, there would be between 500 and 600.
2343. Do the products from these cows go to Merimbula? Generally.
2344. How is it that some people have been able to get some of this good chocolate soil at Lochiel, while the rest of it is shut up? A lot of it is as beautiful land as ever I rode over, and I have been forty years in the country, but the Government has it shut up. There is as fine country for miles south-west as ever a man would wish to ride over.
2345. That is out Bondi way? Out between Wyndham and Towamba.
2346. What is that land worth an acre? It is a reserve. I have been trying to get them to move the Government to sell it. I would buy it all round at £3 an acre. It is splendid land.
2347. The gentleman who said it was worth 26s. an acre is out of it? He was within the mark. I would buy some of it if it were put up at auction to-morrow at £3 an acre, and be glad to get it.
2348. Picked portions, perhaps? I would use my own judgment.
2349. You think, taking it all round, it is well worth £2 an acre? Yes.

Mr. S. Gordon. 25 Aug., 1892.

2350. You would be prepared to take the lot up at that? Yes; if I had the money I would take the lot up at that.
2351. Do you think the line should be constructed? I do.
2352. Even with the big estimated loss that stares the country in the face? I think that the loss would be recouped after the line had been opened for five years. I lived in the old country until I was 27 years of age, and I saw many a railway built. I own a lot of land about Wolumla, and so do several others. We are holding it for the sake of our families. We are dairy people principally. Supposing I live at Colombo, I get from my agent——
2353. We have had all the Colombo evidence; please confine your remarks to the Pambula district? Pardon me a moment. Say bacon is in demand now. It is a week before it reaches Sydney after it leaves the farm, and the market is glutted with bacon that has been sent in by train.
2354. Does not all you have said go to prove that instead of being taken to a seaport, where a gale of wind may prevent you from getting to market, you ought to be connected with the metropolis by railway? We ought to be connected with Eden and Bega. We can only dairy here now. The freight on hay is too high to allow us to grow it. My first crop of potatoes, which were grown on virgin soil, produced over 10 tons to the acre. That was at a place called Dawson's Flat, on the coast. I have grown over 60 bushels of maize to the acre. I cut some winter oats at the end of this month which the cattle had been allowed to eat down when green, and I got magnificent hay.
2355. With such splendid land could you not put up with a little extra cost in the carriage to a port? We could, but the market is glutted. If we keep back our butter and cheese, according to the instructions of our agents, before it reaches Sydney the market is glutted.
2356. How long would it take you to go to Merimbula by dray—half a day? We make it a day, coming and going.
2357. But you do not bring your butter back? The question to be considered is, how long will the butter be going to the steamer. I have seen it several days there.
2358. You have seen the butter lying at the port for several days at a stretch? Yes.
2359. How many times has that occurred within the last five years? I cannot answer that question.
2360. Has it occurred once? Yes; several times. The last time I was up in Sydney they could not land me at Tathra or Merimbula. I had two buggies and sulkies on board, and they took me on to the Bay.
2361. You say that your butter lies at Merimbula upon the wharf or on the drogher until you lose your market by the delay. How many times has that occurred during the last five years? I could not tell you, because I have not been there so often lately.
2362. Suppose you get the railway to Eden, do you expect that boats will call there every day? I presume that they will in time. It is only a matter of time.
2363. How many boats call there now? That I could not say.
2364. Your butter might lie there for several days, just as you say it lies at Merimbula? If we had railway communication with Twofold Bay we should have the great ocean steamers to send our produce by, and the world would be our market.
2365. What great ocean steamers? All the great steamers running from England to Sydney. Several of them would call and take our dairy produce and frozen meat.
2366. Have you any reason to believe that the Orient Company's steamers on their way to Sydney would call into Twofold Bay to take your one or two, or even fifty kegs of butter to the metropolis? I do not think one of those steamers would call in for that quantity, but I believe that freezing works are to be established at Eden, and if they are established there will be thousands of pounds of meat to send away.
2367. But you are drawing on the future;—if you sent your butter to Eden by railway now how would you get it away more quickly than you do now? We should get it away a lot quicker. Suppose I lived at Wolumla there would be a siding there, and I could bring my butter to it. It would then be taken to the vessel at Twofold Bay in a very short space of time, and within seventeen or eighteen hours it would be in Sydney.
2368. You want to get rid of the Illawarra boats and use the intercolonial boats, one or two of which call at Eden every week? Yes; I wish to God a whale would swallow them, and so would you if you knew how we have been persecuted by that company for years. I have lived at Wollongong since I have been in this Colony.
2369. *Mr. Suttor.*] You have land at Wolumla? Eight hundred and seventy-six acres.
2370. What is being done with it now? It is used for dairying. I have grown beautiful fruit here.
2371. Are you dairying it yourself? No, I have a man dairying it for me.
2372. It is let to tenants? Yes.
2373. What do they do with their butter? They send it to Sydney. Some make butter and some make cheese.
2374. *Mr. McCourt.*] If the line went to Eden you would export your butter to England and elsewhere? Yes.
2375. To Tasmania? Anywhere that we could get a market.
2376. The construction of a railway would induce people to produce more from their land? Undoubtedly.
2377. Which pays the best, dairying or agriculture? Both combined would pay well.
2378. But take them separately? Dairying pays best at present, because of the freight and cartage on other produce. We cannot grow wheat to compete with Sydney or with the people to the north.
2379. Could you grow potatoes if it were profitable? Yes; this is as fine a part for potatoes as I ever saw, and I was 67 last night. As for fruit, I never saw, except at Parramatta, anything to beat this district.
2380. All you want is railway communication? Yes. If we had railway communication we could compete with any part of the Colony. Our soil is good and our climate magnificent.
2381. How much of this land could a man make a living off—how many acres? A man could make a good living on 100 acres.
2382. That area would keep a man and his family? I am living upon 40 acres, and I could support a wife and a couple of children on that. It is magnificent chocolate soil.
2383. Other people could do the same? Yes; I am a farming man born and bred.

Mr. Daniel Frazer, storekeeper, Pambula, sworn, and examined:—

Mr. D. Frazer. 25 Aug., 1892.

2384. *Chairman.*] How long have you been doing business here? About two years.
2384½. That is since the gold rush? Yes. I came here about the middle of the rush.
2385. *Mr. Sutton.*] What is your opinion with reference to this railway? I should be very pleased to see it.
2386. Do you think, in view of the fact that there will be an immense loss on it, that it should be constructed? I do not think that there would be a greater loss upon it than on any other railway, and we are as much entitled to a railway as any other district.
2387. Have you any idea what the production of the district is? I have not had time to make out any figures, but I believe the district will compare favourably with any other part of the Colony.
2388. What do you depend on for feeding the railway? I think the timber would bring traffic to it for one thing; and then there are dairying, agriculture, fruit-growing, and so on.
2389. Is there much timber here that is likely to be used? Yes; I believe so.
2390. What could be done with it? I think it could be shipped away to different parts—Sydney and Melbourne.
2391. You think the railway would be a benefit to the district generally? I believe so.
2392. *Mr. McCourt.*] With whom do you do your principal business—with settlers or with miners? With both; but principally with the settlers.
2393. Are there many settlers about here? Yes; a good many.
2394. Are they generally occupied in farming? Yes; in dairying and cultivating the land.
2395. About how many customers have you on your books? About 500.
2396. How many other storekeepers are there in the town? Three.
2397. Do you know if they do a similar amount of business? Yes; I think so. They ought to.
2398. What port do you deal with? With Merimbula, unfortunately.
2399. How many tons of stuff come there for you in the year, approximately? About £3,000 worth in the year.
2400. How many tons would that be? I could not say.
2401. One hundred and fifty tons? Yes; at the least.
2402. Would that come over the railway to Pambula? Yes.
2403. Do the other storekeepers get about the same amount of stuff? Yes.
2404. That would also come over the railway? Yes; I should think so.
2405. I suppose in time the railway would pay? Yes.
2406. Would the passenger traffic be considerable? I think it would be very good.

Mr. Maurice Roach, late Inspector of Conditional Purchases, Pambula, sworn, and examined:—

Mr. M. Roach. 25 Aug., 1892.

2407. *Chairman.*] You are a resident of Pambula? I am.
2408. How long have you been residing here? I was an Inspector of Conditional Purchases from Cape Howe to Tilba Tilba.
2409. How far north is Tilba Tilba? About 40 miles from Bega, I should think.
2410. And running west into the mountain? Right to the border of Victoria, and right up to the Snowy River.
2411. What was your opinion as to the *bona-fides* of the men who settled in your district? I know all the colonies pretty well. I have travelled in the interior of them all, and I never knew a more *bona-fide* settlement than there is here.
2412. What business are you now engaged in? I am privately engaged as a mining agent.
2413. In connection with the Pambula mines? Yes.
2414. What do you estimate the population of Pambula to be (say) within 5 miles from here? I do not know the population so well. I did not know I was to be asked to give evidence. I know all the farms in the district. I suppose there is not an acre either of conditionally-purchased land or of Crown land that I do not know.
2415. Cannot you give us any idea of the number of settlers? There are a great number, but I cannot give you any idea as to what it is.
2416. *Mr. McCourt.*] Do you know the country through which the line will go? There is a lot of very valuable land in the district which is unused at present, and a good deal of it is locked up by Government.
2417. Is it Crown land? Yes.
2418. Where is it? Just close to the population boundary.
2419. But not between here and Bega? No; but there is a lot at the back, all through the country.
2420. Will the construction of this line cause the land to be taken up? I think so. I have heard people say in travelling about that they would take up land—that was long before this matter came prominently before the public.
2421. Have you any other reasons to advance for the construction of this line? There is a great deal of timber here, which if there were a railway would be used. It is very inconvenient at present to take it to market. Out west of Pambula there is a lot of timber which could be utilised, but it is almost impossible to get it to Merimbula, and it is too far to take it to Eden with teams.
2422. Where would it take the railway from? Pambula.
2423. A timber trade would grow up? Yes; I do not believe that there is any better timber than that on the south coast.
2424. Have you any other reason? Perishable articles, which are not now produced for the want of proper means in getting them away from Merimbula, if there were a railway to Eden, would be produced, and would offer an inducement to Howard Smith's, and other large steamers, to call in at Twofold Bay. At present Merimbula is the nearest port, and the people take the risk of shipping from there, but when they go down for their goods they do not know whether they are going to get them or not.
2425. At present you are in the hands of one company? Yes. I know a lot of people who would come here from Monaro if the line were constructed. In the winter time the road to the railway at Cooma is almost impassable, and they would take the train round to Eden for the sake of getting to Sydney by sea. A lot of people from Wolumla go overland. They have to depend on the Illawarra steamers, and they cannot

cannot rely upon their punctuality. I tried twice to go to Sydney from Tathra, but had to come back, because the steamer could not call in there. Mr. M. Roach.
2426. When did that occur—within the last six months? No; I never travelled by those steamers more than once, and I was compelled to do so then. I always make arrangements to catch the other boats. 25 Aug., 1892.
2427. Do other people do the same? They sometimes do it. I have frequently known them to do it.

Mr. Simon Gordon, junr., saw-mill proprietor, near Pambula, sworn, and examined:—

2428. *Chairman.*] Where do you reside? About 7 miles from here. Mr. S. Gordon, junr.
2429. *Mr. Ewing.*] You want to give evidence as to the way in which the timber industry here would be affected by a railway? A railway would enable us to get rid of a great deal more timber than we dispose of at present. We can only get rid of a small quantity now round about the district. We cannot ship from Eden because of the expense of cartage there, and it is impossible to ship from Merimbula. 25 Aug., 1892.
2430. Therefore, your milling operations, and the timber trade generally, are confined principally to supplying local requirements? Yes.
2431. You find that you cannot ship your timber at Merimbula? No; it would be almost impossible to ship it there.
2432. Because of the handling in the bay? Yes. It would be handled three or four times before it could get on to the boats.
2433. If you had a railway from Eden you believe the trade would be stimulated? Yes; the timber could be shipped direct from Eden, and we could get it taken there by rail.
2434. What timber are you sawing? Principally box, gum, and stringy-bark.
2435. Is there an abundant supply? Yes, there is a large quantity of it.
2436. It would keep the market going? Yes.
2437. You could take it to Sydney? Yes; to any part of the Colony.
2438. Is the profit so small that it will not stand the land carriage? We are not prepared to send it.
2439. What would they cart timber to Eden for? Between 2s. 6d. and 3s. per 100 feet.
2440. What profit would you have to make per 100 feet in order to be paid for your enterprise? About 7s.
2441. That covers everything? Yes. If we had an order for a quantity we could sell it in the Sydney market for between 7s. and 8s.
2442. That does not include the freight from here? No.
2443. Have you ever sent to Sydney? No.
2444. What do you think the freight from here to Eden would be on the railway? I could not tell you. The distance from the mill would be 19 miles.
2445. What would the intercolonial boats charge per 100 feet? I never inquired.
2446. All you say is that it appears to you to be reasonable to suppose that with a railway to Eden, and a good steamer from there to Sydney, you could send timber to Sydney? Yes; and we should then have the Sydney market as well as the local market.
2447. You have not gone into any calculations? No.
2448. There is an abundant supply of timber to keep the trade going for a while? Yes.
2449. Why is the land carriage from here to Eden so dear? On account of the rough road, and the difficulty of getting there. That is the only reason that I can see.
2450. Is there any other reason;—we have been told that the water and grass are very bad, and that the carriers do not like the road? Yes; there is no grass there for stock, or water either, unless you come a considerable distance out of Eden.
2451. *Chairman.*] How is it if that is the case, that all the machinery that has gone up the Big Jack route towards Bombala has been landed at Eden? Because it was brought by the Tasmanian Company's boats. They could not get it any other way.
2452. They were obliged to land it there because of its weight? It seems like it.

Mr. Stephen Woods, Police Sergeant, Pambula, sworn, and examined:—

2453. *Chairman.*] How long have you been in charge of this station? Only about eight months. Mr. S. Woods.
2454. Were you in the district before that? Yes; twenty-seven years.
2455. In the Bega district? Down here principally. 25 Aug., 1892.
2456. Do you know if there has been any considerable increase in the population here during the last year or two? Yes.
2457. Has it been principally brought about by the gold-fields? Yes.
2458. Is the rush here going down? Yes; lately.
2459. Men are going away daily? Yes.
2460. Do you know if that is because of the failure of the gold-bearing strata? In my opinion the gold is there in abundance. I have the utmost confidence in the mines.
2461. A lot of money has been spent there? A large amount has been squandered.
2462. You have heard some of the other witnesses give evidence about the existence of a large area of excellent land to the west of Pambula; do you know anything of it? Yes; these is some good brush land.
2463. Outside the population boundary? Yes; out west.
2464. Are there many farmers out that way? A few.
2465. Do they bring their stuff to Merimbula? Yes.
2466. Do they bring it themselves, or employ teamsters? Some of them employ teamsters.
2467. Can you give us any idea as to the quantity of produce that goes through this place in a month or a week? No; I cannot.
2468. There is a daily mail between Bega and Eden? Yes.
2469. How many passengers travel through each day? I do not think they average one a day.
2470. A poor look out for the passenger traffic on the railway? Yes; of course it was different when the diggings were in full swing. For several days, sometimes, there are none at all in the coach. Day after day there are none in it.
2471. Did you see the coach go away to-day? No; I did not notice it.
2472. Do the people here use their own vehicles much? Nearly every person has got his own buggy.

Mr. S. Woods. 25 Aug. 1892.

2473. Do they use their own vehicles in going to Eden, or do they take the coach? I think it is those who have no vehicles of their own who use the coach.
2474. Do you know Merimbula? Yes; well.
2475. Have the people suffered any great inconvenience there? Yes; and danger too. I was there last Saturday assisting to put a prisoner on board the steamer, and I helped to throw women and a child from the rocks into the boat.
2476. The steamer took away passengers last Saturday? She called off the bar. I was there, and helped people into the boats.
2477. How often does that sort of thing happen? In the winter time you can never depend upon the weather. There may always be an easterly or south-westerly gale. There is no certainty about it.
2478. During your residence in the district, has there been a very great increase in its production and population? Yes; it has increased wonderfully since I came here, and especially during the last three or four years.
2479. Presuming that the Railway Commissioners' estimate, as to the probable loss on the line, is correct, how long do you think it would be before the population and production of the district would increase sufficiently to wipe off that loss? I verily believe that it would be wiped off within three or five years.
2480. You do not believe that the district has in any way reached the height of its productive power? Not by one-half.
2481. Are the people generally well-to-do? They have been, but many of the farmers have put into the diggings and lost by it.
2482. So far as their ordinary pursuits are concerned, they have been fairly comfortable? They have been well off, especially at the Bega end.
2483. Is it only the people who have put their money into the gold-fields—the foolish people—who have lost? Some of the wise people have done the same.
2484. *Mr. Ewing.*] How do you regard Eden as a port? It is a splendid port. I was there fifteen and a half years, and I saw large steamers come in. The Union Company's steamers call there.
2485. You regard it as the port of the district? There is no other port worthy of the name. I should like you gentlemen to see Merimbula as I saw it last Saturday.

THURSDAY, 25 AUGUST, 1892.

[*The Sectional Committee met at the Wharf, Merimbula, at 5·30 p.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor. | Thomas Thomson Ewing, Esq.
William McCourt, Esq.

The Sectional Committee further considered the proposed Railway from Eden to Bega.

Mr. P. J. Clinch, local agent for the Illawarra Steam Navigation Company, sworn, and examined:—

Mr. P. J. Clinch. 25 Aug., 1892.

2486. *Chairman.*] How long have you been here? Nine years.
2487. Have you been an agent for the Illawarra Company all the time? Yes.
2488. What is the tonnage shipped from here in a week or a month, can you tell us? Not without making it out. I never keep statistics. We have a little 50-ton craft here, and we cannot fill her up every trip she makes. She is only half full when she goes out to the steamer, taking an average all the year round.
2489. Where does the principal portion of your trade come from—from the northern side of the river? Yes; nothing much comes from the Pambula side.
2490. What are the kegs lying over there now? We only get about twenty kegs of butter from that side in a week.
2491. Anything else? Some ore.
2492. They send the ore to Sydney to be treated? Some of it.
2493. How much a week? There may have been 200 or 300 tons since the field was started.
2494. Has the quantity shipped increased since you have been here? The quantity of wool sent away has decreased since the construction of the Cooma railway. We used to have about 9,000 bales sent here, but now we have only 5,000 bales.
2495. Is any of it diverted to Eden? No; it is diverted to Cooma. Eden got about 100 bales last year.
2496. No wool is produced in this district? There are only a few sheep.
2497. Is the quantity of dairy produce increasing? I do not think so; it keeps about the same. Some of it has gone to Tathra since I have been here.
2498. Has Tathra sprung into existence since you came here? No; but they did not have so much stuff from Candelo and Colombo at one time; some of it used to come here.
2499. So far as the shipment of it is concerned you are rather at a standstill? Yes.
2500. Have there been many times when the steamer could not land her cargo? No; I do not think she has brought it back three times, and then only a portion.
2501. What do you mean by that? Back to Sydney.
2502. Can they land cargo here when they cannot land it at Tathra? Yes; when there is a strong north-easter blowing, or a southerly sea, and they cannot land cargo here, they go on to Pambula Heads, and shelter there.
2503. And your drogher goes there? She steams there.
2504. Has there ever been a time when the drogher could not go out to meet the steamer? There have been times when she could not go out as advertised, because of the heavy sea.
2505. She had not necessarily to wait for high water? She had to wait until the sea moderated.
2506. Has there ever been any accident here? No one ever got injured in my time. I have been in the service of the Company for twenty years, and never heard of an accident here.
2507. Would it give severe shocks to the nerves of women and children? With a bar harbour we cannot help that. Sometimes the sea is smooth and sometimes it gets up in a minute.

Mr. P. J. Clinch. 25 Aug., 1892.

2508-9. Does Mr. Munn ship by your boats? Yes.
2510. Is he the principal shipper from here? Yes.
2511. Does he ship every time the steamers go? No.
2512. How often does he ship? It depends on the trade he has for his maizena. He ships according to his orders.
2513. Is his main depôt down here? Yes.
2514. How many hands does he employ? I could not tell you exactly.
2515. Are there busy and slack times? I think he always keeps about the same number going. He has men cutting wood round here for the fires.
2516. Does the property here belong to the Illawarra Company, or is it rented? It belongs to the I.S.N.Co.
2517. The same remark applies to the wharf on the other side? Yes; we rent a wharf lower down belonging to the Government, but we do not use it. We lease the ground, but the wharf belongs to the Company.
2518. Do you expect any great increase in the trade here? It is decreasing. We have regular carriers here who have been waiting three weeks for loading, and there is no loading for them.
2519. Is that because the steamer has been unable to land her cargo? No.
2520. Did she land cargo at Tathra on her two last trips? On Saturday she took passengers at Tathra, and she landed passengers here on Sunday on the rocks. There is a landing place outside, on the Flat Rock, and the steamer landed them there with her own boat. They walked over the hill, and we then picked them up in another boat.
2521. Is that a better way than using the drogher? I do not send the drogher out on Sunday. It is dangerous to cross the bar when there is a heavy sea.
2522. Was there not another trip missed? There were two or three passengers for this port by the "Allowrie" last Thursday, but she went on. I suppose the people preferred to go on to Eden, because it was dusk when she passed.
2523. She called in here on her return trip? Yes, and discharged cargo, and took in passengers for Sydney.
2524. Have the gold-fields made much difference to your trade? They did, but it has gone down again. We never brought any machinery; it goes to Eden. We brought passengers and goods, but the trade is going down to the old state again.
2525. Trade comes here from the Wolumla portion of the district? Yes; from Bombala, Delegate, and from the border, at Bendock.
2526. Would that not go through Pambula? No; it comes down Tantawanglo. We get a little from Rocky Hall and Wyndham, but most of that goes to Eden.
2527. Would that not tap the main road near Pambula? Yes, and go on to Eden.
2528. Although it is a shorter road here they go on to Eden? Yes, on account of the bad road to this port.
2529. Why do not the Pambula people go there? This is nearer.
2530. Do the Rocky Hall and Wyndham people bring their stuff into Pambula? They turn off at the Roan Horse. To come here they would have to cross the Pambula River, and they would have some heavy pulling through sand, so they prefer to go on to Eden.
2531. Pambula River is the dividing line between the trade that comes this way and the trade that goes on to Eden? The greater part of the trade goes to Eden.
2532. Who maintains the road to Pambula, on the southern side of the lake? The Government.
2533. Do you bring goods over from there in a punt? Yes; and the drogher goes over at high water.
2534. Have you ever had a dredge here? No; nothing at all. The Government will not spend a penny here because they reckon this a private port.
2535. Butter coming from the other side is put on to the punt, and then shipped into the drogher, and then transhipped outside into the steamer? Yes.
2536. Are the people satisfied or dissatisfied with the Company's operations here? I have never heard any complaints.
2537. Do you think a railway from Eden to Bega would pay? I do not.
2538. You do not think there is sufficient trade? No; not when they cannot keep two steamers full, all the year round.
2539. Do not they ship a great deal of produce by the Union steamers? Not a great deal.
2540. Do not those steamers call at Eden regularly? Yes; but they do not take much cargo.
2541. In days gone by they did not call regularly? I think they have always called pretty regularly since I have been here.
2542. How often? Twice a week since the Pambula gold-fields were started. They only had one steamer running before.
2543. Do you not think that if a railway were constructed it would entice larger boats to the port? I do not think so, if they cannot keep the small boats going now.
2544. If they assert that the district is not working up to one fourth of its capabilities you think there is room for expansion? There is; but I do not think the railway would be a paying concern. I should be very sorry to have shares in it.
2545. Have you any shares in this Company? No; I have not.

FRIDAY,

FRIDAY, 26 *AUGUST*, 1892.

[*The Sectional Committee met at the Court-house, Eden, at 2 p.m.*]

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR. | THOMAS THOMSON EWING, Esq.
WILLIAM McCOURT, Esq.

The Sectional Committee further considered the proposed Railway from Eden to Bega.

Mr. John Davidson, whaler and miner, Twofold Bay, sworn, and examined:—

Mr. J. Davidson. 26 Aug., 1892.

2546. *Chairman.*] How long have you resided in this part of Her Majesty's dominions? I came here in 1846.
2547. Have you been here ever since? I was away for a little while, but I have been here most of my time.
2548. Were you following the sea before you came here? No; but I followed up the whaling business for a long time.
2549. Only about here; you have not followed it elsewhere? No.
2550. You are not a seafaring man, except so far as the whaling business is concerned? No.
2551. Have you seen the ships that have come in and out of this port during the time you have been here? Yes.
2552. Is it a fact that in heavy weather vessels seek shelter in Twofold Bay? Yes; I have seen as many as thirty here, wind-bound, while trying to get to the south. Going to the north it is not so bad.
2553. Vessels do not seek shelter here when going to the north? Very seldom; unless they are very light.
2554. They seek shelter here from southerly and south-east gales? From south-west gales. I have not seen them here with the south-east wind blowing.
2555. Do not south-east gales sometimes make it uncomfortable for the vessels in the port? No; there is a good holding ground here.
2556. What about easterly gales? Vessels are safe enough here from them.
2557. Do they not blow right into the bay? They blow into the centre of the bay, but not into the cove where the wharf is. I have seen as many as thirty anchored there, and some anchored under the lee of E. Boyd Point.
2558. It would not do for them to swing round much? They will not swing much when the wind is blowing one way.
2559. But there is such a thing as the chopping round of wind? Sometimes it comes off the shore, but there is plenty of room.
2560. You never saw them foul each other when a change of wind came? No.
2561. Do vessels seeking shelter from easterly gales prefer to go to the southern end of the bay? Some of them do. Some of the captains who are accustomed to come here go in there to get out of the roll of the sea.
2562. There is plenty of shelter on the north side, but if an easterly gale is too strong it sends the sea in there, and some of the captains prefer going to the south side? Yes.
2563. What about north-easters here? It is quite smooth in Snug Cove.
2564. But it is fairly open on the southern side to a north-easter? It is sheltered a little by Honeysuckle Point on the east side.
2565. A point projecting out beyond what is know as Boydtown? No; this is across on the south-east side of the bay.
2566. It protects vessels anchored under the lea of it from the north-east gales? Yes.
2567. Are north-east gales very frequent here? Not very.
2568. How many are there in a year as a rule? Three or four perhaps.
2569. Are there more south-east gales than there are north-east gales? Yes.
2570. Do you have gales coming due east, or generally from the north-east and south-east? From the south-east generally. It is very seldom that there is an easterly gale.
2571. The gales are principally from the south-east and north-east? Yes.
2572. And there is plenty of shelter for all the vessels that come here, when those gales are blowing? Yes.
2573. Have you ever seen a time when a vessel could not lie alongside the jetty because of the swell? I have seen a little range there. They can lie there well enough, and discharge cargo at any time.*
2574. How is it if the weather is dirty? Vessels like to lie out at anchor then. They come alongside and put off their cargo, and then they anchor. They would not care to lie there with a little range.
2575. They would sooner trust to their own ground tackle than to warps alongside a wharf? Yes.
2576. How often would it occur that a vessel could not land cargo there;—once a year? Once or twice.
2577. For how long—for several days together? A south-east gale might last several days.
2578. A swell would keep up for several more days? Yes.
2579. That would make a week? They could get alongside the wharf at any time.
2580. You have just told us that you could not? They could discharge their cargo, but if there were a range alongside the wharf they would not like to lie there.
2581. It would be very awkward for an Orient liner if she were calling in here, to be kept a week? She would not be able to come alongside the wharf. There is not enough water.
2582. How much is there? Sixteen feet; I think that is about all.
2583. There is no chance of an Orient boat, drawing 22 feet, going alongside the wharf? I am not certain of the depth of water.
2584. Where is the water deepest; immediately around the foreshores? The deep water is just off Middle Head.
2585. Were you here when Boyd established his township on the other side? Yes.
2586. He was a pretty shrewd man? Yes; I recollect him well.
2587. Was he a sailor by profession? No.

2588.

* NOTE (*on revision*) There may have been exceptions that I do not know of.

Mr. J. Davidson. 26 Aug., 1892.

2588. Do you think he was out in his calculations in establishing this town on the south-west side of the bay instead of the north-east side? I do not know. A vessel could lie in at Boydtown* almost at any time.
2589. Do you think the Boydtown side is the best place for vessels to lie in all weathers;—is it better than Snug Cove? No; it is not.
2590. To that extent Boyd was wrong? He had vessels over there.
2591. But in your opinion Snug Cove is the best place to go in all weathers, and to that extent Boyd must have been wrong in establishing his town where he did? He thought that the best place for it.
2592. Is there so little difference between the sites that any two intelligent men might differ on the point? Yes.
2593. Are you whaling still? Yes; occasionally.
2594. Where do you land your whales? At the Kiah River. Once in the river, no sea can get at you.
2595. But is not the beach at the mouth of the river rather exposed? Yes; it is open to the sea.
2596. As an old resident, who has used this place for many years, and under all circumstances of weather, you consider that this side is the best for a settlement? Yes.
2597. You have not the slightest doubt about that? Not the slightest.
2598. You have no interest here at all? No.
2599. You are interested on the other side? I live on the other side.
2600. Your personal interest would lead you to choose the other side? Yes.
2601. But you are of opinion that this side is undoubtedly the best place? Yes.
2602. If a railway is to be constructed from Eden to Bega we should make no mistake in commencing it from this side of the bay;—we should not have to take it round to Boydtown afterwards? No.
2603. Do you know anything of the country out to the back, on this side of Mount Imlay? I have been through it prospecting.
2604. What sort of country is it? There are patches of good farming land on the Kiah River.
2605. Is it not very limited in area;—if there were very good land on either side of the river do you not think it would have been taken up? Perhaps it would.
2606. Can you tell us if there is any great area of good land in Yanbulla, Sturt, Buckle, or the surrounding district? No, I could not.
2607. Do you know anything about the country north beyond Pambula? Yes.
2608. Is there any country down about here similar to the country about Wolumla or Bega? No.
2609. Nothing like it? No.
2610. Not within a cooey of it? No.
2611. You think that 4 acres down there would be worth 1 acre up Wolumla way? One acre of the land I refer to is as good as any up there.
2612. But getting away from the river, you think that 4 acres of that land are equivalent to 1 acre of the Bega land? I should not think so.
2613. Are 10 acres equivalent to 1 acre? That would be about it.
2614. Is there any good timber about here? Yes, the timber is very good.
2615. I think you said that you had been prospecting the country for gold and other minerals;—do you think it likely country? Yes; I have found gold in several places, but nothing payable.
2616. You think the country only wants developing? Yes.
2617. Have you ever gone up as far as the Monaro Range? Yes.
2618. Is there a fairly easy ascent? There are two ways of getting up. I have been up what is called the Big Jack, and I have been up the other way.
2619. Further south there is a better road than the Big Jack road? Yes.
2620. The Big Jack road is pretty rough? It is pretty steep.
2621. Is there anything else you would like to say with regard to any point on which we have not touched? I do not think so.
2622. You do not know whether the railway is likely to pay? No.
2623. You come just to give your opinion with regard to the port with which you have been connected so long? Yes.
2624. *Mr. Ewing.*] You have been here pretty well half a century? Yes.
2625. You have seen as many as thirty vessels lying here for shelter at one time? Yes; there have been more than that. I am speaking within bounds.
2626. Did you ever see any accident happen in Twofold Bay because of the swell? No.
2627. A vessel coming in here is quite safe? Quite safe.
2628. *Mr. McCourt.*] Do you know the route of the surveyed line from Bega to Bombala? No.

Mr. Solomon Solomon, storekeeper, Eden, sworn, and examined:—

Mr. S. Solomon. 26 Aug., 1892.

2629. *Chairman.*] You are engaged in business here? Yes.
2630. You are also local agent for the Union Steamship Company, with which is amalgamated the Tasmanian Steamship Company? Yes.
2631. How long have you been a resident of the district? Getting on for forty years; I was living on Monaro before that. I think I am the oldest resident now in this part.
2632. *Mr. Suttor.*] Can you give us any information as to the amount of goods brought here and taken away by the steamer? Yes; I have taken the figures from the books. I can show you that part of Captain Turner's statement in Sydney is not correct, He said that the Union Company's boats only carried about 20 tons from here; but this is a telegram which I have just received:—"'Corinna,' 9 last night, about 40 tons; 'Oonah' sails at 6 o'clock to-night."
2633. Those goods are to be landed here? Yes; the steamer is coming from Sydney. One hundred tons came here two or three weeks ago. There were exactly 300 passengers booked here between July, 1891, and July, 1892.
2634. Going to Sydney? Yes; that is the number who booked before they went on board, but a lot of passengers went on board, and paid there. The number I have given you is the number to whom we gave tickets. We are quite satisfied that a very much larger number come from Sydney.
2635. Can you give us the number? I can safely say that there would be more than 300. 2636.

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* Note (*on revision*): I mean East Boyd.

Mr. S. Solomon. 26 Aug., 1892.

2636. Where did the 300 passengers who went from here come from? From the interior. They always come down and meet our boats.
2637. Where would they tap the proposed line from Bega to Eden? At Candelo, Bega, Wolumla, and Pambula. A great number come from Bombala through Pambula and Wyndham. There is a great tract of country there.
2638. Can you give us any idea of the tonnage landed here in twelve months? Yes. From July, 1891, to July, 1892, 700 tons of cargo were sent to Sydney by our boats, and 850 tons brought here from Sydney by them—1,550 tons altogether. A little, such as potatoes, hay, and that sort of thing, comes from Tasmania.
2639. The steamers have no difficulty in loading or unloading here? None whatever; at any time of night or day. There may sometimes be a heavy sea coming into the bay, and they call here as quickly as possible and go off again. It is not likely that they will stop at the wharf when they have done their business.
2640. How often do they run here? Once a week regularly. They used to come once every ten days.
2641. Do you think it is at all likely that if the railway were made the traffic would increase to any great extent? I am certain it would. I have grown with the district, and have seen how it has grown. I have seen how its production has increased, notwithstanding its few shipping facilities. I am certain that if we had a railway here, before two or three years have passed, where we have 1,000 tons now, we shall have 7,000 or 8,000 tons. There is a fine tract of country from the Old Hat up to the Box Range, and you will not find a better potato soil anywhere than there is there. Some of the potatoes weigh 1½ lb. each, and they are good eating too. A lot of people will bear me out as to the quality of that land. It is beautiful chocolate soil.
2642. What production will give this great increase—anything besides potatoes? Yes; corn.
2643. Is it likely that wool will be shipped here? All the Monaro wool will come down here. They would not come further than Wolumla by road. The men would come to Wolumla and get their load back.
2644. Whereabouts is this fine potato country? N.N.W. from here.
2645. About how far? Commencing about 7 miles from here, and extending over 20 miles.
2646. In what direction would that be? Out Wyndham way. There are lots of farms at the back of the Box Range, where they are growing splendid crops of corn; but the cartage is so heavy that the corn does not pay. If they could grow potatoes at £2 a ton clear it would pay them well, and the same thing might be said of corn. It is the means of transit that they want.
2647. If a large increase of production were brought about by the railway, the steamer accommodation would be increased to meet it? Yes; all the steamers running backwards and forwards to Melbourne would be only too glad to get a footing here There would be any amount of tonnage.
2648. You are quite sure the increase would be very great? Yes; no one can imagine it better than I can myself. When I first came here a small vessel of 45 tons register used to do the whole trade of this district and Monaro.
2649. That is a good many years ago? It is about thirty-two or thirty-three years ago. Then I bought a vessel, and that increased the trade a little more. Then the "William IV" was put on, and then the "Tamar" and "Mimosa," and other such steamers came on as the trade increased. People saw a way of getting their produce to market, so they became a little more industrious.
2650. *Mr. McCourt.*] Have the Tasmanian boats ever been unable to land their cargo here? They have never taken it away once, and they never stopped to lose their trip.
2651. Do you know the depth of water at the wharf? At the end it is 22 feet.
2652. Have the I.S.N. boats ever been unable to land their cargo? I do not think so. They have always landed their cargo. If it is rather rough they will drop their anchor and come alongside before they go away. They can always land stuff here.
2653. Supposing the railway were constructed, and the great trade it is expected it would bring followed it, to what do you think freights would be reduced between here and Sydney? I think the trade would be so increased that the ships would be very glad to take freight for 7s. 6d. or 8s.
2654. What is the freight now? Fifteen shillings.
2655. The freight would be reduced one-half? Yes; I think so. They take potatoes from Tasmania for 7s. 6d., and I do not see why they should not charge the same freight from here. The distance is not half as much.
2656. If the freight were reduced, would your farmers be able to compete with farmers in other parts of the Colony? Of course they would, because their produce would go to market much more easily.
2657. Would this place be a sanitorium if there were conveniences for getting to it? Yes.
2658. Where would the people come from? From Sydney and from Monaro. I know that a lot are coming next summer. I was told to engage bed-rooms and parlours for some families.
2659. Are there many people coming from Monaro here? Yes; a good many. There is a gentleman here now who has been down all the winter, and I am sure he will recommend the place.
2660. Only facilities of communication are wanted to increase the quantity of goods and the number of passengers brought here? Yes.
2661. Do you think it would be necessary to bring the railway to the wharf at present, or would it be as convenient to leave it at the post office? The goods would be better brought to the wharf. The saving in cartage would be very considerable.
2662. You think the railway ought to come to the wharf? I think so.
2663. *Chairman.*] If people came down here from Monaro they would probably tap the railway at Pambula? They would come *via* Wolumla.
2664. I understood you to say that they generally came down the Big Jack? Now they do; but if they could tap the railway at Wolumla there is no doubt that that would be their nearest point.
2665. Would Wolumla or Pambula be the nearest point of the railway from the table-land? I think Wolumla would be the nearest, and it is a far better and more pleasant road to drive. If we had a railway here I feel confident that 100 or 200 people at least would come here every Sunday from Bega, and go back again the same day. Of course that traffic would increase.
2666. Are you aware that the Railway Commissioners estimate a loss on this line of £19,000 per annum? I have read it in the newspaper. They ought to be better judges than I am, but if I had the capital I should very much like to undertake the work, if they would guarantee me not to lose more than £10,000 at the first start.

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2667. You would be prepared to lose £10,000 at the start? No; I should want a guarantee.
2668. Where would the guarantee come from? From the Government.
2669. Do you think the passenger traffic would be larger than the Commissioners have estimated? Very much larger. If the Bega people had an easier way of coming here they would make this a pleasure resort, and Eden people would go there.
2670. You said that you thought that Twofold Bay would become a sanitorium for not only the people of Monara but also the people of Sydney? I think so.
2671. Would the Sydney people feed this line in any shape or form? They would be likely to use it to see the country. A trip of an hour or two would be nothing.
2672. Has not this place been known for many years, and yet few people come here? No; I do not think it has been known. Many persons who have come to Eden knew nothing whatever about the place before.
2673. Do you think the country should be saddled with a railway, which it is estimated would entail a loss of £19,000 per annum? That is one way of putting it. I think the country would not be saddled with half that loss. I speak from experience. I think they have estimated the cost of the line at more than it would take to construct it. I feel sure that if contracts were called for the line now, the work would be done for very little more than half the estimate.
2674. With the definite statement of the Engineer-in-Chief for Railway Construction, that after a survey and re-survey of the line, he does not think it could be made for less than £564,000, do you adhere to your opinion that the cost could be cut down? Yes.
2675. Can you tell us any particular portion of the line where the cost could be cut down? No; I can only speak from what I have heard from contractors who have made other railways. They would like to get the contract for a great deal less than the estimated cost.
2676. Would you mind stating the names of any of these contractors? I should not like to do so.
2677. Do you not think that with the experience the officers of the Railway Construction Department have had, they ought to know what the cost would be? They ought to know.
2678. If the Engineer-in-Chief says that he does not think that the cost can in any way be reduced, do you think we are perfectly right in accepting his estimate? Perhaps so.
2679. The Railway Commissioners—one of whom, at all events, ought to be in a position to know what he is talking about—say that after making a very liberal allowance both for goods and passenger traffic, and after having made a personal inspection of the district, they think there will be a loss of nearly £19,000 per annum on the line? I do not think they could judge from what they have seen of the district. They might judge from the surveyor's and engineer's reports, but I do not think they will be capable of judging from what they saw of the district.
2680. As to what the traffic would be? No.
2681. But they had officers who collected the imformation for them. You did not expect them to go into every farm-house? They came down Big Jack, that is all.
2682. But if they had officers out getting information as to the trade of the district, you did not expect them to go into every house? They got their information from their officers. They could not give an opinion upon their own personal observation.
2683. Their officers made out returns and laid them before them? They did not take the trouble the Committee have taken, and nothing like it.
2684. Their officers took the same trouble, and perhaps more. The Commissioners have not been far out in their estimates before? I imagine that they fixed their prices when everything was very high, and when the Colony was in a prosperous state. Their estimate of cost is more than you could get the work done for now.
2685. About a week ago Mr. Deane gave it as his opinion that there would not be any very large decrease in the cost? But where is the saving upon roads. Do they not take that into consideration?
2686. Do you think there would be any saving? I think there ought to be.
2687. Do you know as a matter of fact that there has never been any saving on roads, but rather an increased expenditure, in order to make side roads to give access to the railway at convenient points? That is something new to me. I have not heard of that.
2688. Is it not reasonable to suppose that access would have to be given to the railway at different points, and will not that increase the road expenditure? Expenditure on the main road at present is very great; but these small roads would be comparatively inexpensive.
2689. If we have been informed that the annual expenditure on the roads of this district—a very much larger district than the railway would serve—is £12,000, there would not be very much saving? No; but then there would be settlement along the line. We can grow fruit all about here for miles.
2690. Presuming that the Railway Commisioners are right as to their estimate of the traffic and the possible loss on the line, how long do you think it would be before the increased production of the district would overtake that loss—five or seven years? I do not think it would be more than five or six years.
2691. You think that within five or six years the increased production of the district would more than cover the estimated loss? If it did not quite do it, it would make a large hole in it.
2692. You do not think the district is at present working up to its full capability? I am sure it is not.
2693. Do you think that if the railway were constructed some of the land which at present is not used for agricultural purposes could be used for agricultural purposes? Yes; to a large extent.
2694. How is it that this stretch of wonderfully good potato country, commencing about 5 miles from here, and running out 15 miles, has never been developed? The carriage would cost more than the potatoes would fetch. It would cost them £2 a ton.
2695. To bring their potatoes 10 miles? Yes; some of the land is 15 miles away.
2696. Take the middle of that district? It would cost 25s. a ton.
2697. The carriers here must be in a very sound position. This country lies N.N.W. from here. They would have to cart their potatoes from there to the nearest point on the railway line, would they not? Yes.
2698. How far would that be? Two or three miles, if they had tracks. I think the furthest distance would be to Pambula from the Box Range.
2699. You think they would tap the line at Pambula? Yes.
2700. From the furthest place they would have to cart 6 or 7 miles to the railway at Pambula? Yes.

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2701. If it cost them 30s. to cart 10 miles, it would cost them about 10s. to cart 3 miles? They could use their own carts, if they had only a short distance, and they would be able to make three or four trips a day.
2702. But their own labour will be worth something? Yes; but they could afford the time.
2703. If it cost 30s. to bring produce 10 miles, would it not be worth 10s. to bring it 3 or 4 miles? If a man could use his own cart and horses he would save by doing the work himself.
2704. Would the man not be spending his time for nothing? No; he would be saving the cartage.
2705. Is not a man's own time worth something? He would be paid for it if he saved 10s. a ton on his cartage.
2706. But what would it cost him to use his own time? He could make three or four journeys a day. He could get the work done for 2s. or 3s. if he used his own labour.
2707. But there would still be the railway freight, and the water freight? Yes.
2708. You think there would be such a saving if they could tap the railway at Pambula, that these farmers could easily compete with the outside world in the sale of potatoes? Yes; I think so. There are other places nearer in.
2709. Do you think other products of the district would be increased so largely that in a very short time the estimated loss would be overcome? I think they would. I think everything would grow here. One large item of trade not taken into consideration is the timber trade. There is one of the finest timber countries ever looked at, a few miles from Pambula.
2710. Do you think it would pay to cut timber, bring it here on the railway, and then ship it? I think it would. It pays to send it from other parts—from New Zealand, and from Hobart.
2711. You do not grow kauri pine here. What does it cost the Clyde people? I have no idea. They send lots of timber from Hobart, such as palings, and so on,
2712. But is not their timber of a special description? No; I do not think it is as good as ours.
2713. Do you think the timber of this district could compete with it? Yes; our timber would be good for piles.
2714. Has there been any shipment of piles from here? Yes; a large quantity has gone to Melbourne lately.*
2715. How far has that timber to be brought? I suppose 3 or 4 miles. I do not know exactly where it comes from.
2716. Is there plenty of it? Any amount of it.
2717. I suppose that when a teamster has got these heavy logs on to his waggon a few extra miles of carriage does not matter. Would it not be more expensive for him to unload and truck them part of the journey by railway than to carry them the whole of the distance? I think not, especially in the winter time when the cattle are weak.
2718. Whereabouts does the timber to which you refer, grow? What they have been shipping away grows close to this place, but the other timber to which I have referred grows from beyond Pambula right up to Wyndham.
2719. Is it a convenient distance from the railway—4 or 5 miles? It commences before you get 5 miles from the railway, and goes on for a long distance out.
2720. That timber would be trucked from Pambula? Yes.
2721. You think that after it had come 5 miles on drays it would be cheaper to truck it for the rest of the journey than to keep it on the drays? I am sure they would be only to glad to get rid of it at the railway station.
2722. Would there not be a double handling? Yes.
2723. Is it not the handling of heavy things that runs into the expense? I daresay that at the railway station they would have means and appliances for handling easily.
2724. Do you know any place in the world where big logs are drawn 5 miles by road, and then taken 10 miles on the railway? I have not been out of this district, and I do not know anything about the timber elsewhere. I know that the Monaro teams would be only too glad to bring their loading to the railway and take back loading from there, so as to have the cattle fresher when they started away. It would make a considerable difference in time.
2725. If they were sending goods to Wyndham, which came here by sea, would you put them on the railway and send them to Pambula, and let a dray meet them there? Yes; they would be glad to do it. If I lived at Wyndham I would sooner do that for less than half the price, than bring my produce right down here. Without the railway I should have to come right down to Eden and then go right back again.
2726. What is the nature of the cargo that is coming by the "Corinna" to night? I have no idea.
2727. Do those steamers bring stores? Yes; all kinds of things.
2728. Has there been a very large increase in the importation of goods because of the Pambula gold-fields; No doubt of it. Over 100 tons of machinery came here during the last two or three weeks. I have not taken that into account at all.
2729. Is it a fact that the gold-fields are panned out? I hope not.
2730. Is it not a fact that where there were hundreds of men employed only a short time since, there are only thirty on the field now? I do not know about thirty. I know that there are not so many there now as there were. I dismissed a lot of men because we were waiting for machinery. The water was beating us.
2731. You are waiting for machinery to work the mine more effectively, you have not deserted the mine? No.
2732. We have been told that there has been a great decrease in the number of men employed there. The real reason for the decrease, so far as your speculation is concerned is, that the water has become too strong to be dealt with by the old machinery? Yes.
2733. When the water has been dealt with, more labour must be employed? Yes.
2734. You believe that there is a great future before this gold-field? I do.
2735. And that will lead to traffic on the railway? To a considerable traffic.
2736. Can you give us any idea of the number of people who came here by your steamers during the year. You told us that 300 went away? Yes.
2737. You think that quite as many came here? Yes. 2738.

* Note (*on revision*): Not shipped, but drawn to the waterside ready for shipment.

Mr. S. Solomon. 26 Aug., 1892.

2738. Would two-thirds of those people go over the railway? I think they come here for the express purpose of coming by the Union boats.
2739. They would go over some part of the line if it were constructed? Yes.
2740. A great many would go to Pambula, some to Wolumla, and others to Bega? Yes.
2741. If that means of communication were given, it would increase the passenger traffic? Yes.
2742. Is the quantity of goods shipped from here increasing? Yes; though during the last two or three months trade has been rather dull.
2743. This is a dull time of the year? Yes.
2744. But year by year there is always a general increase? Yes. I have paid as much as 30s. a ton to take salt from Eden to Monaro. I should not like to do it now.
2745. Does any wool come from Monaro direct to Eden? There would be some.
2746. How much? Not much.
2747. Does it go by your steamers or by the Illawarra Company's steamers? I think that where we take 1 ton, the Illawarra Company take 5 tons, on an average.
2748. So that if the Illawarra Company have given us correct returns of their trade we should have to deduct four-fifths to get the amount of your trade? Yes; I see by the evidence that they get very little from Eden, but it is a very convenient port.
2749. Do you think that they carry more passengers? I think we carry more passengers from Eden.
2750. Their boats go twice a week, while your boats only go once a week? Yes; but they get a lot from other places.
2751. But I am speaking of Eden alone? I think they take more, if you reckon both trips.
2752. The numbers are about equal, probably? Yes.
2753. Is there anything else you would like to give evidence about? About the harbour. I think I know as much about it as anybody. Very frequently there were from 25 to 30 vessels lying here for a fortnight, when it has been blowing feather-white, to use the nautical term. The only vessel I ever knew to come to grief was a large vessel of 1,500 tons. She went right on to the bar at Kiah. Another vessel, a cattle vessel, which was too close to the rocks, went ashore in getting under weigh.
2754. Did the ship that went on to the Kiah bar become a wreck? Yes; she came from Melbourne to Sydney, and was in a leaky condition. She went right across the spit, and as soon as the sea got on her broadside she went over. I have seen vessels lying here when boats could not possibly go off to them.
2755. Do you know if there is any extra insurance to be paid on vessels coming here? I think less, because they are protected so much. The owners did not like it, and at last forbade their captains coming here, because it was too safe a place.
2756. What delay does it make for the Hobart boat to call in here, irrespective of the time she is loading? About three hours, I think.
2757. Any further delay is caused by the amount of cargo she has to take on board? Yes.
2758. Do you agree with the last witness in reference to the depth of water alongside the jetty? I know that there are 22 feet at the end. The depth was measured by the harbour-master. We measured the depth this morning or yesterday morning, three parts of the way down, close to the stone-work, and it was 16 feet.
2759. What does the "Oonah" draw? Fourteen or 15 feet; when loaded, 22 feet.
2760. So if you were going to have the Orient boats here, you would either have to extend the jetty, or do some dredging? We shall have the Orient boats here if the freezing-works are a success—I am certain of that. They could have a hulk to go alongside, and that would obviate the necessity for a wharf.
2761. But if the hulk were subject to the action of the sea, it would be rather uncomfortable? She would lie in smooth water, near the entrance to Cattle Bay, straight out from the wharf.
2762. Would they bring the hulk straight alongside the jetty? No; they would take the Orient steamer to the hulk. My suggestion would be that they should take the carcases to the hulk in barges.
2763. Does not that bring in the costly element of handling? I think not. If the meat were frozen on shore it would have to be conveyed on board the steamer afterwards.
2764. But there would not be so much handling if it were run right on to the steamer? Perhaps not.
2765. Are the figures which you have quoted taken from the books of the Union Company? Yes.
2766. Is there any other point about which you wish to speak? No.

Mr. Henry Vincent Harrison, saw-mill proprietor, Yowaka, near Pambula, sworn, and examined:—

Mr. H. V. Harrison. 26 Aug., 1892.

2767. *Mr. Ewing.*] Are Yowaka and Pambula one place? Yowaka is near the last bridge you come over after you leave Pambula, 12 miles from here.
2768. What timber are you cutting here? Different kinds—stringybark, box, woollybutt, and ironbark.
2769. Is there a large quantity of it? Yes.
2770. There is practically an unlimited supply? Of course it depends on how many mills you put on it. If there were as many mills there as there are on the Murray, you would clear it out in half a dozen years.
2771. How many million feet are there—I suppose a considerable quantity? There is enough to last for the next 20 years if the railway is constructed.
2772. What do you do with your timber when you cut it? Now, we only sell it locally. I used to send to Sydney, but I got humbugged so by the steamers that I knocked off.
2773. How did you bring it here? I had a mill on the other side of the bay at that time. I saw that there was a great demand for small quick orders, and I came down here and arranged with the steamers of the Illawarra and Tasmanian Companies to take it at so much per 100 feet. I used to deliver it at the wharf, but sometimes they would not take it because they were too full. Several times they caused a great loss to me. Last time I sent £117 10s. worth. The Illawarra boat had to make four trips to take it. It was delivered too late, and Mr. Anderson, the consignee, would not accept it, so that it was left unsold until Captain Turner, of the Illawarra Company, sold it by auction, to pay for the freight, and I got something about £17 by the transaction.
2774. What is the freight for timber by the Illawarra Company? Four shillings per 100 feet.
2775. What was it by the Tasmanian Company? They charged me 3s. per 100.
2776. What would the Union Company charge you now? I do not know. I have not shipped any for years.

Mr. H. V. Harrison. 26 Aug., 1892.

2777. Do you think they would charge 4s. per 100? I think they would reduce it to 3s. per 100, but they would be a bad Company to ship by, because in the fruit season you could not depend on them. They load up so with fruit then, that you cannot depend on their taking timber. That is why I had to use the boats of both companies. When the fruit season was slack the Tasmanian Company would take my timber, but when the fruit season was at its height, I used to have to ship by the Illawarra Company's boats.
2778. You have no mill now on the shores of Twofold Bay? No.
2779. You send nothing away from Pambula except to meet the local demand? Yes.
2780. You believe that you would send from here by ship if the railway were made? Yes. I interviewed Howard Smith and Company several times to try and get them to call here, but they wanted too much. They would not come for less than a £50 cargo, and my orders were not large enough.
2781. Would you expand your operations if the railway were made? Yes.
2782. And you would send your stuff along the railway to Eden? Yes.
2783. Do you know what the freight would be? Judging from what they charged me on the Deniliquin to Moama line, I should think about 9d. per 100 feet.
2784. What would you pay to bring your timber by road from Pambula? I could not send it; this end of the road is so bad. I do not know whether you noticed the road as you came along last night. There was a very bad place at Saltwater Creek, though they got a bridge over it a short time ago. Then there are what we call Jiggemy Hill and Bellbird Hill. In the summer time we have no water and no feed on the road.
2785. In general terms it is not possible, commercially, to bring timber here by road from Pambula? It is impossible. Teams cannot do it to pay.
2786. If the railway were constructed you would use it to bring your timber here, because you believe that better boats would then call at Twofold Bay, and you would get your timber away cheaply? Yes. Howard Smith and Company told me that if I would guarantee them a £50 freight they would take stuff away from here for 7s. 6d. a ton. The Illawarra Company at that time were charging £1 per ton. That was for the heavy bulk stuff.
2787. Do you know the country well between here and Pambula? Nearly every hill.
2788. You have been all through it looking for timber? Yes.
2789. Supposing it was not material that the line should go through settled country, could you get a more level route by going closer to the coast? I pointed out a line to Mr. Hardy four years ago, and I also spoke to Mr. Dyer about it, but I do not wish to interfere with the surveyors. I know where a line could be taken much more cheaply and much more suitably than along the proposed route, but that has not been the policy of the people connected with the work. Their line is something like the Commissioners' estimated loss upon it.
2790. After all it is only a matter of opinion;—upon what do you base your opinion that a better line could be obtained elsewhere? One line goes through a gap and the other goes over a mountain.
2791. Where is the gap;—would you go by Wolumla? I have nothing to do with that part of the line, I am only speaking of the first part of it. It is right enough all along till you come to Bellbird Hill.
2792. Could you describe the improvement? I described it six years ago, and do not feel inclined to do it again now.
2793. You would rather say nothing about it? I described it when Mr. Dyer was here.
2794. Did you send the description to the department officially? No, but he did.
2795. Then we shall be able to get your description from the Government, if we desire it? I could not say whether he sent it officially. I told him of it, and he went part of the way along and had a look at it.
2796. Where is Mount Robinson? I do not know.
2797. You know the Bay well? Yes; I have been here nine years.
2798. What do you think of the port? I believe it is equal to any in the Colony. I have seen as many as a dozen boats in here through stress of weather.
2799. Do you know the present jetty? Yes.
2800. Does the water get deeper as you go out? There are 21 feet there at low water.
2801. Supposing you went further out what would you get? Fifty feet.
2802. It deepens rapidly? Yes.
2803. If a bigger boat were wanted here there would be plenty of water for it? Yes. Cattle Bay is another good anchorage.
2804. The deviation which you recommended goes *via* Old Hut, Lochiel, and Pambula? No; it is quite different from that. Nothing was done towards surveying it. I drew Mr. Dyer's attention to it, and he said he would refer it to the Department, but I never heard anything more about it.
2805. It was not a line near Lochiel? It was never even traversed.
2806. You think you could avoid Bellbird Hill? I am sure of it.
2807. Do you know the Old Man Mountain;—would your deviation go by that? It goes round it.
2808. Do you get into the bed of the Old Hut Creek below Mr. Clark's farm? You do not go right into the bed of the creek. You cross the Old Hut Creek above Clark's farm, and then cross another creek.
2809. This would be your route. Starting from Twofold Bay, where Shadrack's Creek runs into the Bay, you would follow up the creek, passing over the watershed between it and Old Hut Creek, then down the Old Hut Creek approximately to where the railway at present runs along the shores of the Pambula Lake? Yes.
2810. Therefore you believe that by going to the west you would get a much better route? Yes.
2811. Your deviation deals with the southern 10 miles of the line? Yes.
2812. You believe it would be a great improvement? I think so. The surveyors who have seen it approve of it.
2813. What surveyors? A Mr. M'Leod, a surveyor in Melbourne, came over here to look at the place at the time we were talking of forming a company. His estimate of the cost of the line was something like £300,000.
2814. Has anyone else seen it? Not to my knowledge.
2815. You believe that a better route could be got by following your deviation? Yes.
2816. You made no survey? No.
2817. And it is quite possible that in going from one watershed to another great difficulties might be met with? I do not see where they would be met with.

2818.

Mr. H. V. Harrison. 26 Aug., 1892.

2818. You believe that yours is the best route, though beyond that you cannot say anything? If you had a piece of country with a long dividing range, and there is a valley through which you can go, I do not see what difficulty there could be.
2819. How high is the valley I do not know, it does not appear to be very high.
2820. It is sufficient to divide the water? Yes.
2821. Therefore it is some height? Yes.
2822. How far is it from one water to the other? About 3 miles.
2823. If you went direct through you would have 3 miles of a tunnel to make? Yes; if you put a drive through.
2824. At what height would you cross? I could not say. A very good track could be got through it.
2825. Would you have to cross at a height of 1,000 feet? No.
2826. Say 500 feet? Not more than 400 feet.
2827. You think at a height of 400 feet? I think about that.
2828. Therefore, you have to go up 400 feet in a mile and a half, and come down 400 feet in a mile and a half? You could begin to rise directly you left Eden. You would have a lot of ground to go through before you got to the place of which we are speaking. I do not want to go into any explanation of it. I only mentioned it because you asked me about it. I offered to point it out to Mr. Dyer and also to Mr. Hardy, four years ago, but it was never done, and it is no use pointing it out now.
2829. You do not speak as an engineer at all? No; I am merely speaking as a layman.
2830. And you know that very frequently serious mistakes are made in these matters by those who do not know anything about engineering? Yes.
2831. You believe that Twofold Bay is a proper port, and if you had proper access to it you would use it? Yes. I had a 6-ton steam launch—the Tambour-Major—moored at the mouth of the Nullica for over three years.
2832. *Mr. Sutton.*] Is the timber you spoke of very durable? I could show you split fencing posts that have been known to be in the ground fifty years.
2833. What is the box used for? For posts. It makes splendid posts.
2834. Fit to be used for house building? For anything.
2835. What is the best timber? They consider stringybark the best, because it is easy to work.
2836. What about woolly-butt? That is very good.
2837. It could be used for any purpose whatever. For household purposes? They object to it for sleepers because it is rather brittle in the grain, but for flooring-boards, weather-boards, or anything like that it is good, as well as for heavy timber and girders.
2838. Have you any ironbark at all? Yes; but we do not cut that because we prefer softer timber.
2838½. Ironbark could be used for railway sleepers? Yes; there is good ironbark.
2839. Within a reasonable distance of the line? I suppose within 2½ miles of it.
2840. *Chairman.*] Do you know where abouts Lochiel is? Yes.
2841. Where abouts is it? Past the Roan Horse.
2842. Towards Wyndham? Towards Wyndham.
2843. On the same road? Yes.
2844. Before you reach Wyndham? Yes, 3 miles out of Pambula.
2845. Is it the name of a small settlement, or of a fairly good district? It is a farming centre.
2846. Is there exceptionally good land there? There is some good land, but for fruit-growing none of this land is bad. At my place I could show you fruit-trees growing on what used to appear a perfectly barren hill. When I put them there people laughed at me, but they are doing better there than they would on rich land.
2847. Is there any other point which you wish to bring before the Committee? No; I think not.

Mr. Thomas Venn Smith, Sub-collector of Customs, Twofold Bay, sworn, and examined:—

Mr. T. V. Smith. 26 Aug., 1892.

2848. *Chairman.*] How long have you occupied your present position? Sixteen months.
2849. *Mr. McCourt.*] You desire to give some information with regard to the exports of this place? I have made out statistics, showing the principal exports from Eden, between 1st January and 31st July, 1892. In that period 1,000 head of bullocks, 4,000 head of sheep, 1,100 head of pigs, and 1,000 bags of bark weighing 75 tons, were exported.
2850. Is that a fair average six months, taking the last five years into consideration? I could not tell you whether it is an average exportation or not. It is rather more than for the year before, in fact, a good deal more. I can give you the figures for the previous year.
2851. What are they for the corresponding six months of the year? I can give you them for twelve months, but I have not got them for six months.
2852. You could make them out and forward them to the Committee? Yes; I will.
2853. Is there anything else you wish to state? No.
2854. Do your figures include any imports? No; only the exports.
2855. Can you give us any information with regard to the imports? During this year and a portion of last year a great deal of machinery was brought here for a mine near Bombala, and a mine in Victoria, the other side of Delegate.
2856. That was a special importation? Yes. The machinery was not brought by the Union Company's boats; it came by Howard Smith & Co.'s boats.
2857. Can you give us the imports for the first six months of the year? I have them in the office.
2858. How do the imports for the first six months of this year correspond with those of the first six months of last year? I will ascertain.

Mr. Thomas Shelley, selector, Nungatta, sworn, and examined:—

Mr. T. Shelley. 26 Aug., 1892.

2859. *Chairman.*] Whereabouts is Nungatta from Eden? Near the Victorian Border, Towamba direction.
2860. How far are you from the Victorian Border? About 12 miles.
2861. What is the extent of your holding? I have 640 acres conditional purchase and lease.
2862. How long have you been residing there? Five and a half years.
2863. What do you produce? I rear cattle there principally.
2864. Is it good cattle country? Yes.

Mr. T. Shelley. 26 Aug., 1892.

2865. Where do you find a market for them? The market has been very dull for a long time. There are general buyers who come round for cattle.
2866. You sell your cattle on your own farm? Sometimes I drive them away.
2867. Where do you drive them to? Towamba and Bombala.
2868. Towamba is what the Government call Sturt? Yes.
2869. You find a market there? Yes; there is a place of sale there.
2870. Do you ever bring them as far as Eden? No.
2871. You never bring produce here? I send butter here.
2872. How often? Every week.
2873. This is where you have to send it to get it taken to Sydney? Yes.
2874. How far is it from Nungatta to Eden? About 32 miles.
2875. Does it pay you to send it that distance and then ship it to Sydney? Yes; there is no other place to send it at present.
2876. Do you cart it in yourself? No; we cart it to Perricoe, and the carrier comes for it regularly.
2877. You go by a side road to Perricoe, and the carrier takes it from there? Yes.
2878. How far have you to carry it? About 12 miles.
2879. What does the carrier charge to take it to Eden? Two shillings and sixpence a keg.
2880. How do you ship it? By the Illawarra Company's steamers. They call here regularly. There are no other boats that call here regularly.
2881. Are there any other selectors close to you? There is another man there near me on the other side of the creek. The rest of the country principally belongs to one or two.
2882. There is just a patch of good country on the creek, where you and others have selected? Yes.
2883. Do your neighbours send their produce in the same way as you do? Yes.
2884. Are any of them disheartened in their attempts to make a living at such a distance away? Oh, no. Some of them are much further away.
2885. But they come the same way? Yes; some of them come through Victoria to reach Eden.
2886. Do they pay duty on their butter? Yes; but they send most of it to Victoria, and I do not think they have to pay duty then. I do not understand the duty.
2887. They get a rebate. Butter comes through Nungatta from Victoria to Eden, and then goes to Melbourne from here? Yes.
2888. What steamers take it to Melbourne? The Union Company's boats call in here for Melbourne stuff—pigs, and so on.
2889. And carry stuff to Melbourne? Yes.
2890. Direct, or *via* Launceston? Some of them direct.
2891. That is where they find a market? Yes.
2892. Your market is Sydney? Yes.
2893. Is there any country round about your holding, as good as your own land? Yes.
2894. Do you know anything of the nature of the country in the parishes adjoining yours, in Yambulla or Sturt? There is plenty of good country there which could be taken up if there were means of getting away from it.
2895. Down on the borders of the creeks? Yes; on the creeks.
2896. What is the nature of the soil? Alluvial soil on the creeks, and granite ridges.
2897. Is there any soil lying over the decomposed granite on the hills? There is a little soil.
2898. The railway would be of no use to you, would it? It would be of use to this extent, that it would open up the port of Eden, and we should be able to send our produce away by larger boats, more cheaply and more quickly than at present. That is how it would principally affect us.
2899. A line from Monaro *via* Bondi would be of more use to you? Yes.
2900. If that line were constructed you would be all in it? Yes, I should be in it. I should get my butter away more quickly.
2901. You would not, however, be a contributor to the revenue of the line which we are considering? Except by travelling. I do a lot of travelling in the district.
2902. What would call you up north, when all your interests are centred in Eden or south of Eden? At present I am representing three or four Sydney companies, and therefore I have to travel very frequently. I represent importers of dairying machines and cream separators, and houses in different lines, so that I should be a customer to the railway.
2903. You advocate the construction of a line, because you think it will improve the steamer service to Eden, and you will thus be able to get your stuff away more quickly? Yes.
2904. Can you give us any idea as to whether the country between here and Bega would produce more if the railway were constructed? I am sure there would be a great increase in production.
2905. Do you know the country? There is hardly a house that I have not been at. I am confident that four times as much as is produced now would be produced if the railway were constructed.
2906. Then the loss estimated by the Railway Commissioners would soon be overtaken? I think so. I was at a place yesterday where five years ago they could only keep four or five cows, but now they are milking thirty, and gave me an order for a cream separator. There are plenty more such people on the land to which Mr. Solomon referred a while ago.
2907. Where is that? At Boggy Creek.
2908. You are an agent for the freezing company? I am getting shareholders for it in this part of the district, going as far as Wolumla.
2909. How are you progressing? I have 3,000 shares taken.
2910. Are there many more men like you at the work? I suppose there are a lot better than I am out. I have the application forms and the deposit slips with me.
2911. Do you know how many there are in the field? I do not. I am working from the south to Wolumla. I have not done Pambula yet, or the district on to Wolumla, though I went to Wolumla yesterday. Some shares have been taken there, but most them have not been taken yet. I anticipate that 4,000 shares will be taken.
2912. You anticipate that the proposed freezing works will be constructed in a short time? I have not the slightest doubt about it.
2913. If this railway is not constructed, will it damp the project? No.

2914. They will go on with it? Yes, the railway would help the project, but the directors will go on with it anyhow, and it will help the railway. Mr. T. Shelley.
2915. Knowing the people who have taken shares, do you believe that the project will be carried out—that they will not merely pay their application fees and then drop it? Yes, there is not one of them but is sound and able to pay the remainder. 26 Aug., 1892.
2916. Knowing the people, you feel perfectly sure that the affair will be a success? Yes.

Mr. Frederick Thomas Thompson, Senior-constable, Eden, sworn, and examined:—

2917. *Chairman.*] How long have you been on this station? About seven months. Mr. F. T. Thompson.
2918. And before that where were you? I was over eight years at Wolumla.
2919. You know the district which the proposed line would traverse, very well? Yes. 26 Aug., 1892.
2920. During your residence in it have you noticed that it has improved considerably? Every year.
2921. Both in population and productiveness? Yes.
2922. How far south does your present district extend? To the border.
2923. And west? To within a few miles of Pambula, and through to Bondi.
2924. You know the country which would be traversed by a railway to Eden from the Monaro table-land *via* Bondi? Yes; I know a great portion of it.
2925. There is not very much settlement out there at present? Very little.
2926. Is there very good country there fit for settlement? On the creeks there is good land for homesteads, and the hills would make good grazing country if the timber were taken off.
2927. It is not to be compared with the Wolumla land? No.
2928. It is somewhat similar to the land lying between Wolumla and Pambula, or Pambula and Eden? It is a shade better than that. Out at Perricoe there is some land equal to the Bega country.
2929. But that has been taken up. There seems to have been a considerable amount taken up in the parishes of Burragate, Towamba, and Perricoe? Yes.
2930. And the rest of the land is not quite so good? It would make good grazing country.
2931. If the timber were taken off the banks of the creeks it would perhaps do for grazing? Yes.
2932. Is it difficult of access? The road for the first 20 miles is very heavy.
2933. Does the country get better after that? Yes; for about 12 miles, and then it becomes bad again.
2934. Is there any good timber on any of this country? Nearly all of it is splendidly timbered.
2935. What is the nature of it? There is iron-bark, stringy-bark, and all classes of hardwood.
2936. Is anyone cutting timber to send to market? It would not pay to send it along the road.
2937. Have you ever been up the mountain *via* Bondi? No, but I know Monaro.
2938. You do not know if it is easy country to go up and down? Not from my own knowledge.
2939. Do you know the route of the proposed line between Bega and Eden? Yes.
2940. Have you any idea if a better route could be obtained? No. A very old survey went along the Wolumla Valley. I used to think that it would be better than taking the range.
2941. Does it go over the Gap? It must go over the Gap, but it continues further along towards Candelo and along the Wolumla Valley.
2942. To reach Bega from Wolumla you would go further towards Candelo? Yes.
2943. If we have been informed that these various suggestions have been looked into, and the Department have come to the conclusion that the proposed route is the best, you are quite satisfied? Yes, quite satisfied.
2944. Do you know the Big Jack road? Yes.
2945. That country is very rough? Very rough.
2946. Who collects the statistics here? The police.
2947. Has there been any large increase during the last few years? No; there has been a gradual increase. This district is not like other districts further north.

Mr. Albert Wood Aspinall, contractor, Eden, sworn, and examined:—

2948. *Mr. Suttor.*] You have a statement to make to the Committee? Yes; I will read it. It is as follows:— Mr. A. W. Aspinall.

Memorandum for information of Sectional Committee in the matter of the proposed railway—Eden to Bega.

Eden, 26 August, 1892. 26 Aug., 1892.

1. I am a contractor, and reside at Eden.

2. I came to this Colony in 1857, during the first Parliament under Responsible Government, and have been in this Colony ever since the above date.

3. I have had experience of this district since January, 1881, and have always landed my goods at Twofold Bay.

4. I had a small vessel trading here two years and a half. In 1881 I surveyed a line through the bush, and built a wooden tramway 4 miles long, which worked well.

5. I consider Twofold Bay the best port in the Colony, next to Sydney. A large number of vessels can anchor here in safety in the most boisterous weather.

6. I believe that direct international trade will be the natural consequence of opening up the coast country, Bombala, and the interior generally, by railways—of which I consider the proposed line from Eden to Bega is the first line required.

7. I know that the policy of centralisation of all the traffic of the Colony to the city and port of Sydney has caused the port of Twofold Bay to be neglected to the injury of the public of the Colony of New South Wales generally, and the residents of this town and district have sustained loss of trade, caused by irregularities, and delays, and slow traffic.

8. The absence of natural water-ways, such as navigable rivers to the interior, from Twofold Bay, entitles this district to first consideration in the matter of railways, from all statesmen of our country in Parliament.

9. The non-development of the port of Twofold Bay, which is the direct result of the absence of rapid transit from the interior, and the rocky coast line, has compelled the necessarily small population to carry on a second-hand trade with Sydney. Imported goods cost us, say, 15s. a ton, by deep-sea vessels to Sydney; and, say, 10 per cent.—importer's profit there; and 15s. a ton by coastal steamers to Eden—and local storekeeper's profit; and carriage by horse teams, or bullock-dray, and customs duties added, make our necessaries of life so dear as to make peoples' lives miserable, and the settlement of the district impracticable.

10. I have travelled on the Illawarra steamers to and from Sydney scores of times. These steamers perform a dangerous service; but hitherto, as at present, the only practical trade on that part of the coast line from here to Sydney. Only small, uncomfortable steamers can do the trade at Merimbula, and Tathra, and Bermagui. These steamers have to run for Twofold Bay in rough weather. From thence they often make two journeys to Merimbula and Tathra before they can get their load of produce for Sydney. Frequently they arrive at Sydney partly loaded, while the farmer's butter is left to spoil at Tathra, or Merimbula. At the latter place I have often spent hours of dreary waiting on the steamer for the small dogger to come out over the bar with passengers and cargo, and wait until the cargoes are transferred to the steamer, and *vice versa*. On the passage from Eden to Sydney I have seen large crowds of people left standing on the wharf at Tathra, bound for Sydney on business, and the steamer could not get near enough to take them, and had to proceed to Sydney without them.

Mr. A. W. Aspinall. 26 Aug., 1892.

11. The climate and the soil of the interior of this district is similar to the climate and the soil of Tasmania. I believe wheat, barley, hay, chaff, gooseberries, blackberries, strawberries, raspberries, cherries, apples, quinces, lemons, pears, and mulberries would all thrive in this district. They cannot be cultivated on an extensive plan, for market; because the slow, rough transit to market would spoil the fruit. The grain would not more than pay carriage thereto. These goods now form the trade from Tasmania to Sydney, *via* Eden, by the Union boats. When railway transit is available for these goods, they will be grown and exported from Twofold Bay.

12. Early this year I brought before our Government the fact of the existence of an ancient river bed upon a hill within one mile of the Post Office here at Eden. This river bed is a wonderful natural concrete of small hard stones, and sharp clean sand, in just the proper proportions. So that when with a blow of a hammer we can loosen a cubic foot ready for remixing, nothing more is required, than to add the one part of Portland cement necessary, and mix for use. I beg to suggest this material as the most economical for station buildings, culverts, &c., of the proposed railway line. Within a short distance of Eden we have a fine freestone quarry, and under the Black Mountain Range, at Wolumla, we have a grand deposit of blue slate, suitable for building purposes. These products will be exported to Sydney and Melbourne, when the proposed railway is constructed.

13. The isolation of position of the line from Eden to Bega, referred to by our worthy Railway Commissioners in their report, may prove an advantage for them. I beg to suggest to you for their consideration that here is a fine field for them to try any new system of traction or rolling-stock. The "Rowan" engine and car in one (said to be very economical) is now being tried on the non-payable, and hitherto unprofitable, lines of the colony of Victoria. Perhaps the "Rowan" car system of passenger traffic would answer our requirements here, for a few years, and we should have a profit on our line from the start. But in any case, whether the line pays from the start or not, the people of this district have not only been handicapped by double freights and charges, but they have loyally paid their share of taxation for the construction of 418 miles of railways elsewhere in this Colony, the profit, and convenience, of which, have been enjoyed by others, and not by them. We feel ourselves in the position of members of a Joint Stock Company, who have honorably paid their calls, but have had no share in the dividends. We therefore, claim our share of the comforts and conveniences of railway expenditure on the highest ground of political morality. Be just and fear not. We claim for Twofold Bay, that, by virtue of its latitude and the breezy coolness of climate in the heat of summer, caused by the presence of magnificent sheets of salt-water, on each side, it is the sanatorium of New South Wales. We have tourists here now, who have been here for weeks, to escape the Monaro winter. The number will increase when they can travel by the Eden-Bega railway: the grand work required.

2949. *Chairman.*] In your statement you inform the Committee that you came here in 1881? I first came here then. I went away then, and have been back again since 1888.

2950. You are now engaged in contracting? Yes.

2951. You have had no experience of railway making? I have read in my statement that I made 4 miles. I could make a line to Bega if I had the order.

2952. Were you the contractor for Green Cape Lighthouse? Yes. I have been private foreman and Government foreman and contractor off and on for the last thirty-five years.

2953. You say that the Illawarra Steam Navigation Company's steamers frequently have to make several trips to Tathra before they can land their cargo;—how often have they had to do that during the last twelve months? I have not observed them particularly. It is not my business to do so. The statement which I have read has been compiled from my own observations during a residence of a number of years in this town. I have seen them frequently in rough weather go to Merimbula and Tathra twice before they could get their loading, or they might have to go to Sydney without it.

2954. Can you tell me how many times that has occurred during the twelve months? It may occur half a dozen times during the year. Something like that.

2955. It may? It has occurred. I can say that positively.

2956. You say that on your passages from Eden to Sydney you have often seen large crowds of people left standing on the wharf of Tathra;—what, in your estimation, would be a large crowd? I consider that if this room were densely packed it would be a large crowd. I have seen the wharf at Tathra densely packed with men and women. I have seen it crowded.

2957. Have there been ninety or 100 people on the wharf? I could not count them.

2958. What constitutes a large crowd? The whole wharf appeared to be full of men, women, and children.

2959. Have you ever been in Tasmania? Yes; I was there in January, 1882.

2960. What part of Tasmania do you liken this country to? There seemed to be a similarity of country. I went from here to Hobart, stayed there a little while, and then went across by railway to Launceston. After that I journeyed to Melbourne, and returned that way.

2961. You think that generally the Tasmanian country you passed through is similar to the country here? Yes.

2962. Have you seen wheat growing in this district? No, I have not; but my wife has. They grow wheat often on Monaro.

2963. You have not seen wheat grown in this district? No; but I know that it is capable of growing it.

2964. You mean that you think it is capable? Yes; I have not seen black and red currants growing, but I know that they are grown on Monaro.

2965. Now you are jumping up to the table-lands? It is the back country to this port. The same things will grow up Towamba way; the climate is the same.

2966. You say that wheat, barley, hay, chaff, gooseberries, blackberries, strawberries, raspberries, cherries, apples, quinces, lemons, pears, and mulberries all thrive in this district? So they do.

2967. Have you seen wheat growing here? I have not seen it.

2968. How can you swear that it does grow here unless you have seen it? From proper evidence.

2969. You say you have not seen it, so how can you swear that it would grow here? In the mouth of two or three witnesses, should every word be made good.

2970. It would be far better for us to have these witnesses rather than yourself. You say that you believe the country is suitable for wheat? It is a matter of common report. I would stake my head upon it that it was growing wheat forty years ago. I have read the history of the Colony generally. We know what the production of foreign countries is, though it is impossible for us to travel there.

2971. Do you know anything about the "Rowan" engine and car to which you refer? I speak from a newspaper report. It has now been found to be most unexpectedly good, and the acting Railway Commissioners in Victoria are running it there, and will introduce it generally when they find the experiment successful. It would reduce the cost of rolling stock, and therefore the estimate would be reduced.

2972. Do you not think that every improvement of that kind is laid before the Railway Commissioners, and that they would adopt anything that would reduce the cost of running? Just so.

2973. Do you not think that they would have more reliable information than a newspaper report? I have the highest respect for them, but I think it is probable that we got that report as soon as they did.

Mr. A. W. Aspinall. 26 Aug., 1892.

2974. Through the newspapers? Yes. I simply suggest that the use of that engine on this isolated line may be found economical.
2975. Do you know the grade on the line over which the engine and car run? I know nothing of the grades on the Victorian railways.
2976. Where did the account, which you saw, state that the car was running? The statement was general. It was on the long non-paying lines of the Colony—on those lines which are worked at a loss, and of which complaint is now being made.
2977. You do not know if any of them have grades of 1 in 40 or 1 in 50? I know nothing about the grades. The particulars given were not ample enough. I merely offer a suggestion.
2978. Have you ever been on the Monaro? Yes.
2979. Do you know anything of the country lying between this and Monaro, *via* Bondi? I have never been *via* Bondi. I have only been *via* Wolumla.
2980. You have been down the Big Jack route? Yes; I have come down it on foot, and I have been up the Tantawanglo Mountain.
2981. It is rather difficult country through which to construct a line of railway? Yes. I have been 50 miles out Towamba way also, in similar country.
2982. The Tantawanglo country is rather difficult? Yes.
2983. You anticipate that a good deal of trade would come from the Monaro district? Yes, from the mountain and under the mountain. There are some beautiful spots under the mountains.
2984. You anticipate that there will be considerable traffic on this line to the Monaro table-land? Yes; to the lower portion of it—Bombala for instance.
2985. Do you think the people would come here and make use of the Bega to Eden line without any further connecting link? I think a Bega to Eden line would help them with their journey.

Mr. Henry Hardy, civil engineer, Department of Public Works, sworn, and examined:—

Mr. H. Hardy. 26 Aug., 1892.

2986. *Chairman.*] You are a railway engineer engaged by the Public Works Department? Yes.
2987. The Committee understand that in 1888 you, with others, went over a survey that was then being made for a railway from Bega to Eden, and carried out certain deviations and alterations? Yes.
2988. A very careful examination was made of the line at the time? Yes.
2989. You heard what Mr. Harrison said about there being a better line between this and Pambula. Do you know the route to which he referred? Yes; I have some knowledge of it.
2990. Do you know if it has ever been tried, except by Mr. Dyer. Do you know if he tried it? According to the printed papers he did.
2991. Is the route mentioned there—the line to which Mr. Harrison refers? I think so, from his statement.
2992. Is there not some difference between what Mr. Dyer says and what Mr. Harrison has said? I have not read what Mr. Dyer said.
2993. Do you think it likely that a better route could be found there? I cannot say; but there is one objection to his line. It would have to cross from the Roan Horse to Pambula, and that would be a serious objection to it. That country is all flooded sometimes.
2994. I suppose you are always ready when you are in the field to avail yourself of any local information? Always.
2995. You think that every effort has been exhausted to find a better or a cheaper route to connect Bega with Eden? Yes. Of course, I have not explored the line. I speak from my general knowledge of the country. I know the route Mr. Harrison means. I have a general knowledge of it.
2996. The site of the proposed station here would be somewhere about the site of the post-office? Yes.
2997. Skirting the hill on the west the line would find its way down to the port? Yes.
2998. You have recently been engaged on a survey of the Big Jack route? No.
2999. Which route? The Bondi route.
3000. Where would the Bondi route, if constructed, join the Bega to Eden line? At the post-office.
3001. Do you skirt the western side of Twofold Bay to reach here? Yes.
3002. You would, therefore, have to rise from the Bay up to the site of the station? Yes.
3003. And then run down again? Yes; if we wanted to.
3004. Is there anything to prevent you bringing the line round to Snug Cove? The present survey goes round.
3005. Supposing the Monaro traffic is brought by the Bondi line, and it is thought desirable to concentrate it at the water's edge, you will not need to come up to the station? That is matter to be arranged.
3006. With reference to the Bondi route, after skirting the Bay on the western and south-western side, you follow up the river known as the Towamba River? No, the Kiah River.
3007. The Committee see that there are two surveys there, one on each side of the river—which has been decided upon? The one on the western side.
3008. Does it cross the river? The Bondi line crosses it.
3009. This side of Sturt? Yes.
3010. Sturt and Towamba are the same place? Sturt is the site of the village reserve, Towamba is the district generally.
3011. After passing Sturt you keep to the west? Yes, on the Bondi route.
3012. How far along have you been engaged on it? Only as far as Towamba.
3013. Who was on the other portion of it? Mr. Jamieson.
3014. Is he on it still? He is on the Big Jack route now.
3015. Are you going on with the survey right up to Bondi? No; it has been done.
3016. Who had the portion from the Monaro Range to Bondi? Mr. Smyth, Mr. Wilkins, and Mr. Jamieson.
3017. Do you know what the ruling grade was? One in 50.
3018. It is a much more lengthy line than the line from Cathcart to Wolumla would be, is it not? I cannot say; I have not seen the main survey.
3019. You know nothing of the country between Sturt and the main table-land? I have driven down there from the table-land.
3020. But you have not been over the route of the line? No.

Mr. H. Hardy. 26 Aug., 1892.

3021. Will the Bondi line, so far as you have gone, be an expensive one to construct? It might in parts be very expensive. We should have to keep out of the flooded ground.
3022. Can you tell us approximately what the cost would be per mile? I cannot at present.
3023. Would it be as expensive as the line between Bega and Eden? No, except for the floods. We are obliged to keep on the highest ground we can on account of the floods.
3024. Do you know anything of the Big Jack route? No.
3025. Have you ever been along it? No.
3026. You have arrived at no conclusion as to which would be the best connection from the table-land to the coast? No.
3027. If it were decided to adopt what is known as Postle's route from Bombala *via* Cathcart to Wolumla, that would work in with the Bega to Eden line? Yes, from Wolumla.
3028. And on the map it seems the shortest route? Yes.
3029. Do you know if it is a fact that the Big Jack route is so difficult that some other means will have to be adopted for conveying traffic up it than the ordinary locomotive? Yes; I know the scheme.
3030. What is the nature of it? To have rack grades.
3031. It is not a desirable thing in the interests of economy to work with two different systems? No.
3032. But in some cases there is no other way possible? Yes.
3033. Have you any idea of the length that would have to be worked by the rack grade? No.
3034. Close to Twofold Bay there are several deviations;—which is the one that has been actually decided upon by the Department? The one marked red on the map is the route that has been permanently staked and lock-spitted.
3035. Was not Mr. Deane here early in the year, and did he not agree to a deviation to go on the north-west side of Lake Curalo? A portion of that is the old line. The only deviation there, would be a bend in the line.
3036. Striking off from that line across to the permanently-staked line? Yes.
3037. The permanently-staked line would be subject to the breaking out of the lake occasionally? So I think.
3038. You are aware that the Bega to Eden line was permanently staked on a grade of 1 in 40? Yes.
3039. We have been informed that it would cost some £47,000 to improve the grade to 1 in 50? Yes.
3040. May this deviation have something to do with the alteration of the grade? I think the trial survey was 1 in 40; but it will probably be altered to 1 in 50.
3041. Is there no very great difficulty? No.
3042. We are informed by Mr. Deane that although the line will be lengthened other works can be cut down, so that there will be a saving to some extent. You could not give us any idea as to that? No.
3043. The officers in the field only furnish data which is worked up by the officers in Sydney? Yes; we are not supposed to make calculations out here.
3044. Having gone thoroughly into this matter in 1888 you still think that the best route has been chosen, and that no very beneficial alteration could be made? No.
3045. How long will it be before you have concluded your work on the Bondi route? Very soon.
3046. A few months? Less than that.
3047. All the particulars will be in the office ready to be worked out? Yes.
3048. You do not know what progress Mr. Jamieson is making? No.
3049. We are informed that there are five or six surveys for a line to connect the table-land with the coast? Yes; there are two surveyors on Mr. Darragh's line, and one besides myself on the Bondi line. I think Mr. Wilkins is still near Bondi. Mr. Smyth and Mr. Jamieson were on the Big Jack route, but I think that Mr. Smyth has left.
3050. You have no idea how far they have progressed towards a finish? Not the slightest.
3051. From what you know of Twofold Bay, from your present visit to it, and your previous knowledge of it, do you think this is the best site from which to take a railway to Bega or to Monaro;—do you think the northern side of the Bay is the best place for a railway station? Snug Cove is the most sheltered place in the Bay.
3052. You have been here on several occasions and for a considerable length of time? Yes, constantly.
3053. *Mr. Ewing.*] The table-land is about 3,000 feet high, and in approaching it, the further you get from the coast the more abrupt the country becomes? Yes.
3054. A deviation from the west is nearly certain to go through rougher country than a line to the east? Yes.
3055. Therefore the probabilities are strongly against Mr. Harrison's being the best route? I do not think he can get a line. I took objection to his route because he would have to cross flooded ground.
3056. If his route goes among a nest of hills, some very high, you think there may be difficulties to encounter? Yes.
3057. But you know nothing about the route? No.
3058. The probabilities are against it? Yes.
3059. *Mr. McCourt.*] What would be the difference in cost between a grade of 1 in 40 and a grade of 1 in 50? I think a grade of 1 in 40 would cost 10 per cent. less on account of the earthwork.
3060. *Chairman.*] What sort of country is it between Twofold Bay and Sturt? All the flats will grow corn.
3061. What are the hills like? Barren country.
3062. Granite country? No, ironstone and sandstone.
3063. Is there any good timber? It is largely covered with mountain ash and other timber.
3064. Mountain ash is a good marketable timber? It is in some districts. I have had a lot of work done with it.
3065. When was the first time you went through this district? In 1888.
3066. Have you been through it very frequently since then? Yes.
3067. Has there been any marked increase in its population and its productiveness? I think so.
3068. Your experience would lead you to believe that if the railway were constructed there would be a still more marked improvement? There is no doubt about it.
3069. There is no possibility of the cost of the line being cut down at all? I do not think so. I think it is at the lowest estimate.
3070. There is only one large bridge on the line—that over the Pambula River? Yes, that is a large item.
3071. What length of tunnel will there will be at Wolumla? Under 10 chains, I think.

Mr. Thomas Rawlinson, solicitor, Bega, sworn, and further examined :—

Mr. T. Rawlinson. 26 Aug., 1892.

3072. *Chairman.*] Are you interested in any land through which the railway from Bega to Eden would pass? I am not interested in one foot of land through which the railway would go, nor does it come in close proximity to my land.

FRIDAY, 26 *AUGUST*, 1892.

[*The Sectional Committee met at the "Commercial Hotel," Eden, at* 8 *p.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor. | Thomas Thomson Ewing, Esq.
William McCourt, Esq.

The Sectional Committee further considered the proposed Railway from Eden to Bega.

Mr. Charles Tarleton Stiles, grazier, near Eden, sworn, and examined :—

Mr. C. T. Stiles. 26 Aug., 1892.

3073. *Chairman.*] You are a resident of this district? Yes.
3074. And have been for many years? For twenty-nine years. I came here in 1863.
3075. Are you engaged in any professional occupation? My occupation is shipping cattle.
3076. From Monaro? Yes.
3077. Do you make regular shipments? Yes.
3078. Where to? To Tasmania.
3079. Where do you draw your supplies from? I fatten a good many myself—about 1,500.
3080. On the coast? At Bega.
3081. How do you get them? They all come from Queensland.
3082. Over the Monaro plains? Yes.
3083. Do you get your supplies generally from Monaro? Yes; I get a lot from there.
3084. At any rate they come through Monaro? Yes.
3085. You fatten them on the coast? Yes; and I buy fat cattle at Monaro as well.
3086. What number do you ship during the year? I think in 1889 I shipped about 1,800 from here, in 1,890 about 1,900, in 1891 a little over 2,000, and this year there will be more.
3087. So that it is a growing trade? Yes; I suppose this year the number will be at least 2,300 and probably 2,500. I am shipping 300 head of cattle and 3,000 sheep a month.
3088. Do they all go to Tasmania? Yes.
3089. What are the figures in regard to sheep? I think last year I shipped about 5,000, and this year I have drawn from Monaro 3,800 already.
3090. So that in all probability you will send away more this year than you did last year? No; I do not think so. I do not think there are many more to come from there this season.
3091. Are all the fat sheep drawn from that country? Yes.
3092. All go to Hobart? Yes.
3093. Is this trade likely to go on increasing? I think so. The population in Tasmania is increasing. The silver mines, I daresay, have had a blow and that may affect it a little, but it has been steadily increasing.
3094. Tasmania does not produce enough for its own consumption? It never can.
3095. And as the population increases they must get their food from elsewhere? Yes.
3096. This is the nearest place? This is the nearest fattening country to Tasmania.
3097. And the country here or immediately above on the Monaro tableland is exceptionally good for fattening? Yes. We have been shipping since 1866.
3098. It has been stated in Sydney that the shipping of cattle from this port is decreasing—that people are now shipping from Sydney; that is not correct? No; we are shipping as well from Sydney. We ship sheep from Sydney. I have 500 on board to-night from Sydney.
3099. How long have you been shipping from Sydney? For nearly three years.
3100. You have two strings to your bow, then? If the Sydney market is very low, I buy there and save my own cattle.
3101. But the number of sheep and cattle exported from here has not decreased? No, it is increasing.
3102. And likely to increase? I think so.
3103. You have no intention of retiring from the business? No.
3104. What company do you ship by? The Union Company.
3105. Have you ever had any difficulty in getting the animals on board here owing to the bad weather? I have been shipping twenty-nine years, and I never saw the time when I could not ship a bullock.
3106. The steamer never had to pass the port? I never had it so rough that I could not ship.
3107. You swim the cattle from the beach? Yes.
3108. That is a very primitive way? It is a very good way, because they are not bruised. If they are in a yard they cannot possibly be bruised. Butchers do not like bruised beasts.
3109. And as your stock is for immediate consumption that is a great consideration? The butcher will buy them with his eyes shut, because he knows that they are not bruised. If stock comes from Sydney they are bruised in the trucks and then knocked about in the yards, and afterwards shipped in a very rough way at Glebe Island. They are bruised from head to foot.
3110. Does not your process of shipping delay the vessels considerably? Yes; but it has the advantage of preventing the animals from being bruised.
3111. If you could yard the cattle on to a wharf and drive them straight on board would not that more than compensate for any bruising? I contemplated putting up such a yard. It would only be a race, to run cattle off to save time.
3112. Are there any other markets besides Tasmania? I could go to Melbourne now very advantageously.
3113. There is a stock tax there? There is a stock-tax in Tasmania of 30s. a head, the same as in Melbourne. I could go to Melbourne very advantageously.

Mr. C. T. Stiles. 26 Aug., 1892.

3114. If the market there improves, this is the nearest and best port for supplying their wants? Yes; we are only 400 miles from Melbourne, and about the same from Hobart.
3115. If the railway were constructed would you be a customer to it by sending your live stock along it? No; I would not send them on the Bega line. I would use the Monaro line. I could do with 25,000 sheep a year comfortably, if they were on Monaro and I would truck every sheep here.
3116. That is to say, that if there were an extension of the Cooma line to Bombala and thence to Eden? Yes, I think it would be the making of Monaro, and the making of Twofold Bay.
3117. It would mean an expenditure of over £2,000,000? Yes; but there are thousands and thousands of acres of good ground on Monaro—land as good as one ever saw. It might be used for anything. They could grow oats and root crops of every description here, and they would grow them. At present they are handicapped by the cartage rate at £3 or £3 10s.
3118. You would not be a customer to the line immediately under our consideration, as far as your cattle and sheep are concerned? Not for the short distance of 30 miles.
3119. You come down the Big Jack route? If I came into Bega it would not be worth my while to put my cattle into trucks when I could drive them down in a day and a half.
3120. You would only use the railway if it were connected with Monaro? As far as stock is concerned, If I had calves I would truck them.
3121. Where is your holding? Half-way between Candelo and Bega.
3122. Would you truck calves from Bega to Eden? Anything that would suffer much from driving.
3123. Do you think that if the railway were constructed from Bega to Eden there would be a large increase in the production of the district? I think there would be. There is plenty of land now fit for agriculture that is not used because dairying pays better.
3124. Owing to the long and expensive land carriage? Yes.
3125. Can you give us any idea as to when the estimated loss of £19,000 would be overcome by the increased production—five years or ten years? I should think five or six years. I think there would be a great saving in the amount required for road maintenance. The roads are kept up now at great expense whereas if you had one good road to the railway——
3126. Would you not require a number of good roads to the railway? You would not have to keep up those roads to the pitch at which they are maintained now.
3127. Did you ever hear of the amount spent upon roads in a district being reduced after a railway was constructed there? All the heavy haulage would go by the railway, and this would save the roads.
3128. Would not the less cost of maintaining the main roads, owing to the decrease of traffic upon them, be more than made up by the expenditure upon cross roads? It might be. I do not know.
3129. Do you think that if the railway were constructed from Eden to Wolumla it would be a very material service to the district? If you went to Wolumla you might as well go on to Bega.
3130. It would be a saving of 12 miles? I should think you would be over almost every difficulty there.
3131. If the railway were constructed as far as Wolumla would it be of any advantage to you, or would it be used by the people in and around Bega? Of course it would be used, but I think it would be very much better to take it on. I do not think you would get the same benefit from it.
3132. You would not get the same amount of traffic as if you went to Bega? Certainly not.
3133. What leakage would there be if the line only went to Wolumla. Do you think we should lose 25 per cent. of the possible traffic? You get further away from the Cobargo traffic, which I do not think would come to Wolumla. They would be content with Bermagui.
3134. We hardly estimate now that we should get much from Bermagui. Taking the trade at Tathra, would a line to Wolumla get 75 per cent. of it? I think more of the trade would go to Tathra. People would say "we will go to Tathra."
3135. But if they could get larger boats, and cheaper water carriage at Eden, would it not be to their interest to use the line from Wolumla? I do not think you would get them to come to Wolumla. They would go the other way.
3136. If they found themselves a penny or sixpence in pocket by using the railway from Wolumla, they would go there? I do not think they would go to Wolumla.
3137. They would put up with Tathra? I think they would.
3138. You were speaking of the people in and around Bega—a railway to Candelo would certainly get the traffic? I suppose it would.
3139. And some of the traffic from south-west of Colombo? I suppose so.
3140. Have you given any consideration to what is known as the betterment principle? No; I have not.
3141. If by any national work—a railway for instance—land is increased in value, say to £2 an acre, do you think it would be fair to ask the owner to contribute half of that towards paying for the cost of the work by which he would be benefited? I think it is a very fair principle. I should be quite willing if I gained £2 an acre to return £1.
3142. As long as the principle is applied universally? Yes.
3143. *Mr. Ewing.*] Have you any trade in calves? I have not done much in them lately, but I have shipped a good many.
3144. If there were fair access to a good port here, would there be a good trade in calves? People would rear calves and send them away. They will not send small things now, and there is a great deal more money made out of small things than out of big things.
3145. *Chairman.*] Have you ever done any trade with either Merimbula or Tathra? Not much.
3146. You found so much inconvenience in what you did, that you always come now to the superior port of Eden? Yes; I thoroughly believe in Eden. Big ships come in here. I ship away a good deal of bark, and I only pay 10s. a ton for it from Eden, while if I sent from Merimbula I should have to pay 15s. a ton.
3147. Where do you send your bark to? Sydney.
3148 By the Union Company's boats? Yes.
3149. Do you patronise them exclusively? No.
3150. You use any boat that suits you? Yes.
3151. Is the freight the same? No; the Union Company takes potatoes for 10s. a ton, and ore for 10s. a ton. The Illawarra Company charge me 15s. a ton for bark.
3152. Do you know anything of the country between here and Monaro, *via* Bondi? Yes; I know it very well.

Mr. C. T. Stiles. 26 Aug., 1892.

3153. What is the nature of it? One route I rather like is to the west of Mount Imlay, right away from the mountains altogether, on the flat country. I am only speaking of it from a bushman's point of view. One line is by Bondi through the heads of Weatherhead's run, into Tombillager, at the back of Mount Imlay, and then down to the Bay. You get away from the mountains altogether, and you have a gradual descent from Nimitybelle.
3154. You would tap the tableland south of Bombala? Yes; you cross a little gap at the head of the Tombillager.
3155. Does not the Bondi survey follow the route you have described? No; it goes right through Towamba.
3156. You must be nearly in Victoria? Not very far from it. About 8 miles fron the Victorian border.
3157. Your route is further south than the route known as the Bondi route? When the Government offered a reward for finding a road, a surveyor and myself thought about looking for one. He was acquainted with the district through having made surveys through it, and I through having had runs there. I think the other line is better than this, through Towamba and Perricoe. Years ago it was said that there would never be a railway there in our time, but if ever it is made, it must come down the Towamba River. I believe you will get the best route from Towamba to the top of the mountain at Cathcart.
3158. We are told that that is a very good route as far as the top and bottom portion is concerned, but that you will have to go up a perpendicular wall? I do not think they have been up the Cow Bail.
3159. Do you fancy your route? I think it is the best route.
3160. It would tap the Monaro country at the southern extremity? It would go through Bombala, and through near Bondi. You have a gradual descent all the way.
3161. What is the nature of the country intervening between the range and the coast south of Twofold Bay? It would not feed a bandicoot.
3162. Excepting on some of the creeks. We are told that a number of selections have been taken up on Nangatta Creek? You would cross that creek at right angles.
3163. All the rest of the country is comparatively poor?. As poor as it can be.
3164. If the line were brought in the way you suggest, there would not be very much traffic for it from the country it would pass through down there? Not a bit.
3165. But it would be a comparatively easy connection to make to Monaro? Yes; it would be a cheap line to make.
3166. It is best to go through good country if possible? Yes; on the Big Jack route you would get better country.
3167. Have you great expectations from the development of Twofold Bay? I think this line would develop Monaro, and there are thousands and thousands of acres there which are wasted now.
3168. Another man, a good number of years ago, thought there was a future before Twofold Bay and Monaro? He was on the wrong side of the Bay.
3169. But you would tap that side of the Bay on your proposed route? I should come round the Bay.
3170. You think this is the best side for shelter in all weathers? This is the best side for shelter, except East Boyd, which is much better sheltered. Cattle Bay is smooth enough to ship cattle at any time.
3171. The "Corinna" to-night had a little bit of a range on her? Yes; there is often a range there, but there is very little at Cattle Bay. You could make it perfectly land-locked at very little expense. You could have it just as land-locked as Wollongong basin.
3172. There they have a range sometimes? Not much, I think.
3173. Do you know anything of the narrow-gauge railway in New Zealand or Queensland? No; they have the narrow gauge in Tasmania.
3174. They fairly serve the people, do they not? Fairly well. The Launceston line is a narrow gauge.
3175. Do you think the narrow gauge would suit this line? I think it would suit admirably; but you would want a big gauge down to Monaro. I am not in favour of the Bega line unless it comes down from Monaro first.
3176. You think the Monaro connection will be of more importance than the Bega to Eden line? Infinitely more important.
3177. There is more trade to be got from the Monaro District than from the Bega District? Yes; and the line would pay better.
3178. The Bega line would be merely a short branch from the Monaro line? Yes.
3179. The present traffic would not justify the extension of the line to Monaro? I think it would. I think you would get rid of the people who are at Monaro at present, and that you will have another class of people there who will work the land.
3180. We should be constructing the line in advance of population or production? The line would bring the produce that you want to carry.
3181. And you would soon get the people? If it would pay they would work the land. It does not pay them now, because they are handicapped.
3182. The line from Bega to Eden is estimated to cost from £14,000 to £15,000 a mile, and we are told that an extension from Cooma to Bombala would cost about the same, while a line from Bombala to Eden would be very expensive, bringing the total cost to about £2,000,000; that would be rather a big sum to spend before there was any population on the land? But I think we should get other advantages from the line. In case of war it would be very easy for a hostile vessel to stop some colliers, and bring them into Twofold Bay to take the coal; but with this line we could soon send volunteers down to harass them. The vessel cannot get along without coal, and a hostile ship would be very glad to come in here.
3183. Is there any other information which you would like to give? Not that I know of.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Railway from Eden to Bega.

SECTIONAL COMMITTEE.

APPENDIX.

A.

[*To Evidence of Mr. T. Rawlinson.*]

ILLAWARRA STEAM NAVIGATION COMPANY.—FREIGHTS AND PASSENGERS' FARES.

RATE of freight on goods shipped to and from Bermagui, Tathra, Merimbula, and Eden.

		£	s.	d.
Butter, in kegs under 50 lbs.		0	1	6
,, ,, 50 lbs. to 60 lbs.		0	2	0
,, ,, 60 ,, 70 ,,		0	2	6
,, ,, 70 ,, 80 ,,		0	3	0
,, ,, over 80 lbs.		0	3	6
Cheese	each, 3d., small	0	0	2
Bacon	per bag	0	2	0
Eggs, in cases	from	0	1	6
Poultry in cases or coops—				
Ducks and fowls	per pair	0	0	6
Geese and turkeys	per pair	0	1	0
Pigs	per head, 2s. 6d. and	0	3	0
Calves	per head	0	3	6
Sheep	over twenty, per head	0	1	6
Cows	,,	1	2	6
Horses	,,	1	2	6
Bark	per bag	0	1	0
,, in quantities, as per arrangement.				
Maize	,,	0	1	6
,, in quantities	,,	0	1	3
Hay	per ton	1	0	0
Carts	each, 25s. to	1	10	0
Buggies	,, ,,	1	10	0
Drays	,, 40s. ,,	2	10	0
Waggons	,, 60s. ,,	3	10	0
Bricks	per 1000	3	0	0
Timber	per 100 ft. super.	0	4	0
Goods in quantity	deadweight, per ton	0	15	0
,, ,,	measurement, per ton	1	0	0

Passengers' Fares.

Saloon	30s.	Return ticket,	45s. 0d.
Steerage	15s.	,, ,,	22s. 6d.

Children under 12, half-price.

A. C TURNER,
Manager.

B.

[*To Evidence of Mr. G. E. Ward.*]

EXPORTS AND IMPORTS FOR CERTAIN PARISHES NEAR THE PROPOSED LINE OF RAILWAY.

PARISHES of Tantawanglo, Bemboka, Mogila, Colombo, Ooranook, Werriberri, and portion of parish of Numbugga (say 1,500 acres).

EXPORTS.

THE area comprised in the above parishes is 60,000 acres, suitable for dairying purposes, of which about 45,000 acres are, at the present time, devoted exclusively to dairy farming; the balance is likely to be used for the same purpose before very long, but is at present devoted to grazing and fattening, and it is estimated that 1,000 head of cattle (fat) are marketed from this area yearly.

The first-mentioned area of 45,000 acres graze an average number of 7,500 dairy cows, the average number in work being 5,440, which produce in cheese 1,496 tons yearly, or in butter, 600 tons yearly. It is estimated that half the dairies make butter, and the other half cheese; thus the average amount of cheese produced is 748 tons, and of butter 300 tons, making an annual output of 1,048 tons.

Other items of export, such as wattle bark, bacon, hides, &c., &c., are estimated at 90 tons yearly, making a total annual export from this locality of 1,138 tons.

Considering the area of land suitable for dairying purposes which is at present used for grazing only, the output of dairy produce under more favourable conditions should increase to 1,500 tons.

IMPORTS.

The imports to the township of Colombo, and supplying the parishes of Mogila, Colombo, Ooranook, and Werriberri, amount to about 520 tons yearly,—the remaining portion of the area, viz., parishes of Bemboka and Tantawanglo, being supplied through the township of Candelo, and representing an import of about 190 tons annually.

C.

C.

[*To Evidence of Mr. J. M. Black.*]

AYRDALE PRODUCE RETURNS.

Year.	Weight of Butter.	Net returns.
		£ s. d.
1871		228 12 3
1872		345 12 5
1873		499 5 9
1874	18,584 lbs.	701 16 7
1875		755 11 3
1876		645 6 8
1877		732 18 1
1878		769 14 3
1879	Butter and cheese	757 6 11
1880	,, ,,	1,018 16 2
1881*	,, ,,	994 19 8
1882	Bought Peak Farm—all cheese	1,947 7 11
1883	All cheese	1,740 5 10
1884	,,	1,797 5 6
1885	,,	832 3 11
1886	Bad drought, had to leave Ayrdale—made on Tiptree and Ayrdale	747 11 8
1887	All cheese	1,054 14 8
1888	40,122 lbs. of cheese; 3,462 lbs. of butter	1,344 17 8
1889	58,215 lbs. of cheese	1,605 15 8
1890*	62,178 lbs. of cheese; 8,480 lbs. of butter	1,545 1 7
1891	45,481 lbs. of cheese	1,203 4 0

* Up to 1881, I had 1,132 acres in use; up to March, 1890, I had 1,751 acres in use. Now, I have 2,161 acres in use. Since I bought the Peak, 11 years ago, I have made £14,813 8s. 1d. in dairy produce, or £1,347 12s. 9d. yearly. Acreage:—Peak, 619 acres; outside blocks, 182 acres; Ayrdale, 1,000 acres; total, 1,801 acres, at 15s., £1,350. In other words, each acre has produced 30 lbs. of cheese, at 6d., from 1881 to 1891, and during that time I have bought ten times more cattle than I have sold.

C 1.

FURTHER STATEMENT OF AYRDALE PRODUCE RETURNS.

Sir,

Ayrdale, Wolumla, 24 September, 1892.

Since giving my evidence at Wolumla, I have read more about the railway, and in reading Barling's evidence, he says a farm carrying 300 milking cows will only produce 75 tons of cheese and 25 tons of butter per annum. Now, my most successful year for weight of produce was 1890. I milked from 180 to 235 cows—average per month, 192 cows in actual milk—and they only produced:—

62,178 lbs. of cheese, or 27 tons 15 cwt. 18 lbs.
8,480 ,, butter, or 3 ,, 15 ,, 8 ,, } Return in net cash, £1,545 1s. 7d.

Cheese was sold, bulk at 5d., top price, 6d.; butter was sold from 7d. to 1s. 6d. per lbs.

Barling's average weight of produce, per cow . . 560 lbs. of cheese, 187 lbs. of butter.
Ayrdale ,, ,, ,, ... 324 ,, 44 ,,

A long difference between us, and 1890 was the exceptional year for weight; year following, 1891, I only produced 45,481 lbs. of cheese; made no butter, rather a dry season; received net cash, £1,203 4s.

The railway is estimated to lose £19,000 on Barling's; what will they lose on mine? Believe me, if this railway is constructed it will prove to be the biggest white elephant the Government have in the railway line.

Now, one word re freight. Rawlinson, in his evidence, says £3 6s. 6d. to £4 4s. for butter. Last August, 1892, I sent 21 kegs; freight, 2s. per keg, or £2 2s. My agents, Denham Bros., gave me a return of 1,524 lbs. of butter, and 688 lbs., tare, of kegs. Now, the kegs are brought back free, so the I.S.N. Co. carried backward and forward 2,900 lbs., or 12 lbs. short of 26 cwt., for £2 2s., or 1s. 7½d. per cwt. or £1 11s. 8d. per ton. And Rawlinson further says over £2 per ton for cheese. Now, I enclose my returns for August; the butter you can reckon for yourself. My cheese you can pass, as they are heavier than the average cheese made in the district; but I attach another return, Black and Bryant, and there you will find—

52 cheese ..... 1203 lbs.
68 ,, ... 1577 ,,
120 ,, 120) 2780 (23 lbs. each, and 20 over.
240
380
360
20

Now, this is the size of cheese made in the Bega district:—Size, 11 inches by 7 inches deep, say, 24 lbs. each; they are carried for 3d. per cheese, or 1s. 2d. per cwt., or £1 3s. 4d. per ton.

If the Government must build a railway, then start it from Cooma. Here, then, every mile built would pass through country fit for agriculture; but here the Government have made a great mistake—they have let the land all pass from them into large estates, for instance, Bibbenluke, Maharatta, and others.

I have, &c.,

The Chairman, Parliamentary Standing Committee on Public Works.

JOHN M. BLACK.

D.

[To Evidence of Mr. T. V. Smith.]

EXPORTS AND IMPORTS AT EDEN.

Custom House, Eden, 1st September, 1892.

Sir,

I have the honor to enclose statistics as near as possible of the imports and exports at this port for periods stated therein, and trust they will be found satisfactory.

I have, &c.,
T. V. SMITH,
Sub-collector of Customs, Eden.

To the Chairman, Public Works Sectional Committee, Sydney.

GENERAL Exports from the Colony of New South Wales at Eden.

Articles.	Countries to which exported.	Quantities. Produce and manufacture of the Colony.	£
From 1s tJuly, 1890, to 30th June, 1891—			
Bark	Victoria	607 bags	340
Cheese	,,	3,072 lbs.	76
Furniture (second-hand)	,,	32 packages	75
Hardware	,,	355 ,,	600
Live stock: Cattle	Tasmania	1,518 No.	15,180
Live stock: Pigs	Victoria	2,067 ,,	4,134
Live stock: Sheep	Tasmania	9,459 ,,	4,729
Ores	Victoria	304 bags	400
		Total	£25,534
From 1st July, 1891, to 30th June, 1892—			
Bark	Victoria	721 bags	420
Cheese	,,	230 lbs.	12
Hams	,,	240 ,,	12
Live stock: Cattle	Tasmania	918 No.	9,180
Live stock: Horses	Victoria	9 ,,	540
Live stock: Pigs	,,	952 ,,	1,904
Live stock: Sheep	Tasmania	2,378 ,,	1,189
Ores	Victoria	2,416 bags	1,192
Sundries	,,	320 packages	552
		Total	£15,001

GENERAL IMPORTS into the Colony of New South Wales at Eden.

Articles	Countries whence imported.	Importations. Quantities.	Value.
	From 1st July, 1890, to 30th June, 1891.		£
Bark	Victoria	24 tons	140
Butter	,,	105 lbs.	3
Flour	,,	1½ ton	15
Fruit (green)	Tasmania	25 cases	13
Hay	,,	3 tons	18
Harness	,,	1 package	5
Jams	,,	2 cases	3
Live stock (cattle)	Victoria	40 head	210
Machinery	,,	450 packages	1,500
Whisky	,,	1 keg	24
		Total	£1,931
About 50 tons of spirits, groceries, &c., landed here for re-introduction into Victoria at Delegate.			
	From 1st July, 1891, to 30th June, 1892.		
Ale	Tasmania	34 gallons	4
Bark	Victoria	18 tons	144
Chaff	Tasmania	4½ tons	18
Cement	Victoria	10 casks	5
Dynamite	,,	34 cases	140
Fruits (canned)	Tasmania	1 case	1
Furniture (second-hand)	Victoria		22
Hay	Tasmania	5 tons	25
Jams	,,	1 case	1
Live stock: Cattle	Victoria	14 head	140
Live stock: Horses	Victoria	3 ,,	300
Live stock: Sheep	Victoria	2 ,,	10
Machinery	,,	253 packages	3,800
Potatoes	Tasmania	5 tons	20
Sundries	Victoria	220 packages	180
Timber (dressed)	,,	4,712 feet	14
		Total	£4,824
About 60 tons landed here from Victoria for re-introduction at Delegate, consisting of spirits, groceries, &c.			

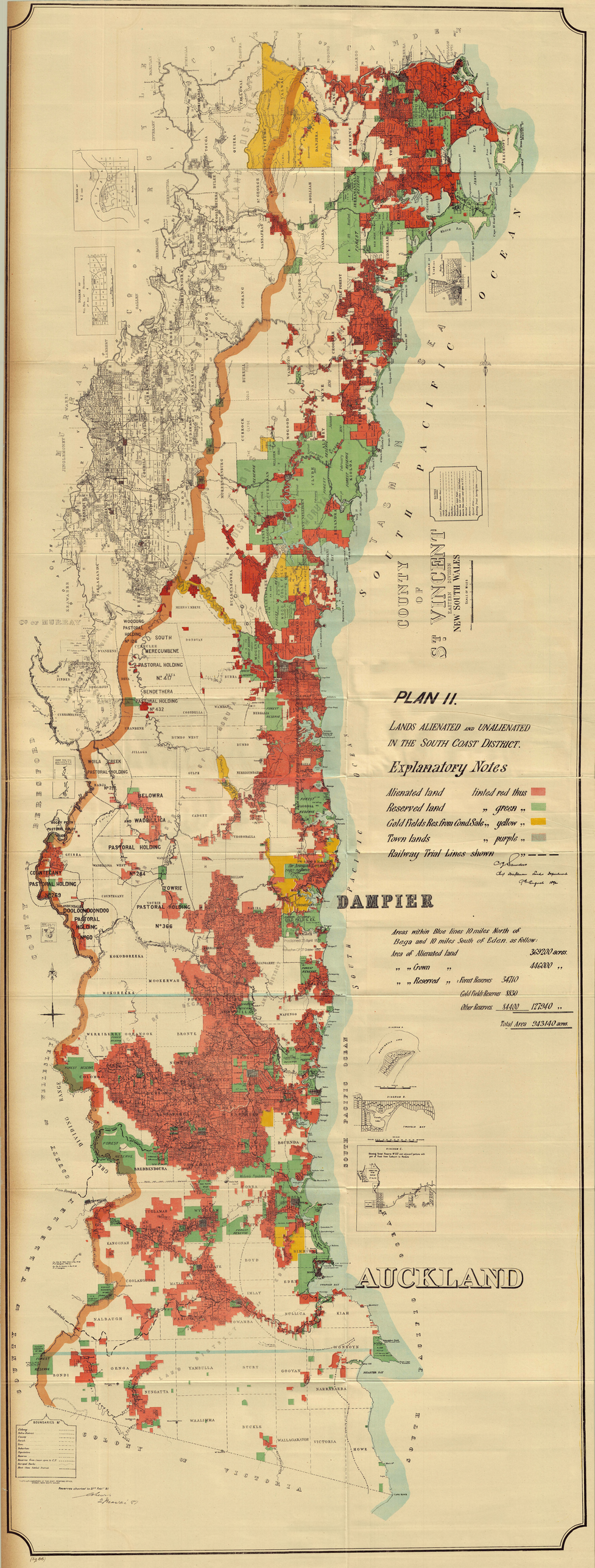
[Two plans.]

Sydney: Charles Potter, Government Printer.—1892.

PLAN I.


RAILWAY FROM
EDEN TO BECA
SCALE 40 CHAINS TO 1 INCH
Roads shewn thus
Alienated Land shewn thus
NOTE: Alienated Land shown by yellow tint
Map is reduced from 40 chains to an inch
to scale shown below
Present Scale
1 ½ 0 1 2 3 4 5 MILES
SOUTH PACIFIC OCEAN
BECA
TATHRA
CANDELO
Mt HARRIETT
WOLUMLA
WOLUMLA PEAK
MERRIMBULA
PAMBULA
WYNDHAM
BURRAGATE
STURT
EDEN
TWOFOLD BAY
BIBBENLUKE
CATHCART
BOMBALA
FROM BENDOCK TO COOMA VIA NIMITYBELLE
ARNHEIM'S
TRIAL
PROPOSED ROUTE
LINE
SUGGESTED ROUTE
PERMANENTLY STAKED LINE
DARRACH'S
Mr POSTLE'S ROUTE
Mr KIRBY'S ROUTE
STUART'S EXPLORATION ROUTE
BONDI
WOC WOC RIVER
TOWAMBA
MATACANAH RIVER
PAMBULA RIVER
BECA RIVER
BOMBALA RIVER
VICTORIA

(Sig 86).


PLAN II.
LANDS ALIENATED AND UNALIENATED IN THE SOUTH COAST DISTRICT.
Explanatory Notes
Alienated land tinted red thus
Reserved land " green "
Gold Fields Res. from Cond. Sale " yellow "
Town lands " purple "
Railway Trial Lines shown " — — —
Areas within Blue lines 10 miles North of Bega and 10 miles South of Eden, as follow:
Area of Alienated land 369200 acres.
" " Crown " 446000 "
" " Reserved " : Forest Reserves 34710
Gold Fields Reserves 8830
Other Reserves 84400 127940 "
Total Area 943140 acres.
COUNTY OF ST. VINCENT
EASTERN DIVISION
NEW SOUTH WALES
SCALE OF MILES
DAMPIER
AUCKLAND
SOUTH PACIFIC OCEAN
TASMAN SEA
COUNTY OF CAMDEN
COUNTY OF MURRAY
COUNTY OF WELLESLEY
COUNTY OF BERESFORD
COUNTY OF GREAT DIVIDING RANGE
COLONY OF VICTORIA
WOODONG PASTORAL HOLDING No 126
SOUTH MERECUMBENE PASTORAL HOLDING No 417
BENDETHERA PASTORAL HOLDING No 432
WOILA CREEK PASTORAL HOLDING No 229
BELOWRA AND WADBILLICA PASTORAL HOLDING No 284
COUNTEGANY PASTORAL HOLDING No 269
DOOLOONDOONDOO PASTORAL HOLDING No 60
YOWRIE PASTORAL HOLDING No 366
BOUNDARIES No
Reserves charted to 21st Feb 81
2 March 81

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RAILWAYS.

(MESSRS. ANGUS AND COMPANY'S RAILWAY CONTRACT—RYDE TO HORNSBY.

Ordered by the Legislative Assembly to be printed, 4 October, 1892.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 16th March, 1892, That there be laid upon the Table of this House a Return showing,—

"(1.) How many cube yards of brickwork in cement Angus & Co. have "done at the tender price of £1 per cube yard—contract, Ryde to Hornsby.

"(2.) The number of cube yards of cement concrete done at the tender "price.

"(3.) How many feet of platform coping, 3 feet wide, has been done at "the contract price of 2s. per foot run.

"(4.) How many of the 300 cesspits and grids complete have been supplied "at the contract price of 5s. each."

(Mr. McCourt.)

RETURN giving certain particulars of Messrs. Angus & Co.'s contract for widening, Ryde to Hornsby, as asked for by Mr. McCourt, M.P.:—

(1.) 1,873.
(2.) 884.
(3.) Nil.
(4.) Twenty-five.

[3*d.*] 249—
[882 copies—Approximate Cost of Printing (labour and material), £1 2s. 5d.]

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RAILWAYS.

(RETURN SHOWING AMOUNTS PAID BY THE RAILWAY COMMISSIONERS TO 31ST MARCH, 1892, TO MESSRS. ANGUS & CO., J. McSWEENEY, MESSRS. PROUDFOOT & CO., AND JOHN AHEARN.)

Ordered by the Legislative Assembly to be printed, 4 October, 1892.

RETURN to an *Order* made by the Legislative Assembly of New South Wales, dated 17th March, 1892, That there be laid upon the Table of this House a Return showing,—

"The amount of money paid by the Railway Commissioners up to date to "the following Railway contractors:—Angus & Co., J. McSweeney, "Proudfoot & Co., and John Ahearn."

(Mr. Hoyle).

RETURN showing the amounts paid by the Railway Commissioners from October, 1888, up to 31st March, 1892, to the following contractors:—Messrs. Angus & Co., J. McSweeney, Messrs. Proudfoot & Co., and John Ahearn:—

MESSRS. ANGUS & CO.

Particulars.	Amount. £	s.	d.
Three stone-crushers, Wollongong	700	0	0
Duplication, Strathfield to Ryde	21,479	16	7
" Teralba to Adamstown	48,702	17	2
" Sutherland to Waterfall	33,958	4	6
" Hurstville to George's River	10,190	2	6
" Granville to Liverpool	82,223	12	0
" Liverpool to Campbelltown	102,452	11	6
" Campbelltown to Picton	113,587	3	3
" George's River to Sutherland	21,750	7	1
Excavating site and sidings, new carriage shed, Eveleigh	5,317	6	0
Filling in at Homebush	332	16	4
Repairs to road damaged by Bourke flood	8,549	16	6
Deviation, Great Western Railway, at Bell	1,487	14	6
Tramway, Bowral quarry	3,012	15	6
Alterations to curves, Blue Mountains	20,285	17	6
Widening line, Ryde to Hornsby	42,477	9	7
Reballasting " "	11,113	4	5
Culvert under line at Flemington	2,119	9	10
Labor, slip at Bell	474	2	10
Flood openings, Kogarah to Sans Souci	206	11	7
Labor, repairs slips, Mudgee line	400	19	9
Platform, watering shed, Tuggerah Lakes	316	8	6
Materials supplied, Bourke flood	146	11	3
Forming, &c., Homebush carriage shed	560	2	0
Supply of ballast	1,168	4	0
Purchase of 30 ballast waggons	624	0	0
Purchase of portable engine	475	0	0
Laying in roads, Hurstville carriage shed	1,416	5	7
	£535,529	10	3

882 copies—Approximate Cost of Printing (labour and material), £1 12s. 2d.

JUSTIN MCSWEENEY.

Particulars.	Amount. £	s.	d.
Reballasting, Central Division	17,769	14	6
„ Metropolitan Division	114,759	15	11
„ Southern Division	38,032	12	8
Widening line, Redfern to Illawarra Junction	56,466	2	9
Subway and platform, Parramatta	1,737	7	7
Conveyance of blue metal	10,457	16	7
Iron footbridge, Belmore Park	788	8	8
Erecting hay shed, Redfern	11,790	7	4
Taking down farm produce market, Darling Harbour	252	4	2
Erecting signal box, Redfern tunnel	464	17	6
Deviation between Blaxland and Karabar	1,537	4	1
Erection farm produce market, Darling Harbour	9,516	16	2
Extension „ „	21,128	8	10
Widening „ „	1,267	13	9
Weighbridge, goods shed, Darling Harbour	25	0	0
	£285,994	10	6

MESSRS. PROUDFOOT & CO.

Reballasting Great Northern Railway	94,539	2	8
„ Great Western Railway	68,586	5	3
„ Central Division	11,808	9	10
Deviations, Mudgee line	22,691	0	8
Improvements to grades near Singleton	7,806	5	0
Deviation, Lapstone Zig Zag	19,720	16	6
Lowering grades between Dubbo and Narromine	13,059	0	2
Altering grades 234 miles west	1,822	1	9
	£240,033	1	10

JOHN AHEARN.

Construction of sorting sidings, Clyde	30,146	15	6
Duplication, Croydon to Strathfield	50,974	17	10
Passenger station, Croydon	1,699	4	0
„ Burwood	1,818	13	6
	£84,639	10	10

SUMMARY.

	£	s.	d.
Messrs. Angus & Co.	535,529	10	3
Justin McSweeney	285,994	10	6
Messrs. Proudfoot & Co....	240.033	1	10
John Ahearn	84,639	10	10
	£1,146,196	13	5

Sydney: Charles Potter, Government Printer.—1892.

[3d.]

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RAILWAYS.

(RETURN SHOWING AMOUNTS PAID BY THE RAILWAY COMMISSIONERS TO MESSRS. ANGUS & CO., JUSTIN McSWEENEY, PROUDFOOT & CO., AND JOHN AHEARN, SINCE MARCH, 1892.)

Ordered by the Legislative Assembly to be printed, 3 *November*, 1892.

[*Laid upon the Table of the House in answer to Question No.* 1, *of* 2 *November*, 1892.]

Question.

1. MR. HOYLE *asked* THE COLONIAL TREASURER,—

(1.) What amount of money has been paid by the Railway Commissioners to the following contractors since March, 1892:—Messrs Angus & Co., Justin McSweeney, Messrs. Proudfoot & Co., and John Ahearn?

(2.) Have their final claims been sent in to the Commissioners; if so, what are the amounts of such claims?

(3.) Will he lay upon the Table of this House all contracts and correspondence with these different contractors?

(4.) Will he state how much of the total amounts paid to these contractors was for work let by public tender, and how much without public tender?

(5.) What was the estimated cost of the quadruplication of the suburban line; has the estimate been exceeded; if so, by what amount?

(6.) What was the estimated cost of the duplication of the line from Granville to Picton; has the estimate been exceeded; if so, by what amount?

(7.) What amount of money have the Railway Commissioners had from loan funds since they took office?

Answer.

(1.) What amount of money has been paid by the Railway Commissioners to the following contractors since March, 1892:—Messrs. Angus & Co., Justin McSweeney, Messrs. Proudfoot & Co., and John Ahearn?

	£	s.	d.
Messrs. Angus & Co.	71,413	12	10
Justin McSweeney	27,862	19	1
John Ahearn	18,173	15	5
Messrs. Proudfoot & Co.	66,983	5	5

(2.) Have their final claims been sent in to the Commissioners; if so, what are the amounts of such claims?

The whole of the certificates for contracts executed by Messrs. Angus & Co. have been passed for payment.

Mr. Justin McSweeney has submitted his final account for £9,910 11s. 1d. in connection with his contract for widening between Redfern and Illawarra Junction, and it is now being examined.

Mr. John Ahearn has submitted his final account for £4,837 1s. 1d. in connection with his contract for marshalling sidings at Clyde. Final account not yet submitted for widening between Croydon and Strathfield.

Messrs. Proudfoot & Co.'s accounts are in dispute, and it is not desirable that details should be published at the present time.

(3.) Will he lay upon the Table of this House all contracts and correspondence with these different contractors?

The papers and extensive evidence in connection with these contracts were placed before the recent Royal Commission, which investigated the charges brought by the Honorable Member's colleague. Mr. Schey, against the Railway Commissioners.

(4.)

(4.) Will he state how much of the total amounts paid to these contractors was for work let by public tender, and how much without public tender?

The whole of the work was let at prices determined by public tender, as fully detailed in the evidence given before the Royal Commission above referred to.

(5.) What was the estimated cost of the quadruplication of the suburban line; has the amount been exceeded; if so, by what amount?

In the year 1886, plans and estimates were called for by the then existing administration for duplicating the line as between Illawarra Junction and Homebush. The estimate for the work was £366,800, including land. This scheme contemplated the retention of the level crossings at Alt-street, Ashfield, Edwin-street, Croydon, Webb-street and Cheltenham Road (between Croydon and Burwood Road), and Burwood Road; but in the scheme carried out all these crossings have been abolished, by substituting means of access from one side of the line to the other, to the satisfaction of the local authorities.

With regard to the cost of the work, the estimate for the scheme of 1886 was £366,800, including land and compensation, but it should be mentioned that the experience gained in resuming land for the widening proved that the amount allowed for this item in the scheme of 1886 was altogether too low. The Commissioners were anxious, in carrying out this work, to respect the rights and privileges, and to meet the wishes of the respective Borough Councils affected, and, consequently, many costly additions had to be made to the scheme of 1886. The permanent-way is also of a much higher character—80-lb. rails and 45-lb. chairs have been laid, instead of 75-lb. rails and 27-lb. chairs; the thickness of the ballast was also increased, the expenditure being wisely incurred in the interests of economical working.

The following additional works have been carried out, which were not contemplated in the 1886 scheme:—

	£
Widening roadway, King-street bridge, Newtown	3,500
Additional cost of double subway over single subway at Lewisham ...	1,300
Do do do do Summer Hill	1,500
Do do do do Ashfield ...	1,000
40 feet subway and approaches, between Hercules-street and Bland-street, Ashfield	13,000
Subway, Alt-street, in lieu of level crossing	1,000
Additional cost of double subway in lieu of extension of over-bridge at Croydon	1,900
Overbridge and approaches at Meta-street	6,700
Deviation at Burwood—Dispensing with level crossing	18,000
Additional cost of Wentworth Road bridge over that proposed to be constructed at Stanley-street	3,150
	51,050
Additional land required in connection with the above works ...	22,535
Total cost of additional works	73,585

This amount should therefore be added to the estimate of 1886, viz., £366,800, which would bring the total up to £440,385, and it is expected that when the final certificates are given the total expenditure will be within a few thousands of this sum.

Surplus lands are available for sale when suitable opportunity presents itself for selling the same. Estimated value, £15,500.

The cost of widening the line from Redfern to Illawarra Junction has been:—

	£
Works	93,086
Land	21,995

Curve from North Coast Line, Homebush; altering Homebush Station, and widening thence to Flemington, and improving shunting accommodation for the largely increased traffic at the stock-yards:—

	£
Works	39,811
Land	2,700

(6.) What was the estimated cost of the duplication of the line from Granville to Picton; has the estimate been exceeded; if so, by what amount?

No specific estimate was made for the duplication in question. The work was commenced by the Commissioners departmentally, as it was urgent, and in order to afford speedy employment for a large number of men who were at the time out of work. Subsequently it was found desirable to place the control in the hands of contractors, and public tenders were called for the work. Twelve tenders were received, and the tender of Messrs. Angus & Co. was found to be the lowest. The work has been completed in a very satisfactory way.

The whole of the circumstances, as well as the checking of the work performed, have been the subject of full inquiry at the hands of the Royal Commission previously referred to.

(7.) What amount of money have the Railway Commissioners had from loan funds since they took office?

From the 1st November, 1888, to the 30th September, 1892, £3,158,748, exclusive of the million vote granted for special purposes, and which is being repaid.

As the question of expenditure has been raised, it may be well to recapitulate some of the principal works which the Commissioners have undertaken since they have been in office out of the Loan Votes.

Eight and a half miles of railway have been quadrupled.

The length of double line has been increased by 71¼ miles.

The

The number of miles for which provision has been made for the traffic to be worked under the Absolute Block System, by the introduction of new appliances, has been increased from 28 to over 1,000 miles.

The number of places interlocked have increased from 104 to 260.

The work of fitting up the goods stock with a continuous automatic brake has been commenced, and 1,000 vehicles have been fitted with the Westinghouse appliances.

The rolling-stock has been increased in all departments to meet efficiently an increase of traffic, to the extent of 40 per cent. on the railways and 29 per cent. on the tramways, since the Commissioners have taken office.

Rolling-stock has also been created to equip 330 miles of line, authorised to be constructed since the Commissioners assumed office, and which lines are now being opened every few months.

On the Mountain lines a considerable sum has been spent in altering the 8-chain curves, and easing the gradients. Grades have also been improved at Mumbil and Manoa in the west, and near Singleton in the north, and Merrylands, Cabramatta, Glen Lee, and Spaniard's Hill in the south.

Deviation of the line to avoid the first Zig Zag at Lapstone Hill.

The line between East and West Maitland has been raised above flood level, to avoid interruption to the Great Northern Trunk line traffic in time of flood, the whole of the traffic having been stopped several times soon after the Commissioners assumed office.

Various deviations have been made on the Mudgee line, to make travelling upon that line safer and freer from interruption by landslips.

Two large, well-equipped blue metal quarries have been acquired, to enable the lines to be efficiently maintained.

A large goods-shed for outward traffic, to accommodate ninety-seven waggons, wool-shed for 118 waggons, and produce-shed for eighty-seven waggons, have been provided for the largely increasing traffic of Sydney.

At Eveleigh commodious gas-works have been erected to meet the increased demands for lighting carriages, yards, &c.

New carriage-sheds have been provided at Eveleigh, Hurstville, Homebush, Junee, Albury, Moss Vale, Jennings, and Bourke, for the protection of valuable carriage stock, and the more efficient cleaning of the same.

New engine-sheds have been provided at Hamilton (Newcastle), Clyde, Hurstville, Homebush, and Campbelltown.

At Clyde a complete marshalling yard for the whole of the suburban traffic and exchange traffic between the Southern and Western and Northern lines has been provided, which has greatly facilitated and economised the working.

A curve has been put in between the North Coast and Suburban line at Homebush, to facilitate the exchange of the rapidly-developing traffic from the north to Flemington cattle-yards, and south and west.

New passenger stations have been built at Bowral, Moss Vale, Wentworth Falls, Katoomba, Lithgow, Orange, Blayney (and at the latter place convenient arrangements have been made for the exchange of goods traffic with the Blayney-Murrumburrah line), Helensburgh, Carlton, Erskineville, Exeter, Riverstone, Cockle Creek, and Greta; also new buildings or improved accommodation at stations on the widened lines.

At Sydney, additional platform accommodation has been provided, and roofing for the protection of passengers getting in and out of cabs and exchanging with the trams, and also for some of the platforms. A large new parcels office and cloak-room have also been provided.

A large block of land acquired and sidings put in at Alexandria (Eveleigh).

For the coal traffic at Newcastle largely-increased accommodation has been provided at the Dyke.

Fifty-six cottages have been provided for the staff in various parts of the line.

Eleven new lodging-houses have been provided for the staff when away from their homes.

Twenty-nine overbridges and subways have been provided for the greater security of life in connection with the crossing of the railway.

The Mount Keira line has been purchased, and a loop from off the Illawarra line provided in connection therewith for the accommodation of coal traffic to be shipped at Wollongong.

Botany line tramway has been partly duplicated.

A large amount of additional flood openings provided at Bourke and other places.

New shed for flour traffic, &c., Goulburn.

Grain-shed, Jerilderie, and a large number of minor works to meet the great growth of traffic on the parent lines which has taken place since 1888.

The lines, facilities, and rolling-stock were notoriously below the requirements of the trade when the Commissioners took office, and since that date the business has increased by 40 per cent. It must, therefore, be apparent to all unprejudiced minds that a large expenditure was necessary to bring the property up to an efficient standard. This has been done in such a way that the traffic can be dealt with in an efficient and satisfactory manner, and only a moderate expenditure per annum will be required to meet the ordinary growth of business in the future.

The Railway Commissioners feel it necessary to apologize for the length of the foregoing replies, but it is impossible to condense them without the risk of the true position of the matter referred to being misunderstood; and they at the same time must respectfully ask that they may in some way be spared the loss of valuable time which is devoted to the recapitulation of information already placed before a Royal Commission, whose report is now before Parliament.

Sydney: Charles Potter, Government Printer.—1892.

[3d.]

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RAILWAYS.

(RETURN OF FREE RAILWAY PASSES, OTHER THAN DEPARTMENTAL, ISSUED DURING THE EXISTENCE OF THE LAST PARLIAMENT, WITH THE DATES OF ISSUE.)

Ordered by the Legislative Assembly to be printed, 4 October, 1892.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 24th March, 1892, That there be laid upon the Table of this House a Return showing—

"All the Free Railway Passes, other than Departmental, issued during "the existence of the last Parliament with the dates of issue."

(*Mr. Kelly, for Mr. Black.*)

A RETURN has already been submitted to Parliament of passes issued during the years 1889 and 1890 (see Parliamentary paper, No. 12 Report from Printing Committee). The following passes were issued from the 1st January to 31st May, 1891, which would cover the question asked:—

Dates.	Names.	Dates.	Names.
1891.		1891.	
January	Mr. C. N. Smith.	January	Mr. F. W. Webb.
	Mr. D. T. Seymour.		Mr. C. Walker.
	Mr. B. M. Haggard.		Mr. J. Barling.
	Mrs. Hetley.		Mr. S. H. Lambton.
	Mr. Owen Smith.		Mr. E. Fosbery.
	Officers of H.M.S. "Royalist."		Mr. E. C. Cracknell.
	Miss Seymour.		Mr. P. B. Walker.
	Captain Jorgenson.		Mr. C. Darley.
	Mr. Jeffreys.		Mr. P. R. Hickson.
	Mrs. Hall.		Mr. C. Potter.
	Dr Colletti.		Consul for France.
	Mr. V. Bompard.		" United States.
	Mr. and Mrs. Hislop.		Mr. E. B. Rowley.
	Lady and Miss Griffiths.		Mr. J. Dalgarno.
	Mr. Bell.		Mrs. Brown.
	Lieut. Blackburn.		Mrs. Dow.
	Col. Ballingall.		Mr. Smith.
	Mr. H. J. Jordan.		Lady Scott and family.
	Mr. Shaw Stewart.		Mrs. Copeland.
	Lady Shaw Stewart.		Consul for Japan.
	Colonel French.		Mrs. O'Sullivan.
	The Ladies Hope (2).		Mrs. Dawson.
	Captain Wallington.		Admiral Scott.
	Mr. J. Coom.		Lieut. Fitzgerald.
	Mr. C. A. Page.		Mr. H. Halloran.
	Mr. J. E. Sherrard.		Mrs. Ritchie.
	Mr. W. R. Beaver.		Mr. Coghlan.
	Mr. F. L. Clapin.		Captain Le Patourel.
	Commissioner Cummings.		Major Hunt.

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Dates.	Names.
1891.	
January.....	Mr. A. J. Davies.
	Mr. G. P. Unwin.
	Mr. F. B. Bossley.
	Mr. N. Tucker.
	Mr. N. Burnett.
	Captain and Officers, H.M.S. "Dart."
	Mr. C. J. Wecks.
	Captain and Officers, H.M.S. "Royalist."
	" " "Rapid."
	" " "Lizard."
	Chilian Consul.
	Captain and Officers, H.M.S. "Palumna."
	Mr. W. Houston.
	Mrs. Clubb.
	Mrs. Garrard.
	Mrs. Fletcher.
	Captain and Officers, H.M.S. "Swinger."
	Mrs. Hayes.
	Mrs. S. E. Lees.
	Captain and Officers, German ship "Sperber."
	Mr. Ferguson.
	Mrs. Melville.
	Mrs. Willis.
	Mrs. Butler.
	Mrs. Shepherd.
	Mr. Harnett.
	Captain Leigh.
	Earl of Ancram.
	Captain Cholmondeley.
	Mr. Goschen.
	Rev. Dr. Smith.
	Mr. Rutherford.
	Mr. Whitney.
	Mr. Nilsen.
	Mrs. J. P. Abbott.
	Vice-Consul for France.
	Mrs. Brown.
	Mr. J. Bennett.
	Mr. Gordon.
	Mr. H. S. Dutton.
	Mr. W. F. Christie.
	Mr. J. B. Laing.
	Mr. Monahan.
	Mr. Friend.
	Mr. R. A. Arnold.
	Mr. Barton.
	Mr. Cooper.
	Mr. Logan.
	Mr. Moule.
	Mr. C. B. Boydell.
	Servant to Lady Hope.
	Mr. Robertson.
	Mrs. Boyd.
	Mrs. D. King.
	Mr. J. Westall.
	Mr. J. Flynn.
	Mr. Luppy.
	Mr. J. Cooper.
	Mr. Chamberlain.
	Mr. J. Radford.
	Mr. Bray.
	Mr. Connolly.
	Mr. E. J. Cooper.
February	Mrs. Hutchison.
	Dr. Stirling.
	Mr. J. Bosisto.
	Mr. C. Dallison.
	Mr. Jeffreys.
	Mrs. Hetley.
	Mr. J. T. Bell.
	Mr. and Mrs. Hislop
	Bishop of Brisbane.
	Mr. J. Fuller.
	Mrs. W. D. Box.
	Mr. J. Simbert.
	Mr. J. M'Donnell.
	Mr. C. Todd.
	Mrs. Duffy.
	Mrs. and Miss Burgess.
	Mr. Henry.
	Mr. Grey.
	Mr. Mackray.
	Mrs. Henry.
	Mr. and Mrs. Warren.
	Mr. Copley.
	Mr. Sowden.
	Mr. Just.
	Mr. Marsden.
	Mr. Ingo.

Dates.	Names.
1891.	
February	Mr. Smith.
	Mr. Ward.
	Mr. Russell.
	Officers of Austrian warship, "Saida."
	Mr. Gill.
	Mr. M. Stephenson.
	Mrs. and Miss Coote.
	Mr. Felton.
	Mr. D. Robinson.
	Mrs. Taylor.
	Mrs. Curley.
	Mr. Justice Clubb.
	Miss Ackerman.
	Mr. W. Piggott.
	Mrs. Jones.
	Mrs. Fletcher.
	Mrs. Melville.
	Miss Hurley.
	Captain and Officers, German warship "Sperber."
	Mrs. Barnes.
	Mrs. Cass.
	Mrs. Lees.
	Mrs. Lakeman.
	Mrs. Creer.
	Mr. F. Walsh.
	Mr. Edwards.
	Messrs. Harvey and Webster.
	Mr. C. Lyne.
	Mr. W. S. Christie.
	Mr. R. A. Arnold.
	Mr. Elliott.
	Mr. F. Webster.
	Mr. Clapin.
	Mr. Garland.
	Mr. Boydell.
	Mr. Turner.
	Mr. F. Walsh.
	Mr. A. C. Logan.
	Mr. Wahlberg.
	Mr. Moule.
	Mr. C. B. Boydell.
	Mr. Elliott.
	Mr. R. Robertson.
	Mr. A. Hill.
	Mr. Cusack.
	Mr. D. King.
	Mr. G. Collins.
	Mr. Baker.
	Mr. J. Cowlings.
	Mr. J. Clarke.
	Mr. J. Kenvan.
	Miss Gibson.
March	Mrs. Munro.
	Mrs. R. C. Baker.
	Mrs. Playford.
	Mrs. Kingston.
	Lady Downer.
	Mrs. Deakin.
	Mrs. Fysh.
	Mrs. Donaldson.
	Mrs. Paterson.
	Mrs. Thynne.
	Mr. Sutton.
	Mr. Nash.
	Hon. Adye Douglas.
	Mr. Dallison.
	Captain South.
	Bishop of Auckland.
	Mrs. Crowther.
	Mrs. Box.
	Mrs. and Miss Bent.
	Mr. C. Baldwin.
	Mr. D. Forrest.
	Major Gordon.
	Mrs. and Miss Forrest.
	Hon. G. Smith.
	Mr. B. M. Haggard.
	Major-General Tulloch.
	" Downes.
	Colonel Bernard.
	Commander R. Collins.
	Mr. and Mrs. Hislop.
	Mr. H. Willoughby.
	Mrs. and Miss Burgess.
	Colonel French.
	Mr. Thos. Gill.
	Dr. Colletti.
	Miss M'Coll.

Dates.	Names.	Dates.	Names
1891.		1891.	
March	Mrs. J. Forrest.	March	Mr. W. Henderson.
	Lady Downer.		Mr. W. Burns.
	Mrs. Fyeh.		Mr. J. Keane.
	Miss Ackerman.		Mr. J. Sullivan.
	Consul for Japan.		Mr. P. M'Call.
	Captain Moore, R.M.		Mr. C. Williams.
	Mr. W. W. Edgar.		Mr. R. Faithful.
	Mr. Foster.		Mr. W. Unwin.
	Mr. Darley.		Mr. T. Sencocks.
	Captain Carey.		Mr. T. Spencer.
	Mr. Halcomb.		Mr. J. Lowe.
	Mr. Connal.		Mr. Thos Head.
	Mr. Davis.		Mr. Buckingham.
	Mr. Hutchison.		Mr. A. Stewart.
	Mr. Melville.		Mr. J. Wiley.
	Mr. Lee.		Mr. J. Clarke.
	Mr. Day.		Mr. D. Mann.
	Captain and Mrs. Stanley Lowe.		Mr. J. Perrin.
	Miss Armstrong.		Mr. C. Lee.
	Mr. J. J. Calvert.		Mr. W. Williams.
	Mr. Harnett.		Mr. W. Walsh.
	Mrs. Fitzgerald.		Mr. H. Williams.
	Mrs. Ritchie.		Mr. R. Hayes.
	Mr. A. Budge.		Mr. J. Fraser.
	Captain and Officers, H.M.S. "Ringdove."		Mr. S. Prendergast.
	Mrs. Ball.		Mr. G. Compton.
	Mrs. Lees.		Mr. R. Goulding.
	Mr. C. Robinson.		Mr. C. Wilson.
	Colonel Roberts.		Mr. J. Quale.
	Mrs. Dalton.		Mr. J. Douglas.
	Mrs. M'Court.		Mr. J. Freeman.
	Mr. Elliott.		Mr. W. M'Kelly.
	Mr. Yeo.		Mr. J. Booth.
	Mr. Foley.		Mr. J. Herbert.
	Mr. Jenney.		Mr. J. Cumming.
	Mr. J. Bartlet.		Mr. F. Seymour.
	Mr. D. Sutherland.		Mr. W. Cronin.
	Mr. Clapin.		Mr. J. Glyndon.
	Mr. J. B. Laing.		Mr. G. Lewis.
	Mr. W. S. Moule.		Mr. J. Scott.
	Mr. R. Robertson.		Mr. J. Guirey.
	Mr. Drake.		Mr. M. Coghlan.
	Mr. C. Lyne.		Mr. F. Donohoe.
	Mr. F. Clapin.		Mr. J. Scott.
	Mr. Paynter.		Mr. A. Kemp.
	Mr. King.		Mr. F. Cassidy.
	Mr. Turpin.		Mr. H. Williams.
	Mr. Barry.		Mr. W. Major.
	Mr. J. T. Quance.		Mr. F. Arnold.
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	Mr. H. Stacey.		Mr. Stanley.
	Mr. J. Kirby.		Rev. J. Shearston and thirty-five men of H.M.S "Ringdove."
	Mr. F. Hall.		Three men H.M.S. "Swinger."
	Mr. J. O'Brien.		
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	Mr. B. Hogg.		Lady Thurston.
	Mr. J. Grant.		Mr. Duffy.
	Mr. J. Williams.		Sir George Grey.
	Mr. J. Cavanagh.		Mr. Davidson.
	Thirty sailors (H. M. ships).		Hon. J. Murray.
	Mr. J. Randall.		Mrs. Dunn.
	Mr. J. Henry.		Herr Carl Eggert.
	Mr. J. Dunbar.		Captain Fullerton.
	Mr. J. Adams.		Mr. F. Spence.
	Mr. H. Douglas.		Sir E. and Lady Smith.
	Mr. H. Thomas.		Mr. J. M. Roberts.
	Mr. J. Anderson.		Rev. Mr. Mackay.
	Mr. W. Henderson.		Mr. J. Calder.
	Mr. A. Laundry.		H. E. the Governor of New Caledonia and family.
	Mr. J. Rowell.		
	Mr. J. Clarke.		Captain Renard.

Dates.	Names.	Dates.	Names.
1891.		1891.	
April	Captain St. Clair.	April	Mr. J. Birch and son.
	Mr. Justice Cooper.		Mr. T. Kent.
	Rev. W. G. Pearse.		Mr. Bray.
	Mr. Dewhirst.	May	Captain and Miss Moore.
	Mr. Tatchell.		Mr. J. Kircaldie.
	Mr. J. R. Cox.		Mrs. Wettley.
	Hon. G. Smith.		Rev. Dr. Colletti.
	Mr. Amos Burr.		Mrs. and Miss Bouchant.
	Rev. Dr. and Mrs. Chalmers.		Mr. N. Tait.
	Mr. R. R. Garran.		Mrs. C. Young.
	Servants travelling with Admiral (3).		Mrs. Bennett.
	Mr. Rutledge.		Miss Davis.
	Mr. O'Connor.		Mr. J. Smibert.
	Mr. Ball.		Mr. C. E. Davies.
	Mr. Ferguson.		Mr. H. N. Read.
	Mr. Molesworth.		Mrs. Graves.
	Mr. Stokes.		Mrs. Mason.
	Mr. Creer.		Mrs. Ham.
	Mr. Hurley.		Mrs. Kirkpatrick.
	Captain and officers, H.M.S. "Orlando."		Mrs. A. C. Budge.
	Mrs. Dale.		Lady Scott and two children.
	Mr. Langtree.		Mr. Pullen.
	Mrs. Turner.		Mrs. Elliott.
	Mr. J. Fuller.		Mrs. Kidd.
	Mr. M'Bain.		Mrs. Clubb.
	Mrs. Bowman.		Mrs. Willis.
	Mrs. Trickett.		Mr. H. Wood.
	Mr. S. G. Boydell.		Mrs. Gough.
	Mr. Turner.		Mr. and Mrs. Squier.
	Mr. Garland.		Mr. N. C. Fraser.
	Mr. Edwards.		Mr. W. S. Christie.
	Mr. Elliott.		Mrs. Marsh and three children.
	Mr. Pemell.		Mr. Piggott.
	Mr. A. J. Gray.		Mr. F. Walsh.
	Mr. Friend.		Mr. J. Gilbert.
	Mr. Lyne.		Mr. D. King.
	Mr. R. A. Arnold.		Mr. P. Baker.
	Mr. Kyngdon.		Mr. G. Slack.
	Mr. W. Elliott.		Mr. H. Johnson.
	Mr. Riley.		Messrs. J. Travers and S. Torr.
	Mr. C. B. Boydell.		Mr. N. Grouden.
	Mr. J. R. M'Gregor.		Mr. D. Campbell.
	Mr. A. Logan.		Messrs. Haley and C. Stephens.
	Mr. Monahan.		Five men, H.M.S. "Dart."
	Mr. Harvey.		Mr. A. Chubb.
	Mr. Quinlan.		Mr. N. Jeffrey.
	Mr. S. G. Boydell.		Mr. J. Struthers.
	Mr. W. S. Moule.		Mr. N. Holmes.
	Mr. S. M. Moule.		Mr. T. Storr.
	Mr. F. L. Clapin.		Mr. J. Byrnes.
	Mr. F. B. Turner.		Mr. J. Barker.
	Mr. Wahlberg.		Mr. G. Rich.
	Rev. Shearston and twelve men, H.M.S. "Ringdove."		Mr. F. W. Mills.
			Mr. S. Mortiner.
	Mr. J. Graves.		Mr. Beasley and daughter.
	Mr. O'Sullivan.		Mrs. Harris.

Sydney: Charles Potter, Government Printer.—1892.

[6d.]

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RAILWAYS.

(RETURN SHOWING SPECIAL TRAINS, FREE PASSES, &c.)

Ordered by the Legislative Assembly to be printed, 4 *October*, 1892.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 9th February, 1892, That there be laid upon the Table of this House, a Return showing,—

"(1.) The number of special trains that have been despatched to Sydney "from all stations with military during the last two years.
"(2.) The number that have been despatched from Sydney and from pro- "vincial to provincial towns during the same period.
"(3.) The number of military and naval men that have been carried by "other than special trains.
"(4.) The total numbers carried by both means.
"(5.) Whether the Treasury is charged with the amount of expense "incurred by the Railway Department, or by what other means the expense "is provided for.
"(6.) The amount so charged (if any), including cost of transit of tents, "baggage, &c., and munitions of every description.
"(7.) The total number of free passes that have been issued during the last "two years, including military officers, notable persons, civil servants, and "others respectively (Members of Parliament and their wives and the "unemployed excepted).
"(8.) The estimated amount of revenue that would have been derived if "the ordinary fares had been paid for such passes.
"(9.) The total amount of revenue that would have been derived had all "trains, carriage of persons, and free passes, been charged for as to the "ordinary travelling public, as per rates and fares, &c., by the Railway "Department."

(*Mr. Hutchison.*)

RETURN showing the number of special trains run during the years 1890 and 1891 for the conveyance of military and the cost of same, together with the number of free passes issued for the same period to military officers, notable persons, civil servants, and others, and showing the amount that would have been paid if ordinary fares had been charged:—

(1.) Eighty, including those to Loftus and Campbelltown.
(2.) 114.
(3 and 4.) This information cannot be given, but the total amount for the conveyance of troops for the two years was as shown in answer to question 6.
(5.) Yes; the Military Department is debited with the cost of each service, and credit is obtained for same from the Treasury.
(6.) The total amount charged the Military Department for both years was £25,322 5s. 2d.
(7.) During the year 1890, 624 passes were issued, and during 1891 796 were issued.
(8.) The total amount for the two years is estimated at £22,826 6s. 10d.
(9.) It is difficult to give an accurate estimate of the value of free passes, no check taking place on the number of journeys made, but under the ordinary rates the value of the unremunerative services rendered by the Department for the last year, ending 30th June, 1892, was £42,692.

[3*d*.] 250—

[882 copies—Approximate Cost of Printing (labour and material), £1 2s. 5d.]

1892-3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RAILWAYS.

(RETURN RESPECTING CASE OF MOTOR-DRIVER VOLK.)

Ordered by the Legislative Assembly to be printed, 21 *March*, 1893.

RETURN to an *Order* of the Legislative Assembly of New South Wales, dated 21st March, 1893, That there be laid upon the Table of this House,—

"Copies of all letters, papers, or other documents connected with the "suspension of Motor-driver Volk."

(Mr. Hoyle.)

H. C. Hoyle, Esq., M.P., to The Colonial Treasurer.

Dear Sir, Parliament House, 21 February, 1893.

I beg to draw your attention to the report of a speech, published in this day's papers, by a man named "Volk," who, I understand, is an employee of the Railway Commissioners.

I beg to point out that one of the reasons given for my dismissal from the Railway Service was that I took part in political meetings. I do not want this man to be dismissed, but if it was fair to stop me, others should be treated in the same way. I remain, &c.,

H. C. HOYLE.

The Railway Commissioners.—J.S., 21/2/93. The Secretary for Railways.—F.K., 21/2/93.

Memo.

Office of the Railway Commissioners of New South Wales, Sydney, 23 February, 1893.

Notes of interview *re* Volk's Case.

MR. VOLK was called to the Commissioners' Office, and had an interview with Mr. Commissioner Fehon, when he was informed that attention had been directed to what had taken place at a political meeting at Leichhardt, calling for the dissolution of the present Legislative Assembly, the utterances of Mr. Volk having been drawn attention to by Mr. Hoyle, one of the Members for Redfern. Volk was asked whether he was the person referred to as having taken part in such meeting, and he admitted he was.

Mr. Fehon pointed out that so long as the railways were severed from political control the employees should abstain from attending political meetings to express themselves publicly, either one way or the other, in connection with party politics.

Mr. Fehon intimated that his colleagues were absent from Sydney, and pending their return, when the Board of Commissioners would deal with the matter, Volk would be relieved from duty.

G.

792—

[882 copies—Approximate Cost of Printing (labour and material), £2 9s. 0d.]

G. D. Clark and E. Darnley, Esquires, M's.P., to The Railway Commissioners.

Gentlemen, Parliament House, Sydney, 23 February, 1893.

We, the undersigned, having heard that F. Volk has been suspended for taking part in a political meeting at Leichhardt on Monday evening last, wish to state, for your information, what actually took place on the occasion. Mr. Volk was in the body of the hall at the meeting in question, and being called for by a number of persons in the audience he went on to the platform and made a few remarks on general matters, which caused some amusement. He certainly did not make a political speech, nor did he say one word against the Government or anyone in authority.

We wish further to state that, being present during the entire meeting, we heard everything that was said by Mr. Volk, and can vouch for the truth of these statements.

We also venture to express the hope that Volk will not be made to suffer for what could hardly be regarded as an offence against constituted authority.

We have, &c.,
G. D. CLARK.
E. DARNLEY.

The Secretary for Railways to G. D. Clark and E. Darnley, Esquires, M's.P.

Government Railways of New South Wales, Secretary's Office,
Sydney, 2 March, 1893.

Gentlemen,

I am directed to acknowledge your letter of the 23rd ultimo, relative to the part taken by Mr. F. Volk in a political meeting at Leichhardt.

I have, &c.,
H. M'LACHLAN,
Secretary.

Memo.

Office of the Railway Commissioners of New South Wales, Sydney, 6 March, 1893.

Meeting of Board of Commissioners *re* Volk's Case.

Volk, in accordance with instructions, was present at the meeting, and it was intimated to him that whilst he was entirely free to exercise his franchise, he must abstain from taking a prominent part in party political meetings whilst in the employ of the Railway Commissioners; and as his suspension was brought about by his own indiscretion, they could not see their way to pay him for the time he was not at work. He was instructed to report himself for duty in the ordinary way.

Mr. F. Volk to The Board of Railway Commissioners.

Gentlemen, Marion-street, Leichhardt, 6 March, 1893.

I must admit that I was completely taken by surprise during the interview which I had with your Honorable Board this morning, and as the matter is so serious to my family and self, I would like to be able to give the whole matter my most serious consideration, and with that end, I desire most humbly to request that I may be furnished with the decision of your Honorable Board in writing as given me verbally this morning, and that a short time after its receipt by me may be given to me for its consideration.

I remain, &c.,
FRANZ VOLK.

The Secretary for Railways to Mr. F. Volk.

Sir, 7 March, 1893.

I have to acknowledge your letter of yesterday relative to your interview with the Commissioners.

I have to confirm the intimation made to you verbally that, while you were entirely free to exercise your franchise, you were to abstain from taking a prominent part in party political meetings while an employee of the Railway Commissioners.

The Commissioners did not propose any harsh action with regard to the matter brought under attention by Mr. Hoyle, M.P.; but as your suspension was brought about by your own indiscretion they cannot consent to payment being allowed for the limited period you were not at work.

I have to repeat the directions given you at the meeting with the Commissioners: that if you wish to retain your position you must report yourself to your superior officer in the ordinary way at Bridge-street yard; and if this is not done by Thursday morning you will be deemed to have vacated your position, and the same will be filled.

I have, &c.,
H. M'LACHLAN,
Secretary.

Mr. F. Volk to The Secretary for Railways.

Dear Sir, Leichhardt, 8 March, 1893.

I have received your letter in reply, and intend to have my reply ready by the morrow morning.

I have, &c.,
FRANZ VOLK.

Mr.

3

Mr. F. Volk to The Railway Commissioners.

Gentlemen, Marion-street, Leichhardt, 8 March, 1893.

I have received your favour of the 7th instant, and in reply I desire most respectfully to say that I cannot possibly be free to exercise my franchise except I am allowed to give my reasons for so exercising it; and I cannot but hold that I have a perfect right, under the common law of this country, as well as under the Railway Act now in force, to take part in any political meeting, always with the understanding of course that I do not desire to claim any right to publicly criticise the action of my employers, the Railway Commissioners.

With regard to my suspension being brought about by my own indiscretion, I hold that I have not committed any.

As to the last paragraph, I beg most respectfully to state that I do not desire to vacate my position as a tramway motor driver, and it seems to me that I am being unjustly forced into a false position by being either deprived of my freedom as a free citizen of a free country or of my employment; and as, according to the record given me by your Honorable Board, that I have always given every satisfaction in the discharge of my duties, I respectfully submit that I have done nothing to forfeit my employment, and trust that it will be again restored to me free from the degrading conditions which is sought to be imposed upon me.

Trusting, gentlemen, that you will favour me with a favourable reply,

I remain, &c.,

FRANZ VOLK.

The Secretary for Railways to Mr. F. Volk.

Government Railways of New South Wales,

Sir, Secretary's Office, Sydney, 10 March, 1893.

I am directed to inform you that as you neglected to report yourself for duty on Thursday last, as instructed by my letter of the 7th instant, you have vacated your position as an employee in the Tramway Service, and the vacancy has been filled up.

I have, &c.,

H. M'LACHLAN,

Secretary.

Sydney: Charles Potter, Government Printer.—1893.

1892–3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RAILWAY EMPLOYEES.

(RETURN RESPECTING.)

Ordered by the Legislative Assembly to be printed, 9 *May*, 1893.

[*Laid upon the Table of the House in answer to Question No.* 5, *of 6th December*, 1892.]

Questions.

5. RAILWAY EMPLOYEES:—MR. MCGOWEN (FOR MR. HOYLE) *asked* THE COLONIAL TREASURER,—
(1.) How many railway servants have been dismissed from the Railway Service during the past four years, and are now drawing pensions from the Civil Service Superannuation Fund?
(2.) What are their names, ages, and their length of service?

Answers.

(1.) Ninety-six.
(2.) Return following giving names, ages, and lengths of service.

Name.	Office.	Age.	Length of Service.	Pension.
	1889.	Years.	Years.	£ s. d.
Boag, Thomas	Loco. Foreman	64	28	231 8 0
Scott, William	Loco. Engineer	62	33	443 7 0
De Courcy, Thomas	Clerk	33	20	71 10 10
Finegan, J. P.	Examiner of Accounts	35	22	153 6 4
Molony, C. C.	Clerk	52	23	73 11 3
Higgs, John	Traffic Manager, Great Northern	59	33	357 7 6
Seale, Michael	Chief Clerk, Audit Branch	40	26	174 8 0
Higgs, Edward	Inspector	54	33	249 1 0
Slatyer, Hampton	Clerk	36	15	58 1 0
Howarth, Shepherd	Issuer, Stores Branch	70	29	67 13 4
Bourne, E. J.	Superintendent, Rolling Stock	66	33	192 10 0
Wascoe, John O.	Clerk	68	17	64 16 0
Sirkett, Thomas	Foreman, Stores Branch	58	21	89 3 0
Bingham, George	„ Carriage Shop	49	32	160 17 0
Smithers, A.	Clerk	46	15	38 19 0
Betteridge, George	„	41	16	42 17 0
Docksey, William	Sub-Inspector	52	22	96 16 0
Brabstone, Michael	Overseer, Stores Branch	51	30	78 13 0
Pickering, James E.	Clerk	30	15	89 17 0
Fligg, Henry	Storekeeper	65	30	173 16 0
Kinsett, F. J.	Clerk	60	22	95 17 0
Evans, George T.	Superintendent of Stores	40	21	190 0 0
Iredale, L. P.	Record Clerk	46	22	151 19 0
Irvine, Christopher	Cashier, Great Northern	49	18	94 4 0
Purton, Henry	Inspector	57	28	185 5 0
Deitz, William	Foreman	59	21	90 6 0
Murdock, George	„	69	26	100 6 0
Moodie, Andrew	Station-master, Marulan	63	23	147 13 0
Scotland, David	„ Windsor	63	21	112 18 0
Thompson, John R.	Inspector	44	19	105 7 0
Read, W. V.	Traffic Manager	50	34	546 10 0
Williams, Walter	Gatekeeper	78	22	40 10 0
Vernon, Donald	Secretary	50	30	392 15 0
Woods, George	Foreman, Tramways	59	23	89 9 0
Roberts, H.	Gatekeeper	64	32	68 10 0
Higgs, James	Station-master, Granville	57	33	208 18 0

Name.	Office.	Age.	Length of Service.	Pension.
	1890.	Years.	Years.	£ s. d.
Richardson, Ralph	Inspector, Tramways	61	23	106 15 0
Lennox, John	Foreman	61	21	120 19 0
Carpenter, Abraham	Station-master, Hexham	61	22	97 7 0
Evans, Thomas	Carriage Examiner	53	28	108 14 0
Baker, John	"	54	27	88 18 0
Cobb, John	Loco. Engineer	54	34	277 7 0
Crewes, Richard	Machinist	64	21	50 5 0
Hopkins, Evan	Blacksmith	65	22	66 10 0
Burrows, Joseph	Labourer	71	17	34 6 0
Dwyer, Patrick	Station-master, Uralla	58	34	149 2 0
Muir, John	" Tarana	61	25	109 8 0
Robertson, James J.	District Superintendent	50	30	228 7 0
M'Intosh James	Sheeting Foreman	64	30	85 11 0
Phelan, Samuel	Guard	60	30	110 8 0
Fitzpatrick, Denis	Foreman	51	26	154 2 0
Morrison, James	Fitter, Loco. Branch	58	20	49 0 0
Landers, George	Chief Clerk, Permanent-way Branch	52	24	176 0 0
Tobin, Nicholas	Clerk	51	15	49 4 0
Heron, John	Loco. Inspector	60	29	180 0 0
Cowdery, George	Engineer for Existing Lines	60	25	451 19 0
Crawford, Leslie	Foreman	60	28	125 5 0
Duncan, Frederick	Stationary Engine-driver	69	28	66 17 0
	1891.			
M'Lean, John	Station-master, Aberdeen	60	30	106 3 0
Hampton, Aaron	Sub-Inspector	64	33	153 4 0
Morrison, Peter	Inspector	64	28	163 7 0
Salkeld, Benjamin	Station-master, Macdonaldtown	61	28	96 6 0
Humphries, John	" East Maitland	60	28	123 12 0
Thurlow, Jonathan	Gatekeeper	69	33	65 5 0
Edwards, James P.	Station-master, West Tamworth	60	19	59 3 0
Herald, Edmund	" Singleton	60	26	157 4 0
Gallagher, Patrick	Engine-driver	63	28	114 15 0
Clarke, Henry	Porter, Singleton	60	27	51 5 0
King, Robert	Gatekeeper	61	21	46 6 0
Pearce, William	Messenger, Traffic Branch	60	27	46 10 0
Dowling, William	Guard	63	29	88 5 0
Pike, Thomas	Porter	67	15	31 2 0
Rose, Henry	Night-officer, Erskineville	64	23	52 16 0
Munson, Nathan	Stationary Engine-driver	61	34	77 6 0
Newton, George	Inspector, Newcastle	60	30	205 11 0
	1892.			
Tanner, James	Station-master, Rylstone	60	15	52 10 0
Walker, John H.	" Wallsend	60	28	98 5 0
Lawrence, Charles	Clerk	63	22	81 10 0
Jacobs, Jesse	Sheeting Foreman	61	33	110 0 0
Pike, John G.	Travelling Inspector	66	29	103 5 0
Cauldrake, Thomas	Ganger	61	28	67 2 0
Garvan, D. A.	Station-master, Macdonaldtown	44	29	114 16 0
Squires, Josiah	Signalman	61	21	48 9 0
Willison, George	Ganger	64	34	78 14 0
Mulholland, Phillip	Shed Inspector	45	32	155 18 0
Woods, Moses	Porter	61	23	52 4 0
Fitzpatrick, Charles	Guard	61	31	113 8 0
Williams, John	Officer-in-charge, Goulburn	60	17	48 17 0
Fleming, James	Guard	61	33	120 1 0
Gould, Edwin	Porter	62	29	61 10 0
Hawkins, John	"	62	19	52 0 0
Callaghan, Patrick	Gatekeeper	61	24	54 11 0
Wallwork, Daniel	Machinist	67	28	75 19 0
Cruickshank, William	Sub-Inspector	60	20	77 0 0
Canavan, William	Carpenter	67	33	93 11 0
Paton, John	Inspector	72	20	78 14 0
				£11,790 13 3

Sydney: Charles Potter, Government Printer.—1893.

[3d.]

1892-3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

SALARIES AND WAGES OF EMPLOYEES IN RAILWAY AND TRAMWAY DEPARTMENT.

(RETURN RESPECTING.)

Ordered by the Legislative Assembly to be printed, 2 *May*, 1893.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 8th March, 1893, That there be laid upon the Table of this House,—

"A list of salaries and wages paid to all the employees of the Railway and "Tramway Department, not giving any names, but showing the rates of "pay and the number and designation at each of such rates."

(Mr. Schey.)

RETURN of Staff in the Service of the Railway Commissioners, New South Wales, in April, 1893.

RAILWAYS.

SECRETARY'S BRANCH.

1	Secretary, £800 per annum.
21	Clerks—1 at £350, 1 at £325, 2 at £320, 1 at £300, 1 at £260, 3 at £250, 1 at £240, 2 at £200, 1 at £180, 2 at £165, 1 at £150, 1 at £140, 1 at £110, 1 at £100, 1 at £90, 1 at £70 per annum.
22	

CHIEF ACCOUNTANT'S BRANCH.

1	Chief Accountant, £1,000 per annum.
1	Chief of Expenditure, £600 per annum.
1	Chief Cashier, £500 per annum.
1	Chief Paymaster, £450 per annum.
1	Principal Book-keeper, £450 per annum.
1	Book-keeper, £100 per annum.
1	Examiner of Accounts, £340 per annum.
36	Clerks—1 at £325, 1 at £305, 2 at £285, 1 at £280, 3 at £275, 1 at £265, 2 at £260, 2 at £250, 1 at £240, 5 at £220, 1 at £210, 1 at £200, 1 at £195, 1 at £190, 1 at £180, 1 at £155, 1 at £140, 1 at £135, 2 at £120, 1 at £110, 1 at £105, 1 at £60, 1 at £40, 3 at £30 per annum.
43	

TRAFFIC AUDITOR'S BRANCH.

1	Traffic Auditor, £600 per annum.
1	Chief Inspector, £450 per annum.
6	Inspectors—3 at £305, 3 at £290 per annum.
60	Clerks—1 at £375, 1 at £305, 1 at £275, 1 at £250, 1 at £220, 1 at £215, 1 at £210, 2 at £200, 2 at £185, 1 at £180, 2 at £170, 1 at £165, 3 at £150, 1 at £140, 6 at £135, 1 at £130, 9 at £120, 3 at £110, 2 at £100, 1 at £90, 4 at £70, 2 at £60, 5 at £50, 3 at £40, 5 at £30 per annum.
68	

[782 copies—Approximate Cost of Printing (labour and material), £5 12s. 7d.]

STORE BRANCH.

(Salaried Staff.)

1 Comptroller of Stores, £800 per annum *
1 Book-keeper, £300 per annum.
1 Overseer, £300 per annum.
23 Clerks—1 at £300, 2 at £285, 1 at £280, 2 at £215, 1 at £205, 1 at £185, 1 at £160, 1 at £140, 2 at £120, 2 at £70, 3 at £50, 2 at £40, 4 at £30 per annum.

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* Allowed £100 per annum as Staff Committeeman.

Wages Staff.

1 Foreman, 10s. per diem.
2 Gangers—1 at 9s., 1 at 8s. per diem.
6 Issuers—1 at 10s. 6d., 2 at 9s. 6d., 1 at 9s., 2 at 8s. per diem.
5 Labourers—4 at 7s 6d., 8 at 7s. per diem.
6 Storemen—1 at 9s., 3 at 8s., 2 at 7s. 6d per diem.
3 Miscellaneous, Generals—1 at 8s. 6d., 2 at 7s. 6d. per diem.
9 Sheet-dressers—1 at 7s. 6d., 8 at 7s. per diem.

32

PERMANENT-WAY BRANCH.

(Salaried Staff.)

1 Engineer-in Chief for Existing Lines, £1,200 per annum.
9 Engineers—2 at £700, 1 at £600, 1 at £550, 1 at £525, 2 at £500, 1 at £450, 1 at £350 per annum.
17 Draftsmen and Surveyors—1 at £400, 1 at £375, 1 at £350, 1 at £320, 1 at £300, 1 at £275, 1 at £250, 1 at £240, 1 at £225, 1 at £220, 1 at £175, 2 at £150, 1 at £140, 1 at £130, 1 at £125, 1 at £52 per annum.
1 Chief Clerk, £470 per annum.
20 Clerks—2 at £250, 1 at £225, 3 at £220, 2 at £195, 1 at £190, 1 at £185, 1 at £175, 1 at £165, 1 at £160, 1 at £156, 4 at £150, 1 at £140, 1 at £135 per annum.
7 Clerks, Junior—1 at £105, 1 at £100, 3 at £90, 2 at £80.
12 Clerks "Apprentice"—1 at £70, 1 at £60, 7 at £50, 2 at £40, 1 at £30 per annum.
1 Accountant, £400 per annum.
5 Inspectors of Permanent Way—1 at £400, 3 at £300, 1 at £250 per annum.
1 Inspector of Weighing Machines, £250 per annum.
4 Inspectors of Buildings—2 at £310, 1 at £300, 1 at £250 per annum.
27 Sub-Inspectors of Permanent Way—1 at £280, 2 at £260, 2 at £250, 1 at £240, 5 at £230, 1 at £225, 2 at £215, 13 at £200 per annum.
7 Time-keepers—1 at £190, 3 at £150, 1 at £135, 2 at £115 per annum.

112

PERMANENT-WAY BRANCH.

(Wages Staff.)

1,295 Fettlers—33 at 9s., 1 at 8s., 1197 at 7s. 6d., 55 at 7s., 9 at 6s. 6d. per diem.
402 Gangers—3 at 12s., 1 at 11s., 1 at 10s. 6d., 9 at 10s., 3 at 9s. 6d., 332 at 9s., 53 at 8s. 6d. per diem.
502 Labourers—6 at 9s, 6 at 8s. 6d., 4 at 8s., 329 at 7s. 6d., 83 at 7s., 74 at 6s. 6d. per diem.
41 Boys—2 at 5s, 7 at 4s., 3 at 3s. 6d., 10 at 3s., 10 at 2s. 6d., 9 at 2s. per diem.
58 Carpenters—1 at 15s, 1 at 13s, 2 at 12s. 6d., 2 at 12s, 1 at 11s. 3d., 16 at 11s., 3 at 10s. 8d., 5 at 10s. 6d., 2 at 10s. 4d., 9 at 10s., 5 at 9s. 6d., 3 at 9s., 4 at 8s. 6d., 4 at 8s. per diem.
13 Blacksmiths—1 at 14s., 2 at 12s. 8d., 3 at 11s., 3 at 10s. 8d., 2 at 10s. 6d., 1 at 9s. 8d., 1 at 9s. 6d. per diem.
11 Strikers—10 at 7s. 6d., 1 at 7s. per diem.
7 Fitters—1 at 13s., 1 at 12s. 6d., 1 at 11s. 8d., 2 at 11s., 2 at 10s. per diem.
9 Fencers—1 at 10s., 2 at 9s., 1 at 8s. 6d., 2 at 8s, 3 at 7s. 6d per diem.
7 Bricklayers—2 at 12s., 1 at 11s. 6d., 1 at 11s, 1 at 10s. 6d., 1 at 9s., 1 at 8s. per diem.
12 Painters—1 at 11s. 6d., 1 at 11s., 1 at 10s. 4d., 2 at 10s., 2 at 9s. 8d., 1 at 9s. 2d., 2 at 9s., 1 at 8s. 8d., 1 at 8s. 6d. per diem.
7 Plumbers—1 at 12s. 6d., 1 at 12s., 1 at 10s. 8d., 1 at 10s., 1 at 9s. 6d., 1 at 7s. 6d., 1 at 6s. per diem.
6 Stationary Engine Drivers—1 at 10s., 1 at 9s., 3 at 8s. 6d., 1 at 8s. per diem.
1 Quarry Foreman, 16s. per diem.
2 Timber Inspectors—1 at 12s., 2 at 11s. per diem.
8 Miscellaneous Trades—1 at 12s., 2 at 9s., 2 at 8s. 6d., 1 at 8s., 1 at 7s., 1 at 5s. per diem.
14 Miscellaneous, General—1 at 9s., 3 at 8s. 6d., 3 at 7s. 6d., 1 at 7s., 2 at 6s. 6d. per diem; 1 at 25s., 2 at 23s, 1 at 10s. per week.

2,395

LOCOMOTIVE BRANCH.

(Salaried Staff.)

1 Chief Mechanical Engineer, £1,200 per annum.
1 Chief Clerk, £500 per annum.
1 Accountant, £500 per annum.
2 Out-door Superintendents, £550 per annum.
2 Works Managers—1 at £550, 1 at £350 per annum.
1 Superintendent of Carriage and Wagon Shops, £400 per annum.
1 Gas Superintendent, £350 per annum.
1 „ Inspector, £370 per annum.
1 Boiler Inspector, £300 per annum.
1 Water Supply Inspector, £375 per annum.
2 Travelling Engine Inspectors—1 at £300, 1 at £255 per annum.
11 Steam Sheds Foremen—1 at £430, 1 at £350, 2 at £310, 1 at £300, 2 at £290, 1 at £280, 2 at £275, 1 at £250 per annum.
6 Sub Sheds Foremen—1 at £330, 1 at £300, 1 at £290, 1 at £280, 2 at £250 per annum.
25 General Foremen—1 at £375, 2 at £350, 1 at £325, 1 at £305, 3 at £300, 2 at £290, 3 at £270, 3 at £260, 4 at £255, 2 at £250, 1 at £235, 2 at £225 per annum.
9 Draftsmen—1 at £375, 2 at £325, 1 at £275, 1 at £260, 1 at £235, 1 at £150, 1 at £140, 1 at £110 per annum.
18 Timekeepers—1 at £305, 1 at £265, 2 at £200, 4 at £175, 1 at £180, 2 at £165, 3 at £150, 1 at £140, 1 at £120, 1 at £110, 1 at £80 per annum.
76 Clerks—1 at £330, 1 at £320, 1 at £275, 1 at £265, 3 at £220, 1 at £215, 3 at £200, 1 at £190, 2 at £180, 1 at £175, 2 at £170, 2 at £165, 3 at £160, 10 at £150, 3 at £135, 2 at £140, 3 at £130, 5 at £125, 2 at £120, 1 at £110, 2 at £100, 5 at £70, 1 at £60, 4 at £40, 8 at £50, 6 at £30 per annum : 1 at 6s. per day, 1 at 30s. per week.

159

(Wages Staff.)

384 Drivers (Loco.)—65 at 15s , 255 at 14s , 42 at 13s., 13 at 12s., 9 at 11s. per diem.
446 Firemen—364 at 10s., 81 at 9s., 1 at 8s. per diem.
418 Cleaners—3 at 10s., 2 at 9s., 5 at 8s., 1 at 7s. 6d., 296 at 7s., 48 at 6s , 30 at 5s. 6d., 27 at 5s., 4 at 4s., 2 at 3s. 3d. per diem.
114 Fuelmen—2 at 9s., 4 at 8s. 6d , 21 at 8s., 37 at 7s. 6d., 45 at 7s., 2 at 6s. 6d., 2 at 6s., 1 at 5s. 6d. per diem.
10 Gland Packers—3 at 10s., 7 at 8s. per diem.
57 Pumpers—1 at 10s., 1 at 9s., 34 at 8s. 8d , 5 at 8s. 6d., 1 at 8s. 4d., 1 at 8s. 2d., 11 at 8s., 2 at 7s. 8d., 1 at 6s. 6d. per diem.
3 Fire-lighters—7s. per diem.
10 Chargemen—4 at 15s., 2 at 14s., 1 at 13s., 1 at 12s., 1 at 11s., 1 at 8s. per diem
232 Fitters—3 at 15s., 2 at 14s., 13 at 13s., 2 at 12s. 8d., 3 at 12s. 4d., 2 at 12s., 10 at 11s. 8d., 2 at 11s. 6d., 2 at 11s. 4d., 1 at 11s. 2d., 13 at 11s., 1 at 10s. 10d., 46 at 10s. 8d., 5 at 10s. 6d., 10 at 10s. 4d., 16 at 10s. 2d., 86 at 10s., 9 at 9s. 4d., 6 at 8s. per diem.
78 Turners—1 at 12s. 8d., 1 at 12s., 8 at 11s. 8d., 5 at 11s. 2d., 16 at 11s., 6 at 10s. 8d., 12 at 10s. 6d., 6 at 10s. 4d., 18 at 10s., 2 at 9s. 4d., 3 at 8s. per diem.
44 Machinists—1 at 12s., 3 at 10s., 3 at 9s. 8d., 3 at 9s. 6d., 1 at 9s. 2d., 13 at 9s., 2 at 8s. 8d., 7 at 8s. 6d., 9 at 8s., 2 at 7s. 6d. per diem.
22 Drillers—2 at 9s. 2d., 1 at 8s. 2d., 8 at 8s., 9 at 7s. 6d., 1 at 7s., 1 at 5s. per diem.
114 Boilermakers—1 at 14s., 1 at 12s. 8d., 3 at 12s. 2d., 1 at 12s., 2 at 11s. 8d., 6 at 11s. 6d. 2 at 11s. 4d., 1 at 11s. 2d , 4 at 11s., 3 at 10s. 8d., 32 at 10s. 6d., 2 at 10s. 4d., 2 at 10s. 2d., 36 at 10s., 16 at 9s. 4d., 1 at 8s., 1 at 7s 6d. per diem.
79 Boilermakers' Assistants—4 at 8s., 47 at 7s. 6d., 28 at 7s. per diem.
63 Blacksmiths—1 at 16s., 1 at 15s , 1 at 13s., 2 at 12s 8d., 1 at 12s. 6d., 5 at 12s. 2d , 1 at 12s., 4 at 11s, 8d., 1 at 11s. 4d., 1 at 11s. 2d., 7 at 11s., 20 at 10s. 8d., 2 at 10s. 6d., 3 at 10s. 2d., 11 at 10s., 1 at 9s. 8d., 1 at 8s. 6d. per diem.
13 Springmakers -1 at 14s., 1 at 12s. 8d., 1 at 12s. 2d., 2 at 11s. 2d., 2 at 10s. 8d., 2 at 10s. 2d., 3 at 10s., 1 at 9s. per diem.
104 Strikers—1 at 8s. 2d., 4 at 8s., 56 at 7s. 6d., 43 at 7s. per diem.
40 Moulders—1 at 14s., 5 at 11s. 2d., 5 at 11s., 3 at 10s. 6d , 15 at 10s , 5 at 9s. 4d , 6 at 8s. per diem.
5 Furnace-men—1 at 10s. 8d., 2 at 10s., 1 at 9s. 6d., 1 at 8s. 6d. per diem.
4 Dressers—1 at 9s., 1 at 8s. 6d , 2 at 8s. per diem
8 Coppersmiths—1 at 12s., 1 at 11s,, 1 at 10s. 10d., 3 at 10s , 1 at 9s. 6d., 1 at 9s. per diem.
8 Plumbers—1 at 12s., 2 at 10s. 8d., 1 at 10s. 6d , 1 at 10s., 3 at 9s. per diem.
27 Gasfitters—1 at 12s., 5 at 10s. 8d , 6 at 10s., 2 at 9s. 8d., 2 at 9s. 6d., 1 at 9s. 4d., 5 at 9s., 1 at 8s. 6d., 1 at 8s., 1 at 7s. 6d., 1 at 6s. 6d., 1 at 5s. per diem.
7 Tinsmiths—1 at 11s., 2 at 10s. 8d., 2 at 10s., 2 at 9s. 8d. per diem.
8 Brass-finishers—1 at 11s. 2d., 1 at 10s. 6d., 6 at 10s. per diem.
6 Patternmakers—1 at 15s., 1 at 12s. 2d., 2 at 11s. 2d., 2 at 10s. per diem.
4 Grinders—1 at 11s., 2 at 9s., 1 at 8s. per diem.
185 Builders (Car and Wagons)—1 at 14s., 1 at 12s., 1 at 11s. 4d., 12 at 11s., 2 at 10s. 8d., 31 at 10s. 6d., 1 at 10s. 4d., 124 at 10s., 1 at 9s. 8d., 6 at 9s. 6d., 1 at 9s. 4d., 4 at 8s. per diem.
14 Trimmers—1 at 11s. 2d., 4 at 10s. 8d., 6 at 10s., 1 at 9s. 6d., 1 at 9s. 4d., 1 at 8s. per diem.
72 Painters—2 at 11s , 1 at 10s 8d., 1 at 10s. 6d., 1 at 10s. 2d., 26 at 10s., 2 at 9s. 8d., 1 at 9s. 4d., 10 at 9s., 2 at 8s. 8d., 3 at 8s. 6d., 23 at 8s. per diem.
41 Painters' Assistants—1 at 8s. 2d., 17 at 7s. 6d., 9 at 7s , 2 at 6s. 6d., 10 at 5s., 2 at 4s per diem.
34 Lifters—1 at 11s. 4d., 1 at 9s. 8d., 2 at 9s. 4d., 29 at 9s. 2d., 1 at 9s. per diem.

LOCOMOTIVE BRANCH—*continued.*

(*Wages Staff—continued*)

20 Oilers—1 at 10s. 8d., 15 at 8s., 3 at 7s. 6d., 1 at 7s. per diem.
80 Examiners (Car and Wagon)—1 at 13s., 3 at 12s. 8d., 1 at 12s. 2d., 2 at 12s., 3 at 11s. 8d., 1 at 11s 2d., 5 at 11s., 1 at 10s. 10d., 8 at 10s 8d., 2 at 10s. 4d., 14 at 10s., 10 at 9s., 1 at 8s 9d., 4 at 8s. 6d., 1 at 8s. 3d., 19 at 8s., 2 at 7s. 6d., 2 at 7s. per diem.
16 Carpenters—1 at 11s., 1 at 10s. 10d., 2 at 10s. 6d. 6 at 10s., 2 at 9s., 1 at 8s. 8d., 2 at 7s. 6d., 1 at 7s per diem.,
6 Foremen—1 at 16s. 8d., 1 at 15s., 1 at 14s. per diem; 2 at 90s., 1 at 80s. per week.
29 Drivers, "stationary engine and traversers"—1 at 10s. 8d., 3 at 10s., 3 at 8s. 8d., 9 at 8s., 10 at 7s. 6d., 2 at 7s., 1 at 6s. 6d. per diem.
38 Storemen -1 at 10s., 2 at 9s., 1 at 8s. 6d., 16 at 8s., 5 at 7s. 6d., 10 at 7s., 1 at 6s. 6d., 1 at 5s. 6d., 1 at 4s. per diem.
18 Gasmen—20 at 70s. per week, 1 at 11s. 5d., 1 at 10s. 6d., 2 at 10s., 5 at 9s. 6d., 3 at 8s. 6d., 1 at 7s. 6d., 2 at 7s., 1 at 6s. per diem.
5 Cylinder Fillers -3 at 8s. 6d., 1 at 6s. 6d., 1 at 5s. 6d. per diem.
117 Apprentices—35 at 5s., 13 at 3s. 6d., 11 at 3s., 2 at 2s. 6d., 1 at 2s. 3d., 17 at 2s, 1 at 1s. 9d., 18 at 1s. 3d., 19 at 10d. per diem.
57 Boys—11 at 5s., 16 at 4s., 3 at 3s. 6d, 1 at 3s. 3d., 5 at 3s., 9 at 2s. 6d., 6 at 2s. 3d., 5 at 2s., 1 at 1s. 8d. per diem.
337 Labourers—1 at 8s. 8d., 1 at 8s. 6d., 19 at 8s., 154 at 7s. 6d., 145 at 7s., 13 at 6s. 6d., 2 at 5s 6d., 2 at 5s. per diem.
11 Messengers -4 at 7s. 6d., 2 at 7s., 1 at 5s., 1 at 3s. 6d, 1 at 2s. 6d. per diem, 1 at 10s. per week, 1 at 12s. 6d. per week.
10 Miscellaneous "Trades"—1 at 10s. 6d., 1 at 9s. 8d., 2 at 9s. 6d., 1 at 9s. 2d., 2 at 9s., 3 at 8s. 6d. per diem.
23 Miscellaneous "General"—5 at 10s., 2 at 9s., 1 at 8s. 6d., 3 at 8s., 2 at 7s. 6d., 3 at 7s., 1 at 5s., 1 ar 4s. per diem; 1 at 50s., 1 at 30s., 1 at 27s., 1 at 25s., 1 at 7s. 6d. per week.

3,421

TRAFFIC BRANCH.

(*Salaried Staff, including Electrical Engineer's Branch.*)

1 Chief Traffic Manager, at £1,100 per annum.
1 Chief Clerk, at £450 per annum.
1 Goods Superintendent, all Lines, £700 per annum.
1 District Goods Manager, £600 per annum.*
2 Out-door Superintendents, at £750 per annum.†
1 Traffic Officer, £500 per annum.
6 District Superintendents—1 at £600, 1 at £510, 1 at £500, 2 at £475, 1 at £450 per annum.
15 Traffic Inspectors—2 at £300, 2 at £235, 2 at £230, 5 at £210, 1 at £200, 2 at £170 per annum, 1 at 10s. per diem.
5 Foremen—1 at £350, 1 at £250, 2 at £200, 1 at £180 per annum.
1 Overseer Coal Traffic, £300 per annum.
2 Berthing Masters—1 at £371 10s., 1 at £170 per annum.
1 Special Inquiry Officer, at £300 per annum.
167 Station-masters—2 at £400, 1 at £365, 1 at £350, 4 at £330, 4 at £310, 5 at £300, 3 at £290, 1 at £280, 1 at £275, 6 at £270, 1 at £265, 5 at £255, 7 at £250, 1 at £244, 3 at £240, 1 at £239, 1 at £234, 10 at £225, 1 at £223, 7 at £220, 1 at £219, 1 at £216, 8 at £210, 2 at £206, 2 at £204, 25 at £200, 1 at £196, 1 at £195, 1 at £192, 1 at £191, 3 at £190, 1 at £185, 1 at £181, 29 at £180, 1 at £179, 2 at £175, 1 at £172, 2 at £170, 13 at £165, 3 at £160, 3 at £150 per annum, with free quarters or an allowance for rent.
174 Officers-in-charge—2 at £210, 1 at £201, 1 at £200 4s., 2 at £200, 1 at £196, 1 at £192, 2 at £189, 1 at £182, 2 at £180, 1 at £179, 1 at £178, 1 at £172, 1 at £171, 2 at £170, 1 at £169, 3 at £168, 3 at £165, 1 at £160, 3 at £164, 1 at £163, 1 at £162, 4 at £161, 7 at £160, 2 at £158, 2 at £157, 2 at £156, 2 at £155, 1 at £152, 1 at £151, 45 at £150, 5 at £145, 1 at £142, 2 at £141, 55 at £140, 1 at £136, 12 at £130 per annum, with free quarters or an allowance for rent.
174 Night Officers-in-charge—2 at £170, 10 at £150, 46 at £140, 96 at £130, 1 at £145, 17 at £120, 1 at £125, 1 at £110 per annum.
2 Porters-in-charge, at £130 per annum.
302 Clerks—1 at £430, 2 at £350, 2 at £300, 2 at £290, 4 at £275, 1 at £270, 1 at £260, 6 at £250, 3 at £240, 1 at £235, 2 at £230, 1 at £225, 3 at £220, 1 at £215, 3 at £210, 19 at £200, 22 at 180, 3 at £175, 2 at £170, 11 at £165, 5 at £160, 1 at £155, 27 at £150, 17 at £140, 1 at £136, 23 at £130, 2 at £125, 27 at £120, 1 at £115, 10 at £110, 12 at £100, 2 at £95, 7 at £90, 9 at £80, 16 at £70, 1 at £65, 4 at £60, 11 at £50, 21 at £40, 15 at £30 per annum.
25 Operators—1 at £125, 3 at £120, 1 at £110, 2 at £100, 1 at £95, 2 at £90, 12 at £80, 2 at £70, 1 at £50 per annum.
6 Miscellaneous, General—1 at £164, 1 at £146, 1 at £150, 1 at £90, 1 at £13, 1 at £5 per annum.

887

* Allowed £100 per annum as Staff Committeeman.

† One Out-door Superintendent allowed £100 per annum as Staff Committeeman.

The salaries shown against the Station Officers include the allowances made by the Post Office Department for postal duties in those cases where performed.

ELECTRICAL ENGINEER'S BRANCH.

1 Electrical Engineer, at £800 per annum.
3 Inspectors—1 at £270, 1 at £220, 1 at £200 per annum.
5 Electric Assistants—1 at £185, 2 at £180, 2 at £160 per annum.
51 Operators—1 at £200, 3 at £180, 1 at £165, 2 at £160, 3 at £150, 2 at £140, 1 at £136, 1 at £135, 7 at £130, 5 at £120, 7 at £110, 2 at £100, 1 at £95, 2 at £90, 12 at £80, 1 at £40 per annum.
9 Clerks—1 at £200, 1 at £150, 1 at £130, 1 at £110, 1 at £80, 4 at £30 per annum.
1 Storeman, at £90 per annum.

70

957

TRAFFIC BRANCH.

(Wages Staff, including Electrical Engineer's Branch.)

293 Guards—6 at 12s., 35 at 11s., 97 at 10s. 6d., 81 at 10s., 23 at 9s. 6d., 37 at 9s., 12 at 8s. 6d., 2 at 7s. 6d. per diem.
71 Assistant Guards—70 at 8s. 6d., 1 at 8s. per diem.
682 Porters—7 at 10s., 1 at 9s. 6d., 9 at 9s., 8 at 8s. 6d., 75 at 8s., 113 at 7s. 6d., 438 at 7s., 12 at 6s. 6d., 14 at 6s. per diem, 4 at 45s., 1 at 40s. per week.
342 Junior Porters—150 at 5s., 92 at 4s. 2d., 58 at 3s. 4d., 41 at 2s. 6d., 1 at 1s. 8d. per diem.
192 Signalmen—10 at 11s. 6d., 26 at 11s., 3 at 10s. 6d., 24 at 10s., 12 at 9s. 6d., 1 at 9s. 2d., 3 at 9s., 88 at 8s. 6d., 17 at 8s., 7 at 7s. 6d., 1 at 7s. per diem.
161 Shunters—1 at 10s. 6d., 2 at 10s., 12 at 9s., 16 at 8s. 6d., 13 at 8s., 106 at 7s. 6d., 11 at 7s. per diem.
12 Messengers—1 at 8s., 1 at 7s. 6d., 2 at 7s., 3 at 5s., 2 at 1s. 2d., 3 at 3s. 4d.
19 Telephone Boys—1 at 5s., 1 at 4s. 2d., 4 at 3s. 4d., 7 at 2s. 6d. per diem, and 6 at 10s. per week.
19 Barrack Attendants—2 at 35s., 1 at 34s., 1 at 30s., 4 at 25s., 1 at 22s. 6d., 4 at 20s., 2 at 15s., 1 at 13s., 1 at 12s., 1 at 7s. 6d., 1 at 5s. 7d. per week.
17 Conductors—1 at 8s. 6d., 7 at 7s. 6d., 6 at 7s., 2 at 5s., 1 at 3s. 4d. per diem.
4 Platform Inspectors at 12s. per diem.
19 Foremen—2 at 12s., 1 at 11s. 6d., 6 at 11s., 4 at 10s. 6d., 2 at 10s., 1 at 9s. 6d., 1 at 8s. 6d., 2 at 8s. per diem.
26 Ticket Collectors—1 at 10s., 1 at 9s., 1 at 8s. 6d., 9 at 8s., 6 at 7s. 6d., 6 at 7s., 1 at 6s. 6d., 1 at 4s. 2d. per diem.
6 Lamp Trimmers—2 at 8s., 2 at 7s. 6d., 2 at 7s. per diem.
5 Attendants, Ladies Waiting-rooms—3 at 4s. 2d. per diem; 1 at 30s., 1 at 25s. per week.
32 Probationers at 2s. 6d. per week.
20 Clerks—1 at 8s., 5 at 7s., 3 at 5s., 4 at 4s. 2d., 7 at 2s. 6d. per diem.
42 Miscellaneous—1 at 12s. 4d., 1 at 12s., 1 at 11s., 5 at 10s., 1 at 9s., 1 at 8s., 6 at 7s. 6d., 9 at 7s., 1 at 6s. 6d., 1 at 5s., 1 at 4s. 2d., 2 at 2s. 6d., 1 at 2s., 1 at 1s. 8d. per diem; 3 at 45s., 1 at 30s., 1 at 25s., 2 at 12s. 6d., 1 at 10s., 1 at 50s., 1 at 10s. per week.
442 *Gatekeepers—1 at 7s. 6d., 18 at 7s., 3 at 6s., 5 at 2s. 6d. per diem; 1 at 45s., 2 at 42s., 1 at 35s., 31 at 30s., 6 at 25s., 6 at 20s., 1 at 17s., 46 at 15s., 3 at 12s. 6d., 1 at 12s., 56 at 10s., 1 at 9s., 34 at 7s. 6d., 192 at 7s., 26 at 5s., 1 at 3s., 7 at 2s. 6d. per week.

2,404

* All gatekeepers paid less than 7s. per week have a cottage provided free of rent.

ELECTRICAL ENGINEER'S BRANCH.

(Wages Staff.)

1 Cleaner at 5s. 6d. per diem.
7 Electric Light Enginemen—2 at 10s., 1 at 9s., 2 at 8s. 8d., 2 at 8s. 6d. per diem.
15 Fitters—2 at 10s., 3 at 9s., 3 at 8s., 1 at 7s. 6d., 4 at 7s., 2 at 6s. per diem.
9 Junior Fitters—1 at 3s. 4d., 4 at 3s., 4 at 2s. 6d per diem.
5 Messengers—1 at 5s., 1 at 4s. 2d., 1 at 3s. 4d. per diem; 2 at 10s. per week.
1 Operator at 8s. per diem.
14 Probationers at 2s. 6d. per week.
2 Miscellaneous—1 at 12s., 1 at 11s. per diem.

54

2,458

INTERLOCKING BRANCH.

(Salaried Staff.)

1 Interlocking Engineer, at £500 per annum.
4 Draftsmen—1 at £300, 1 at £280, 1 at £220, 1 at £130 per annum.
4 Inspectors—1 at £275, 1 at £265, 2 at £250 per annum.
9 Clerks—1 at £165, 1 at £150, 1 at £110, 1 at £100, 1 at £70, 1 at £60, 2 at £50, 1 at £40 per annum.
1 General Foreman, at £275 per annum.
1 Timekeeper, at £160 per annum.

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(Wages

INTERLOCKING BRANCH—*continued.*

(*Wages Staff*)

18 Smiths—1 at 13s 4d., 1 at 11s. 8d., 1 at 11s. 6d., 3 at 11s. 2d., 3 at 11s., 4 at 10s. 8d., 2 at 10s. 6d., 1 at 10s. 4d., 2 at 10s. per diem.
18 Strikers—17 at 7s. 6d., 1 at 6s. 6d. per diem.
7 Apprentices—1 at 3s., 3 at 2s., 2 at 1s. 3d., 1 at 10d. per diem.
29 Signal-fitters—1 at 13s., 1 at 11s. 8d., 1 at 11s., 4 at 10s. 8d , 6 at 10s., 3 at 9s., 4 at 8s. 6d., 9 at 8s. per diem.
9 Drillers—1 at 8s. 8d., 3 at 8s. 2d., 1 at 8s., 4 at 7s. 6d. per diem.
4 Turners—1 at 11s. 8d., 2 at 10s. 8d., 1 at 10s. per diem.
5 Tin-smiths—1 at 11s. 8d., 1 at 10s. 8d., 2 at 10s., 1 at 9s. 6d. per diem.
4 Improvers—3 at 8s., 1 at 6s. 6d. per diem.
17 Carpenters—1 at 12s., 3 at 11s., 2 at 10s. 6d., 10 at 10s., 1 at 9s. per diem
18 Miscellaneous trades—1 at 10s. 8d., 1 at 10s. 6d., 4 at 10s., 1 at 9s. 2d., 4 at 9s., 1 at 8s. 8d., 3 at 8s. 6d., 3 at 8s. per diem.
1 Foreman at 13s. per diem.
45 Labourers—1 at 9s., 2 at 8s., 31 at 7s. 6d., 11 at 7s. per diem.
9 Boys—2 at 5s., 1 at 4s., 6 at 2s. 6d. per diem.

184

GENERAL STAFF.

1 *Medical Officer, £900 per annum.
1 Railway Solicitor, £900 per annum.
1 Articled Clerk, £36 per annum.
1 Messenger, 5s. per diem.
1 Estate and Property Agent, £650 per annum.
1 Clerk, £145 per annum.
1 Surveyor, £250 per annum.
1 Apprentice Clerk, £30 per annum.
1 Advertising Clerk, £150 per annum.
1 Secretary to Ambulance Corps, £200 per annum.
1 Ticket-printing Clerk, £185 per annum.

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*£130 allowed for office accommodation, which ceases on 31st May.
£100 per annum allowed for ambulance duties

(*Wages Staff.*)

2 Labourers—1 at 7s. 1 at 6s. per diem.
4 Messengers—2 at 8s., 1 at 6s., per diem ; 1 at 48s per week.
4 Office-cleaners—1 at 27s., 1 at 20s., 1 at 14s. per week ; 1 at 3s. per diem, and £25 per annum in lieu of quarters.
1 Attendant at 3s per diem.

11

TRAMWAYS.

LOCOMOTIVE BRANCH.

(*Salaried Staff.*)

1 Locomotive Superintendent, £700 per annum.
1 Chief Clerk, £375 per annum.
5 Foremen—2 at £320, 1 at £300, 1 at £270, 1 at £265 per annum.
1 Locomotive Officer-in-charge, £275 per annum.
1 Travelling Inspector, £265 per annum.
4 Timekeepers—1 at £225, 1 at £205, 1 at £165, 1 at £130 per annum.
1 Draftsman, £130 per annum.
4 Clerks—1 at £220, 1 at £190, 1 at £150 per annum.
3 Apprentice Clerks—1 at £50, 2 at £40 per annum.

21

(*Wages Staff.*)

144 Drivers—14 at 14s., 65 at 13s., 20 at 12s , 45 at 11s. per diem.
5 Drivers (Stationary Engine)—2 at 10s. 6d., 1 at 9s., 1 at 8s., 1 at 7s. 6d. per diem.
140 Firemen—31 at 9s., 74 at 8s., 35 at 7s. 6d per diem.
79 Cleaners—2 at 11s., 4 at 7s. 6d , 14 at 6s 6d., 34 at 6s., 22 at 5s. 6d., 3 at 4s. 6d. per diem.
18 Fuelmen—17 at 7s , 1 at 6s 6d. per diem.
12 Blacksmiths—1 at 12s. 4d., 1 at 12s. 2d., 1 at 12s., 1 at 11s. 6d., 1 at 11s. 4d., 2 at 11s., 2 at 10s. 8d., 1 at 10s. 4d., 2 at 10s. per diem.
14 Strikers—13 at 7s. 6d., 1 at 7s. per diem
12 Boilermakers—1 at 11s., 1 at 10s. 8d., 2 at 10s. 4d., 7 at 10s., 1 at 9s. 4d. per diem.
52 Fitters—5 at 13s., 1 at 11s. 6d , 1 at 11s. 4d , 1 at 11s., 2 at 10s. 6d., 21 at 10s. 2d., 13 at 10s., 2 at 9s. 4d., 3 at 8s., 1 at 7s 6d , 2 at 7s. per diem.
14 Machinists—2 at 10s. 2d., 1 at 9s. 8d., 1 at 9s. 4d., 5 at 8s. 8d., 3 at 8s. 6d., 1 at 8s 4d., 1 at 8s. per diem.

7

LOCOMOTIVE BRANCH—*continued.*

(*Wages Staff*)—*continued.*

4 Plumbers—1 at 11s. 8d., 1 at 11s. 4d., 1 at 10s. 8d., 1 at 9s. 6d. per diem.
18 Turners—1 at 11s. 8d., 1 at 11s. 2d., 1 at 11s., 1 at 10s. 8d., 2 at 10s. 6d., 1 at 10s. 4d., 5 at 10s. 2d., 6 at 10s. per diem.
4 Tinsmiths—2 at 10s. 8d., 2 at 10s. per diem.
17 Apprentices—1 at 5s., 1 at 3s., 2 at 2s., 5 at 1s. 3d., 8 at 10d. per diem.
12 Shop Boys—2 at 4s., 2 at 3s., 2 as 2s. 6d., 2 at 2s. 3d., 2 at 2s., 2 at 1s. 9d. per diem.
9 Car Builders—4 at 11s., 3 at 10s. 6d., 2 at 10s. per diem.
8 Carpenters—3 at 10s., 1 at 9s. 8d., 2 at 9s. 4d., 2 at 9s. per diem.
10 Painters—1 at 12s., 4 at 10s., 1 at 9s. 8d., 1 at 9s. 6d., 3 at 8s. per diem.
6 Painter's Assistants—3 at 7s. 6d., 1 at 7s., 2 at 6s. 6d. per diem.
11 Car Lifters—10 at 8s. 6d., 1 at 8s. per diem.
3 Car Fitters—1 at 11s. 2d., 1 at 10s. 2d., 1 at 9s 4d. per diem.
8 Gripmen at 8s. per diem.
4 Oilers—3 at 7s., 1 at 4s. per diem.
7 Lamp Trimmers—6 at 7s, 1 at 4s. per diem.
60 Labourers—2 at 8s, 5 at 7s. 6d., 43 at 7s., 8 at 6s. 6d, 1 at 4s., 1 at 3s. per diem.
10 Miscellaneous trades—1 at 12s. 6d., 2 at 11s., 2 at 10s., 1 at 9s. 6d., 1 at 9s., 1 at 8s. 6d., 2 at 8s. per diem.
9 Miscellaneous, General—1 at 11s., 1 at 8s. 6d, 3 at 8s., 1 at 7s. 6d., 1 at 7s. per diem, 1 at 15s., 1 at 10s. per week.

690

TRAFFIC BRANCH.

(*Salaried Staff.*)

1 Manager at £700 (allowed £52 Sundays, and £100 house rent) per annum.
1 Assistant Manager at £400 (allowed £41 10s. Sundays) per annum.
1 Chief Clerk at £260 per annum.
1 Timekeeper at £220 per annum.
9 Clerks—1 at £220, 1 at £180, 1 at £150, 2 at £140, 1 at £135, 1 at £70 per annum, 1 at 8s., 1 at 7s. 6d. per day.
1 Messenger at £83 per annum.

14

(*Wages Staff.*)

185 Conductors—83 at 9s., 8 at 8s. 6d., 35 at 8s., 18 at 7s., 5 at 6s. 6d., 17 at 6s., 6 at 5s. 6d., 13 at 5s. per diem.
28 Car-cleaners—1 at 9s., 17 at 7s., 8 at 6s. 6d., 2 at 5s. per diem.
1 Clerk at 9s. per diem.
4 Foremen—2 at 12s., 2 at 11s. per diem.
19 Flagmen—1 at 7s. 6d., 18 at 7s. per diem.
7 Inspectors—1 at 91s. per week, 1 at 15s., 1 at 14s., 2 at 12s., 1 at 11s., 1 at 10s. per diem.
3 Point-cleaners—1 at 9s., 1 at 7s, 1 at 5s. per diem.
16 Pointsmen—6 at 8s., 9 at 7s. 6d, 1 at 7s. per diem.
4 Shunters—2 at 10s., 1 at 9s. 6d., 1 at 8s. 6d., per diem.
9 Staffmen—At 9s. per diem.
4 Ticket-sellers—1 at 5s., 1 at 3s. 4d. per diem, 2 at 20s. per week.
5 Miscellaneous "General"—1 at 7s. 6d., 2 at 7s. per diem, 1 at 20s., 1 at 19s. per week.

285

PERMANENT-WAY BRANCH.

(*Salaried Staff.*)

1 Engineer at £425 per annum.
2 Inspectors, 1 at £250, 1 at £200 per annum.
1 Clerk and Timekeeper at £205 per annum.
1 Draftsman at £150 per annum.
1 Apprentice Clerk at £40 per annum.

6

(*Wages Staff.*)

135 Labourers—1 at 8s. 6d., 98 at 7s. 6d., 34 at 7s., 2 at 6s. 6d. per diem.
19 Gangers—1 at 12s., 1 at 10s., 14 at 9s., 3 at 8s. 6d. per diem.
20 Men (horse and dray) at 12s. per diem.
5 Boys—1 at 5s, 2 at 4s., 1 at 3s., 1 at 2s. per diem.
3 Artisans—1 at 11s., 1 at 10s. 8d., 1 at 10s.
7 Miscellaneous "General"—1 at 9s 6d., 1 at 8s. 6d., 1 at 7s 6d., 2 at 6s. 6d., 1 at 3s. 4d. per diem, 1 at 10s. per week.

189

STORE

STORE BRANCH.

(*Salaried Staff.*)

1 Clerk at £200 per annum.
2 Apprentice Clerks—1 at £40, 1 at £30 per annum.

3

(*Wages Staff.*)

1 Storeman at 8s. 6d. per diem.

STATEMENT of the number of Persons employed on the Railways in April, 1893.

Branch.	No.
Commissioners and Secretary's Office	22
Chief Accountant's Branch	43
Traffic Auditor's Branch	68
Stores Branch—Salaried Staff	26
Wages Staff	32
Permanent-way Branch—Salaried Staff	112
Wages Staff	2,395
Locomotive Branch—Salaried Staff	159
Wages Staff	3,421
Traffic Branch (including Electrical)—Salaried Staff	957
Wages Staff	2,458
Interlocking Branch—Salaried Staff	20
Wages	184
General—Salaried Staff	11
Wages Staff	11
Total, Salaried Staff	1,418
Total, Wages Staff	8,501
Grand Total	9,919

A large number of persons are included in this return as Salaried Officers whose positions were formerly paid through the Wages lists. Grades, such as Officers in charge of Stations, Night-officers, Foremen, Sub-Inspectors, &c., being principally affected.

STATEMENT of the number of Persons employed on the Tramways in April, 1893.

Branch.	No.
Locomotive Branch—Salaried Staff	21
Wages Staff	690
Traffic Branch—Salaried Staff	14
Wages Staff	285
Maintenance Branch—Salaried Staff	6
Wages Staff	189
Stores Branch—Salaried Staff	3
Wages Staff	1
Total, Salaried Staff	44
Total, Wages Staff	1,165
Grand Total	1,209

SUMMARY.

Railways	9,919
Tramways	1,209
Grand Total	11,128

Sydney: Charles Potter, Government Printer.—1893.

[6d.]

1892–3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

MEN ENGAGED AT DARLING HARBOUR DURING WOOL SEASON.

(RETURN SHOWING.)

Ordered by the Legislative Assembly to be printed, 7 March, 1893.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 18th January, 1893, That there be laid upon the Table of this House,—

"(1.) The number of men engaged at Darling Harbour, and the wages paid "in connection with the unsheeting, unloading, and loading of wool, for the "months of October, November, and December, 1891.

"(2.) The like information for the same months in 1892."

(*Mr. Wright.*)

RETURN showing the number of men engaged at Darling Harbour, and the amounts and wages paid in connection with the unsheeting, unloading, and loading of wool, for the six months ending 31st December, 1891 and 1892.

Month.	1891.			1892.				
	Average number of men employed.	Wages paid.	Bales of wool delivered.	Average number of men employed unsheeting and for Railway purposes.	Wages paid for unsheeting the trucks.	Paid under the contract for loading and unloading.	Total paid.	Bales of wool delivered.
		£ s. d.			£ s. d.	£ s. d.	£ s. d.	
July ...	2	18 8 0	1,226	2	19 10 0	12 5 2	31 15 2	3,914
August ...	12	99 13 10	6,657	5	40 0 0	60 7 3	100 7 3	19,294
September..	45	358 18 5	37,991	8	69 2 4	169 6 1	238 8 5	54,670
October ...	60	488 16 5	93,008	15	129 0 3	266 13 6	395 13 9	87,241
November..	89	738 13 1	133,838	16	141 9 5	393 19 5	535 8 10	127,167
December...	60	499 16 8	110,564	16	140 6 10	327 0 9	467 7 7	104,879
Totals ...	...	2,204 6 5	383,284	.....	539 8 10	1,229 12 2	1,769 1 0	397,165

NOTE.—In order to make the return more complete, the information has been compiled for the half-years ending December 1891 and 1892.

1892-3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

RAILWAYS.

(LETTER FROM SECRETARY FOR RAILWAYS TO UNDER SECRETARY FOR FINANCE AND TRADE, RESPECTING LAVATORY ACCOMMODATION IN SECOND-CLASS CARRIAGES.)

Ordered by the Legislative Assembly to be printed, 21 *March*, 1893.

The Secretary for Railways to The Under Secretary for Finance and Trade.

Government Railways of New South Wales,
Secretary's Office, Sydney, 21 March, 1893.

Sir,

With reference to the question, without notice, asked in the House, relative to lavatory accommodation on 2nd-class carriages, I am directed to inform you that the Railway Commissioners, since they have been in office, have done much to improve the accommodation for 2nd-class passengers. A better description of carriage has been provided, the room being increased nearly 40 per cent., and, in addition, lavatory accommodation for 2nd-class passengers is provided on all main line brake-vans. No new 2nd-class carriages have been built since the matter was discussed in Parliament on the 24th November, 1891, nor are there funds available for additional rolling-stock, but when the construction of new additional vehicles is under question the matter will have careful consideration.

I have, &c.,
H. McLACHLAN,
Secretary.

[3d.] 793—

1892.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND IN CONNECTION WITH THE DUPLICATION OF THE RAILWAY BETWEEN MENANGLE AND CAMPBELLTOWN.)

Presented to Parliament, pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND FOR RAILWAY PURPOSES UNDER THE PUBLIC WORKS ACT OF 1888.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

WHEREAS the Railway Commissioners of New South Wales, are desirous of acquiring the land referred to in the Schedule hereto for the purpose of the partial duplication of the Great Southern Railway between Campbelltown and Menangle Stations, on the line aforesaid, which work appears to the Commissioners necessary, and is such work as the Railway Commissioners are authorised to carry out pursuant to the "Government Railways Act of 1888," and it is estimated that the cost of completing such work will not exceed the sum of twenty thousand pounds: And whereas the said land is, in my opinion, required for carrying out the said work: Now, therefore, I, the Governor aforesaid, with the advice of the Executive Council, in pursuance of the "Public Works Act of 1888," do hereby direct that the said work shall be carried out under the "Public Works Act of 1888" by the said Railway Commissioners, who, in respect to the said work, I hereby declare shall be deemed to be the Constructing Authority: And in further pursuance of the provisions of the said Act, I do hereby direct that the said land may be acquired and taken for the purposes aforesaid under the "Lands for Public Purposes Acquisition Act"; and I do declare by this notification, to be published in the Gazette, and in one or more newspapers published or circulated in the Police District wherein the said land is situated, that the said land described in the Schedule hereto has been resumed for the public purpose hereinbefore expressed, that is to say,—the partial duplication of the Great Southern Railway as before stated, to the intent that upon the publication of this notification in the Gazette, the said land described in the Schedule hereto shall forthwith be vested in the said Constructing Authority on behalf of Her Majesty for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever, and to the intent that the legal estate therein, together with all powers incident thereto, or conferred by that Act, shall be vested in such authority as a Trustee: And I declare that the following is the Schedule of land hereinbefore referred to:—

SCHEDULE.

All that piece or parcel of land situated in the parish of St. Peters, county of Cumberland, and Colony of New South Wales: Commencing at a point on the southern boundary of the railway line between Campbelltown and Menangle, opposite 35 miles 30 chains; and bounded towards the south by lines bearing south-westerly 292 links and 397 links respectively to the railway boundary; and thence towards the north by the aforesaid boundary, being lines bearing north-easterly 295$\frac{5}{10}$ links, 299 links, and 195$\frac{5}{10}$ links, to the point of commencement, containing 9 perches or thereabouts, and numbered 7a on the working plan.

Again commencing at a point on the railway boundary aforesaid opposite 35 miles 38 chains; and bounded towards the south by a line bearing south-westerly 580 links to the railway boundary aforesaid; and thence towards the north by the aforesaid boundary, being lines bearing north-easterly 285$\frac{5}{10}$ links and 295$\frac{5}{10}$ links, to the point of commencement, containing 9 perches or thereabouts, and numbered 7b on the working plan.

Again commencing at a point on the railway boundary aforesaid opposite the 35 miles 46 chains; and bounded towards the south by a line bearing south-westerly 600 links to the railway boundary aforesaid; and thence towards the north by that boundary, being lines bearing north-easterly 204$\frac{5}{10}$ links and 396$\frac{3}{10}$ links, to the point of commencement, and containing 7$\frac{3}{4}$ perches or thereabouts, and numbered 7c on the working plan,—which several pieces of land make a total area of 25$\frac{3}{4}$ perches or thereabouts, and are supposed to be the property of one Miss Jessie Barber.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this twenty-fourth day of June, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

JOHN SEE.

GOD SAVE THE QUEEN!

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

ELECTRIC TRAMWAY, RANDWICK TO WAVERLEY.

(RETURN IN CONNECTION WITH THE COST OF WORKING THE.)

Ordered by the Legislative Assembly to be printed, 4 October, 1892.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 23rd March, 1892, That there be laid upon the Table of this House a Return showing,—

"(1.) The original cost of the whole of the workings in connection with "the electric tram system, Randwick to Waverley.

"(2.) The amount expended on repairs during the time that the system "has been in vogue on this line.

"(3.) The relative cost of working, as compared with the locomotive "system, if the latter were adopted on this line.

"(4.) What speed the electric tram can be regulated to travel at with "safety to the passengers.

"(5.) How many men are now engaged in connection with the present "system, and what quantity of fuel is consumed per day.

"(6.) How many men would be required to work the locomotive system, "and what quantity of fuel would be consumed."

(*Mr. Neild.*)

RETURN of the cost of working the Electric Tramway between Randwick and Waverley :—

(1.) £10,110 17s. 3d.

(2.) £954 1s.

(3.) Electric, per annum £2,909; steam, per annum £2,302.

(4.) Up to 15 miles per hour.

(5.) Ten men ; consumption of fuel per day, 2 tons 18 cwt. 2 qr. 15 lb.

(6.) Seven men ; consumption of fuel per day, 13 cwt. 1 qr.

[3*d.*] 248—

[882 copies—Approximate Cost of Printing (labour and material), £1 2s. 5d.]

1892–3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

YASS TRAMWAY.

(RETURN RESPECTING.)

Ordered by the Legislative Assembly to be printed, 12 *June*, 1893.

[*Laid upon the Table of this House in answer to Question No.* 1, *of* 19 *May*, 1893.]

Question.

1. MR. HOUGHTON *asked* THE COLONIAL TREASURER,—
   (1.) How long has the tramway from the town of Yass to the main line been opened to the public for traffic?
   (2.) What is the length of such line?
   3.) What is the average number of paying passengers, and the amount received therefrom per week?
   4.) What is the average amount received for the carriage of goods per week?
   (5.) What are the working expenses per week, and the interest on cost of construction?
   (6.) What is the estimated loss per annum on this line?

Answer.

(1.) Since the 20th April, 1892.
(2.) 2 miles 73 chains.
(3.) Average number of paying passengers per week, 173; amount received therefrom, £5 17s.
(4.) Average amount received per week for the carriage of goods, £8 10s. 4d.
(5.) Working expenses per week, calculated on the total working expenditure since the line was opened, £27 10s. 11d.; interest on cost of construction per week, £20 3s. 3d.
(6.) Estimated loss per annum, including interest on capital, £1,654 14s. 11d.

[3*d*.] 1022—

1892.

NEW SOUTH WALES.

FOURTH ANNUAL REPORT

OF THE

METROPOLITAN

BOARD OF WATER SUPPLY AND SEWERAGE,

BEING FOR THE YEAR

1891.

Presented to Parliament by Command.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1892.

[2s 6d.] 138—A

[1,153 copies—Approximate cost of Printing (labour and material), £150 6s. 5d.]

1892.

NEW SOUTH WALES.

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE.

(ANNUAL REPORT FOR 1891.)

Presented to Parliament by Command.

To the Honorable the Secretary for Public Works,—

Sir, 21 March, 1892.

The Board of Water Supply and Sewerage have the honor to submit to you their fourth annual Report.

WATER.

1. During the past year the average daily consumption of water has increased from 8,486,000 gallons to 9,540,000 gallons, and from 24·70 to 26·11 gallons per head of estimated population, which may be accounted for by difference in rainfall.

2. 102 miles of pipes have been laid, in sizes varying from 42 in. to 3 in. 550 screw-down hydrants and 6,458 ball hydrants fixed, and nearly 27 miles of pipes cleaned, making their capacity equal to new. It is satisfactory to be able to report that all the old-fashioned fire plugs in the city have been removed, and replaced by either screw-down or ball hydrants.

3. A 36-in. cast-iron rising main was laid from Crown-street to Paddington Reservoir to take the place of the old system of partly 30-in. and partly 20-in. mains. There was also laid a 24¾-in. wrought-iron rising main from Crown-street to Woollahra Reservoir in place of the old combination of 30-in. and 20-in. mains; these pipes were made by Messrs. Hoskins Bros. of this city, and have given every satisfaction.

4. The supply to all districts has been greatly improved, though some difficulty was experienced in giving a good supply to the heights of Balmain; this was eventually overcome at the end of the year by extending a branch of the Ryde and Hunter's Hill Scheme across the Parramatta River to Balmain. The district of Hurstville was supplied by means of a gas engine fixed near Carlton Railway Station, to pump the water to a 20,000-gallon tank at Penshurst. This engine is capable of pumping 8,000 gallons per hour, but as this locality seems to be a very progressive one it is contemplated to supplement it by moving the small Blake engine, which has until lately been pumping the water to higher levels of North Shore. The two 20,000-gallon tanks erected near St. Thomas' Church, North Shore, will be removed to Waverley to supply some houses which are too elevated to be supplied from the Waverley Reservoir.

5. The second Worthington engine mentioned in our last report as having been ordered, for the purpose of pumping the water to Woollahra and Waverley Reservoirs, was erected and started, and it has worked with the same smoothness of action as the first Worthington engine the Board erected, which pumps to Paddington.

6. The consumption of coal to work performed during the year has shown a great difference to that of the previous year. In 1890, 451 gallons per lb. of coal were pumped to Paddington Reservoir as against 623 gallons in 1891. This is by the Worthington engine and the difference is caused by the engines having a 36-in. main to pump through instead of the combination of 30-in. and 20-in. mains alluded to above. The work performed by the Tangye engines with the same boilers (Babcock and Wilcox) was, in 1890, 118 gallons per lb. of coal, and in 1891, 97 gallons; the consumption of coal by these engines may be pronounced to be enormous.

7. There were 59,501 taps and fittings tested and stamped during the year, 5,146 proved defective and 905 were condemned altogether, or 10 per cent. of the whole amount; the charge for the testing of which is 2d. There were 959 new meters connected and 510 disconnected, making an increase for the year of 449. The total number of meters on the Board's mains on December 31st, 1891, was 4,237.

8. During the year a contract was let to Messrs. Burns, Philp, & Co. for 6,843 tons of pipes and 300 tons of castings, total 7,143 tons, the former at the rate of £6 1s. 9d. per ton, and the castings at £9 9s. 9d. per ton, delivered in the Board's depôts in Sydney. The whole quantity was to be delivered in three shipments, and the first ship was to (and did) arrive in January, 1892.

9. The Government handed over the 100 million-gallon balance reservoir at Pott's Hill on December 19, the completion of which has removed one element of danger of the City being deprived of water through any accident to the canal or pipes from Prospect to Pott's Hill; the remaining element of danger, the want of a second pipe line from Pott's Hill to Crown-street, is fast being removed by the pushing on of the contract of laying the 4-ft. pipes in the ground, which it is expected will be completed by next winter. The pipes are already laid on the surface the whole distance, which consists of $5\frac{2}{5}$ miles of wrought iron, and $6\frac{3}{4}$ miles of cast iron.

Liverpool.

10. During the year the town of Liverpool was supplied with water at a cost, together with reticulation, of £11,459. A small dam is being constructed at the take-off from the canal, to hold sufficient water to supply the town during such time as the canal may be emptied for cleansing purposes.

Campbelltown.

11. It is satisfactory to be able to report that the revenue from Campbelltown is on the increase, as the following table will show:—

Year.	Revenue.	Expenditure.			Percentage of Net Revenue on Capital.
		Loans during the year.	Total Loans.	Maintenance.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1889	128 18 0	2,174 15 11	2,174 15 11	95 8 0	1·5
1890	346 16 0	2,178 0 2	4,352 16 1	140 17 0	4·7
1891	408 15 0	79 14 2	4,432 10 3	140 17 0	6·04

It must be borne in mind that no expenses are charged to this account beyond the turncock's wages; nor does the capital debt of Campbelltown or Liverpool include any expenditure beyond the actual amount expended in constructing the works from the canal to the towns mentioned and the reticulation thereof to date.

12. For some time past the Board have had under their consideration the alteration of the charge per meter, viz., 1s. 6d. per 1,000 gallons, and as they found on inquiry that this charge per meter was out of all proportion to the charge per assessment, viz., 6d. in the pound with a sliding scale to 2d., they decided to reduce it to 1s. per 1,000 gallons, such charge to come into operation on the 1st January, 1892. The immediate result of this charge will be of course a reduction in the revenue, but it is expected that the increased consumption, consequent on the lowering of the rate, will at no distant date equal the revenue derived by the old charge; on the other hand the change will be a great boon to the Railway Commissioners, manufacturers, and other large consumers of water.

SEWERAGE.

13. During the past year 21½ miles of stoneware sewers were laid by the Board of sizes varying from 24 in. to 6 in. in diameter, and the total amount of sewers and storm water drains constructed by the Government and transferred to the Board during the past year is 5·29 miles. The total length of sewers and storm water drains under the Board's control, and being maintained by them, is 149·41 miles.

14. The number of houses connected to the sewers by the owners was 3,855, and the number connected by the Board under the compulsory clause of the Act was 264, making a grand total of 4,119. This brings the total number of houses in city and suburbs connected to the sewers to 26,884.

15. The Board found that the system of sewers transferred to them in the city were frequently laid at too shallow a depth to drain the cellars of ordinary buildings, causing a great deal of damage through backwatering when the sewers became surcharged through heavy downfalls of rain. To remedy this deep sewers have to be laid, and those already commenced and nearly completed are in George, Pitt, Market, and King Streets. This has greatly enhanced the value of property in those streets, as it enables very much deeper cellarage and higher buildings to be built, and has already been taken advantage of to a great extent.

16. The Sewerage Engineer in his report draws particular attention "to the difficulty experienced by the Board in carrying out sewerage works in the suburbs owing to the manner in which the lands have been subdivided in the first instance." He also states that it is a matter of regret that a controlling authority does not exist for the purpose of checking the present unsatisfactory system of subdivision of residential areas.

17. A great deal of work has been done in repairing the old system of sewers, which will increase their efficiency and lengthen their life. The Tank Stream Sewer has been found to be in places in very bad repair; this will be taken in hand and thoroughly repaired. All the sewerage from the district south of Martin-place, which formerly flowed into this sewer, is now intercepted and carried to Bondi.

18. The attention of Municipal Councils should be drawn to greater improvements which could be effected by them in the provision of gullies to conduct storm water from roads and streets into the drains. A great part of the flooding of premises which has recently occurred has been caused by the fact that there are not sufficient gullies connected to the storm-water drains, and in others to the gullies being

being choked by debris, thus rendering them useless. A great deal of the complaints of sewers in the city being surcharged, and the water from them being forced up through the sinks in yards and basements, has been caused by gullies being connected to the sewers, without any regard to their size and discharging capacity. The combined system, as carried out in the past in the city, has not proved a success, and the Board trust that in a few years the new system of sewers will have superseded the old, and the latter will then be utilised as storm water drains only.

19. The more inspection there is of the sanitary arrangements of old buildings in the city, the more glaring instances of danger to the health of the occupants through defective plumbing are revealed. The Sewerage Engineer mentions that "in one case the pipe from one block of houses was found to be in such a leaking condition that the sewage, instead of flowing into the main, passed from it into the neighbouring premises." With regard to this matter, and specially in relation to hotels, particular attention is drawn to that part of the Sewerage Engineer's report headed "Sanitary Plumbing," where instances are given of a state of things which is hardly conceivable.

20. Ventilation of the house and main sewers has, and is being made a strong feature in the Board's system. The system is the *vacuum-plenum*, and experiments as to its efficiency were carried out on a length of sewers of 990 ft., extending over a period of four months, the result of which showed that the air was changed on an average of 235 times per hour, or every 25·5 minutes, the aerating effect being equal to 13·8 per cent. of the wind power. The total area traversed by sewers which have been ventilated is 1,667 acres, and the total length of pipe sewers so ventilated is 69·16 miles, of sizes varying from 24 inches to 6 inches in diameter. The length of brick and concrete sewers so dealt with is 4·67 miles of varying sizes.

21. The Board have to record the death of the late manager of the Sewage Farm, Mr. J. N. Oxley, whose position was filled by the appointment of Mr. W. Brooks as managing foreman. The income from sales of crops, &c., was £300 6s. 11d., as against £198 0s. 1d. for the previous year. The total area of cultivation plots available for irrigation has been increased to 38½ acres. During the year, 16 dry cows, 1 bull, and 6 pigs were purchased to consume the surplus crops that were unable to be sold. The whole of the stock are thriving, and the cost of feeding is nil. The analysis of the effluent water from the farm by Mr. Hamlet, Government Analytical Chemist, is attached, which is just as satisfactory as that of the previous year.

FINANCIAL.

Water.

22. With regard to the working of the Water Department, it is with feelings of pride and satisfaction that the Board report the result of their first quadrennial period, and draw particular attention to the following table :—

Year.	Revenue.	Working Expenses.	Capital Debt.	Percentage of Working Expenses to Revenue.	Percentage of Revenue on Capital Debt.	Interest on Capital Debt after the Paying Expenses.
	£	£	£			
1888	*69,938	19,205	3,004,557	27·46	2·32	1·68
1889	138,923	36,568	3,088,068	26·32	4·49	3·31
1890	145,990	34,788	3,189,080	23·82	4·57	3·48
1891	165,831	38,291	3,306,649	23·09	5·01	3·85

* This item is exclusive of £55,547 of arrears handed over by the City Council.

23. On the 12th May, 1888, the control of the waterworks was entrusted to the Board, and on that date a debt of £2,500,000 was handed over to them by the Government, and, at the same time, an item by the City Council of £55,547 of arrears to be collected.

24. Upon an examination of the table it will be seen that the revenue on capital has been gradually raised from 2·32 per cent. to 5·01 per cent., and when it is considered that the assessment rate of 6d. in the £, with a sliding scale of 2d., is one of the lowest, if not the lowest rate of any water company in any English speaking country, and that the present capital debt of the works is £3,306,650, the result may be considered to be good.

25. The percentage of working expenses to revenue shows a gradual yearly reduction from 27·46 to 23·09 per cent. This may likewise be considered good when it is understood that nearly 50 per cent. of the water consumed is pumped, and is favourable evidence of the careful organisation instituted and carried out by the Board in the interests of the ratepayers.

26. The true criterion of the Board's working is shown by the interest on capital debt after paying all working expenses. The first year's record is of no comparative value, but the table shows a steady advancement in subsequent years to 3·85 per cent. on a debt of £3,306,650.

27. There has been a very great improvement in the yearly workings of the Board shown in another way. In 1889 the revenue showed a debit balance against the total amount of annual expenses—which includes, besides working expenses, interest and depreciation on engines and plant—of £5,718 0s. 4d. In 1890 there was an improvement, the debit balance for that year being £1,319 15s. 7d., but in 1891 there was a credit balance of £11,676 10s. 11d.

28. The total amount paid to the Treasury over and above the amount expended in maintenance and management from May, 1888, to December 31st, 1891, is £430,244 and the amount of outstanding accounts to the credit of the Board is £26,799 7s. 2d.

29. In May, 1888, there were handed over to the Board 328 miles of reticulation pipes in the ground, which had been laid during a period extending over fifty years, and from the above date to December 31, 1891, there were 318 miles laid and 55 miles cleaned, which is nearly as much laid in three years and a half as was laid in all the years prior to the Board's control. The vigorous system pursued in laying this great quantity of pipes in so short a time no doubt receives its reward from the inward thanks of the ratepayers. The Board expect that during 1892 they will have reticulated, practically, the whole of the metropolitan area under their jurisdiction.

Sewerage.

30. The control of the sewerage was first exercised by the Board on 1st January, 1890, and the result of the working is shown in the following table:—

Year.	Revenue.	Working Expenses.	Capital Debt.	Percentage of Working Expenses to Revenue.	Percentage of Revenue on Capital Debt.	Interest on Capital Debt after paying Expenses.
	£	£	£			
1890	71,280*	22,249	1,281,045	31·21	5·56	3·82
1891	81,302	25,411	1,447,287	31·25	5·61	3·86

* This item is exclusive of £10,519 of arrears handed over by the City Council.

31. The percentage of working expenses to revenue shows a slight increase, but as the maintenance of sewers is always a very heavy item in sewerage works, it is satisfactory to record the above low percentage of 31·25.

32. The percentage of revenue on capital shows a slight improvement in 1891. The capital debt was increased from £1,281,045 in 1890 to £1,447,287 in 1891, and the revenue from £71,280 to £81,302. The interest on capital debt, after paying working expenses, is 3·86 per cent.

GENERAL.

33. It was found imperative to issue 6,210 summonses during the year for arrears of rates, being an increase of 1,950 over the number issued in 1890. Notwithstanding this, the amount outstanding in Water Rates, on December 31st was £26,028 4s. 2d., but of this amount the sum of £15,654 7s. 10d. is for meter accounts for the six months ending December 31st, which were, of course, not rendered until January, 1892. The amount owing by the Government was £2,544 9s. 7d.; for churches, £1,178 0s. 9d.; municipalities, £153 19s.; and for houses and vacant land was £5,698 18s. 6d.

34. The amount outstanding for sewerage was £11,544 17s. 1d. Of this amount there was owing by the Government £4,234 17s. 5d.; churches and charities, £408 14s.; municipalities, £228 12s. 8d.; and houses and vacant land, £3,427 18s. 9d.; and for compulsory drainage, £3,224 14s. 3d.

35. It is to be regretted that the finances are not yet in such a flourishing state as to allow some difference being made in favour of those who pay their rates within the time required, and to the detriment of those who oblige the Board to take legal and other proceedings to recover the rates owing by them. The latter section of the community cause a great deal of extra expense which is not included in the amount charged for costs, which in the case of summonses is only the amount that the Board have to pay into court before they can take them out.

36. During the past year stores to the value of £111,053 were received by the Comptroller of Stores, and £104,150 of stores were issued.

37. The tender of Mr. Peter Hill was accepted for the erection of the new offices on February 2, for the sum of £28,900, to be completed within eighteen months from that date. Mr. S. Hurst Seager, A.R.I.B.A., President of the Sydney Architectural Association, was appointed by the Board as architect to superintend the erection of the building. The foundation stone was laid by Mr. Bruce Smith, the then Secretary for Public Works, on July 20. The contractor has made good progress, notwithstanding the wet weather he has had to contend with, and the difficulty in obtaining bricks of a suitable colour.

38. The medical adviser to the Board, Dr. T. M. Kendall, reports the health of the employees of the Board during the past year to have been very good, considering the work that has to be performed in the old system of sewers. There were only three cases of sickness due to the effects of sewer gas. One of these presented the symptoms of typhoid fever, the other two were cases of sore throat. He states: "From the experience of these three cases, as representing the dangers offered to the health of their employees, the Board may truly congratulate themselves on the efficiency of the ventilation of the sewers."

39. Besides the meetings of the Board, to view the different works under their control, there have been fifty-eight meetings held at this office during the year, at which the attendance has been as follows :—

MEETINGS OF BOARD DURING 1891.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec			
Meetings held	5	5	6	4	4	5	4	4	5	5	5	6	58 Meetings.		
													Present.		Absent.
President	5	5	5	4	4	5	4	4	5	5	3	6	55	...	3
B. Palmer	5	5	6	4	4	5	4	4	4	5	4	6	56	...	2
R. R. P. Hickson ...	4	4	5	4	3	5	4	4	5	3	4	6	51	...	7
C. W. Darley	4	5	2	3	4	4	4	4	5	4	5	6	50	...	8
J. D. Young	4	5	6	4	4	5	4	3	5	5	5	6	56	...	2
G. W. Lander	4	4	5	3	4	4	4	4	5	4	4	6	51	...	7
J. Graham	5	5	4	4	4	5	4	4	5	5	3	6	54	...	4

40. Attached are the Reports from the Engineer for Water Supply and the Engineer for Sewerage, with diagrams, also the balance-sheet.

REGINALD BLOXSOME,
Secretary.

THOS. ROWE,
President.

APPENDIX.

APPENDIX.

Government Laboratory, Sydney.

Results of Analyses of Potable and Polluted Waters; by William M. Hamlet, Government Analyst.

Date.	Mark or Number of Sample	Description.	Expressed in Grains per Gallon.				Expressed in Parts per Million.				Examination for Organisms.	Appearance in the standard 2-foot Tube.	Poisonous Metals.	General observations on character of water.
			Total Solid Residue, dried at 220°.	Chlorine as Chlorides.	Nitrogen as Nitrates and Nitrites.	Phosphates from animal impurity.	Free Ammonia.	Albuminoid Ammonia.	Oxygen absorbed in 15 min.	Oxygen absorbed in 3 hours.				
1891.		Sydney Water Supply—												
21 Jan.		Crown-street Reservoir	6·16	2·5	Traces	None	None	·02	·36	·80	....	Clear	None	The quality of the Sydney supply is above the average, and equal to any water supply in the world. The results indicate a water of exceptional purity; such a water may be used for drinking purposes in the unfiltered state.
,,		Allison-road, Randwick	7·00	2·5	do	do	do	None	·25	·60	....	do	do	
,,		Prospect Reservoir Inlet	6·86	2·5	do	do	do	·07	·22	·65	....	do	do	
,,		do do head of canal	6·86	2·5	do	do	do	·07	·21	·63	....	do	do	
10 Feb.		Crown-street Reservoir	6·44	2·5	do	do	do	·10	·21	·52	....	Clear, but slightly peaty.	do	
,,		Allison-road, Randwick	6·60	2·5	do	do	do	·10	·21	·52	....	do	do	The details of these analyses call forth but little remark, the constancy of results plainly shows a water of uniform composition, the variant of greatest importance—the albuminoid ammonia—being somewhat higher than that of the previous month. The water comes under the second class, according to Wanklyn's classification- viz., that of a safe drinking water.
,,		Prospect Reservoir, near inlet	6·16	2·5	do	do	do	·10	·37	·77	....	do	do	
,,		Basin, head of canal, Prospect	6·86	2·5	do	do	do	·10	·32	·64	....	do	do	
,,		Pott's Hill Tank, No. 1 outside screens	6·02	2·5	do	do	do	·10	·32	·64	....	do	do	
,,		do do No. 2 inside screens	6·58	2·5	do	do	do	·10	·32	·64	....	do	do	
11 Mar.		Crown-street Reservoir	7·28	2·5	do	do	·06	·08	·31	·65	....	Clear	do	The dissolved matters in these waters is a little higher than usual, but the organic matter as revealed under the terms "free" and "albuminoid" ammonia is within the standard adopted, and is indicative of good wholesome drinking water.
,,		Allison-road, Randwick	7·28	2·5	do	do	·05	·10	·30	·68	....	do	do	
,,		Prospect Reservoir	7·14	2·5	do	do	·04	·08	·32	·65	....	do	do	
,,		Basin, head of canal	6·30	2·5	do	do	·02	·06	·19	·65	....	do	do	
9 April		Crown-street Reservoir	6·02	2·5	do	do	·08	·08	·32	·65	....	do	do	These samples of water, taken at the beginning of month from different points on the service, have been examined, and were found to maintain their high standard of quality. The appearance of the water was clear and bright, tinged in a slight degree with peat derived from the water shed from whence the water is collected.
,,		Allison-road, Randwick	6·30	2·5	do	do	None	·08	·32	·65	....	do	do	
,,		Prospect Reservoir	6·44	2·5	do	do	do	·10	·36	·72	....	do	do	
,,		Basin, head of canal, P. R.	7·00	2·5	do	do	·06	·09	·30	·68	....	do	do	
11 May		Crown-street Reservoir	6·30	2·5	do	do	·01	·16	·35	·76	....	Slightly turbid	do	The average composition of water is that of a good drinking water, the mean figures given by the most important items being as follows:— Free ammonia .. ·02 Albuminoid ammonia .. ·09 Oxygen used in ¼ hour .. ·27 Oxygen used in 3 hours .. ·58
,,		Allison-road, Randwick	5·88	2·5	do	do	None	·07	·21	·44	....	Clear	do	
,,		Prospect Reservoir, near inlet	6·02	2·5	do	do	·05	·08	·26	·57	....	do	do	
,,		Basin, head of canal, P. R.	6·30	2·5	do	do	·02	·06	·26	·57	....	do	do	
16 June		Crown-street Reservoir	6·86	2·5	do	do	·08	·07	·25	·58	....	do	do	
,,		Allison-road, Randwick	7·00	2·5	do	do	None	·07	·12	·39	....	do	do	
,,		Prospect Reservoir	7·00	2·5	do	do	·06	·08	·24	·52	....	do	do	The figures indicate a water suitable alike for drinking and all household purposes.
,,		Basin, head of canal, P. R.	6·30	2·5	do	do	·06	·09	25	·58	....	do	do	
15 July		Crown-street Reservoir	6·30	2·4	do	do	·02	·08	·36	·85	....	Slightly turbid	do	The water from points of delivery in Sydney was found to be turbid, owing to the presence of a minute quantity of clay in suspension. The organic matter present in the water, and herein described as "albuminoid ammonia," is a very small quantity indeed, and such as to place the Sydney supply in the front rank as a first-class drinking water.
,,		Allison-road, Randwick	6·58	2·4	do	do	None	·07	·30	·72	....	Clear	do	
,,		Prospect Reservoir, near inlet	6·16	2·4	do	do	·02	·06	·35	·72	....	do	do	
,,		Basin, head of canal, P. R.	6·58	2·4	do	do	·02	·07	·36	·67	....	do	do	
11 Aug.		Crown-street Reservoir	6·16	2·3	do	do	None	·06	·34	·61	....	do	do	The results of analyses of the monthly examination of the Sydney Water Supply which are attached herewith call forth some remarks which may be interesting from a sanitary point of view. All the constituents, both organic and inorganic, are present in smaller quantity than has heretofore been found in the water supply, the solids especially being reduced to the average of that found in the old Botany supply of some years ago. These results (given on the single gallon) have a very significant meaning when referred to the entire volume of the City supply. Such a result is due in the first place to the gradual cleansing and purification of the storage tanks and reservoir, and secondly to the abundant additions of rain-water and the consequent dilution of the usual dissolved matter.
,,		Allison-street, Randwick	6·44	2·3	do	do	do	·06	·31	·61	....	do	do	
,,		Prospect Reservoir, near inlet	6·30	2·3	do	do	do	·06	·34	·61	....	do	do	
,,		Basin, head of canal	6·30	2·4	do	do	do	·04	·34	·77	....	do	do	
9 Sept.		Crown street Reservoir	10·24	2·28	do	do	do	·05	·03	·66	....	Suspended matter	do	The increase in the total solids in Crown-street Reservoir sample is caused by the presence of oxide of iron and organic matter. The nitrogen present in the water is a very small amount, none of it being in the form of nitrites. The results show that the water maintains its high-class character, and that the suspended matter is of quite a harmless nature.
,,		Allison-road, Randwick	6·70	2·28	do	do	do	·05	03	·65	....	Clear	do	
,,		Prospect Reservoir	7·00	2·43	do	do	do	·02	03	·63	....	do	do	
,,		Basin, head of canal, P R	6·86	2·45	do	do	do	·04	03	·50	....	do	do	
10 Oct.		Crown-street Reservoir	6·30	2·35	do	do	do	·06	25	·41	....	do	do	
,,		Allison-road, Randwick	6·16	2·35	do	do	do	·04	·25	·41	....	do	do	These waters maintain their usual standard of excellence.
,,		Head of canal, Prospect	6·30	2·35	do	do	do	·06	·20	·55	....	do	do	
,,		Near inlet, Prospect	6·30	2·35	do	do	do	·06	·32	·69	....	do	do	
14 Nov.		Prospect Reservoir, head of canal	6·30	2·40	do	do	do	·08	·42	·86	....	Very slightly turbid.	do	
,,		do do near inlet	6·07	2·40	do	do	do	·08	·50	·93	....	do	do	It will be observed from above analyses that the sample from Allison-road absorbed slightly more oxygen than usual. This is due to a small quantity of suspended vegetable matter present in the water, and as the other samples are up to their usual standard, evidently to strictly local causes.
,,		Crown street Reservoir	6·02	2·40	do	do	do	·08	·33	·80	....	do	do	
,,		Allison-road, Randwick	6·16	2·40	do	do	0·4	·10	·52	1·00	....	do	do	
7 Dec.		Prospect, head of canal	6·58	2·40	do	do	None	·10	·36	·89	....	Clear	do	It will be satisfactory to observe that there is a decided improvement from Randwick sample, about which last month I made a remark, inasmuch as the cause of the increase of absorbed oxygen has disappeared. With the exception of a slight increase of albuminoid ammonia, all four samples are of normal composition. Past analyses show that the Nepean supply contains a fluctuating amount of albuminoid ammonia, varying from 0·4 to ·10 part per million, at periods far between reaching the higher figure, but maintaining it for a very short space of time. These samples represent waters of good quality, suitable for all domestic purposes.
,,		do near inlet	6·30	2·40	do	do	do	·10	·36	·89	....	do	do	
,,		Crown-street Reservoir	6·58	2·40	do	do	do	·10	·30	·73	....	do	do	
,,		Allison-road, Randwick	6·18	2·40	do	do	do	·09	·25	·48	....	do	do	

11.

ANALYSIS of Approximate Cost of Water Main Reticulation in the City of Sydney and Suburbs and the Percentage of Revenue on Cost, for the Year 1890.

District.	1890.						
	Mileage of Mains.	Properties Liable.	Annual Revenue.	Annual Revenue per Mile.	Annual Revenue per Property.	Approximate Cost.	Per Cent. on Cost.
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Alexandria	7·4	1,603	1,326 12 5	165 12 0	0 16 6	5,798 8 8	22·8
Ashfield	32·0	2,238	3,235 4 4	101 2 0	1 8 10	25,167 7 6	12·8
Auburn	.....	.....	... .	.....	.....	.....	...
Balmain	28·8	5,187	6,893 5 11	239 6 9	1 6 7	23,902 7 2	28·7
Botany	.....	.....	.....	.....	.....	.....	...
Burwood	21·9	1,242	1,968 16 0	89 17 9	1 11 8	19,948 2 11	9·8
Campbelltown	5·1	196	390 1 0	76 11 4	1 19 9	4,272 17 1	9·1
Camperdown	8·2	1,369	1,415 15 7	165 6 9	1 0 8	7,527 17 6	18·8
Canterbury	5·5	199	161 9 4	29 7 2	0 16 2	3,841 0 0	4·2
City of Sydney	115·8	22,179	50,407 14 8	435 5 9	2 5 5	116,233 13 8	43·3
Concord	6·3	255	586 3 6	93 0 9	2 5 11	6,516 5 0	8·9
Darlington	3·0	715	857 4 9	285 14 9	1 3 11	1,698 15 0	50·4
Drummoyne	2·8	181	216 11 4	77 6 0	1 3 11	1,070 15 0	20·2
Enfield	2·2	174	202 10 4	92 0 0	1 3 3	2,179 8 6	9·2
Five Dock	1·8	21	148 15 11	82 10 0	7 1 8	1,099 0 0	13·5
Glebe	17·1	3,460	4,566 11 8	267 1 0	1 6 4	12,380 13 4	36·8
Granville	13·2	607	547 15 10	41 10 0	0 18 0	13,210 7 8	4·1
Hunter's Hill	....	.....	... ...	.....	.....	.....	...
Hurstville	.....	.....	.....	.....	.....	.....	...
The Islands	1·1	19	627 5 6	570 4 9	33 0 3	3,000 0 0	20·9
Kogarah	4·8	219	219 11 0	45 15 0	1 0 0	4,041 14 8	5·4
Leichhardt	39·4	3,628	3,180 14 1	92 11 4	0 19 2	26,235 12 0	13·2
Liverpool	... ..	....	....	.....	.....	.....	...
Macdonaldtown	5·2	1,167	880 0 4	169 4 7	0 15 0	4,159 4 0	21·1
Marrickville	29·2	2,635	2,906 12 5	99 18 4	1 2 0	27,413 0 0	10·6
Newtown	19·8	3,978	4,274 17 0	215 17 9	1 1 5	20,399 17 0	20·9
North Botany	.....	....	.....	.....	.....	.....	...
North Sydney	26·0	3,047	4,493 2 7	183 7 9	1 9 5	34,892 0 0	12·8
Paddington	14·9	3,790	5,284 12 11	354 13 4	1 7 10	13,110 7 0	40·3
Petersham	22·1	2,175	2,718 16 2	123 0 0	1 5 0	18,032 0 0	15·0
Prospect and Sherwood	·25	26	39 14 6	158 18 0	1 10 6	277 13 6	14·0
Randwick	16·3	924	2,424 11 8	148 14 9	2 12 5	14,738 15 2	16·3
Redfern	20·5	4,313	11,918 13 1	581 7 9	2 15 3	19,966 7 2	59·6
Rockdale	8·2	351	386 16 4	47 3 5	1 2 0	8,038 0 0	4·8
Rookwood	..	...	.....	.....	.....	.....	...
Ryde	.....	...	.....	.....	.....	.....	...
St. Peters	9·0	994	835 8 9	92 16 6	0 16 9	8,546 2 4	9·7
Strathfield	7·5	297	696 11 3	92 17 6	2 6 10	7,162 7 0	9·7
Waterloo	10·9	1,883	1,933 19 1	177 8 4	1 0 6	9,064 15 8	21·3
Waverley	15·0	1,712	2,768 1 10	185 15 4	1 12 4	10,841 11 4	16·3
Willoughby	....	.....	.....	.....	.....	.....	...
Woollahra	20·2	1,943	3,933 18 6	194 14 9	2 0 5	13,375 15 6	29·4
Total	541·45	72,727	122,747 19 7	226 14 0	1 13 7	488,232 1 4	25·1

ANALYSIS of Approximate Cost of Water Main Reticulation in the City of Sydney and Suburbs and the Percentage of Revenue on Cost, for the Year 1891.

District.	1891.						
	Mileage of Mains.	Properties Liable	Annual Revenue.	Annual Revenue per Mile.	Annual Revenue per Property.	Approximate Cost.	Per Cent. on Cost.
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Alexandria	7·8	1,678	1,601 3 4	205 5 2	0 19 0	6,115 18 8	26·1
Ashfield	32·8	2,375	3,847 12 0	119 2 4	1 12 4	30,215 12 4	12·7
Auburn	2·5	116	143 17 8	57 10 0	1 4 8	1,789 6 8	8·0
Balmain	29·5	5,287	7,276 8 11	246 13 0	1 7 4	31,352 8 0	23·2
Botany	2·7	205	199 17 11	71 7 0	0 19 6	3,080 17 5	6·4
Burwood	22·0	1,326	2,362 15 10	107 7 11	1 15 7	19,997 9 5	11·8
Campbelltown	5·1	204	431 7 11	84 6 0	2 2 3	4,272 17 1	10·0
Camperdown	8·8	1,423	1,902 1 2	216 2 7	1 6 8	8,369 12 8	22·7
Canterbury	5·5	215	323 1 0	58 14 9	1 10 0	3,841 0 0	8·4
City of Sydney	124·8	22,946	84,016 15 8	673 4 2	3 14 1	125,729 18 4	66·8
Concord	9·0	278	804 4 8	89 7 2	2 14 3	8,336 5 4	9·6
Darlington	3·2	731	865 1 11	270 6 9	1 3 8	1,886 15 10	45·8
Drummoyne	3·6	213	262 18 1	73 0 0	1 4 8	3,899 10 0	6·7
Enfield	3·9	237	304 1 1	77 18 9	1 5 7	3,565 8 6	8·8
Five Dock	4·2	118	173 17 8	41 8 0	1 9 5	4,550 8 0	3·8
Glebe	19·8	3,576	4,878 17 2	246 8 0	1 7 2	15,264 5 4	31·9
Granville	12·8	669	608 7 7	47 10 2	0 18 1	14,585 11 0	4·1
Hunter's Hill	...	...	...	...	...	...	...
Hurstville	7·0	199	240 3 6	34 6 2	1 4 1	5,628 6 8	4·3
The Islands	1·1	21	263 2 2	239 3 7	12 10 7	3,000 0 0	8·7
Kogarah	5·5	262	329 5 5	59 17 0	1 5 0	4,615 18 0	7·1
Leichhardt	40·6	3,860	3,863 1 2	95 2 9	1 0 0	33,808 12 0	11·4
Liverpool	12·8	397	1,018 13 10	79 11 9	2 11 3	10,340 16 4	9·8
Macdonaldtown	5·3	1,183	1,032 10 9	194 16 2	0 17 5	4,222 4 0	24·4
Marrickville	30·0	2,868	3,270 4 11	109 0 2	1 2 9	27,986 0 0	11·6
Newtown	22·4	4,100	4,598 12 8	205 3 9	1 2 9	25,921 17 0	17·7
North Botany	1·25	101	68 16 10	55 0 9	0 13 7	1,845 7 0	3·7
North Sydney	35·2	3,311	5,044 5 3	143 6 0	1 10 5	36,495 6 8	13·8
Paddington	16·2	3,869	5,775 19 11	356 10 0	1 9 10	15,376 7 0	37·5
Petersham	22·2	2,329	3,092 15 1	139 6 8	1 5 7	19,410 3 0	15·9
Prospect and Sherwood	·25	26	40 1 6	160 6 0	1 10 9	277 13 6	14·4
Randwick	17·8	1,031	2,471 19 4	138 16 0	2 7 11	15,676 15 2	15·7
Redfern	23·3	4,519	14,726 15 0	632 0 9	3 5 0	22,452 7 2	65·5
Rockdale	16·6	759	1,013 7 0	61 0 9	1 6 8	16,825 0 0	6·2
Rookwood	...	...	...	...	...	...	...
Ryde	...	...	...	...	...	...	...
St. Peters	9·0	1,012	883 16 3	98 4 0	0 17 5	8,546 2 4	10·5
Strathfield	8·3	337	1,081 15 1	130 6 7	3 4 2	8,374 7 0	12·9
Waterloo	12·1	1,932	2,414 8 0	199 10 0	1 5 0	10,925 3 8	22 0
Waverley	16·2	1,855	3,154 13 6	194 14 4	1 14 0	13,881 3 10	22·9
Willoughby	...	...	...	...	...	...	...
Woollahra	22·1	2,137	4,531 19 2	205 1 2	2 2 4	16,246 2 6	27·8
Total	623·2	77,705	168.919 15 11	267 3 9	2 3 4	588,208 17 5	28·7

ANALYSIS OF ACCOUNTS.

Water Supply Table.

Year.	Average Daily Supply.	Total Supply for Year.	Number of Houses supplied.	Estimated Population supplied.	Average Daily Supply during year		Mains.	
					Per House.	Per Head of Estimated Population.	Mains laid.	Mains cleaned.
	Gallons	Gallons.			Gallons.	Gallons.	miles yds.	miles yds.
1888	8,144,169	2,972,621,623	61,718	266,246	132	27·40	63 893	4 890
1889	8,320,000	3,219,244,159	67,924	326,035	122	27·05	86 1,468	16 907
1890	8,436,034	3,097,402,486	71,501	343,204	118	24·70	75 866	7 278
1891	9,540,102	3,482,237,514	76,093	365,246	125	26·11	102 250	26 1,566

Water Rates.

Year.	Gross Water Rates.	Cancelled.	Net Revenue.	Gross Receipts paid to Treasury.	Less Refunds, &c., by Treasury.	Net Receipts paid to Treasury.	Outstanding Accounts. Rates.	Plumbers and Others.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1888	*125,762 3 0	276 4 0	125,485 19 0	90,089 9 11	957 14 6	89,131 15 5	40,701 2 6	948 10 9
1889	141,631 3 0	2,607 4 9	138,923 18 3	147,046 0 1	1,105 6 9	145,939 13 4	34,672 3 2	707 11 6
1890	149,316 0 2	3,325 10 10	145,990 9 4	158,949 17 0	60 11 1	358,889 5 11	24,691 7 0	2,067 8 6
1891	171,445 17 5	5,614 16 6	165,831 0 11	165,264 17 7	127 16 8	166,137 0 11	26,028 4 2	771 3 0

* This item is inclusive of £55,547 of arrears handed over by the City Council.

Maintenance. Management.

Year.	Maintenance of Mains, &c.	Wages and Expenses.	Coals.	Rents.	Total Maintenance.	President and Board fees.	Salaries.	Stationery and Printing.	Advertising and Incidental.	Total Management.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1888	677 17 2	7,676 13 3	901 14 5	767 6 8	10,023 11 6	1,258 10 3	6,089 18 10	1,308 7 1	525 6 4	9,182 2 6
1889	3,289 3 2	13,850 5 10	1,489 13 10	1,756 10 0	20,385 12 10	1,703 12 6	12,346 15 8	933 9 11	1,193 13 7	16,182 11 8
1890	3,676 3 1	13,636 9 4	2,272 11 11	960 16 9	20,546 1 1	1,242 10 0	10,912 0 2	965 6 9	1,122 12 0	14,242 8 11
891	5,665 6 7	14,165 6 3	2,668 6 3	1,107 9 4	23,606 8 5	1,242 10 0	11,201 3 1	948 0 9	1,290 2 1	14,684 15 11

General Summary.

Year.	Revenue.	Total Maintenance.	Total Management.	Total Maintenance and Management.	Interest.		Total Interest.	Depreciation.	Total Expenses.
					On Loan Capital.	On Debentures.			
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1888	125,485 19 0	10,023 11 6	9,182 2 6	19,205 14 0	59,976 7 3	4,800 0 0	64,276 7 3	.....	83,482 1 3
1889	138,923 18 3	20,385 12 10	16,182 11 8	36,568 4 6	101,477 5 5	4,150 0 0	106,627 5 5	2,446 8 8	144,641 18 7
1890	145,990 9 4	20,546 1 1	14,242 8 11	34,788 10 0	105,099 19 9	4,000 0 0	109,099 19 9	3,421 15 2	147,310 4 11
1891	165,831 0 11	23,606 8 5	14,684 16 11	38,291 4 4	107,981 11 8	4,000 0 0	111,981 11 8	3,916 18 0	154,189 14 0

Sewerage Table.

Year.	Number of Houses Sewered.	Estimated Population served.	New Sewers Laid During the Year.		Existing Sewers.	Total Length of Sewers	Storm-water Drains Laid.				Ventilating Shafts Erected.	Sewers Ventilated.
			By Board.	By Govt.			By Board.	By Govt.	Existing.	Total.		
			Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Feet.	Miles.
1890	22,765	109,272	9 60	13·68	96·46	119·74	0·48	Nil.	2·37	2·85	12,639	14·5
1891	26,884	129,043	21·53	4 07	119·74	145 34	Nil.	1·22	2·85	4·07	53,082	85·27

Sewerage Rates.

Year.	Gross Sewerage Rates.	Cancelled.	Net Revenue	Gross Receipts paid to Treasury.	Less Refund by Treasury.	Net Receipts paid to Treasury.	Amount Outstanding. Rates.	Compulsory Drainage, and Others.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1890	*85,291 9 7	3,491 18 7	81,799 11 0	74,180 6 7	48 5 10	74,132 0 9	7,619 4 5	.....
1891	83,731 10 11	2,428 12 7	31,302 18 4	80,555 16 8	50 1 7	81,252 16 9	8,320 2 10	3,224 14 3

* This item is inclusive of £10,510 of arrears handed over by the City Council.

Maintenance. Management.

Year.	Maintenance of Sewers.	Wages and Expenses.	Sewage Farm Maintenance.	Rents.	Total Maintenance.	President and Board Fees.	Salaries.	Stationery and Printing.	Advertising and Incidentals.	Total Management.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1890	427 16 0	8,283 18 3	1,697 0 10	1,041 13 4	11,450 8 5	1,427 2 6	7,796 17 0	1,110 6 3	464 10 7	10,799 5 4
1891	1,109 19 7	11,845 10 3	1,668 17 1	1,000 0 0	15,624 6 11	1,242 10 0	7,180 7 6	889 7 8	475 2 9	9,787 7 11

General Summary.

Year.	Revenue.	Total Maintenance.	Total Management.	Total Maintenance and Management.	Interest.		Total Interest.	Depreciation.	Total Expenses.
					On Loan Capital.	On Debentures.			
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1890	81,799 11 0	11,450 8 5	10,799 5 4	22,249 13 9	36,141 10 1	8,635 0 0	44,776 10 1	.....	67,026 3 10
1891	81,302 18 4	15,624 6 11	9,787 7 11	25,411 14 10	39,674 17 4	6,820 0 0	46,494 17 4	.....	71,906 12 2

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE—WATER SUPPLY REVENUE ACCOUNT FOR THE YEAR ENDING 31ST DECEMBER, 1891.

Dr.	£ s. d.	£ s. d.	Cr.	£ s. d.	£ s. d.
To Balance brought forward		31,966 1 10	*Maintenance.*		
Water rates	110,124 7 0		By Repairs to machinery	270 10 8	
Meter accounts	52,518 11 4		Repairs to mains	2,802 14 2	
New mains revenue	512 14 11		Repairs to buildings	128 18 5	
Building supply revenue	1,411 15 0		Repairs to reservoirs	1 13 3	
House supply	1,496 3 2		Working expenses and charges	1,316 9 11	
Drilling fees	518 0 0		Coals	2,668 6 3	
Sundry water supply	275 14 4		Meter tap testing account	1,109 16 2	
Plumbers' licenses	230 0 0		Rents paid	1,107 9 4	
Plumbers and others	82 8 10		Wages	14,165 6 3	
Rents received	122 15 0				23,571 4 5
Stock account	2,258 12 6		*Management.*		
Garden account	920 10 0		President's salary and Board fees	1,242 10 0	
Meter testing account	933 6 5		Salaries	11,204 3 1	
Miscellaneous receipts	40 18 11		Legal expenses	11 15 0	
	171,445 17 5		Stationery and printing	948 0 9	
Less—			Advertising and incidental expenses	1,278 7 1	
Rates cancelled or removed	5,614 16 6				14,684 15 11
		165,831 0 11	Depreciation account—		
			20 per cent. on old pumping gear	1,102 8 0	
			5 ,, on machinery generally	1,759 19 5	
			20 ,, on working plant and tools	855 10 4	
			10 ,, on furniture	199 0 3	
					3,916 18 0
			Interest on Debentures—		
			£80,000, twelve months, to December, 1891	4,000 0 0	
			Interest on Loan Account		
			£2,499,970, twelve months, to December 1891, at 4%	99,998 16 0	
			£228,079, twelve months, to December, 1890, at 3½%	7,982 15 8	
					111,981 11 8
					154,154 10 0
			Balance		46,642 12 9
		£200,797 2 9			£200,797 2 9

Sydney, January 28th, 1892.

MELBE. GREEN,
Accountant.

Metropolitan Board of Water Supply and Sewerage—WATER SUPPLY BALANCE-SHEET, 31st December, 1891.

Dr.	£ s. d.	£ s. d.	Cr.	£ s. d.	£ s. d.	£ s. d.
To amount advanced by Treasury Loans to May 25th, 1888	2,076,313 0 0		By Metropolitan Water Supply Works—amount expended to May 25th, 1888, from loans by New South Wales Government			2,499,970 0 0
Interest	423,657 0 0		Lands		145,742 8 2	
		2,499,970 0 0	Reservoirs	45,902 17 11		
Amount advanced by Treasury from Loan 52 V. 17 to Dec. 31st, 1890	150,000 0 0		„ Ashfield	2,362 14 1		
Amount advanced by Treasury from Loan 54 V. 33 to Dec. 31st, 1890	78,079 10 7		„ Hurstville	1,710 8 9		
	228,079 10 7		„ Cecil Hill	425 17 8		
Amount advanced by Treasury from Loan 54 V. 33 to Dec. 31st, 1891	111,080 15 3				60,401 18 5	
		339,160 5 10	Mains		241,453 18 8	
City Council Water Fund		380,661 15 11	Buildings		21,314 2 5	
Debentures		80,000 0 0	Machinery		32,337 1 11	
Colonial Treasurer's Loan Account—new offices		6,857 17 8	Working plant and tools		3,422 1 3	
„ „ Stores Advance Account		28,554 8 7	New Mains	297,545 14 9		
„ „ Advance to Refund Over-payments		1 16 3	„ Campbelltown	4,432 10 3		
„ „ Advance for Summons Fees		188 11 11	„ Liverpool	11,459 1 1		
Outstanding Accounts due to contractors		18,114 5 9	„ Smithfield	2 17 7		
Contractors and others—amounts due for deposits on contracts		798 0 0			313,439 3 8	
Rates overpaid		2,169 8 3	Sundry Works		484 4 10	
Balance		46,642 12 9	Meter testing account		415 4 0	
			New offices		8,821 6 2	
			Furniture		1,791 2 5	
			Stores		24,529 6 2	
			Samples account		31 13 6	
						884,183 11 7
			Rates outstanding		26,028 4 2	
			Accounts „		771 3 0	
						26,799 7 2
			Summons fees		184 14 4	
			A.J.S. Bank (summons fees)		3 17 7	
						188 11 11
			E.S. and A.C. Bank (contractors' deposit)			798 0 0
			Refund overpayment account, balance			1 16 3
			Colonial Treasurer—cash account		30,488 17 3	
			„ „ note, 1891		675 4 10	
			„ „ trust account, wages, &c.		13 13 11	
						31,177 16 0
	£	3,403,119 2 11			£	3,403,119 2 11

Sydney, January 28th, 1892.

MELBE. GREEN,
Accountant.

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE—SEWERAGE REVENUE ACCOUNT FOR YEAR ENDING 31ST DECEMBER, 1891.

REVENUE.	£ s. d.	£ s. d.
Balance brought forward	.....	14,773 7 2
To Sewerage rates	78,992 18 2	
New sewer „	744 1 10	
Sewerage service rates	2,042 19 11	
Drainers' licenses	170 0 0	
Sale of plans	1,036 15 0	
„ farm produce	300 6 11	
Drainers and others	75 9 8	
Compulsory drainage	336 17 5	
Miscellaneous receipts	32 2 0	
	83,731 10 11	
Less—		
Rates cancelled	2,428 12 7	
		81,302 18 4
		£96,076 5 6

EXPENDITURE.	£ s. d.	£ s. d.
Maintenance.		
By Working expenditure and charges	264 19 5	
Repairs to sewers	1,109 19 7	
Rents paid	1,000 0 0	
Wages	11,580 10 10	
Sewage farm maintenance	1,668 17 1	
		15,624 6 11
Management.		
President's salary and Board fees	1,242 10 0	
Salaries	7,180 7 6	
Stationery and printing	889 7 8	
Advertising, incidental expenses, &c.	475 2 9	
		9,787 7 11
Interest on— £ s. d.		
City Council Debentures ... 62,000 0 0—12 months at 6 %	3,720 0 0	
„ „ ... 38,000 0 0—12 „ 5 %	1,900 0 0	
Redfern „ ... 30,000 0 0—12 „ 4 %	1,200 0 0	
130,000 0 0		
Loans, 43 V. 11 .....400,000 0 0—12 months at 4 %	16,000 0 0	
„ 46 V. 23 .....100,000 0 0—12 „ 3½ %	3,500 0 0	
„ 48 V. 26 ..... 20,000 0 0—12 „ 3½ %	700 0 0	
„ 50 V. 28 .....250,000 0 0—12 „ 3½ %	8,750 0 0	
„ 52 V. 17 ..... 31,432 7 2—12 „ 3½ %	1,110 2 5	
801,432 7 2		
Loans, 50 V. 28 ... . 8,606 4 5—12 months at 3½ %	301 4 4	
„ 52 V. 17 ..... 46,954 4 2—12 „ 3½ %	1,643 0 11	
„ 53 V. 23 ..... 26,671 13 11—12 „ 3½ %	933 10 2	
„ 54 V. 33 ..... 11,786 3 1—12 „ 3½ %	412 11 4	
„ 54 V. 33 .....158,110 5 4—12 „ 4 %	6,324 8 2	46,494 17 4
		71,906 12 2
Balance	.....	24,169 13 4
		£96,076 5 6

Sydney, January 28th, 1892.

MELBE. GREEN,
Accountant.

Metropolitan Board of Water Supply and Sewerage—BALANCE-SHEET, SEWERAGE, 31st December, 1891.

Dr.	£ s. d.	£ s. d.	Cr.	£ s. d.	£ s. d.	£ s. d.
To amount advanced by Treasury—			By Government Sewerage Works, 30th November, 1889			903,062 5 9
From Loans to 30th November, 1889	801,432 7 3		Sydney Municipal Council Works, 31st December, 1889		248,974 13 1	
,, Revenue to 30th November, 1889	101,629 18 6		Redfern ,, ,, 31st December, 1889	22,712 11 4		
			,, ,, New Sewers	7,287 8 8		
		903,062 5 9			30,000 0 0	
,, Loans to 31st December, 1889	7,833 14 4		Darlington Council		5,000 0 0	
,, ,, 1890	60,122 19 5		New Sewers (Government)		151,089 15 10	
,, ,, 1891	81,332 0 7		,, (Board)		87,564 5 8	
,, Revenue to 31st December, 1891	1,801 1 6		Ventilating shafts		14,820 6 10	
			Land		340 6 8	
			New buildings		2,199 7 3	
		151,089 15 10	Sundry works	76 16 6		
			,, Sewerage farm	1,922 6 4		
					1,999 2 10	
,, Waterloo Loan, 53 V. 23		15,159 7 3				
,, General Loan, 54 V. 33		77,675 4 7				
,, Western Suburbs Loan, 54 V. 33		3,469 1 5				
,, McDonaldtown Loan, 53 V. 23		2,331 5 1	Flushing hydrants		201 6 5	
,, Paddington Loan, 53 V. 23		3,860 0 0	Working plant and tools		682 17 11	
,, Contractor's advance, 54 V. 33		2,530 1 6	Furniture and fixtures		1,331 19 9	
Debentures, City Council		100,000 0 0	Rates outstanding	8,320 2 10		544,204 2 3
,, Redfern		30,000 0 0	Accounts	3,224 14 3		
City Council Overdraft and Debentures paid by Treasury		158,110 5 4				
Rates overpaid		1,164 9 9				11,544 17 1
Outstanding accounts due to contractors		4,179 9 7				
Depreciation account		377 15 10				
Colonial Treasurer's Stores Advance Account		63 11 9				
Balance as per Revenue Account		24,169 13 4	Colonial Treasurer—			
			Balance Cash Account	17,728 5 4		
			,, Vote, 1891	697 16 7		
			,, Trust Account	5 0 0		
						13,431 1 11
	£	1,477,242 7 0			£	1,477,242 7 0

Sydney, January 28th, 1892.

MELBE. GREEN,
Accountant.

Assessor's Department, January 30th, 1892.

Sir,—

I have the honor to submit to the Board a report of the progress made in the work of this branch during 1891.

Rate Notices.

During the year 191,214 rate notices were served, as against 175,286 in 1890, showing an increase of 15,928. This increase will be accounted for by the erection of new buildings, also the additional new mains laid by us in boroughs previously partially supplied, and by the reticulation of five new municipalities, viz., Liverpool, Auburn, Rookwood, Botany, and North Botany.

New Mains and New Sewers.

The number of properties which became liable, from new mains and new sewers, during the year is 4,410, as against 7,681 in 1890. This decrease will be accounted for by the fact that a great number of the new mains have been laid to give a better service to parts already supplied, and also a large number of the mains laid during the latter part of the year will only become liable from early in 1892.

New Assessments.

During the year 2,217 new buildings have been assessed and rated by this Department. The work has been done by our own officers, and so efficiently carried out that, while at all times having the interest of the Department in view, general satisfaction has been given to the public.

Recovery of Rates.

During the year the rates received amounted to £241,844 10s. 3d., being £16,446 9s. 4d. in excess of the amount received in 1890. The areas outstanding on the 31st December amounted to £37,573 1s. 3d., as against £32,390 4s. 9d. on the 31st December, 1890. The increase (£5,182 16s. 6d.) will be accounted for by the fact that the Government did not pay the rates due by them on the 31st December as previously, and as no steps have been taken to recover the rates on churches, &c., and charitable institutions, the amount is accumulating considerably.

The experiment of sending a cashier to the suburban municipal chambers on stated days to receive rates has been more largely availed of than previously, because of its becoming a recognised fact, and therefore more widely known to the ratepayers.

Taking into consideration the fact of the number of additional rates which appear in the Registers, and the tightness of money experienced in financial circles which has effected a very large number of our constituents, the figures should speak well for themselves; although, to obtain this satisfactory result, it was found necessary to issue 1,950 more summonses than in 1890. The summonses issued were distributed in the different small debts courts, &c., as shown in the following table:—

Summonses issued in 1891.

Central Court	...	1,597
Water Court	...	1,454
Newtown Court	...	1,380
Redfern Court	...	634
Balmain Court	...	309
North Sydney Court	...	373
Parramatta Court	...	62
Campbelltown Court	...	47
		5,856
District Court	...	354
Total	...	6,210

Special Fees.

The Waste Water Inspectors were transferred to this branch on the 1st October last, and during the three months that have elapsed, they have been employed in making a complete re-inspection of stock, and with very satisfactory results. They have now written up travelling books for their respective districts, and, as these show the register numbers of every property rated in our books, will be the means of enabling them to identify properties for any purpose, and greatly assist them in the execution of their duties.

The number of applications for gardens have steadily increased during the year, as also have those for the use of water for sundry purposes other than domestic use, viz., Gas Engines, Tyring, Photography, Bottle-washing, &c., &c.

Re-connection Fees.

The decision of the Board to charge a fee of 2s. 6d. for the purpose of re-connecting premises where the water has been cut off for the non-payment of rates, although only recently come into force, has increased the revenue by £7 17s. 6d.

Properties Rated.

The number of properties rated and supplied with water on the 31st December, 1891, are as under:—

	Rated.	Supplied.
City and Suburbs ...	77,105	75,895
Campbelltown ...	204	143
Liverpool ...	397	55
	77,706	76,093

HERBERT J. BEAUMONT,
Assessor.

The Secretary.

SUMMARY

Summary of Properties Liable and Notices Delivered during 1891.

Ward or Borough.	No. of Properties Liable.								No. of Notices delivered during 1891.							
	No. of Properties liable, 1st January, 1891.		New Houses on Old Mains or Sewers becoming liable during Year.		Properties becoming liable through.		Total No. of Properties liable, 31st December, 1891.		Water and Sewerage Rates.	New Houses on Old Mains and Sewers.	New Mains, including Notices to Connect	New Sewers, including Notices to Connect.	Second Notices to Connect with Sewers.	Demand Notices for Payment of Sewerage Expenses.	No. of Final Notices Issued	Total.
	Water.	Sewerage.	Water.	Sewerage.	New Mains.	New Sewers.	Water.	Sewerage.								
Bourke Ward	1,163	1,121	36	31	.....	.....	1,199	1,152	2,341	36	.....	.....	.....	1	354	2,732
Brisbane Ward	1,352	1,320	42	41	.....	.....	1,394	1,361	2,712	42	.....	.....	.....	11	1,061	3,826
Cook Ward	6,162	5,748	47	47	.....	.....	6,209	5,795	12,352	47	.....	.....	.....	.....	2,234	14,633
Denison Ward	4,207	3,393	78	91	.....	10	4,285	3,494	8,451	91	.....	20	.....	.....	1,753	10,315
Fitzroy Ward	3,598	3,322	22	25	2	29	3,622	3,376	7,207	25	4	58	2	.....	1,718	9,014
Gipps Ward	1,855	1,683	27	35	.....	.....	1,882	1,718	3,730	35	.....	.....	.....	1	431	4,197
Macquarie Ward	1,857	1,857	34	34	.....	.....	1,891	1,891	3,727	34	.....	.....	.....	.....	1,057	4,818
Phillip Ward	2,444	2,312	20	19	.....	.....	2,464	2,331	4,898	20	.....	.....	.....	.....	1,143	6,061
Alexandria	1,624	.....	42	14	12	837	1,678	851	3,274	42	24	1,674	.....	.....	840	5,854
Ashfield	2,266	.....	98	.....	11	.....	2,375	.....	4,583	98	22	.....	.....	.....	1,015	5,748
Auburn	.....	.....	1	.....	115	.....	116	.....	.....	1	230	.....	.....	.....	.....	231
Balmain	5,212	.....	60	.....	15	.....	5,287	.....	10,468	60	80	.....	.....	.....	1,337	11,895
Botany	.....	.....	8	.....	197	.....	205	.....	.....	8	394	.....	.....	.....	.....	402
Burwood	1,270	.....	54	.....	2	.....	1,326	.....	2,570	54	4	.....	.....	.....	533	3,161
Campbelltown	200	.....	3	.....	1	.....	204	.....	402	3	2	.....	.....	.....	84	491
Camperdown	1,375	10	48	1	.....	.....	1,423	11	2,768	48	.....	.....	.....	.....	188	3,004
Canterbury	201	.....	8	.....	6	.....	215	.....	409	8	12	.....	.....	.....	84	513
Concord	256	.....	11	.....	11	.....	278	.....	532	11	22	.....	.....	.....	64	629
Darlington	718	716	13	.....	.....	.....	731	716	1,449	13	.....	.....	.....	.....	222	1,684
Drummoyne	190	.....	13	.....	10	.....	213	.....	398	13	20	.....	.....	.....	84	515
Enfield	172	.....	15	.....	50	.....	237	.....	385	15	100	.....	.....	.....	85	585
Five Dock	41	.....	12	.....	65	.....	118	.....	107	12	130	.....	.....	.....	30	279
Glebe	3,510	.....	66	.....	.....	.....	3,576	.....	7,060	66	.....	.....	.....	.....	1,760	8,886
Granville	600	.....	38	.....	17	.....	655	.....	1,230	38	34	.....	.....	.....	260	1,562
Guildford	13	.....	1	.....	.....	.....	14	.....	26	1	.....	.....	.....	.....	4	31
Homebush	2	.....	2	.....	.....	.....	4	.....	5	2	.....	.....	.....	.....	.....	7
Hunter's Hill	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hurstville	1	.....	25	.....	173	.....	199	.....	45	25	346	.....	.....	.....	32	448
Islands	19	.....	2	.....	.....	.....	21	.....	40	2	.....	.....	.....	.....	.....	42
Kogarah	207	.....	18	.....	37	.....	262	.....	437	18	74	.....	.....	.....	91	620
Leichhardt	3,640	.....	206	.....	14	.....	3,860	.....	7,373	206	28	.....	.....	.....	1,516	9,123
Liverpool	.....	.....	1	.....	396	.....	397	.....	.....	1	792	.....	.....	.....	.....	793
Macdonaldtown	1,170	.....	13	.....	.....	.....	1,183	.....	2,347	13	32	.....	.....	.....	351	2,743
Marrickville	2,719	.....	133	.....	16	.....	2,868	.....	5,517	133	.....	.....	.....	.....	935	6,585
Newtown	3,982	.....	118	.....	.....	.....	4,100	.....	8,016	118	.....	.....	.....	.....	1,152	9,286
North Botany	1	3	3	.....	97	.....	101	3	9	3	194	.....	.....	.....	1	207
North Sydney	3,077	.....	139	.....	95	.....	3,311	.....	6,297	139	190	.....	.....	.....	1,162	7,788
Paddington	3,795	3,064	74	162	.....	24	3,869	3,250	7,620	162	.....	48	765	13	1,527	10,135
Petersham	2,227	.....	100	.....	2	.....	2,329	.....	4,507	100	4	.....	.....	.....	819	5,460
Prospect and Sherwood	25	.....	1	.....	.....	.....	26	.....	51	1	.....	.....	.....	.....	7	59
Randwick	951	.....	65	.....	15	.....	1,031	.....	1,932	65	80	.....	.....	.....	337	2,414
Redfern	4,336	2,191	183	515	.....	874	4,519	3,580	8,765	515	.....	1,748	753	67	1,538	13,386
Rockdale	339	.....	61	.....	350	.....	759	.....	846	61	718	.....	.....	.....	142	1,767
Rookwood	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ryde	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Peters	989	.....	23	.....	.....	.....	1,012	.....	1,987	23	.....	.....	.....	.....	223	2,233
Strathfield	294	.....	38	.....	1	.....	333	.....	605	38	2	.....	.....	.....	149	794
Waterloo	1,892	399	40	201	.....	792	1,932	1,392	3,804	201	.....	1,584	329	.....	415	6,333
Waverley	1,736	.....	80	.....	39	.....	1,855	.....	3,532	80	78	.....	.....	.....	883	4,573
Willoughby	.....	.....	1	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	1
Woollahra	1,986	823	94	34	57	29	2,137	886	4,053	94	114	58	196	.....	836	5,351
Totals	73,674	27,962	2,217	1,250	1,815	2,595	77,706	31,807	148,867	2,822	3,630	5,190	2,045	93	28,567	191,214

HERBERT J. BEAUMONT, Assessor.

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Stock and Gardens.

Ward or Borough.	Stock. 1890. No. of Stock Registered.	Stock. 1890. Amount of Fees Paid for the Year.	Stock. 1890. Amount Outstanding on 31st Dec., 1890.	Stock. 1891. No. of Stock Registered.	Stock. 1891. Amount of Fees Paid for the Year.	Stock. 1891. Amount Outstanding on 31st Dec., 1891.	Gardens. 1890. No. of Gardens Registered.	Gardens. 1890. Amount of Fees Paid for the Year.	Gardens. 1890. Amount Outstanding on 31st Dec., 1890.	Gardens. 1891. No. of Gardens Registered.	Gardens. 1891. Amount of Fees Paid for the Year.	Gardens. 1891. Amount Outstanding on 31st Dec., 1891.
		£ s. d.	£ s. d.		£ s. d.	£ s. d.		£ s. d.	£ s. d.		£ s. d.	£ s. d.
Bourke Ward	28	7 12 6	.....	43	7 5 0	.....	7	4 10 0	.....	6	6 10 0	.....
Brisbane Ward	65	17 12 6	0 10 0	165	23 12 6	.....	1	0 10 0	.....	2	1 15 0	.....
Cook Ward	546	143 17 6	0 10 0	815	138 17 6	2 5 0	4	4 17 6	.....	6	6 0 0	.....
Denison Ward	364	102 15 0	.....	524	107 15 0	0 2 6	2	1 10 0	.....	3	1 10 0	.....
Fitzroy Ward	269	71 17 6	0 10 0	485	87 10 0	0 10 0	36	19 0 0	2 10 0	46	36 0 0	.....
Gipps Ward	50	13 10 0	.....	81	14 5 0	.....	1	0 5 0	0 5 0	4	2 0 0	.....
Macquarie Ward	117	28 12 6	0 5 0	63	31 17 6	.....	3	1 5 0	.....	3	1 10 0	.....
Phillip Ward	216	60 17 6	.....	322	57 2 6	.....	2	0 15 0	.....	2	4 0 0	.....
Alexandria	154	36 15 10	.....	238	52 15 0	.....	2	0 10 0	.....	2	1 0 0	.....
Ashfield	86	25 0 0	.....	167	34 7 6	.....	63	41 2 6	15 10 0	89	81 0 0	4 10 0
Auburn	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Balmain	289	89 2 6	0 15 0	460	91 7 6	1 0 0	38	24 5 0	2 15 0	50	32 0 0	4 5 0
Botany	.....	.....	.....	.....	.....	0 5 0	.....	.....	.....	.....	.....	.....
Burwood	81	21 10 0	.....	144	28 7 6	.....	24	15 5 0	1 15 0	39	26 0 0	2 0 0
Campbelltown	1	0 5 0	.....	2	0 5 0	.....	.....	.....	.....	4	2 0 0	.....
Camperdown	216	67 7 6	.....	374	62 5 0	0 10 0	7	3 0 0	.....	7	3 10 0	.....
Canterbury	1	0 2 6	0 2 6	16	2 7 6	.....	.....	.....	.....	.....	.....	.....
Concord	16	3 7 6	.....	52	7 2 6	0 2 6	2	1 5 0	.....	2	1 10 0	.....
Darlington	84	24 15 0	.....	136	25 0 0	.....	.....	.....	.....	.....	.....	.....
Drummoyne	.....	.....	.....	11	2 7 6	.....	2	1 0 0	.....	2	0 10 0	.....
Enfield	3	0 7 6	.....	24	4 12 6	.....	1	0 10 0	.....	3	2 10 0	.....
Five Dock	.....	.....	.....	1	0 5 0	.....	.....	.....	.....	.....	.....	.....
Glebe	367	121 15 0	1 10 0	619	123 17 6	0 5 0	35	21 10 0	1 5 0	49	29 15 0	2 0 0
Granville	16	5 2 6	.....	32	7 5 0	.....	3	0 15 0	.....	7	3 15 0	.....
Guildford	.....	.....	.....	1	0 5 0	.....	.....	.....	.....	.....	.....	.....
Homebush	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hunter's Hill	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hurstville	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	4 0 0	.....
Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kogarah	13	2 0 0	.....	21	2 5 0	.....	4	4 17 6	.....	5	5 10 0	2 10 0
Leichhardt	372	93 0 0	7 5 0	546	109 15 0	1 0 0	40	10 10 0	.....	54	42 0 0	3 10 0
Liverpool	.....	.....	.....	22	3 0 0	.....	.....	.....	.....	1	0 10 0	.....
Macdonaldtown	60	15 5 0	0 5 0	87	19 10 0	0 5 0	2	1 10 0	3 15 0	1	1 0 0	.....
Marrickville	177	44 10 0	0 15 0	267	53 10 0	.....	49	31 2 6	3 0 0	66	48 10 0	3 5 0
Newtown	355	91 7 6	0 5 0	489	94 10 0	0 15 0	20	15 15 0	1 10 0	26	22 5 0	.....
North Botany	.....	.....	.....	2	0 5 0	.....	.....	.....	.....	.....	.....	.....
North Sydney	70	21 7 6	.....	187	26 17 6	0 15 0	67	36 12 6	5 10 0	91	64 15 0	2 5 0
Paddington	355	93 15 0	0 15 0	497	97 5 0	.....	26	14 17 6	4 15 0	43	33 15 0	0 10 0
Petersham	124	35 17 6	0 5 0	182	34 5 0	.....	68	46 7 6	4 15 0	85	71 5 0	2 0 0
Prospect and Sherwood	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Randwick	109	30 5 0	.....	168	29 15 0	0 10 0	35	20 2 6	4 10 0	51	40 15 0	.....
Redfern	291	105 10 0	1 10 0	508	128 17 6	0 10 0	11	5 15 0	0 10 0	16	11 5 0	.....
Rockdale	1	0 2 6	.....	12	1 15 0	.....	7	3 10 0	.....	15	15 0 0	.....
Rookwood	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ryde	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Peters	109	26 10 0	0 5 0	157	35 7 6	.....	3	1 15 0	.....	2	1 0 0	.....
Strathfield	11	3 5 0	.....	26	4 0 0	.....	9	6 7 6	0 5 0	16	20 10 0	.....
Waterloo	253	65 12 6	0 15 0	404	82 2 6	0 10 0	7	3 0 0	.....	10	5 5 0	0 10 0
Waverley	116	51 7 6	1 0 0	243	52 12 6	.....	61	40 15 0	6 10 0	74	50 15 0	4 0 0
Willoughby	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Woollahra	246	64 12 6	1 0 0	367	64 12 6	0 15 0	97	59 12 6	16 0 0	127	121 0 0	2 0 0
Totals	5,636	1,586 12 6	18 2 6	8,990	1,751 0 0	10 0 0	739	444 5 0	75 0 0	1,010	801 15 0	33 5 0

HERBERT J. BEAUMONT, Assessor.

Summary of Final Notices Served and Summonses Issued.

Ward or Borough.	1889.					1890.					1891.				
	No. of Final Notices Issued.	Summonses Issued.		Amount Outstanding on 31st December, 1889.		No. of Final Notices Issued.	Summonses Issued.		Amount Outstanding on 31st December, 1890.		No. of Final Notices Issued.	Summonses Issued.		Amount Outstanding on 31st December, 1891.	
		District Court.	Small Debts Court.	Water.	Sewerage.		District Court.	Small Debts Court.	Water.	Sewerage.		District Court.	Small Debts Court.	Water.	Sewerage.
				£ s. d.	£ s. d.				£ s. d.	£ s. d.				£ s. d.	£ s. d.
Bourke Ward	230	21	37	3,790 7 5	1,604 18 6	400	65	34	2,170 13 5	982 5 11	354	40	35	4,427 13 3	2,093 16 2
Brisbane Ward	400	20	103	2,136 3 7	1,202 8 4	552	35	56	2,368 3 10	827 12 5	1,061	59	110	1,695 1 8	781 8 2
Cook Ward	1,050	...	110	1,932 5 6	913 19 3	1,700	23	427	870 11 2	643 9 5	2,234	20	469	733 5 7	532 19 1
Denison Ward	975	10	177	5,365 0 9	1,294 18 6	1,300	42	196	3,321 5 5	1,005 16 5	1,753	30	349	3,677 14 7	786 14 6
Fitzroy Ward	1,000	...	98	1,018 11 10	890 19 10	1,200	18	274	877 9 0	238 3 9	1,718	11	323	1,090 8 6	490 19 4
Gipps Ward	190	2	29	1,940 16 9	468 11 6	756	25	131	1,057 13 6	218 6 10	431	11	93	1,966 7 0	300 16 8
Macquarie Ward	450	21	56	1,930 14 2	1,805 10 8	450	40	52	1,857 13 8	1,616 0 8	1,057	83	199	938 10 4	820 18 10
Phillip Ward	600	8	120	1,187 9 6	859 15 6	926	33	222	1,024 12 0	562 13 1	1,143	20	192	1,372 15 8	1,051 19 7
Alexandria	300	...	16	301 12 8	.....	530	...	70	272 12 7	.....	840	5	150	221 3 10	58 10 8
Ashfield	185	...	68	605 13 7	.....	400	1	58	567 1 10	.....	1,045	5	261	335 13 1	.....
Auburn	...	...	...	.....	.....	...	...	...	.....	.....	...	...	..	14 19 7	.....
Balmain	900	...	23	1,256 11 9	.....	1,484	5	262	733 18 4	.....	1,337	4	306	1,295 16 3	.....
Botany	...	...	...	.....	.....	...	..	...	.....	.....	1	..	1	11 2 5	.....
Burwood	250	...	80	368 17 5	.....	350	1	101	954 3 5	.....	533	5	107	257 14 3	.....
Campbelltown	...	...	...	38 7 1	.....	62	..	10	65 16 7	.....	84	...	10	87 15 1	.....
Camperdown	600	...	110	161 10 9	.....	500	1	90	192 16 9	224 11 8	188	2	50	293 15 2	682 14 8
Canterbury	...	..	...	24 2 9	.....	..	..	..	47 11 7	.....	84	...	30	24 12 8	.....
Concord	70	...	16	94 19 7	.....	110	...	25	212 8 1	.....	64	..	23	119 18 1	.....
Darlington	120	...	43	43 18 9	.....	86	...	14	50 2 3	35 6 8	222	...	35	46 11 6	22 9 5
Drummoyne	...	...	...	.....	.....	...	...	...	25 14 1	.....	84	..	30	20 7 7	.....
Enfield	20	...	1	16 0 10	.....	30	...	6	28 16 2	.....	85	...	9	27 7 8	.....
Five Dock	...	...	...	4 10 8	.....	..	...	...	20 12 10	.....	30	..	12	21 9 2	.....
Glebe	600	...	136	1,154 7 7	.....	822	1	176	1,136 3 8	.....	1,760	5	183	332 5 10	.....
Granville	10	...	...	25 13 10	.....	124	...	44	98 7 9	.....	260	...	58	67 15 1	.....
Guildford	...	...	...	7 19 5	.....	10	...	2	16 12 8	.....	4	...	1	9 0 6	.....
Homebush	...	...	...	.....	.....	...	...	...	0 19 0	.....	...	...	...	0 18 0	.....
Hunter's Hill	...	...	...	.....	.....	...	...	...	.....	.....	...	...	...	.....	.....
Hurstville	...	...	...	.....	.....	...	...	...	.....	.....	32	...	...	23 18 10	.....
Islands	...	...	...	.....	.....	...	...	...	16 13 4	.....	...	...	...	146 8 4	.....
Kogarah	...	...	...	.....	.....	...	...	...	35 11 3	.....	91	...	7	40 11 8	.....
Leichhardt	450	...	94	1,074 18 5	.....	1,060	4	256	604 19 1	.....	1,516	6	315	386 9 4	.....
Liverpool	...	...	...	.....	.....	...	..	...	.....	.....	...	...	...	131 11 5	.....
Macdonaldtown	200	...	23	174 17 7	.....	264	...	26	169 14 9	.....	351	...	37	124 12 3	.....
Marrickville	200	...	...	732 19 9	.....	500	3	74	735 14 3	.....	935	16	193	345 17 3	.....
Newtown	600	...	114	702 19 5	.....	1,100	3	185	412 9 8	.....	1,152	6	346	367 0 7	.....
North Botany	...	...	...	.....	.....	...	...	...	7 13 0	8 17 4	...	...	...	6 0 5	16 3 4
North Sydney	530	...	100	454 5 10	.....	779	1	155	485 13 0	.....	1,162	2	372	770 9 10	.....
Paddington	650	3	196	641 2 7	7 4 6	960	3	248	761 17 5	582 0 1	1,527	3	329	704 4 4	387 7 7
Petersham	530	...	83	336 6 7	.....	820	3	154	275 3 9	.....	849	1	217	196 11 6	.....
Prospect and Sherwood	...	...	...	7 12 6	.....	6	...	3	2 0 3	.....	7	...	3	.....	.....
Randwick	200	...	19	709 14 11	.....	283	5	68	513 3 10	.....	387	5	121	236 16 0	.....
Redfern	800	...	280	4,733 7 0	1,471 17 3	924	6	191	1,700 19 3	325 8 3	1,538	5	290	1,368 16 5	227 15 2
Rockdale	3	...	...	10 5 9	.....	...	...	...	118 5 10	.....	142	...	28	169 3 8	.....
Rookwood	...	...	...	.....	.....	...	...	...	.....	.....	...	...	...	.....	.....
Ryde	...	...	...	.....	.....	...	...	...	.....	.....	...	...	...	.....	.....
St. Peters	50	...	16	123 0 11	.....	250	1	48	86 3 9	.....	223	1	60	71 0 11	.....
Strathfield	50	...	7	78 18 0	.....	120	1	25	56 1 11	.....	149	...	23	53 17 4	.....
Waterloo	250	...	70	316 12 10	.....	375	1	43	430 12 0	137 10 2	415	2	119	408 15 6	41 3 2
Waverley	600	1	81	559 11 2	.....	544	3	134	389 17 7	.....	883	6	160	215 14 2	.....
Willoughby	...	...	...	.....	.....	...	...	...	.....	.....	...	...	...	.....	.....
Woollahra	650	1	118	656 13 0	.....	468	3	73	593 9 9	202 6 3	836	1	201	371 13 8	24 6 6
Government	...	...	...	.....	.....	...	...	...	.....	.....	...	..	...	780 19 9	.....
Sundry Plumbers, Drainers, and Others	...	...	...	.....	.....	...	...	...	.....	.....	...	...	...	17 8 8	3,224 14 3
Totals	13,713	82	2,423	34,668 16 7	10,519 13 10	20,250	327	3,933	24,673 3 4	7,610 8 11	28,567	354	5,856	26,028 4 2	11,544 17 1

HERBERT J. BEAUMONT, Assessor.

Summary of Rates, Fees, &c., for Water.

Ward or Borough.	No. of Properties Liable.	Water Rates.	Meter Accounts.	New Mains.	House Supply.	Stock.	Gardens.	Special Fees.	Building Fees	Revenue for 1891.	Less Rates Cancelled or Removed.	Net revenue.	Arrears from Previous Years.	Total Water Rates receivable to 31st Dec., 1891.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Bourke Ward	1,199	10,425 0 4	5,505 13 7	.....	225 16 1	10 5 0	7 0 0	40 0 0	11 13 0	16,225 8 0	974 10 7	15,250 17 5	2,170 13 5	17,421 10 10
Brisbane Ward	1,394	7,350 6 11	3,081 18 3	.....	120 9 3	29 2 6	1 15 0	34 16 0	38 17 6	10,657 5 5	207 10 10	10,449 14 7	2,368 3 10	12 817 18 5
Cook Ward	6,209	7,655 1 1	1,272 16 10	.....	46 13 7	201 7 6	6 0 0	6 17 2	61 12 3	9,250 8 5	271 8 2	8,979 0 3	870 11 2	9,849 11 5
Denison Ward	4,285	6,559 7 2	9,991 12 3	.....	65 8 3	130 17 6	2 10 0	15 7 0	51 12 6	16,816 14 8	415 7 7	16,401 7 1	3,321 5 5	19,722 12 6
Fitzroy Ward	3,622	6,444 17 4	1,267 0 5	0 16 6	23 4 11	112 15 0	39 0 0	7 15 0	14 8 0	7,909 17 2	128 4 5	7,781 12 9	877 9 0	8,659 1 9
Gipps Ward	1,882	4,459 14 4	3,487 10 8	....	28 15 1	18 15 0	2 0 0	4 2 0	20 14 9	8,021 11 10	74 17 4	7,946 14 6	1,057 13 6	9,004 8 0
Macquarie Ward	1,891	7,944 12 0	1,559 18 6	.....	182 13 5	40 5 0	2 5 0	39 15 6	9 7 0	9,778 16 5	384 14 11	9,394 1 6	1,857 13 8	11,251 15 2
Phillip Ward	2,464	4,079 2 9	2,528 4 9	.....	43 15 1	84 7 6	4 10 0	9 1 0	29 15 0	6,778 16 1	163 19 10	6,614 16 3	1,024 12 0	7,639 8 3
Alexandria	1,678	1,202 4 11	292 17 11	2 12 1	16 10 6	63 2 6	1 0 0	5 5 0	30 5 0	1 613 17 11	34 2 1	1,579 15 10	272 12 7	1,852 8 5
Ashfield	2,375	3,087 19 0	494 14 5	3 16 4	34 4 5	30 7 6	102 0 0	6 10 0	65 7 6	3,833 19 2	64 2 7	3,769 16 7	567 1 10	4,336 18 5
Auburn	116	.....	.....	23 6 2	0 1 0	.....	.....	.....	1 10 0	24 17 2	0 0 8	24 16 6	.....	24 16 6
Balmain	5,287	4,401 10 10	2,682 18 11	2 10 9	13 1 2	116 2 6	36 15 0	15 17 6	78 16 6	7,347 13 2	128 3 7	7,219 9 7	733 18 4	7,953 7 11
Botany	205	2 5 0	....	15 12 0	2 6 1	....	.....	0 2 6	4 10 0	24 15 7	1 6 2	23 9 5	....	23 9 5
Burwood	1,326	1,856 16 1	374 1 4	0 8 5	23 16 4	34 12 6	32 10 0	1 5 0	20 7 6	2,343 17 2	26 15 2	2,317 2 0	254 3 5	2,571 5 5
Campbelltown	204	311 10 0	114 12 11	.....	1 10 6	0 10 0	2 0 0	1 0 0	1 10 0	432 13 5	16 5 7	416 7 10	65 16 7	482 4 5
Camperdown	1,423	1,267 19 3	151 1 11	.....	57 3 4	80 0 0	4 10 0	4 5 0	33 10 0	1,598 9 6	145 0 4	1,453 9 2	192 16 9	1,646 5 11
Canterbury	215	156 10 11	....	0 16 11	0 15 6	2 7 6	.....	.....	3 0 0	163 10 10	21 14 4	141 16 6	47 11 7	189 8 1
Concord	278	313 3 11	441 4 0	9 9 3	5 8 0	10 2 6	1 10 0	2 0 0	2 15 0	785 12 8	4 18 3	780 14 5	212 8 1	993 2 6
Darlington	731	694 4 9	137 2 11	.....	5 11 2	30 10 0	.....	3 0 0	8 5 0	878 13 10	28 1 6	850 12 4	50 2 3	900 14 7
Drummoyne	213	219 11 2	21 10 6	1 0 5	3 11 4	2 7 6	1 0 0	2 0 0	3 10 0	254 17 11	2 7 11	252 10 0	25 14 1	278 4 1
Enfield	237	217 13 8	24 19 7	12 14 0	2 17 6	4 17 6	2 10 0	.....	4 5 0	269 17 3	10 1 7	259 15 8	28 16 2	288 11 10
Five Dock	118	53 2 9	6 18 0	33 15 6	7 6 1	5 0 0	.....	2 0 0	2 5 0	110 7 4	7 5 3	103 2 1	20 12 10	123 14 11
Glebe	3,576	3,814 6 5	818 19 8	....	21 8 4	157 5 0	34 0 0	5 5 0	48 0 0	4,899 4 5	162 2 6	4,737 1 11	1,136 3 8	5,873 5 7
Granville	655	532 7 11	13 11 6	1 17 1	7 10 10	8 5 0	3 15 0	.....	19 0 0	586 7 4	27 12 7	558 14 9	98 7 9	657 2 6
Guildford	14	24 14 11	3 7 2	..... .	0 6 0	0 5 0	.....	....	.. ..	38 13 1	1 1 0	27 12 1	16 12 8	44 4 9
Homebush	4	6 11 9	....	.....	0 18 9	.....	... .	.. ..	0 5 0	7 15 6	1 10 0	6 5 6	0 19 0	7 4 6
Hunter's Hill	.....	....	....	.....	.....	.....	.....	.. ... .	.....	.....	.....	....	....	.....
Hurstville	199	18 11 6	... .	31 1 6	6 13 2	.....	4 0 0	.....	.....	60 6 2	6 9 2	53 17 0	....	53 17 0
Islands	21	221 0 10	37 16 8	5 4 6	1 14 2	..... .	....	0 3 0	.....	265 19 2	1 0 10	264 18 4	16 13 4	281 11 8
Kogarah	262	221 12 8	42 3 0	8 8 5	8 5 0	5 5 0	11 10 0	2 0 0	13 5 0	312 9 1	15 15 11	296 13 2	35 11 3	332 4 5
Leichhardt	3,860	2,963 1 11	569 3 10	3 7 2	39 18 0	144 17 6	49 10 0	5 6 0	152 10 0	3,927 14 5	751 4 3	3,176 10 2	604 19 1	3,781 9 3
Liverpool	397	.. ..	....	232 18 9	0 9 6	3 0 0	0 10 0	....	7 2 6	244 0 9	.. . ..	244 0 9	.....	244 0 9
Macdonaldtown	1,183	796 19 1	209 5 6	.....	2 7 6	23 17 6	1 10 0	.....	10 15 0	1,044 14 7	11 11 3	1,033 3 4	169 14 9	1,202 18 1
Marrickville	2,868	2,750 17 6	382 14 11	4 3 9	59 5 10	66 2 6	56 15 0	5 1 0	74 12 6	3,299 13 0	119 10 8	3,180 2 4	735 14 3	3,915 16 7
Newtown	4,100	3,985 9 3	408 12 0	..... .	38 10 11	128 2 6	23 5 0	8 10 0	91 16 9	4,684 6 5	92 12 10	4,591 13 7	412 9 9	5,004 3 4
North Botany	101	4 10 0	....	.....	0 3 5	0 5 0	.....	... ...	.....	4 18 5	..... .	4 18 5	7 13 0	12 11 5
North Sydney	3,311	4,083 18 8	570 7 1	36 19 2	86 1 10	33 7 6	70 10 0	9 0 0	84 15 0	4,974 19 3	83 15 3	4,891 4 0	485 13 0	5,376 17 0
Paddington	3,869	4,474 19 1	1,176 14 10	.....	41 13 8	126 10 0	35 5 0	2 10 0	60 3 9	5,917 16 4	45 18 2	5,871 18 2	761 17 5	6,633 15 7
Petersham	2,329	2,601 7 1	203 19 1	1 3 7	34 11 5	43 0 0	76 0 0	4 10 0	62 17 6	3,027 8 8	39 11 0	2,987 17 8	275 3. 9	3,263 1 5
Prospect & Sherwood	26	35 0 3	6 5 0	.. ....	0 8 7	.....	.....	2 0 0	....	43 13 10	0 13 6	43 0 4	2 0 3	45 0 7
Randwick	1,031	1,722 13 3	585 18 4	1 3 0	35 13 5	42 17 6	45 0 0	1 12 2	23 2 6	2,458 0 2	332 12 10	2,125 7 4	513 3 10	2,638 11 2
Redfern	4,519	4,279 17 1	10,125 7 10	....	63 15 1	155 15 0	15 15 0	7 16 0	53 3 6	14,701 9 6	86 15 7	14,614 13 11	1,700 19 3	16,315 13 2
Rockdale	759	427 7 11	228 11 2	59 4 3	17 17 9	1 15 0	15 0 0	2 0 0	28 12 6	780 8 7	3 11 0	776 17 7	118 5 10	895 3 5
Rookwood	.. ...	.....	.....	.....	.....	... .	.....	.....	..... .	.....	.....	.....	....	.....
Ryde	.....	....	284 14 6	.....	.....	... .	.....	. .....	..... .	284 14 6	....	284 14 6	....	284 14 6
St. Peters	1,012	684 13 6	141 2 0	.....	4 6 1	40 7 6	1 0 0	1 10 0	12 10 0	885 9 1	6 14 3	878 14 10	86 3 9	964 18 7
Strathfield	333	650 8 9	326 1 8	0 11 3	21 1 1	4 0 0	22 0 0	..... .	16 0 0	1,040 2 9	9 18 5	1,030 4 4	56 1 11	1,086 6 3
Waterloo	1,932	1,415 0 1	863 11 8	.....	10 16 3	101 17 6	5 15 0	5 10 0	45 5 0	2,447 15 6	182 2 5	2,265 13 1	430 12 0	2,696 5 1
Waverley	1,855	2,387 4 6	540 6 8	3 19 7	27 19 8	62 12 6	70 5 0	1 2 6	59 2 0	3,152 12 5	236 18 9	2,915 13 8	389 17 7	3,305 11 3
Willoughby	1	..... .	.....	.....	0 9 5	... .	.....	.....	.....	0 9 5	.....	0 9 5	... .	0 9 5
Woollahra	2,137	3,318 18 11	861 19 10	15 14 7	52 11 11	92 10 0	130 10 0	11 0 0	51 0 0	4,534 5 3	275 4 3	4 259 1 0	598 9 9	4,857 10 9
Government	.....	....	780 19 9	.....	.....	.....	....	....	....	780 19 9	.....	780 19 9	.. ..	780 19 9
Sundry Plumbers & Ors.	... ..	....	.....	.....	.....	.....	.....	.....	.....	1,927 9 2	9 11 5	1,917 17 9	....	1,917 17 9
Totals	77,706	110,124 7 0	52,518 11 4	512 14 11	1,496 3 2	2,258 12 6	920 10 0	275 14 4	1,411 5 0	171,445 17 5	5,614 16 6	165,831 0 11	24,673 3 4	190,504 4 3

HERBERT J. BEAUMONT, Assessor.

Ward or Borough.	Summary of Sewerage Rates.																		General Summary of Rates, Fees, &c., for Water and Sewerage.											
	No. of Properties liable.	Sewerage Rates.			New sewers			Sewerage service.			Revenue for 1891.			Less rates cancelled or removed.			Net Revenue for 1891.			Arrears from Previous Years.			Total sewerage rates receivable to 31st Dec., 1891.			Gross Total water and sewerage rates receivable to 31st Dec., 1891			No. of Summonses Issued.	Amount sued for during 1891.			Amount paid without Summons.			Total paid during 1891.			Arrears to 31st December, 1891.		
		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Bourke Ward	1,152	14,608	14	0	.....			206	5	6	14,814	19	0	678	5	5	14,136	14	1	982	5	11	15,119	0	0	32,540	10	10	75	1,137	3	9	24,881	17	8	26,019	1	5	6,521	9	5
Brisbane Ward	1,361	9,374	11	1	.....			167	14	5	9,542	5	6	273	1	4	9,269	1	2	827	12	5	10,096	13	7	22,914	12	0	169	1,814	0	9	18,624	1	5	20,438	2	2	2,476	9	10
Cook Ward	5,795	8,940	14	4	.....			61	4	7	9,001	18	11	87	0	10	8,914	18	1	643	9	5	9,558	7	6	19,107	18	11	489	1,251	13	4	16,890	0	11	18,141	14	3	1,266	4	8
Denison Ward	3,494	7,564	2	1	4	8	1	130	19	10	7,699	10	0	455	17	9	7,243	12	3	1,005	16	5	8,249	8	8	27,972	1	2	379	1,196	13	8	22,310	18	5	23,507	12	1	4,464	9	1
Fitzroy Ward	3,876	7,348	12	0	17	1	7	26	2	5	7,391	16	0	31	7	0	7,360	9	0	238	3	9	7,598	12	9	16,257	14	6	334	1,072	3	3	13,604	3	5	14,676	6	8	1,581	7	10
Gipps Ward	1,718	4,911	17	6	.....			35	19	2	4,347	16	8	50	14	5	4,297	2	3	218	6	10	4,515	9	1	13,519	17	1	104	424	11	10	10,828	1	7	11,252	13	5	2,267	3	8
Macquarie Ward	1,891	10,219	3	9	.....			280	14	6	10,499	18	3	364	17	5	10,135	0	10	1,616	0	8	11,751	1	6	23,002	16	8	282	2,515	6	5	18,728	1	1	21,243	7	6	1,759	9	2
Phillip Ward	2,331	5,372	11	3	.....			58	15	8	5,431	6	11	77	17	11	5,353	9	0	562	13	1	5,916	2	1	13,535	10	4	212	892	7	8	10,238	7	5	11,130	15	1	2,424	15	3
Alexandria	851	34	19	10	199	1	9	1	17	2	235	18	9	2	10	10	233	7	11	.....			233	7	11	2,085	16	4	155	141	18	0	1,664	3	10	1,806	1	10	279	14	6
Ashfield	...	.....			.....			.....			.....			.....			.....			.....			.....			1,336	18	5	267	388	1	2	3,613	4	2	4,001	5	4	335	13	1
Auburn	...	.....			.....			.....			.....			.....			.....			.....			.....			24	16	6	...	.....			9	16	11	9	16	11	14	19	7
Balmain	...	.....			.....			.....			.....			.....			.....			.....			.....			7,953	7	11	310	368	5	1	6,289	6	7	6,657	11	8	1,295	16	3
Botany	..	.....			.....			.....			.....			.....			.....			.....			.....			23	9	5	1	7	10	0	4	17	0	12	7	0	11	2	5
Burwood	...	.....			.....			.....			.....			.....			.....			.....			.....			2,571	5	5	112	199	4	7	2,114	6	7	2,313	11	2	257	14	3
Campbelltown	...	.....			.....			.....			.....			.....			.....			.....			.....			482	4	5	10	9	9	2	385	0	2	394	9	4	87	15	1
Camperdown	11	539	16	4	.....			175	0	0	714	16	4	215	16	8	498	19	8	224	11	8	723	11	4	2,369	17	3	52	69	6	1	1,324	1	4	1,393	7	1	976	9	10
Canterbury	...	.....			.....			.....			.....			.....			.....			.....			.....			189	8	1	30	26	16	0	137	19	5	164	15	5	24	12	8
Concord	..	.....			.....			.....			.....			.....			.....			.....			.....			993	2	6	23	27	10	11	845	13	6	873	4	5	119	18	1
Darlington	716	830	19	0	.....			5	0	1	835	19	1	3	2	1	832	17	0	35	6	8	868	3	8	1,768	18	3	35	51	2	1	1,648	15	3	1,699	17	4	69	0	11
Drummoyne	..	.....			.....			.....			.....			.....			.....			.....			.....			278	4	1	30	15	8	10	242	7	8	257	16	6	20	7	7
Enfield	...	.....			.....			.....			.....			.....			.....			.....			.....			298	11	10	9	14	17	7	246	6	7	261	4	2	27	7	8
Five Dock	..	.....			.....			.....			.....			.....			.....			.....			.....			123	14	11	12	9	16	1	92	9	8	102	5	9	21	0	2
Glebe	...	.....			.....			.....			.....			.....			.....			.....			.....			5,873	5	7	188	252	15	8	5,288	4	1	5,540	19	9	332	5	10
Granville	...	.....			.....			.....			.....			.....			.....			.....			.....			657	2	6	58	37	15	1	551	12	4	589	7	5	67	15	1
Guildford	...	.....			.....			.....			.....			.....			.....			.....			.....			44	4	9	1	2	0	0	33	4	3	35	4	3	9	0	6
Homebush	...	.....			.....			.....			.....			.....			.....			.....			.....			7	4	6	..	.....			6	6	6	6	6	6	0	18	0
Hunter's Hill	..	.....			.....			.....			.....			.....			.....			.....			.....			.....			...	.....			.....			.....			.....		
Hurstville	...	.....			.....			.....			.....			.....			.....			.....			.....			53	17	0	...	.....			29	18	2	29	18	2	23	18	10
Islands	...	.....			.....			.....			.....			.....			.....			.....			.....			281	11	8	...	.....			135	3	4	135	3	4	146	8	4
Kogarah	..	.....			.....			.....			.....			.....			.....			.....			.....			332	4	5	7	5	15	6	285	17	3	291	12	9	40	11	8
Leichhardt	..	.....			.....			.....			.....			.....			.....			.....			.....			3,781	9	3	321	314	11	4	3,050	8	7	3,394	19	11	386	9	4
Liverpool	...	.....			.....			.....			.....			.....			.....			.....			.....			244	0	9	...	.....			112	9	4	112	9	4	131	11	5
Macdonaldtown	...	.....			.....			.....			.....			.....			.....			.....			.....			1,202	18	1	37	41	16	6	1,036	9	4	1,078	5	10	124	12	3
Marrickville	...	.....			.....			.....			.....			.....			.....			.....			.....			3,915	16	7	200	323	5	9	3,216	13	7	3,563	19	4	345	17	3
Newtown	...	.....			.....			.....			.....			.....			.....			.....			.....			5,004	3	4	352	365	7	11	4,271	14	10	4,637	2	9	367	0	7
North Botany	3	7	6	0	.....			.....			7	6	0	.....			7	6	0	8	17	0	16	3	4	18	14	9	...	.....			6	11	0	6	11	0	22	3	9
North Sydney	...	.....			.....			.....			.....			.....			.....			.....			.....			5,376	17	0	374	457	6	10	4,149	0	4	4,606	7	2	770	9	10
Paddington	3,250	4,311	8	2	63	17	7	196	10	1	4,571	15	10	61	19	7	4,509	16	9	582	0	1	5,091	16	4	11,725	11	11	332	1,015	18	9	9,618	1	3	10,634	0	0	1,091	11	11
Petersham	...	.....			.....			.....			.....			.....			.....			.....			.....			3,263	1	5	218	224	17	5	2,841	12	6	3,066	9	11	196	11	6
Prospect & Sherwood	...	.....			.....			.....			.....			.....			.....			.....			.....			45	0	7	3	5	16	9	39	3	10	45	0	7	.....		
Randwick	...	.....			.....			.....			.....			.....			.....			.....			.....			2,638	11	2	126	256	11	1	2,145	4	1	2,401	15	2	236	16	0
Redfern	3,580	3,724	8	6	259	2	5	550	17	0	4,534	7	11	77	14	8	4,456	13	3	325	8	5	4,782	1	6	21,097	14	8	295	603	10	1	18,897	13	0	19,501	3	1	1,595	11	7
Rockdale	...	.....			.....			.....			.....			.....			.....			.....			.....			895	3	5	28	26	19	11	698	19	10	725	19	9	169	3	8
Rookwood	...	.....			.....			.....			.....			.....			.....			.....			.....			.....			...	.....			.....			.....			.....		
Ryde	...	.....			.....			.....			.....			.....			.....			.....			.....			284	14	6	...	.....			284	14	6	284	14	6	.....		
St. Peters	...	.....			.....			.....			.....			.....			.....			.....			.....			944	18	7	61	54	6	0	839	11	8	893	17	8	71	0	11
Strathfield	...	.....			.....			.....			.....			.....			.....			.....			.....			1,086	6	3	23	36	13	4	995	15	7	1,032	8	11	53	17	4
Waterloo	1,392	558	1	5	182	6	4	117	16	0	858	3	9	14	13	4	843	10	5	137	10	2	981	0	7	3,677	5	8	121	172	16	1	3,054	10	11	3,227	7	0	449	18	8
Waverley	...	.....			.....			.....			.....			.....			.....			.....			.....			3,305	11	3	166	292	1	11	2,797	15	2	3,089	17	1	215	14	2
Willoughby	...	.....			.....			.....			.....			.....			.....			.....			.....			0	9	5	...	.....			0	9	5	0	9	5	.....		
Woollahra	886	1,245	12	11	18	4	1	28	3	6	1,292	0	6	33	10	4	1,258	10	2	202	6	3	1,460	16	5	6,318	7	2	202	486	12	11	5,435	14	1	5,922	7	0	396	0	2
Government	...	.....			.....			.....			.....			.....			.....			.....			.....			780	19	9	...	.....			.....			.....			780	19	9
Compulsory Drainage Plans, Fees, &c.	...	.....			.....			.....			1,951	11	0	.....			1,951	11	0	.....			1,951	11	0	3,869	8	9	...	.....			627	5	10	627	5	10	3,242	2	11
Totals	31,807	78,992	18	2	744	1	10	2,042	19	11	83,731	10	11	2,428	12	7	81,302	18	4	7,610	8	11	88,913	7	3	279,417	11	6	6,210	16,640	5	1	225,204	5	2	241,844	10	3	37,573	1	3

HERBERT J. BEAUMONT, Assessor.

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Summary of Arrears on 31st December, 1891.

Ward or Borough.	House Properties.		Vacant Land.		Churches & Charities.		Government.		Municipal.		Meters.	Total.		Increase on Previous Year.		Decrease on Previous Year.	
	Water.	Sewerage.	Water.	Sewerage.	Water.	Sewerage.	Water.	Sewerage.	Water.	Sewerage.	Water.	Water.	Sewerage.	Water.	Sewerage.	Water.	Sewerage.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Bourke Ward	445 4 10	460 3 5	114 7 9	149 4 8	2 5 0	2 12 6	963 11 0	1,481 15 7	.....	.....	2,902 4 8	4,427 13 3	2,093 16 2	2,256 19 10	1,111 10 3	.....	.....
Brisbane Ward	253 7 2	256 14 2	113 18 5	111 12 1	69 19 0	49 16 1	166 15 3	174 1 0	108 8 9	180 4 10	982 13 1	1,695 1 8	781 8 2	.....	....	673 2 2	46 4 3
Cook Ward	290 19 1	345 9 5	93 1 0	109 0 0	95 7 7	63 12 5	23 11 9	14 17 3	.....	.. ...	225 6 2	733 5 7	532 19 1	.....	.....	137 5 7	110 10 4
Denison Ward	269 19 11	355 14 4	127 2 6	89 3 4	53 17 10	54 14 4	133 9 5	281 17 6	4 10 0	5 5 0	3,088 14 11	3,677 14 7	786 14 6	356 0 2	.....	.....	219 1 11
Fitzroy Ward	100 0 10	108 3 9	32 7 4	37 10 3	45 5 0	32 4 11	158 17 5	312 11 5	.....	.....	753 17 11	1,090 8 6	490 19 4	212 19 6	252 15 7	.....	.....
Gipps Ward	250 15 10	146 1 10	50 3 10	79 0 5	24 3 9	18 6 8	42 5 0	49 19 11	8 9 6	7 7 10	1,586 9 10	1,966 7 0	300 16 8	908 13 6	82 9 10	.....	.....
Macquarie Ward	314 17 6	377 12 0	58 4 5	107 12 1	119 0 10	95 3 0	169 9 10	240 11 9	.....	.....	276 17 9	938 10 4	820 18 10	.....	.....	919 3 4	795 1 10
Phillip Ward	149 1 2	174 13 7	43 13 3	43 16 6	57 6 9	34 11 9	256 17 0	772 2 9	23 0 0	26 15 0	842 17 0	1,372 15 8	1,051 19 7	348 3 8	489 6 6	.....	.....
Alexandria	64 2 8	57 5 10	11 9 2	.....	7 1 3	0 15 2	1 5 0	0 9 8	.....	.....	137 5 9	221 3 10	58 10 8	.....	58 10 8	61 8 9	.....
Ashfield	158 5 0	.....	16 7 8	.....	46 11 5	.....	30 16 9	.. ....	.....	.....	88 12 3	335 13 1	.....	.....	....	231 8 9	.....
Auburn	14 12 11	.....	.....	.....	.....	.....	0 6 8	.....	.....	.....	.....	14 19 7	.....	14 19 7	.....	.....	.....
Balmain	133 19 0	.....	4 13 0	.....	62 17 0	.....	21 6 0	.....	.....	.....	1,073 1 3	1,295 16 3	.....	501 17 11	.....	.....	.....
Botany	11 2 5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11 2 5	.....	11 2 5	.....	.....	.....
Burwood	60 9 2	.....	14 0 0	.....	21 12 0	.....	11 14 9	.....	0 15 0	.....	149 3 4	257 14 3	.....	3 16 10	.....	.....	.....
Campbelltown	9 14 8	.....	.....	.....	8 13 9	.....	86 8 6	.....	.....	.....	32 18 2	87 15 1	.....	21 18 6	.....	.....	.....
Camperdown	37 15 5	.....	3 5 6	.....	12 14 6	.....	156 18 0	682 14 8	.....	.....	84 1 9	293 15 2	682 14 8	100 18 5	458 3 0	.....	.....
Canterbury	4 11 4	.....	6 11 6	.....	6 13 7	.....	3 2 3	.....	.....	.....	3 14 0	24 12 8	.....	.....	.....	22 18 11	.....
Concord	11 5 1	.....	14 19 2	.....	6 14 6	.....	1 5 0	.....	.....	.....	85 14 4	119 18 1	.....	.....	.....	92 10 0	.....
Darlington	9 7 3	11 3 9	.....	.....	2 16 0	3 5 4	6 12 9	8 0 4	.....	.....	27 15 6	46 11 6	22 9 5	.....	.....	3 10 9	12 17 3
Drummoyne	9 5 7	.....	1 10 0	.....	0 15 0	.....	1 16 6	.....	.....	.....	7 9 6	20 7 7	.....	.....	.....	5 6 6	.....
Enfield	13 11 9	.....	.....	.....	3 18 8	.....	1 9 3	.....	.....	.....	8 8 0	27 7 8	.....	.....	.....	1 8 6	.....
Five Dock	17 12 11	.....	.....	.....	0 12 5	.....	0 15 0	.....	2 5 10	.....	0 3 0	21 9 2	.....	0 16 4	.....	.....	.....
Glebe	45 9 3	.....	.....	.....	48 14 9	.....	11 8 6	.....	.....	.....	226 13 4	332 5 10	.....	.....	.....	303 17 10	.....
Granville	43 7 8	.....	0 18 7	.....	11 0 4	.....	9 9 6	.....	.....	.....	3 4 0	67 15 1	.....	.....	.....	30 12 8	.....
Guildford	.....	.....	9 0 6	.....	.....	.....	.....	.....	.....	.....	.....	9 0 6	.....	.....	.....	7 12 2	.....
Homebush	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15 1 6	15 1 6	.....	14 2 6	.....	.....	.....
Hunter's Hill	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hurstville	17 4 11	.....	.....	.....	0 3 5	.....	.....	.....	.....	.....	6 10 6	23 18 10	.....	23 18 10	.....	.....	.....
Islands	146 8 4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	146 8 4	.....	129 15 0	.....	.....	.....
Kogarah	26 8	.....	1 4 4	.....	5 4 8	.....	2 1 8	.....	.....	.....	5 13 0	40 11 8	.....	5 0 5	.....	.....	.....
Leichhardt	141 11 6	.....	25 6 2	.....	41 18 6	.....	61 15 9	.....	0 5 0	.....	115 12 5	386 9 4	.....	.....	.....	218 9 9	.....
Liverpool	131 5 5	.....	.....	.....	.....	.....	.....	.....	.....	.....	0 6 0	131 11 5	.....	131 11 5	.....	.....	.....
Macdonaldtown	15 12 6	.....	.....	.....	4 14 6	.....	2 16 3	.....	.....	.....	101 9 0	124 12 3	.....	.....	.....	45 2 6	.....
Marrickville	192 9 7	.....	30 19 8	.....	44 18 0	.....	7 18 6	.....	.....	.....	69 11 6	345 17 3	.....	.....	.....	339 17 0	.....
Newtown	112 12 11	.....	17 13 10	.....	65 18 0	.....	33 13 4	.....	.....	.....	137 2 6	367 0 7	.....	.....	.....	45 0 2	.....
North Botany	6 0 5	6 8 4	.....	9 15 0	.....	.....	.....	.....	.....	.....	.....	6 0 5	16 3 4	.....	7 6 0	1 12 7	.....
North Sydney	441 7 11	.....	57 7 0	.....	24 1 10	.....	36 13 7	.....	.....	.....	210 19 6	770 9 10	.....	284 16 10	.....	.....	.....
Paddington	110 19 9	176 3 10	8 19 11	8 7 10	41 17 0	23 3 2	66 9 10	179 12 9	.....	.....	475 17 10	704 4 4	387 7 7	.....	.....	67 13 1	194 12 6
Petersham	55 16 7	.....	5 3 0	.....	71 17 11	.....	15 18 6	.....	0 15 0	.....	41 0 6	190 11 6	.....	.....	.....	78 12 3	.....
Prospect and Sherwood	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 0 3	.....
Randwick	82 4 11	.....	44 11 0	.....	21 0 9	.....	11 16 3	.....	.....	.....	77 3 1	236 16 0	.....	.....	.....	276 7 10	.....
Redfern	136 18 0	170 9 6	12 14 3	12 6 5	35 4 8	15 19 10	20 2 5	28 19 5	.....	.....	1,157 17 1	1,368 16 5	227 15 2	.....	.....	332 2 10	97 13 1
Rockdale	76 14 7	.....	1 11 3	.....	12 1 4	.....	2 9 0	.....	.....	.....	76 17 6	169 3 8	.....	50 17 10	.....	.....	.....
Rookwood	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ryde	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Peters	19 12 9	.....	1 5 2	.....	4 15 6	.....	4 11 0	.....	.....	.....	40 16 6	71 0 11	.....	.....	.....	15 2 10	.....
Strathfield	13 1 4	.....	13 8 7	.....	4 6 3	.....	2 16 8	.....	.....	.....	6 1 6	39 13 10	.....	.....	.....	16 8 1	.....
Waterloo	76 2 3	31 12 4	21 4 10	4 6 10	17 15 3	1 1 11	2 16 3	4 2 1	.....	.....	290 16 11	408 15 6	41 3 2	.....	.....	21 16 6	96 7 0
Waverley	67 9 11	.....	30 11 9	.....	18 13 6	.....	5 2 6	.....	4 10 0	.....	89 6 6	215 14 2	.....	.....	.....	174 3 5	.....
Willoughby	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Woollahra	87 15 0	7 18 8	25 13 5	.....	55 9 6	13 6 11	47 17 0	8 1 4	.....	.....	154 13 0	371 13 8	21 6 6	.....	.....	226 16 1	177 19 9
Government	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	780 19 9	780 19 9	.....	780 19 9	.....	.....	.....
Sundry Plumbers, Drainers & others	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17 8 8	3,224 14 3	17 8 8	3,224 14 3	.....	.....
Totals	4,676 15 0	2,685 14 4	1,022 2 9	702 4 5	1,178 0 0	408 14 0	2,544 9 7	4,234 17 5	153 19 0	228 12 8	16,435 7 7	26,023 4 2	11,544 17 1	6,237 0 11	6,684 16 1	4,892 0 1	1,750 7 11

HERBERT J. BEAUMONT, Assessor.

Waste Water Inspectors' Report for 1891.

Ward or Borough.	No. of Inspections.	Special Inspections.	Re-inspections where Notices had been served.	Total number of Inspections and Re-inspections.	Notices Served. For Pollution. Urinals.	Sinks.	To pay Special Fees, or fix Meters. Stock.	Gardens.	Bakeries.	Engines.	Laundries	12 Bedrooms or over.	Sundries.	Waste.	Total Notices Served.	No. of Informations.	Amount of Fines. £ s. d.
Bourke Ward	974	69	113	1,156	13	.....	16	.....	.....	7	.....	11	6	48	101	.....	.....
Brisbane ,,	724	253	124	1,101	.....	.....	45	.....	.....	5	.....	15	11	39	115	6	.....
Cook ,,	1,173	397	348	1,918	.....	.....	201	.....	.....	2	.....	2	4	116	325	6	.....
Denison ,,	758	357	251	1,366	.....	.....	163	.....	1	1	.....	6	12	43	226	12	2 0 0
Fitzroy ,,	2,124	223	273	2,620	1	.....	123	1	1	1	1	1	3	97	229	13	11 0 0
Gipps ,,	.....	83	75	158	.....	.....	38	.....	.....	2	.....	16	1	14	71	.....	.....
Macquarie ,,	.....	257	83	340	2	.....	25	.....	1	.....	2	11	2	19	62	4	1 0 0
Phillip ,,	673	279	144	1,096	.....	.....	94	.....	.....	.....	.....	1	.....	26	121	2	.....
Alexandria	.....	178	91	269	.....	.....	72	.....	1	.....	.....	.....	.....	11	84	7	0 10 0
Ashfield	.....	89	54	143	.....	.....	35	.....	.....	.....	.....	.....	.....	.....	35	.....	.....
Auburn	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Balmain	.....	274	350	624	.....	.....	122	.....	.....	.....	11	2	15	9	159	13	3 5 0
Botany	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Burwood	.....	103	74	177	.....	.....	38	.....	.....	.....	.....	.....	.....	3	41	.....	.....
Campbelltown	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Camperdown	.....	170	141	311	.....	.....	68	.....	.....	.....	.....	1	2	3	74	8	2 0 0
Canterbury	.....	50	4	54	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	4	.....	.....
Concord	.....	97	35	132	.....	.....	20	.....	.....	.....	.....	.....	.....	.....	29	.....	.....
Darlington	.....	148	67	215	.....	3	49	.....	.....	.....	.....	.....	.....	.....	52	.....	.....
Drummoyne	.....	9	.....	9	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Enfield	.....	120	15	135	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	11	.....	.....
Five Dock	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glebe	1,945	442	275	2,662	.....	1	193	.....	.....	.....	.....	2	4	91	291	24	6 15 0
Granville	.....	43	11	54	.....	.....	10	.....	.....	.....	.....	1	.....	.....	11	.....	.....
Guildford	.....	25	.....	25	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Homebush	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hunter's Hill	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hurstville	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kogarah	.....	14	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Leichhardt	.....	347	71	418	.....	.....	77	.....	.....	.....	.....	.....	.....	.....	77	9	3 0 0
Liverpool	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Macdonaldtown	1,201	84	10	1,295	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	11	.....	.....
Marrickville	.....	112	21	133	.....	.....	11	.....	.....	.....	.....	.....	.....	13	24	.....	.....
Newtown	1,394	287	105	1,786	.....	.....	83	.....	.....	.....	.....	2	.....	8	93	4	.....
North Botany	.....	3	.....	3	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
North Sydney	.....	218	69	287	.....	.....	64	.....	1	.....	1	1	1	3	71	.....	.....
Paddington	.....	256	95	351	3	.....	86	1	.....	.....	.....	7	.....	18	115	11	0 10 0
Petersham	795	132	30	957	.....	.....	25	.....	.....	.....	.....	1	1	1	28	1	0 5 0
Prospect and Sherwood	.....	1	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Randwick	.....	95	29	124	.....	.....	22	.....	.....	.....	.....	.....	.....	.....	22	3	1 0 0
Redfern	.....	572	190	762	.....	.....	152	.....	.....	.....	.....	2	.....	6	160	5	2 0 0
Rockdale	.....	14	.....	14	.....	.....	6	.....	.....	.....	.....	.....	.....	2	8	.....	.....
Rookwood	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ryde	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Peters	.....	81	.....	81	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	4	0 10 0
Strathfield	.....	69	.....	69	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	11	.....	.....
Waterloo	193	308	159	660	.....	2	90	.....	.....	.....	.....	1	1	.....	94	6	.....
Waverley	.....	134	63	197	.....	.....	51	.....	.....	.....	.....	.....	.....	2	53	.....	.....
Willoughby	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Woollahra	.....	146	32	178	.....	.....	39	.....	.....	.....	1	.....	2	10	52	6	1 0 0
Totals	11,954	6,539	3,402	21,895	19	6	2,074	2	5	18	16	83	65	582	2,870	145	34 15 0

HERBERT J. BEAUMONT, Assessor.

Stores Branch, 25th January, 1892.

Sir,

I have the honour to report that during the past year, stores to the value of £110,053 12s. 3d. were received from the following sources:—Contractors; local purchases not under contract; returns of surplus material from works in progress; old material taken out of the ground in replacement by new work; and proceeds of manufactures by the Board's operatives. The issues over the same period to all Branches of the Department amount to £104,150 18s. 7d.

The following Abstract and Summaries will give a more detailed account of the transactions of this Branch during the year 1891:—

ABSTRACT OF RECEIPTS AND ISSUES.

Description.	Receipts.	Issues.	
		Water.	Sewerage.
	£ s. d.	£ s. d.	£ s. d.
A—Water Pipes	77,823 9 2	70,407 13 8	
B—Stop Valves	2,816 9 10	2,779 9 10	
C—Special Castings	15,812 16 10	14,916 12 5	
D—General Stores	14,600 16 5	14,804 16 10	1,242 5 10
Totals	£111,053 12 3	£102,908 12 9	£1,242 5 10

SUMMARY A.—WATER PIPES.

Description.	Received.		Issued.		Balance on hand, 31/12/91.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	No.	£ s. d.	No.	£ s. d.	No.	£ s. d.
3-inch, cast iron	77	27 5 5	1,984	575 1 7	4	1 7 4
4 ,, ,,	14,433	7,457 1 0	21,536	11,071 17 4	299	154 9 8
5 ,, ,,	102	61 4 0	100	44 10 9	11	5 17 4
6 ,, ,,	20,445	18,459 5 6	18,425	16,631 12 4	822	730 19 0
9 ,, ,,	12,096	20,609 16 4	10,177	17,314 2 4	1,901	3,217 0 0
10 ,, ,,					193	308 7 5
12 ,, ,,	3,547	11,349 1 5	1,822	5,847 11 5	1,422	727 18 8
15 ,, ,,	1,197	4,807 19 0	368	1,456 12 0	35	139 18 2
18 ,, ,,			6	19 15 2	90	342 18 2
20 ,, ,,	4	21 17 0	10	53 14 4	71	373 6 1
24 ,, ,,			10	85 12 6	20	169 16 6
	Feet.		Feet.		Feet.	
30 ,, ,,			47	42 19 11	148	154 8 8
36 ,, ,,	3,518	5,863 6 8	4,848	8,079 3 4	914	1,523 6 8
42 ,, ,,	72	135 18 0	84	158 11 0	22	41 10 6
24¾ ,, wrought iron	9,579	9,030 14 10	9,575	9,026 9 8	5	4 14 7
Total on charge by Number	51,901	62,793 9 8	54,438	53,100 9 9	4,868	6,171 18 4
Total on charge by Feetage	13,169	15,029 19 6	14,554	17,307 3 11	1,089	1,724 0 5
Total values		£77,823 9 2		£70,407 13 8		£7,895 18 9

SUMMARY B.—STOP VALVES.

Size.	Received.		Issued.		Balance on hand, 31/12/91.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	No.	£ s. d.	No.	£ s. d.	No	£ s. d.
3-inch	10	14 5 0	46	65 11 0	33	47 0 6
4 ,,	262	541 9 4	367	758 9 4	89	183 18 8
6 ,,	200	647 10 0	251	812 12 3	119	385 5 3
9 ,,	81	494 15 6	82	501 0 8	20	122 3 4
12 ,,	36	361 10 0	26	261 1 8	23	230 19 2
15 ,,			4	67 16 0	4	65 9 6
18 ,,			1	20 18 0	5	104 10 0
20 ,,						
24 ,,	2	67 0 0	4	134 0 0		
30 ,,	5	361 5 0	2	140 0 11	2	144 10 0
36 ,,	2	180 0 0			2	180 0 0
42 ,,	1	145 0 0			1	145 0 0
Air valves	5	3 15 0	24	18 0 0	23	35 12 6
Totals	604	£2,816 9 10	807	£2,779 9 10	321	£1,644 8 11

Summary C.—Special Castings.

Description.	Received.		Issued.		Balance on hand, 31/12/91.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	No.	£ s. d.	No.	£ s. d.	No.	£ s. d.
Bends	1,224	981 17 6	1,320	895 17 4	716	1,287 16 3
Base Pieces for Hydrant Surface Boxes	9,024	1,466 9 0	5,247	852 14 5	4,895	795 8 9
Caps, End	1,580	220 4 9	1,305	181 17 2	985	208 0 3
Collars	1,954	753 8 7	2,861	1,112 19 10	222	279 2 8
Cross Pipes	162	199 12 7	267	340 4 0	313	605 16 2
Hydrants, Ball	6,245	2,419 18 9	7,027	2,723 3 2	489	189 9 9
„ Screw Down	166	249 0 0	570	750 0 0	156	234 0 0
Hydrant Pipes	3,341	2,339 5 4	2,420	1,533 6 2	1,489	1,217 18 10
Reducing Pipes	534	330 8 0	474	363 13 6	272	297 9 9
Risers, Flanged for Hydrants	2,438	324 11 9	2,745	370 8 5	557	97 17 8
Surface Boxes for Hydrants	9,553	3,632 13 0	6,774	2,601 0 0	6,258	2,456 0 4
Tee Pipes	1,382	1,497 7 8	1,415	1,645 7 0	571	932 0 0
Miscellaneous	2,151	1,347 19 11	2,727	1,546 1 5	1,032	853 11 2
Totals	39,754	£15,812 16 10	35,152	£14,916 12 5	17,955	£9,454 12 5

Summary D.—General Stores.

Description.	Received.		Issued Water Service.		Balance on hand, 31/12/91.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Ts. cwt. q. lbs.	£ s. d.	Ts. cwt. q. lbs.	£ s. d.	Ts. cwt. q. lbs.	£ s. d.
Bolts and Nuts	6 6 1 20	162 15 8	7 4 0 0	187 2 7	2 2 1 8	54 9 9
Coals for melting Lead	46 5 1 21	49 14 10	51 0 0 0	55 1 8	1 4 1 0	1 6 1
Coals for Pumping Engines	3,731 12 3 12	2,850 10 6	3,731 12 3 12	2,850 10 6	.....	.....
Lead for jointing Pipes	300 11 2 0	4,583 15 4	305 0 0 0	4,650 11 4	0 11 2 27	8 19 1
Yarn „ „	5 2 0 20	188 3 6	5 2 0 0	187 17 2	0 9 1 0	17 0 9
	No.		No.		No.	
Bricks, common	30,575	76 8 9	36,000	97 11 4	308	0 15 5
	Sets.		Sets.		Sets.	
Concrete Blocks for Hydrant Surface Boxes	4,033	1,008 5 0	4,784	1,195 6 3	333	83 5 0
	Casks.		Casks.			
Cement	1,222	850 6 2	1,288	900 16 0	.....	.....
Miscellaneous	.....	4,830 16 8	.....	4,680 0 0	.....	1,077 8 3
Totals	.....	14,600 16 5	.....	14,804 16 10	.....	1,243 4 4
			Sewerage Service.			
Total	.....	.....	.....	1,242 5 10		

The Secretary.

A. ELLICE FLINT,
Comptroller of Stores.

Board of Water Supply and Sewerage,
Sydney, 30th January, 1892.

FOURTH ANNUAL REPORT OF THE ENGINEER FOR WATER SUPPLY.

I HAVE the honor to submit my Fourth Annual Report of work performed during the year 1891 in this branch, of such projects, incidents, and accidents as have taken place, together with supplementary reports of the operations of sub-branches prepared by the respective heads of those branches, viz., the pipe laying, pumping and tap testing, meter testing and repairs, with returns from each Branch, exhibiting the operations in a tabular form. A return of meters fixed, removed, and otherwise dealt with, is also furnished by the Meter Clerk, showing also the rate of progress in that branch.

The Supply from Prospect.

The supply from Prospect sufficed for all requirements from the time it was introduced until the summer of 1890, when the increased consumption, added to the great draught created by the powerful new pumps, were found to have the effect of exhausting the Crown-street Reservoir, and thereby lowering the hydraulic grade between Potts' Hill and Crown-street. This result, though delivering more water into Sydney, lowered the supply to some of the western suburbs, especially to Balmain. This entailed on the Board the necessity of giving the Ryde pressure to Balmain, and the Woollahra pressure to Newtown and Petersham, which will form a good supply for those districts. In other respects the supply was just sufficient to meet requirements, but required considerable economy in distribution during hot weather. The consumption during the day hours amounted to no less than 1,000,000 gallons per hour, and the pipes do not deliver at this rate, therefore the reservoir was depleted during the day, and had hardly time to recover before next morning.

The Duplicate or Second Trunk Main from Potts' Hill.

Foreseeing this shortcoming, and in order that the City should not be dependent upon one pipe, Mr. Darley had recommended the Public Works Department to lay a second line of main, 4ft. diameter, from Potts' Hill to Crown-street. This work was let at the end of the year, and will be laid by July; it will set at rest all fears of interruption to the supply, besides giving a more abundant supply to those suburbs that had suffered from an irregular service. This will also put off for a few years the necessity for the low level balance reservoir that has been projected to be erected at Moore Park. The amount of water received from Prospect during the summer weather amounts to 12,000,000 gallons per twenty-four hours.

Quality of the Water.

The quality, which is tested monthly, is certified to stand high as a potable water; it is clear and tasteless, and exceptionally free from any mineral or other detrimental admixture. A high medical authority has stated that its effect on the death rate, and in the suppression of disease, is observable.

Pipe Laying.

The activity in this Branch has considerably exceeded that of any previous year, and would have been greater but for the failure of two of the Board's contractors to fulfil their contracts, and the delay occasioned by re-letting the same, as well as the want of pipes. A great proportion of the work consisted of laying new and more ample mains, chiefly to replace the old pipes in the city, which have become inadequate for present requirements, as well as deteriorated from age, though the rate of laying new mains was in no way diminished. The work proposed to be done in the first half of this year will probably have so met the bulk requirements as to cause an abatement in the rate. As a proof of the way in which the Board's work of pipe laying is done, it is due to contractors and the Board's inspectors and gangers to point to the almost entire absence of leaks or fractures in the Board's mains, a notable case was that of North Shore, where an additional head of pressure of 160 feet was added to the former head without bursting a pipe or blowing a joint for over a week, when one joint blew.

New Rising Main to Paddington.

At the beginning of the year, a 36-inch cast iron rising main was laid from Crown-street to the Paddington reservoir, to replace the old 20-inch rising main, which was a combination composed partly of the old 30-inch Botany main and two 20-inch branches from Albion-street to Paddington. The result in

reducing

reducing the frictional resistance, and also in saving of fuel, was very marked. The old rising mains were at the end of the year, utilised as delivery mains for Paddington water to meet the demand for high level water, brought about by the Board's liberal distribution of water from Paddington levels throughout the central part of the city to conform with modern requirements.

24¾-inch Wrought Iron Main.

To obviate that liability to fracture found in cast iron pipes when exposed to the pulsations of powerful pumps, the Board sanctioned the laying of a line of 24¾-inch wrought iron pipes from Crown-street to Woollahra, in readiness for the new Worthington high duty pumping engines, then ordered. These were severely tested without showing a single leak or flaw of any kind, and when used showed a very small skin friction, notwithstanding that they are rivetted. These were treated, internally and externally, to a thick coating of asphalt and tar in equal proportion, applied to the heated iron, which, it is anticipated, will ensure a long usefulness.

Old Rotative Engines and Blake's, Crown-street.

The old rotative pumping machines, and the Blake's, were called into requisition once during the year, in order to allow of stopping the No. 1 Worthington, so that the new No. 2 Worthington might be connected to the new wrought iron rising main to Woollahra. After the stiffness due to congealed oil and oxidation of parts had been rubbed off, these engines worked as smoothly as ever, and kept up the supply for forty-eight hours, but could not have maintained it longer; the No. 2 Worthington then became available (on the 24th December), and have worked since with but one interruption for final adjustments.

Ryde Pumping Plant.

In December the above plant was completed and put through various tests successfully, and handed over to the Board by the Harbours and Rivers Department for use in raising water to Ryde reservoir for the use of that village, Hunter's Hill, Gladesville, and the heights of Balmain, and also to Chatswood for the North Sydney reticulation and Willoughby, to all of which districts trunk mains had been laid by the Harbours and Rivers Department. These localities can now be given a liberal and constant supply, the North Sydney supply being superior to that of any other community for pressure; the reticulation here had been complete for some years, and had been supplied indifferently well from Paddington levels by means of a submarine pipe under the harbour, with a small pump for the use of the higher levels; this pump is now disused.

Woollahra Pumps.

The pumping plant employed in raising water from the Woollahra reservoir into the Waverley reservoir will now be disused, the second Worthington plant being designed to throw water to that reservoir, direct from Crown-street, at a considerable economy. There is no work that can be foreseen for this engine and boiler. It will probably, therefore, be offered for sale for some country water supply, for which it would answer very well.

Botany Pumps.

Both the pumping plants at Botany have been keept in readiness for action for any emergency, but were not called into use during the year. The boilers are warmed in rotation every week, at a consumption of about 11 cwt. of coal per week, and the engines are turned at intervals.

Liverpool Supply.

This scheme was, for several reasons (rainy weather and want of pipes) considerably retarded, but was completed and put in use for the residents on 20th September, and an official opening took place on the 9th October, at which the Minister for Works, accompanied by the Board, attended. This supply is brought from the canal at the upper end of the Cecil Hill Tunnel by a 9-inch main to the top of Mount Young, a distance of 6 miles, and thence by a 6-inch pipe to the reticulation town mains. The larger main for the first section is designed to afford water for orchard irrigation to the adjacent lands, for which some informal applications are being made; but, so far, nothing practical has been done. The pressure in the town often rises to 100lbs. per square inch, and if a Fire Brigade were formed and a fire occurred, its power for extinction would be most effectual. In September the Board let a contract for the construction of an earthen dam, to contain 4,000,000 gallons, which, when filled, will last for two or three months during any time the canal may cease to run. The dam was drawing towards completion at the end of the year.

Hurstville Supply.

The supply to Hurstville was delayed for want of pipes until September, when all was in readiness to take up the work of supplying the district with water, viz.:—The gas pumping engine, which was purchased and fixed at Carlton Railway Station, is capable of throwing 8,000 gallons per hour into the 20,000 gallon tank at Penshurst. The consumption here has not exceeded 20,000 gallons per day, but soon will, as the Railway Department has erected running sheds here, which entail on the Board a large expense

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in supplying water to an establishment at such an elevation. The tank is erected on the allotment of ground selected by the Harbours and Rivers Department for the permanent supply reservoir for the district, being the most elevated spot; the capacity is 20,000 gallons, it is square, and rests on a permanent brick structure. A considerable activity is exhibited in this district in the way of settlement and building, so much so, that it will be advisable to move the small Blake duplex engine at North Shore to the Carlton pumping station as a duplicate, and to supplement the gas engine doing the work there at present. The gas engine is only working for three hours per day now, but the Government running sheds there will greatly increase the consumption of water.

Smithfield and Fairfield.

A survey was made and a design prepared to supply Smithfield and Fairfield, at the request of some of the residents. The extension to Smithfield would have yielded a fair revenue, but the distance of Fairfield entailed too great a cost in length of main to justify its being carried out. Both schemes are in abeyance for the present.

Prospect and Sherwood.

A scheme was also prepared for that part of Prospect and Sherwood lying close to the canal, but this is also in abeyance pending financial arrangements.

Petersham and Newtown.

Complaints were rife from Petersham and Newtown heights during the early summer months of scarcity during the day hours. The pumping engines then available would not have been adequate to meet the demand if the Woollahra water had been given to the districts. When the No. 2 engine was finished, however, all complaints were met and satisfied by giving water from that reservoir to the complaining districts.

Balmain.

The elevation of part of Balmain is such that it could be fed by gravitation from the Potts' Hill main fairly well up to 1890, but the consumption of gravitation water so increased in the city as to lower the pressure there, and to cause a scarcity on the higher levels of Balmain. The Board passed a scheme designed to give a supply here by extending a branch of the Hunter's Hill scheme, which is fed from the reservoir on Ryde Hill at an elevation of 234 feet above the high water mark, branching off the 15-inch main at Gladesville and crossing the Parramatta River and Iron Cove Bridges into Weston-street, Balmain. It consisted of a 9-inch main, feeding the 6-inch in Darling-road, which has met all requirements, that borough being now well supplied, and will be further improved on the completion of the second trunk main from Potts' Hill.

The Pumping Engines and Boilers at Crown-street.

The No. 1 Worthington Engine worked uninterruptedly the whole year (with the exception of forty-eight hours in December to allow of connection of No. 2 engine), raising water to the Paddington reservoir through the new 36-inch rising main. When the weather cools, it will be advisable to stop it for an overhaul; but the new No. 2 Worthington engine will do the work of both in the interim, when the pumping hours are not so extended. The economy of coal was considerable when this engine came into use, and, now that the second Worthington is doing the Woollahra pumping, the coal bill will sink to less than half that of 1891. The No. 2 Worthington was expected to be ready in September, but, for various reasons, it was not completed for constant work until the 31st December. It was started on that day, and it took up the work with a smoothness of action and freedom from noise or jar that is very satisfactory, exhibiting the same economy of coal as its duplicate, which economy will be enhanced when it is worked to Waverley. The Babcock and Wilcox boilers continue to give great satisfaction and promise of long service, their property of accelerating the circulation of the water largely contributing to that end. The Board had three of these boilers in use for the No. 1 engine. When the second engine was ordered, a fourth boiler of the same type was included in the contract, and has been erected.

Gradual Reduction of Areas of Precarious Supply.

At the commencement of the year the following localities suffered from the want of a steady supply, viz., the heights of The Glebe, Newtown, Petersham, Ashfield, Balmain, Hurstville, Waverley, and North Shore. All the above districts are now well supplied; Waverley heights only await the erection of a tank (now at North Shore) at a greater elevation than the local reservoir, which fails to give a satisfactory supply to the few elevated houses immediately contiguous to it. In this behalf it should be stated that Sydney and suburbs are peculiarly difficult to deal with in this respect, on account of the isolated elevated pinnacles that characterise its surface. The bulk of a district may be capable of being satisfactorily fed

by

by gravitation, but in some part of it there may exist a small patch of elevated ground which requires pumped water, entailing on the Board the necessity and cost of laying a separate main for inordinate distances, such as from Woollahra to Ashfield, to feed it, which a more elevated service would have fed by gravitation. For this reason it was necessary this season to give Woollahra water to Petersham heights, but when the Centennial Park reservoir is finished that level will give a good supply in that locality at half the pumping expense.

Street Flushing.

In September the City Council inaugurated a system of flooding the wood-blocked streets at night, washing away the dirt. Some uneasiness was felt as to whether the quantity of water needed would affect the supply. I computed the quantity used at under half-a-million gallons nightly. It consisted of high-level water, therefore it entailed more work on the pumps, and added somewhat to the outlay; but the Board decided to allow the water without charge.

Hydrants Fixed.

From Inspector Robertson's Report, it will be seen that, during the year, no less than 6,458 ball hydrants and 405 screw-down hydrants have been fixed, chiefly in substitution of the old fire-plugs, and partly on new mains.

Old Materials Recovered.

Another notable item in this report is that the value of old materials recovered, cleaned, and put to use or stores.

Potts' Hill Reservoir.

The 100,000,000 gallon Balance Reservoir at Potts' Hill was handed over to the Board by the Harbours and Rivers Department on the 19th December. This work has two objects, viz., to tide the city over any interruption that may be found necessary to effect repairs or improvements to the 6-foot main between Booth Town and Potts' Hill; also to maintain the head of water at Potts' Hill at as high a level as possible, for the acceleration of the current into the city. Until the reservoir was built, it was necessary to restrict the night flow in the 6-foot main, on account of the diminished consumption in the city at night; but now it will be enabled to deliver its full capacity night and day.

Centennial Park Reservoir.

The Government having dedicated a portion of the above park, in a most favourable situation for the construction of a 20,000,000 gallon reservoir, it will at once be my duty to prepare new designs adapted to the form of the land allotted for it, which differs from the shape of that previously marked. When this is built it will remedy the precariousness of the supply now given from Paddington level to the higher parts of Darlinghurst and Surry Hills, besides obviating the necessity of giving Woollahra water to Petersham heights at a considerable economy in pumping.

Five-ton Crane.

It being decided to store all the heavy castings at the Paddington Depôt, it was found necessary to erect a crane there for handling them, consequently a 5-ton gib crane was fixed there, which stood the test well, and has been in use throughout the year.

Approaching Completion of Bulk Reticulation.

The great exertions made by the Board to meet the wants of outlying suburbs seems to indicate an abatement in the requirements of the public. Taking the works projected by the Board, together with that petitioned for by the public, it seems to me that when that is finished, and the pipes now ordered laid underground, the work of the Board in extending mains will considerably shrink, so far as supplying new districts is concerned, and the Board's work will then for some time be confined to the improvement of existing supplies and renewals, together with such current extensions as may be called for for new districts springing up.

Removal of the 20,000 Gallon North Shore Tanks.

The two wrought-iron 20,000 gallon tanks, erected on the heights of North Shore, near St. Thomas' Church, are now disused, owing to the completion of the Chatswood supply, and can be used elsewhere; and as the residents living close to the reservoir at Waverley are complaining that, owing to the elevation

of

of their houses, they receive a very unsatisfactory supply, it may be found advisable to remove the tanks from North Shore, and to re-erect them on an elevated sub-structure for the service of the small area immediately adjacent to the reservoir. A plan in this behalf will be submitted.

Quantity of Water pumped and Coal consumed during the years 1879 to 1891 inclusive :—

From Botany to Crown-street Reservoir.

Year.	Water Pumped.	Coal Consumed.
1879	1,488,297,152 galls.	6,365 tons.
1880	1,522,843,440 „	6,320 „
1881	1,281,692,592 „	4,997 „
1882	1,364,004,000 „	4,808 „
1883	1,729,537,200 „	5,510 „
1884	1,590,107,040 „	5,754 „
1885	1,729,441,440 „	6,237 „
1886	1,864,123,400 „ (Nepean water partly received)	7,240 „
1887	1,047,638,880 „ „ „	4,040 „
1888 } 1889 }	No water was raised from Botany, as the Nepean scheme was complete.	
1890	9,615,120 galls.	49 „
1891	Nil.	27¾ „

From Crown-street to Paddington and Woollahra.

Year.	To Paddington.	To Woollahra.	Coal Consumed.
1879	480,205,500 galls.	Nil. galls.	758 tons.
1880	511,906,510 „	„ „	599 „
1881	372,323,963 „	17,767,046 „	508 „
1882	453,060,680 „	36,410,630 „	559 „
1883	571,414,074 „	55,382,384 „	739 „
1884	569,034,960 „	83,867,744 „	817 „
1885	568,146,150 „	94,959,800 „	704 „
1886	585,848,540 „	124,994,480 „	972 „
1887	633,380,590 „	190,100,040 „	1,192½ „
1888	724,914,200 „	300,112,240 „	1,613¼ „
1889	843,068,150 „	339,163,150 „	1,683½ „
1890	992,457,890 „	367,108,960 „	2,355½ „
1891	1,141,030,760 „	451,200,880 „	2,882½ „

From Woollahra to Waverley.

1887—From April 2 to December 31,	19,317,700 gallons.	
1888—From January 1 to December 31,	61,236,931 „	181 tons.
1889—From January 1 to December 31,	80,679,780 „	197 „
1890—	85,113,600 „	228 „
1891—	121,828,160 „	272 „

Pumped at North Shore.

1890—	30,420,740 gallons,	231½ tons.
1891—	58,404,440 „	347¾ „

In conclusion, I would ask the Board's attention to the excellent conduct, energy, and diligence of the staff of officers and operatives working under my direction.

J. TREVOR JONES,
Engineer for Water Supply.

The Secretary.

Sir,

Sir, The Water Works, Crown-street, 12th January, 1892.

I have the honour to make the following Report upon the working of all the pumping engines, &c., for water supply during the year 1891.

1. With the exception of a stoppage of twenty-six hours on the 23rd December last, the main Worthington pumps at the Crown-street pumping works have been kept going daily throughout the year, keeping up the supplies to the Paddington reservoir. The stoppage referred to was made to allow of some new connections for the second Worthington pump being done.

2. During the year, periodical examinations have been made, and renewals of air-pump valves incidental to ordinary wear and tear have been effected.

3. The Tangye pumps at the Crown-street works have been in daily use throughout the year, pumping to Woollahra reservoir.

4. During the spring and prior to the hot weather setting in, advantage was taken to make good nearly the whole of the brass valve seats in the Tangye pumps, which had become loose. This was effected by replacing them with new cast-iron ones, thus placing the pumps in fair working condition to meet the increasing requirements.

5. The work of these pumps, however, will be taken up forthwith by the No. 2 Worthington pumps, a trial of which we had for a few hours on the last day of the past year. This trial went off very creditably for a first one.

6. The boilers in use at the Crown-street works during the past year were three in number, and are in fair working order. A fourth has just been added with the new pumps.

7. Prior to the stoppage of the No. 1 Worthington pumps on the 23rd December last, the old Rotation and Blake pumps were examined, and certain repairs done, viz.: All the packings were made good, two new valves in the Rotation pumps, three new valves in the Blake pumps, and the packing made good in the pump bucket. These pumps worked very well during the twenty-four hours they did duty, but the Crown-street reservoir suffered, owing to the inflow being constricted for the purpose of causing the water to rise to the pumping well.

8. The pumps at the Woollahra works have been pumping daily to the Waverley reservoir, and have worked satisfactorily. The repairs to these pumps have been merely nominal. The demand on the resources of the Waverley reservoir prevented the usual annual internal flue and boiler cleaning, which was dispensed with till the new pumps at the Crown-street works could take up the duty of these pumps.

9. The North Sydney pumps have been pumping daily to their full capacity, the demand on them having been much increased. The work of these pumps is now taken up by the Ryde pumps.

10. The Botany engines have been turned round by purchase every week throughout the year, and a fire kept banked in readiness and changed alternately for the purpose of keeping the bottoms of the boilers dry.

11. The quantity of water pumped by the Worthington pumps at the Crown-street works during the year was 1,141,030,760 gallons, showing an increase of 148,572 million gallons on the previous year, and in the pumping of the last quarter of the year an increase of 18,465 million gallons on that of the corresponding quarter of the previous year.

12. The quantity of water pumped to Woollahra by the Tangye pumps during the year was 451,200,880 gallons, showing an increase of nearly 84,092 million gallons on the previous year, and in the pumping of the last quarter of the year an increase of 43·378 million gallons on that of the corresponding quarter of the previous year.

13. The quantity of water pumped to Waverley during the year was 121,828,160 gallons, showing an increase of 36·714 million gallons on the previous year, and in the pumping of the last quarter of the year an increase of 14,836 million gallons on that of the corresponding quarter of the previous year.

14. The quantity of water pumped by the North Sydney pumps to the high level tanks during the year was 58,404,440 gallons, showing an increase of 27·983 million gallons on the previous year, and in the pumping of the last quarter of the year an increase of 6·271 million gallons on that of the corresponding quarter of the previous year.

I have, &c.,

J. Trevor Jones, Esq., Engineer for Water Supply. J. FYFE, E.O.P.

RETURN of Water pumped and Coal consumed, from 1st January to 31st December, 1891.

From.	To.	Water pumped.	Coal consumed.
		Gallons.	Tons. cwt. qr.
Crown-street	Paddington	1,141,030,760	817 11 0
"	Woollahra	451,200,880	2,064 18 0
Woollahra	Waverley	121,828,160	272 14 0
North Sydney	Mains and Tanks	58,404,440	347 15 0

J. FYFE, E.O.P.

The Engineer for Water Supply.

RETURN of Water pumped and Coal consumed, from 1st October to 31st December, 1891.

From.	To.	Water pumped.	Coal consumed.
		Gallons.	Tons. cwt. qr.
Crown-street	Paddington	325,040,600	226 8 0
"	Woollahra	142,027,400	620 6 0
Woollahra	Waverley	39,540,400	78 1 0
North Sydney	Mains and Tanks	18,123,840	105 10 0

J. FYFE, E.O.P.

The Engineer for Water Supply.

WATER

WATER METERS.

Board of Water Supply and Sewerage,
Sydney, 9th January, 1892.

ANNUAL Report in reference to Meter Department for year ending 31st December, 1891.

The number of Meters fixed during the year 1891 is as under:—

Sydney and Suburbs	934	(388 of these were for B.P.)
Government	25	
Total	959	
Disconnected	510	(33 Government).
Net Increase	449	

Total number of Meters fixed from commencement:—

Sydney and Suburbs	5,548	
Government	169	
	5,717	
Total Disconnected	1,480	
	4,237	

The number of Meters in operation on December 31, according to Meter Readers' return, is:—

Sydney and Suburbs	4,101	
Government	136	
	4,237	

This rate of progress may be considered satisfactory, as Meters in many cases are not now compulsory, special fees being available in lieu of same.

The number of Meters which became inoperative during the year is 303 (a smaller proportion than usual.) In nearly all cases they were promptly repaired and refixed, and an adjustment made.

The revenue arising from Meters is steadily improving, and as they are now affixed to most clubs, hotels, and boarding houses, this increase will be maintained.

E. R. ABSELL,
Meter Clerk.

Engineer for Water Supply.

Meter Tester's Office,
Sydney, 12th January, 1892.

Sir,

I have the honor to submit to you the following Reports, &c., for the year ending 31st December, 1891:—New and old Water Meters tested, repaired, and delivered. Also the examining and testing of Water Fittings.

On and after the 1st May, 1891, the Board restricted the passing of the old class water fittings. Since that date the majority of the fittings passed have been manufactured according to the Board's designs, issued in January, 1891.

The Bristol Recording Pressure Gauges purchased by the Board in July, 1891, have been connected to the water mains at various localities in the City. The charts taken off these instruments clearly show the shocks and undue strains to which the mains are subject, through the sudden closing of hydrants, plug-cocks (large size of which there are some still in use) and hydraulic lifts, connected to the Board's mains. The charts also show the variations of pressure in the mains at any time during the 24 hours.

There have been forwarded to this Department, for special tests, &c., water meters of various classes from the different manufacturers, namely:—

Name of Manufacturer.	Patentee.	Where Manufactured.	Class of Meter.	Results of Test.
A. C. Spanner	Faller	Germany	Fan (Wet Runners.)	Satisfactory.
Frankfurter, Wasser & Belenchtungs	Valentin	„	„ (Wet Runners.)	„
J. Taylor and Sons' Household Meter		London	„ (Wet Runners.)	„
Worthington		New York	Piston	„
Glenfield Co.	Kennedy	Kilmarnock	„	„
A. Dobbie		South Australia	Turbine	„
Hersey Meter Co.		Boston	Fan	„
Breslauer Metallgiesserër	D. R.	Germany	„	Not Satisfactory.
London Water Meter Co		London	„	„ „ Damaged in transit.

The staff in connection with this Department have not only been employed repairing water meters and testing taps, but they have proved themselves efficient in executing various classes of mechanical work for the different departments under the Board.

I remain, &c.,
W. J. ADAMS.

Engineer for Water Supply.

METERS, 1891.

NEW Meters tested before connection, and Old Meters disconnected for adjustment during the year 1891.

	⅝″		¾″		1″		1¼″		1½″		2″		2½″		3″		4″		6″		Totals.			
	New.	Old	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	Condemned	Repl'd
J. Tylor & Sons	2	..	73	12	321	72	24	80	1	11	12	7	12	5	..	..	5	5	7	1	1	..	458	143	13	216
Siemens & Halske	..	..	22	1	165	22	43	11	10	1	4	1	2	..	..	..	..	..	1	..	..	..	247	35	..	88
Guest & Chrimes	..	..	1	2	134	33	23	25	18	13	8	5	1	7	1	1	3	9	5	5	..	..	199	100	....	117
R. Laidlaw & Son	..	..	12	..	40	6	8	5	1	..	..	1	2	1	..	..	2	1	1	..	..	..	72	13	....	14
D. R. & Droop	..	..	..	5	..	18	..	6	1	2	..	..	4	2	4	1	1	4	1	1	..	..	11	39	8	27
J. Danks & Son	..	..	..	..	..	3	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	1	5	2	4
Davies, Shephard & Co.	..	..	..	..	1	7	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	3	7	....	5
H. Meinecke	..	..	..	..	..	3	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	4	..	4.
Dewrance & Co.	..	..	1	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	....	4
Hersey Meter Co.	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	....	....
Totals	2	1	109	22	867	163	105	78	31	27	24	14	21	16	5	2	12	19	16	7	2	1	994	350	23	479
																							350			
Grand total																							1,344			

W. J. ADAMS,
Meter Tester.

TAPS TESTED, 1890.

NUMBER and Class of Taps, &c., tested during the Year 1891, including Condemned and Defective Taps.

Month.	Class of Fittings.										Totals.		
	Bibs.	Mains.	Paths.	Balls.	Showers.	Unions.	Spring.	Valves.	Plated.	Hydrants.	Stamped.	Defective.	Condemned.
January	2,470	727	720	1,104	1,057	202	8	3	104	..	5,935	395	65
February	2,157	646	621	1,487	840	981	28	7	71	..	5,871	937	80
March	2,712	900	640	815	1,040	1,560	234	45	85	..	7,107	780	84
April	4,681	991	1,309	1,835	802	1,917	10	34	145	..	10,434	1,162	188
May	3,099	678	1,330	869	799	854	108	1	223	..	6,508	894	499
June	1,465	587	579	906	1,038	1,644	146	10	241	..	5,904	711	..
July	1,080	321	292	347	351	366	..	6	70	..	2,658	175	..
August	460	12	288	1,263	731	102	..	85	23	54	3,004	61	18
September	575	471	376	647	349	480	1	16	18	..	2,930	3	..
October	906	97	424	509	248	..	13	9	44	..	2,238	5	7
November	1,146	24	314	468	289	36	12	20	20	..	2,345	2	..
December	1,188	521	637	932	720	435	..	40	54	..	4,501	21	14
Totals—Stamped											69,555	5,146	905
" —Defective											5,146		
" —Condemned											905		
Grand total											65,600		

W. J. ADAMS.

REVENUE ACCOUNT OF WATER METERS AND WATER-FITTINGS TESTED, REPAIRED, &c., FOR THE YEAR ENDING 31ST DECEMBER, 1891.

Month.	Taps Tested.		Taps Defective.		Taps stamped H. & L. P.		Taps repaired.		Meters Tested.		Meters Repaired.		Hydrants Tested.		Total Amounts.
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.	
		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.	£ s. d.
January	5,935	49 9 2	395	3 5 10	..	.....	..	.....	174	39 7 6	39	21 0 2	..	.....	113 2 8
February	5,871	48 18 6	937	7 16 2	..	.....	..	.....	113	23 16 6	41	21 1 8	..	.....	101 12 10
March	7,107	59 14 6	780	6 10 0	....	....	..	.....	80	15 18 0	34	14 14 3	..	.....	96 16 9
April	10,434	86 19 0	1,162	9 13 8	....	.....	..	.....	99	18 4 0	35	19 15 3	..	.....	134 11 11
May	6,568	54 14 8	894	7 9 0	..	.....	..	.....	81	9 7 0	41	23 3 8	..	....	94 14 4
June	5,904	49 4 0	711	5 18 6	264	0 12 3	..	.....	68	11 5 6	41	27 18 9	..	.....	94 19 0
July	2,658	22 3 0	175	1 9 2	..	.....	1	0 0 10	49	9 18 9	54	27 6 1	..	.....	60 17 10
August	2,950	24 11 8	61	0 10 2	1,138	2 7 5	8	0 1 5	47	9 9 0	34	15 12 5	54	1 7 0	58 19 1
September	2,930	24 8 4	3	0 0 6	609	1 5 4½	2	0 2 0	67	15 0 0	44	14 3 9	..	.....	54 19 11½
October	2,233	18 13 0	5	0 0 10	72	0 3 0	..	.....	66	13 1 0	59	23 19 4½	..	.....	55 17 2½
November	322	2 13 8	2	0 0 4	322	0 0 4	..	.....	67	12 3 6	51	20 6 9	..	.....	35 13 7
*December	501	4 3 6	21	0 3 6	164	0 4 7	..	.....	82	16 8 0	33	15 1 8	..	.....	36 1 8
Totals	53,478	445 13 0	5,146	42 17 8	2,569	5 1 11½	11	0 4 3	963	193 18 9	511	244 3 9½	54	1 7 0	933 6 5

* Exclusive of 6,000 taps tested, but paid for in 1890. Average cost per tap, 2d. Average cost per meter tested, 4s.
Average cost per meter repaired, 9s. 7d.

EXPENDITURE ACCOUNT.

Month.	Wages Account for Testing Taps, &c.	Wages Account for Testing and Repairing Meters.	Cost of Material.	General Supervision and Clerks' Wages.	Total Amounts.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
January	32 14 6	25 4 0	5 3 0	25 10 0	88 11 6
February	35 14 0	28 8 0	7 17 8	24 15 0	96 14 8
March	52 0 0	36 14 10	6 13 6	25 5 0	120 13 4
April	44 17 0	37 5 4	6 11 9	25 5 0	113 19 1
May	44 17 0	37 5 4	7 2 2	25 5 0	114 9 6
June	43 3 0	37 5 4	4 16 9	25 5 0	110 10 1
July	23 12 6	30 4 0	6 16 0	25 10 0	86 2 6
August	22 15 0	24 5 4	2 1 9	25 5 0	74 7 1
September	22 15 0	24 5 4	1 5 6	25 5 0	73 10 10
October	23 12 6	25 4 0	3 12 4	25 10 0	77 18 10
November	21 17 6	23 6 8	1 13 11	25 0 0	71 18 1
December	23 12 6	24 17 0	7 1 2	25 10 0	81 0 8
Totals	391 10 6	354 5 2	60 15 6	303 5 0	1,109 16 2

Total expenditure, £1,109 16s. 2d. Total revenue, £933 6s. 5d. Surplus, £176 9s. 9d.

30th January, 1892.

Sir,

I have the honor to submit Annual Report of work done during the year 1891:—

Main-laying.

The main-laying during the past year has exceeded by a great deal the work of any previous year since the Board has had control. Pipes of various sizes, numbering 57,307, were laid, giving a total length of 102 miles 251 yards, or an average distance of 1 mile 1697 yards per week. This work is rendered the more satisfactory when it is considered that great loss of time was experienced in the beginning and towards the close of the year, by contractors forfeiting their contracts. Moreover, the want of pipes was severely felt for about four months, the bulk of the work being done during the latter part of the year.

Main-clearing.

This work has been pushed on with much energy, with the result that a distance of 26 miles 1,698 yards of mains were cleaned, which means a great saving as these mains are now almost equal to new.

Hydrant Fixing.

During the year 6,458 ball hydrants and 550 screw-down hydrants were fixed. In the city, all the old-fashioned fire plugs have been abolished or replaced by hydrants. Similar work is being carried out in the suburbs, and within the next three months the whole of the fire plugs will have been abolished or replaced by ball hydrants.

Branch, Park-road.

Good work has been done at my cleaning branch at Park-road. Material to the value of £2,265 6s. 11d. was taken out of ground, and a great portion of which, when cleaned and coated, was fit for further use.

In conclusion, I would bear testimony to the very efficient manner in which the officers and workmen have carried out their duties, to which the satisfactory progress is, in a great measure, due. In support of this, and to recognise the faithful work of the different contractors, I would cite one instance, viz., that not more than six leaky joints were discovered in the year's work.

D. C. ROBERTSON,
Inspector.

SUMMARY of Work done during year 1891.

Mains laid	57,397 pipes	179,771 yards	102 miles 251 yards.
„ cleaned		26 „	1,698 „
„ removed		3 „	588 „
„ lowered		1 „	682 „
Alterations and repairs effected by Board's operatives		1 „	229 „
Mains repaired			281
Hydrants fixed		Screw-down, 550;	ball, 6,458
Private works paid for by plumbers and others for large branches			55
Leaks—services cut off to prevent waste			1,617
Services cut off for non-payment of rates			114
Horse-troughs supplied		City, 1;	Suburbs, 8
Gas engines supplied		„ 29	„ 7
Gulley shafts supplied		„ 22	„ 153
Mains—drillings to connect services		„ 581	„ 2,543
Extensions from existing services		„ 1,825	„ 5,390
Value of material taken out of ground, cleaned and tarred fit for re-issue, and old metal			£2,265 6s. 11d.

Abstract of Mains laid during 1891.

District.	Number of different sized Pipes.									Lengths of different sized Pipes, including bends, valves, &c., in yards.									Total No. of Pipes for District.	Total length of Mains for District, in yards
	4″	6″	9″	12″	15″	18″	24″	30″	42″	3″	4″	6″	9″	12″	15″	18″	24″	30″	42″	
1 Alexandria	...	11	200	.....	...	...	...	...	...	...	...	33	613	...	.....	.....	...	...	...	...	211	646
2 Ashfield	...	256	.....	.....	..	...	...	..	...	...	...	776	.....	..	.. ...	.....	...	...	..	...	256	776
3 Auburn	...	895	1,697	.....	...	...	...	...	...	...	...	2,718	5,186	.....	... ..	... ..	...	...	...	...	2,592	7,904
4 Balmain	...	221	.....	402	...	...	...	..	...	...	...	674	.....	1,223	.....	.....	...	...	..	...	623	1,897
5 Burwood	...	49	.....	.....	...	...	..	...	...	...	...	148	... ..	... .	... ..	.....	..	...	..	...	49	148
6 Botany	...	174	622	773	...	...	..	..	...	...	...	541	1,900	2 239	... ..	.....	.	...	...	...	1,569	4,470
7 Camperdown	...	10	36	154	83	...	...	...	...	...	...	34	120	457	335	.....	...	...	...	...	293	946
8 Concord	...	515	.....	.....	...	...	...	...	...	...	...	1,575	.....	.....	.....	.....	...	..	...	...	515	1,575
9 City of Sydney	...	1,790	1,540	1,277	294	...	...	...	...	...	...	5,695	4,892	4,115	1,207	.....	...	...	...	...	4,901	15,909
10 Darlington	..	49	98	.....	...	...	...	...	...	...	...	147	278	.....	.....	.....	...	...	..	...	147	425
11 Drummoyne	1	317	5	932	55	...	...	..	...	...	3	966	20	2,808	217	.....	...	...	...	...	1,310	4,014
12 Enfield	125	1,157	57	.....	...	...	...	...	...	...	378	3,527	169	.....	.....	.....	...	.	...	...	1,339	4,074
13 Fivedock	...	328	13	712	280	14	...	...	...	...	...	992	49	2,142	1,125	61	...	...	..	...	1,347	4,369
14 Glebe	...	433	497	479	94	..	...	...	...	...	...	1,316	1,539	1,557	384	. ...	...	...	...	...	1,503	4,796
15 Granville	...	608	516	.....	..	...	...	...	...	...	...	1,766	1,574	.... .	.... .	... ...	...	.	...	...	1,124	3,340
16 Hunter's Hill	...	1,240	388	1,130	311	...	...	...	...	...	..	3,799	1,182	4 368	1,274	.....	...	...	...	...	3,069	10,623
17 Hurstville	...	1,587	2,669	... ..	...	.	...	...	...	...	...	4,839	8,153	.....	.....	.....	...	...	...	...	4,256	12,992
18 Kogarah	..	230	210	.. ...	..	...	...	...	..	...	..	701	641	... .	.....	.....	...	...	...	...	440	1,342
19 Leichhardt	...	283	22	161	116	...	..	...	...	...	.	876	78	467	476	. ....	...	..	...	...	572	1,897
20 Liverpool	...	2,063	2,222	2,869	26	9	...	...	...	...	...	8,101	5,726	8,626	105	28	...	..	...	...	7,789	22,586
21 Macdonaldtown	...	62	.....	.....	...	...	...	...	...	...	...	188	... ..	.. .	.....	.....	...	...	...	...	62	188
22 Marrickville	...	294	169	.....	...	..	...	...	...	..	...	925	528	.....	.....	.. ..	...	...	...	...	463	1,453
23 North Botany	..	141	2,328	723	73	...	...	...	...	...	...	432	7,074	2,210	302	... .	...	...	...	...	3,265	10,018
24 North Sydney	..	1,287	487	9	7	19	...	...	...	...	...	3,936	1,470	33	29	66	...	...	...	...	1,809	5,534
25 Newtown	...	322	1,969	589	27	261	...	...	...	...	...	982	4,169	1,815	114	1,066	...	...	...	...	2,568	8,146
26 Paddington	...	149	314	296	10	...	...	...	...	.	...	466	965	915	48	.....	...	..	...	...	769	2,394
27 Petersham	...	59	.....	.....	...	...	...	...	...	...	...	177	.....	... ..	. ..	.....	...	...	...	...	59	177
28 Randwick	..	725	131	... .	...	...	...	...	...	...	...	2,213	403	.....	.....	.....	..	...	...	...	856	2,616
29 Redfern	...	541	275	664	...	451	...	...	..	...	...	1,673	854	2,091	.....	1,443	...	...	...	...	1,931	5,971
30 Rockdale	70	3,047	1,727	972	...	..	...	...	...	...	221	9,300	5,256	2,954	.....	.....	.	...	...	...	5,816	17,731
31 Rookwood	...	36	571	.....	...	...	...	...	...	...	...	117	1,736	... ..	... .	.....	...	...	...	...	607	1,853
32 Ryde	...	.....	.....	287	...	...	..	...	...	..	..	... ..	. ....	861	.....	.....	.	...	.	.	287	861
33 Special Contracts	...	.....	3	16	...	...	...	350	201	...	...	.....	20	50	....	. ...	.	3,290	829	...	570	4,189
34 Strathfield	...	402	102	.....	...	..	...	...	...	...	..	1,227	314	. ....	.....	.....	...	..	...	...	504	1,541
35 Waverley	1	1,188	.....	.....	...	...	...	...	...	...	4	3,505	.....	. ....	.... .	.....	..	...	...	...	1,189	3,509
36 Waterloo	...	121	19	305	223	...	...	...	..	...	...	374	74	923	876	.....	...	...	...	...	668	2,247
37 Willoughby	...	15	320	.....	...	...	...	...	...	...	...	48	980	....	... ..	.... .	...	.	...	...	335	1,028
38 Woollahra	...	575	419	704	...	...	...	...	...	...	...	1,788	1,252	2,095	.....	.... .	..	...	...	...	1,698	5,735
39 Mains laid by Board's Operatives	...	.....	.....	39	...	...	...	...	...	7	...	.....	.....	121	. ....	.....	...	..	..	30	46	151
Totals	197	21,780	19,026	13,483	1,599	754	...	350	201	7	606	66,575	57,215	42,070	6,492	2,664	...	3,290	829	30	57,397	179,771

Grand Total—No. of Pipes, 57,397=102 miles, 251 yards.

MAINS LAID, 1891.

District and Street.	No and Size of Pipes. 3″	4″	6″	9″	12″	15″	18″	20″	24″	30″	42″	Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
ALEXANDRIA, No. 1.												yds.	yds.	yds.	yds.
Beaconsfield-street	...	3 &c.	...	...	...	..	..	...	...	.	..	8	306	...	...
Do	...	...	97	...	...	..	...	...	..	...	...	298			
Campbell-street	..	8 &c.	...	...	...	..	...	...	..	...	...	25	340	..	...
Do	...	...	103&c	..	..	...	...	...	..	...	...	315			
Total for year	...	11	..	...	...	...	.	...	...	...	.	33	646	646	211
	...	...	200	..	...	...	...	...	..	...	...	613			
ASHFIELD, No. 2.															
Drynan-street	...	36	...	...	...	...	...	...	...	...	...	111	111	...	...
Croydon Avenue	...	41	..	...	...	...	...	...	...	...	...	125	125	...	...
Prospect-street	...	111	...	...	...	...	...	...	...	...	...	336	336	...	..
Tintern-street	...	68	...	...	...	.	...	...	...	...	...	204	204	...	...
Total for year	...	256	...	...	...	..	...	...	...	...	..	776	776	776	256
AUBURN, No. 3.															
Queen-street	...	205	...	..	..	...	...	..	...	...	...	625	625	...	...
Susan-street	...	148	...	...	...	...	...	...	...	...	...	448	448	...	...
Helena-street	...	97	...	...	...	...	...	...	...	..	...	295	295	...	...
Harris-road	...	175	..	...	...	...	...	...	...	...	...	531	531	..	...
Park-road	...	197	..	...	...	...	...	...	..	..	..	597	597	..	...
Parramatta-road	...	5	..	...	...	...	...	...	.	...	...	14	599	...	...
Do	...	..	191	...	...	...	...	...	..	...	...	585			
Kihilla-street	...	..	244	...	...	...	...	...	...	...	...	740	740	...	...
South Parade	...	...	37	...	...	..	...	...	...	...	..	113	113	...	...
North Parade	...	..	53	...	...	...	...	..	...	...	...	166	166	...	...
Queen-street	...	16	..	..	...	...	...	...	...	...	...	49	586	...	...
Do	...	...	174	...	..	...	...	...	...	...	...	537			
Alice-street	...	...	53	...	..	...	...	...	...	..	..	160	160	...	...
Auburn-road	...	2	...	...	...	..	...	...	...	...	...	7	391	...	...
Do	...	...	125	..	..	.	..	...	...	...	...	384			
Water-street	...	36	...	...	...	...	...	...	...	...	...	110	1,268	...	...
Do	...	...	381&c	...	...	...	..	...	...	...	...	1,158			
Parramatta-road	...	14	...	...	...	...	...	...	...	...	...	42	1,385	...	...
Do	...	...	439&c	...	...	...	...	...	...	...	...	1,343			
Total for year	...	895	...	...	...	...	...	...	...	...	...	2,718	7,904	7,904	2,592
	...	...	1697	..	...	...	...	..	...	...	..	5,186			
BALMAIN, No. 4.															
Crystal-street	...	60	...	...	...	...	...	...	...	...	...	185	185	...	...
Valley-street	...	41	..	...	...	...	..	..	...	...	...	119	119	...	...
Western-street	...	..	...	249	.	...	...	...	...	..	...	753	753	...	.
George-street	...	35	...	...	...	..	.	...	..	..	..	108	108	...	...
Spring-side-street	...	85	...	.	..	...	...	...	...	...	...	261	261	..	...
Iron Cove Bridge	..	..	...	153	..		...	...	...	...	...	470	470	...	...
Total for year	...	221	...	...	...	...	...	..	...	...	...	673	1,896	1,896	623
	...	...	..	402	...	...	...	...	...	...	...	1,223			
BURWOOD, No. 5.															
Robert-street	...	49	...	...	...	..	...	...	...	...	..	148	148	...	...
Total for year	...	49	...	..	..	...	..	...	...	...	...	148	148	148	49
BOTANY, No. 6.															
Botany-road	...	31&c	...	...	...	...	...	...	...	...	.	104	4,333	...	...
Do	...	...	622&c	..	...	...	...	...	..	...	...	1,900			
Do	...	.	...	773&c	...	..	...	...	...	...	...	2,329			
Bay-street	...	46	...	...	..	...	...	...	...	...	...	141	141	...	...
Underwood Avenue	...	97&c	...	...	...	...	...	...	...	...	...	296	296	...	...
Total for year	...	174	...	..	...	..	...	...	...	...	...	541	4,770	4,770	1,560
	...	..	622	...	...	..	...	...	...	..	...	1,900			
	...	...	...	773	..	...	...	...	...	...	...	2,329			
CAMPERDOWN, No. 7.															
Pyrmont Bridge Road	..	7	..	..	...	..	...	...	...	...	...	25	372	...	...
Do	...	...	2&c	..	...	...	...	...	...	...	..	12			
Do	...	...	...	..	83	..	..	.	...	..	...	335			
Prince Alfred Hospital	...	...	29	...	...	...	...	...	...	..	..	93	93	...	...
Australia-street	...	3	..	.	.	..	...	...	...	..	...	9	481	..	...
Do	...	..	5	..	...	.	...	...	...	...	..	15			
Do	...	...	...	154	..	..	...	...	..	..	...	457			
Total for year	...	10	...	...	...	...	...	...	...	..	...	34	946	946	283
	...	...	36	..	...	..	...	...	...	...	..	120			
	...	...	...	154	...	...	...	...	...	...	...	457			
	...	...	...	..	83	..	...	...	...	...	...	335			
CONCORD, No. 8.															
Church-street	...	3	...	...	...	..	...	...	...	...	...	10	10	...	...
Cabarita Park Road	...	512	...	...	...	...	...	...	...	...	...	1,565	1,565	...	..
Total for year	...	515	...	...	...	...	...	...	...	...	...	1,575	1,575	1,575	515

MAINS LAID, 1891—*continued.*

District and Street.	No. and Size of Pipes.											Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
	3″	4″	6″	9″	12″	15″	18″	20″	24″	36″	42″				
CITY, No. 9.												yds.	yds.	yds.	
Riley-street	...	15	.	...	...	.	.	...	...	...	..	45			
Do	...	...	28	..	...	...	...	...	...	...	...	106	636	.....	. ....
Do	...	...	..	155	...	...	...	...	...	...	...	485			
Castlereagh-street	...	...	13	...	...	...	.	...	...	..	..	41	41	.....	.....
Rowe-street	...	. ..	40	...	.	...	...	...	...	...	...	127	127	.....	.....
Moore-street	...	...	41	...	...	...	...	...	...	...	...	128	128	.....	.....
Hunter-street	...	...	47	..	.	...	..	...	...	...	...	136	136	.....	.....
Goulburn-street	...	18&c	..	...	...	...	...	...	...	...	..	77	390	.....	.....
Do	...	...	99	...	...	...	...	...	...	..	...	313			
George-street West	...	8	...	...	...	...	...	...	...	...	..	32	32	... ..	.....
Levey-street	...	23	...	...	...	...	..	...	...	..	..	72	72	.....	.....
Macquarie-street South	...	12	...	...	...	..	..	...	...	...	..	36	246	.....	.....
Do	...	..	71	...	...	...	...	...	...	...	...	210			
Market-street	...	...	32&c	...	...	..		...	...	...	...	120	316	.....	.....
Do	...	..	...	60&c	...	...	...	...	...	...	...	196			
Hunt-street	...	30	..	...	...	...	...	...	...	...	...	94	94	.....	.....
East-street	...	38	...	..	...	...	...	...	...	...	...	122	122	.....	.....
Lower Campbell-street	...	57	...	...	...	...	..	...	...	...	..	177	177	.....	.....
Nicholls-street	...	60	..	..	...	..	...	...	...	...	.	183	183	.....	.....
Riley-place	...	34	...	..	...	...	..	...	...	...	...	113	113	.....	.....
Hutchinson-street	...	52	...	...	...	...	.	.	...	...	..	160	160	.....	.....
Hunt-street	...	14	...	...	...	...	...	...	...	...	...	41	41	.....	.....
Foster-street	...	35	...	...	...	...	...	...	...	...	..	127	132	.....	.....
Do	...	...	...	1&c	...	...	...	...	...	...	...	5			
Taggart's-lane	...	27	...	...	..	...	...	...	...	...	...	86	86	.....	.....
Pelican-street	...	51	...	...	...	...	...	...	...	...	...	160	160	.....	.....
Little Norton-street	...	34	...	...	...	...	...	...	...	...	..	108	108	.....	.....
Bourke-street	...	36	...	...	...	...	..	...	...	.	.	115			
Do	...	...	9	...	...	...	...	...	...	...	...	29	716	.....	.....
Do	...	...	..	185	...	...	...	...	...	..	..	572			
Norton-street	..	41	...	...	..	...	..	...	...	...	...	125	125	.....	.....
Reservoir lane	..	27	..	...	...	...	...	...	...	...	...	84	84	.....	.....
Ann-street	...	119	.	...	...	...	..	...	...	..	...	374	374	.....	.....
Collins-street	..	49	...	..	...	...	...	...	...	..	...	156	156	.....	.....
Samuel-street	...	33	...	...	...	.	...	...	...	.	..	115	115	.....	.....
Smith-street	...	62	..	.	..	..		...	...	...	...	197	197	.....	.....
High Holborn-street	...	116	.	...	..	...		.	...		...	362	362	.....	.....
Devonshire-street	...	19&c	...	...	...	...			...	.	..	66			
Do	.	...	11&c	.	...	...	...	...	...	..	...	40	704	.....	.....
Do	..	..	...	190	...	...	...		...	..	...	598			
Belvoir-street	.	84	...		..	.	..	.	...	..	...	256	363	.. ..	.....
Do	...	..	33	.	.	...	..	..	...	...	...	107			
Arthur-street	...	39	...	...	...	...	...	..	..	.	...	117	117	.....	... ..
Little Arthur-street	...	11	...	...	...	..	...	..	...	...	...	37	37	... ..	.....
Short-street	...	47	.	..	...	..	...	.	...	..	..	143	143	.....	.....
Edgeley-street	.	11&c	...	.	..	..	...	..	...	...	...	36	36	.....	.....
Davies-street	...	4	...	...	...	...	..	..	...	...	...	12	12	.....	.....
Cawley-street		11	.	...	..	.	...	...	...	...	...	33	33	... ..	.....
Wilton-place	...	37	..	...	...	...		...	...	...		121	121	... ..	.....
Butt-street	..	31	...	...	...	...	.	...	...	.	...	99	99	.....	.....
Castlereagh-lane	...	53		...	...	...	..	..	..	...	..	161	161	.. ..	.....
Macquarie-street South	..	12	...	...	...	..	...	...	...		...	37			
Do	...	..	5	...	...	...	..	...	...	...	...	17	427	.....	.....
Do	...	...	...	59	...	...	...	...	...	...	...	180			
Do	...	...	..	..	46	...	...	..	..	..	...	193			
Foveaux-street	...	4&c	...	...	...	...	.	...	...	...	...	17			
Do	...	..	16&c	...	...	..	..	...	...	...	...	56	302	... ..	. ....
Do	...	...	..	72	...	...	.	...	..	...	...	229			
Saunder's-lane	...	17	...	...	...	...	...	..	..	...	...	53	53	.....	.....
Waterloo-street	...	4&c	.	...	..	...		.	.	...	...	18			
Do	..	..	6	...	...	...	...	...	...	...	...	18	227	.....	.....
Do	...	...	...	61	...	...	.	...	.	...	...	191			
Shepherd-street	...	4	..	...	...	...	...	..	..	..	...	10			
Do	...	...	11&c	...	...	...	...	...	...	...	...	40	267	.....	.....
Do	...	...	...	69	...	..	...	...	...	...	...	217			
Pitt-street	...	...	9	...	...	...	...	...	...	...	...	28	28	.....	.....
Albion-street	...	3&c	...	...	...	...	.	...	...	...	...	14			
Do	...	...	7&c	...	...	...	...	..	...	...	...	30	347	... ...	.....
Do	...	...	...	2 cut	...	...	...	...	...	...	...	1			
Do	...	...	...	...	72	...	...	...	...	...	...	302			
Crown-lane	...	68	...	..	...	...	.	...	...	...	...	197	197	.....	.....
George-street	...	...	4&c	...	...	...	...	..	...	...	...	16			
Do	...	...	...	2&c	...	...	...	...	...	...	...	10	738	.....	.....
Do	...	...	..	...	176	...	...	..	...	...	...	712			
Sir John Young-crescent	...	1&c	...	...	...	...	...	...	...	...	...	6	42	.....	.....
Do	...	.	11	...	...	...	...	...	...	..	...	36			
Lane off Sir J. Young-crescent	...	11	...	...	..	..	...	...	.	...	...	36	36	.....	.....
Martin-place	...	13	...	...	...	...	...	...	...	...	.	40	167	.....	.....
Do	...	...	40	...	...	...	...	...	...	...	...	127			
Campbell-street	...	2	...	..	...	...	...	...	..	...	...	5	99	.....	.....
Do	...	...	30	...	...	...	.	...	...	...	...	94			
Druitt-street	...	...	..	21	..	...	...	...	...	..	...	64	64	.....	.....
Parker-street	...	...	42	...	...	...	...	...	...	..	...	127	127	.....	.....
King-street	...	...	..	15	...	...	...	..	...	...	...	53	53	.....	.....
Hay-street	...	1&c	...	...	..	...	...	...	...	...	..	4	96	.....	.....
Do	...	...	30	...	...	..	...	...	...	...	...	92			

MAINS LAID, 1891—*continued.*

District and Street.	No. and Size of Pipes.											Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
	3″	4″	6″	9″	12″	15″	18″	20″	24″	36″	42″				
CITY, No. 9—*continued.*												yds.	yds.	yds.	
Parker-lane	...	26	...	...	...	...	...	...	...	...	...	79	79	.....	.....
King-street	...	...	100	...	...	...	...	...	...	..	...	298	298	.....	. ....
Pitt-street	...	...	114	...	...	..	...	...	...	...	...	349	349	.....	. .... .
Market-street	...	1	...	...	...	...	...	...	...	...	...	4	587	.....	.....
Do	...	...	183	...	...	...	...	...	...	...	...	583			
Union-street	...	1&c	...	...	...	...	...	...	...	...	...	4	1,210	.....	.....
Do	...	...	187&c	...	...	...	...	...	...	...	...	597			
Do	...	...	...	204	...	...	...	...	...	...	...	609			
Bank-court	...	20&c	..	...	...	...	...	...	...	...	...	65	65	.....	... .
Pitt-street	...	...	21	...	...	...	...	...	...	...	...	66	66	.....	.....
Crown-street Reservoir	...	15	...	...	...	...	...	...	...	...	...	46	46	.....	.....
Pine-street	...	2&c	...	...	...	...	...	..	...	...	...	7	90	.....	.....
Do	...	...	27	...	...	...	...	...	...	...	...	83			
Gresham-street	...	...	24	...	...	...	...	...	...	..	...	75	75	.. ...	.....
Bridge-street	...	...	22	...	...	...	...	...	...	...	...	65	65	.....	... ..
Loftus-street	...	4&c	...	...	...	...	...	...	...	...	...	14	14	.....	.....
Bent-street	...	...	2&c	...	...	...	...	...	...	...	..	13	13	.....	.....
Do	...	...	10	...	...	...	...	...	...	...	...	29	29	... ..	.....
Underwood-street	...	...	54	...	...	...	...	...	...	...	...	166	166	.....	.....
Randwick-road	...	...	...	90cut	...	...	...	...	...	...	...	337	337	.....	.....
Bridge-lane	...	36&c	...	...	...	...	...	...	...	...	...	113	113	.....	.....
Fitzroy-street	...	..	44	...	...	...	...	...	...	...	...	150	150	.....	.....
Taylor-lane	...	60	...	...	...	...	...	..	...	...	...	186	186	.....	.....
Marshall-street	...	4&c	...	...	...	...	...	...	...	...	...	17	240	.....	... ..
Do	...	...	71&c	...	...	...	...	...	...	...	...	223			
Phelps-street	...	...	13&c	...	...	...	...	...	...	...	...	40	40	.....	.....
Saunder's-lane	...	16	...	...	...	...	...	...	...	...	...	51	51	.....	.....
Omnibus-lane	...	28	...	...	...	...	...	...	...	...	...	86	86	.....	.....
Mary Ann-street	...	...	16&c	...	...	...	...	...	...	.	. .	52	74	. ....	... ..
Do	...	8	...	...	...	...	...	...	...	...	...	22			
Gipp's-crescent	...	54	...	...	...	...	. .	...	...	...	...	190	190	. ....	.....
Pyrmont Bridge Road	...	14	...	...	..	...	...	...	...	...	...	44	44	....	.....
Forbes-street	...	23&c	...	...	...	...	...	...	...	...	.	88	521	.....	.....
Do	...	..	13&c	...	...	...	.	...	...	...	...	65			
Do	...	...	...	91&c	...	...	...	...	...	...	.	368			
Total for year	...	1,790	...	...	.	...	...	...	...	...	...	5,695	15,909	15,909	4,901
	...	...	1,540	...	...	. .	...	...	...	...	...	4,802			
	...	...	...	1,277	...	...	...	...	...	...	...	4,115			
	...	...	...	...	294	...	...	...	...	...	...	1,207			
DARLINGTON, No. 10.															
Golden Grove-lane	..	32	..	...	...	...	...	...	...	...	...	96	96	.. ..	.....
Codrington-street	...	10	...	...	...	...	. .	. .	...	...	...	33	180	.....	.....
Do	...	...	46&c	..	...	...	...	...	...	. .		147			
Golden Grove-street	...	7 cut	...	...	...	...	...	...	. .	...	...	18	149	.....	.....
Do	...	...	42	...	...	...	...	...	...	...	...	131			
Total for year	...	49	...	...	...	...	...	...	...	...	...	147	425	425	147
	...	...	98	...	...	...	...	...	...	...	...	278			
DRUMMOYNE, No. 11.															
Day-street	...	38	...	...	...	...	...	...	..	...	...	116	116	.....	.....
Cambridge-road	...	242	...	...	...	...	...	...	...	...	...	735	735	.....	.....
Carey-street	...	35	...	...	...	...	...	...	...	...	...	107	107	.....	.....
North-road	...	...	...	260	...	...	...	...	...	...	...	784	784	.....	.....
Cambridge-road	...	1	...	...	...	...	...	...	...	...	...	3	694	.....	.....
Do	...	...	2&c	...	...	...	...	...	...	...	...	8			
Do	...	...	...	227&c	...	...	...	...	...	...	...	683			
Lyons-road	...	...	1	...	...	...	...	...	...	...	...	3	220	.....	.....
Do	...	...	...	...	55	...	...	...	...	...	...	217			
Parramatta River Bridge	...	...	...	101	...	...	...	...	...	...	..	305	305	.....	.....
Birkenhead-road	...	...	...	344	...	...	...	...	...	...	...	1,036	1,053	.....	.....
Do	...	...	2&c	...	...	...	...	...	...	...	...	9			
Do	1	...	...	...	...	...	...	...	...	...	...	3			
Do	...	1&c	...	...	...	...	...	...	...	...	...	5			
Total for year	1	...	...	...	...	...	...	...	...	...	...	3	4,014	4,014	1,310
	...	317	...	...	...	...	...	...	...	...	...	966			
	...	...	5	...	...	...	...	...	...	...	...	20			
	...	...	...	932	...	...	...	...	...	...	...	2,808			
	...	...	...	...	55	...	...	...	...	...	...	217			
ENFIELD, No. 12.															
Minarosa-street	...	98	...	...	...	...	...	...	...	...	...	299	299	.....	.....
Greenhill-street	...	306	...	...	...	...	...	...	...	...	...	933	934	.....	.....
Do	...	...	1 cut	...	...	...	...	...	...	...	...	1			
Heydon-street	...	116	...	...	...	. .	...	...	...	...	...	352	352	.....	.....
George's River Road	...	2&c	...	...	...	. .	...	...	...	...	...	8	176	.....	.....
Do	...	...	56	...	...	...	...	...	...	...	...	168			
Tramway Supply	125	...	...	...	...	...	...	...	...	...	...	378	378	... ..	.....
Punchbowl-road	...	278	...	...	...	...	...	...	...	...	...	841	841	.....	.....
George's River Road	...	319	...	...	...	...	...	...	...	...	...	972	972	.....	.....
Madeline-street	...	40&c	...	...	...	...	...	...	...	...	...	122	122	.....	.....
Total for year	125	...	...	...	...	...	...	...	...	...	...	378	4,074	4,074	1,339
	...	1,157	...	...	...	...	...	...	...	...	...	3,527			
	...	...	57	...	...	...	...	...	...	...	...	169			

MAINS LAID, 1891—*continued.*

District and Street.	No. and Size of Pipes.											Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
	3″	4″	6″	9″	12″	15″	18″	20″	24″	36″	42″				
FIVE DOCK, No. 13.												yds.	yds.	yds.	
Lyons-road		8	...	...	...	...	...	...	..	...	...	26			
Do	.	..	9	...	...	...	..	..	...	...	...	31			
Do	..	.	..	184	..	...	.	.				551	994	.....	.....
Do	...	...	.	...	96	..		..	...	...	...	386			
Henry-street	...	87	...	.		...	..	...	.	..	..	266	266	... ..	... .
Frederick-street	...	9	...	...	....	...	...	...	..	..	...	30	30	.	...
Thomas-street	..	159	...		...	..	...	..	...	...	...	482	482	...	.....
Great North Road	...	..	3&c	...	...		.	.	...	...	...	15			
Do	...	...		528	..	.	...	..		...	..	1,591	1,076	. ..	.. ..
Do	...	...	...	...	2&c	..	...	...	..	...	...	9			
Do	...	...	.	...	...	14&c	...	...	...	...	..	61			
Garfield-street	...	65	...		.	..	..	..	.	...	...	188	188	. ...	.. .
Lyons-road	..	.	1		...	..	...	...	...	...	.	3	733	.....	.... .
Do	...	...	...	.	182	...	..	.	..	...	..	730			
Total for year	.	328	...	...	..	...		..	...	...	...	992	4,369	4,369	1,347
	..	..	13	.	...	...	...	...	.	.	..	49			
	...	..	.	712	...	...	...	..	.	.	...	2,142			
	...	.	...	...	280	.	...	.		..	...	1,125			
	...	...		...	..	14	..	...	...	...	...	61			
GLEBE, No. 14.															
Bay-street	.	11cut	...	...	.	.	..	.	.		..	27	44	... ..	.....
Do		.	6	...	...		..	...	.	...	...	17			
Pyrmont Bridge Road	...	...	13&c	...	...	.	...	..	...	...	...	44			
Do	..	...	.	4&c	...	.	...		..	..	...	19	447	. .	.... .
Do	...	...	...	...	91&c	.	...	..	...	...	..	384			
Bay-street	...	...	26	...	..	...	..	.	..	...		81	81	. ..	.....
Ross-street	...	.	.	111	..	.	...	.	..	...	...	337	337	. .	.....
St John's Road	...	3&c		...	...	...	..	..	.	...	.	30			
Do	.	...	46	...	...	...	.	...	.	..	...	147	812	.... .	..
Do	...	.	..	178	..	...	...	.	..	...	.	635			
Hereford-street	..	..	8	...	..	...	.	...	..	..	...	24			
Do	.	.	...	182	..	.	.		...	...	...	549	573	....	..
Woolley-street	..	63	...	...	...	...	...	.		...	.	204	204	.	.....
Glebe Point Road	..	2&c	...	.	.	.	.	.		..	.	10			
Do	...	...	304&c	...	.	.	..		.	..	.	935	962	. .	.....
Do	..	..	...	4&c	.	..			.			17			
Toxteth-street	.	37	...	...	.	.	..			..	.	112	112	. ..	... .
Ferry-street	..	71	...	..	.	.	..			...	..	209	209	.	....
Derby-place	...	...	35	...	.	.	.				..	111	111	. ...	. .
Derwent-lane	...	38	...	...	.	.	.	...	..	.	...	172	172	. .	.
Wigram-street	...	..	39&c	...		..	.	.	..	..	..	180	180	.	...
Shaftesbury Gardens	.	26&c	...	...		..	.	...	.	.	..	83	83	.....	... .
Broughton-street	.	138	(cut)	...	.	...		.	.	..	.	395	395	..	.....
Ebenezer-street		24&c	.	...		.	.	.	...	.	.	74	74		.. ..
Total for year	...	433	...	...	..	..	...	..	..	.	...	1,316	4,796	4,796	1,503
	...	...	497	...	...	...	..	.		.	.	1,539			
	...	...	...	479	.	..	..	...	.	.	.	1,557			
	...	..	...	...	94	..	.	.	.		..	384			
GRANVILLE, No. 15.															
Alfred-street	...	7	...	..	...		.	.	.		..	21	286	...	.....
Do	...	...	87	.	.	..	..	.	...	...	..	265			
Prospect-street	...	7	...	...	...		..	..	.	.	.	21	703	...	. ..
Do	.	.	224&c	...	.	..		.	..	...	...	682			
Victoria-street	...	21&c	...	...	.	.	..	..		..	.	81	81	....	.....
Clyde-street	...	22	...	..	.	.	..	..	.	.	.	62	62	....	. ....
East-street	...	34	...	..	.	.	..	...	.	.	...	104	104	.. .	.. ...
Bennalong-street	...	22	...	...	..	..	.	.	...	..	.	69	69	...	. ...
Bluxcell-street		233	(cut)	.	.	..		...	..	...	.	611	611	.....	. ...
Australia-street		38	...	..		..	.	.		..	.	115	115	. ..	.. ...
Herbert-street	.	.	60	...		...		..		..	..	187	187	.....	.....
Landsdowne-street	...	224&c	...	..	..	..	...		.	..	...	682	682	.....	. ...
Sutherland-street	...	..	145&c	...	.	.	..	..	...	.	.	440	440	.....	. ...
Total for year	..	608	...	...	..	...	...	...	..	...	...	1,766	3,340	3,340	1,124
	...	..	516	...	...		...	...	.	..	..	1,574			
HUNTER'S HILL, No. 16.															
Great Northern Road	...		...	258	...	.	...	.	...	..	..	799	857	... ..	.....
Do	..	...	9	...	.	..	..	..				29			
Do	..	9	...	...			..	...		.		29			
Joubert-street	...	...	...	..	16	..	..	.	.	..	...	69	80	. . .	.....
Do	..	3	..	...	...		.	.	..	.	..	11			
Stanley-street	..	98	...	...	.	...	..	.	..	...	..	299	299	... ..	. .
Ferdinand-street	..	92	...	..	..	.	...	..	...	..	...	279	279	... ..	.....
North Parade	...	36	..	...	.	...	..	.	.		..	109	109	... .	... .
Daram-street	..	41	...	..	...	..		..	.	...	..	124	124	.....	. ....
Ernest-street		38	...	...	.		...	...	.	.	.	115	115	.	. ....
Madeline-street	.	174	..	.	.		...	.	.		..	527	527	. ..	.....
New Bridge Road	...		...	90	..	.	...	..	..		...	275	287	.....	.....
Do	...	...	4	...	..	..	..	..	.		.	12			
Ady-street	...	...	75	...	..	...		...	.	...		228	228	... ..	. .
New Bridge Road	...	..	...	152	.		...		.	...	...	1,375	1,394	.....	.... .
Do	...	...	7	...	..	..	...				..	19			
Alexandria-street	...	134	...	..	...	.		..	...	..	...	413	413	.....	.... .
William-street	...	23&c	..	...	.	.		.	.	..	...	73	73	... ..	.....

MAINS LAID, 1891—*continued.*

District and Street.	No. and Size of Pipes. 3″	4″	6″	9″	12″	15″	18″	20″	24″	36″	42″	Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
												yds.	yds.	yds.	
HUNTER'S HILL, No. 16—*contd.*															
Drummoyne-street	...	...	...	...	26 &c.	...	...	...	...	...	...	116	329	.....	.....
Do	...	69	...	...	...	...	...	.	...	...	...	213			
Church-street	...	..	...	...	113	...	...	...	...	..	...	456	464	.....	.....
Do	..	2 &c.	...	...	...	...	..	..	...	...	...	8			
Angelo-street	...	23 &c.	...	...	...	...	...	...	...	...	...	72	72	.. ..	.....
View-street	...	39	..	...	..	...	...	.	..	...	..	119	119	.....	.....
Ferry-road	...	...	34	...	...	...	...	...	...	.	...	105	105	.....	.....
Ferry-street	...	..	...	75	...	...	..	...	..	...	...	230	253	.....	.....
Do	...	7	...	...	...				..	...	...	23			
Foss-street	...	96	..	...	...	...	...	...	...	...	...	291	291	.....	.....
Woolwich-road	...	...	...	550	...	..	...	..	...	...	.	1,676	1,796	.....	.....
Do	...	...	5	..	...		..	..	...	...	...	15			
Do	..	33	...	...	...	...	...	...	...	...	...	105			
Ambrose-street	...	54	...	...	...	...	...	...	...	...	...	163	163	.....	.....
Wharf-road	...	75	..	..	..	...	...	..	...	...	...	228	228	.....	.....
Alexandria-street	...	...	..	...	156	...	...	...	...	..	...	633	690	.....	.....
Do	...	...	...	5	...	..	...	...	...	...	..	13			
Do	...	...	4	...	...	...	..	..	...	...	...	10			
Do	...	10	...	...	...	...	...	..	...	...	...	34			
Palace-street	...	...	260 &c.	...	..	...	..	..	...	...	...	764	1,107	.....	.....
Do	...	111 &c.	...	...	...	...	..	...	...	...	...	343			
Wybalena-road	...	73	...	...	..	...	...	..	...	...	...	221	221	.....	.....
Total for year	...	1,240	...	...	...	..	...	...	..	...	...	3,799	10,623	10,623	3,069
	...	...	388	...	...	...	...	...	...	...	...	1,182			
	...	...	...	1,130	..	...	...	...	..	...	...	4,368			
	...	...	...	...	311	...	...	...	...	...	...	1,274			
HURSTVILLE, No. 17.															
Carlton-parade	...	90	...	..	...	...	..	..	...	...	..	274	274	.....	.....
Webber's-road	...	...	2	...	...	..	...	..	...	...	..	9	9	.....	.....
Carlton-parade	...	.	4	...	..	..	..	...	..	..	...	11	11	.....	.....
Ethel-street	...	66	...	..	...	...	...	...	...	..	...	201	201	.....	.....
Railway-street	...	190	..	...	..	...	...	..	...	...	...	612	707	.....	.....
Do	...	...	28	...	..	..	..	...	...	...	...	95			
Taylor-street	...	38	...	...	...	...	..	..	..	...	...	113	113	.....	.....
Barton-street	...	38	...	...	..	.	..	..	...	.	..	115	115	.....	.....
Bismark-street	...	37	...	...	...	...	..	..	...	...	...	115	115	.....	.....
Guinea-street	...	49	...	...	...	...	...	...	..	..	...	153	153	.....	.....
Stuart-street	...	55	...	..	...	...	..	...	.	..	...	172	172	.....	.....
Derby-street	...	57	...	...	...	...	...	...	...	...	...	164	164	.....	.....
Webber's-road	...	5 cut	...	...	...	...	.	...	.	.	..	12	572	.....	.....
Do	...	...	184	...	..	...	...	...	...	..	..	560			
Forest-road	...	69	...	...	...	..	..	...	..	...	...	226	6,028	.....	.....
Do	..	..	1,901	...	...	...	...	...	...	...		5,802			
Laycock's-road	...	4	...	.	...	...	...	..	...	..	...	12	682	.....	.....
Do	...	...	220	..	...	...	...	...	..	..	...	670			
Harrow-road	...	4 cut	...	...	...	..	..	...	...	...	...	8	757	.....	.....
Do	..	...	213	...	...	...	...	...	...	...	...	649			
Gladstone-street	...	3	..	...	...	...	..	..	...	...	...	10	247	.....	.....
Do	...	...	78	...	...	...	...	...	..	...	...	237			
Park-road	...	144	...	...	..	...	..	...	...	...	...	437	437	.....	.....
Bruce-street	...	210	.	..	...	...	..	..	...	...	...	638	638	.....	.....
Wallace-street	...	210	...	...	..	...	...	...	...	...	...	638	638	.....	.....
Ocean-street	...	25	...	...	...	..	...	...	..	...	...	73	73	.....	.....
Gladstone-street	...	233 &c	.	..	...	..	..	...	...	...	...	710	710	.....	.....
Queen Victoria-street	...	7	...	...	.	...	..	...	...	..	...	22	142	.....	.....
Do	...	...	39	...	...	...	...	...	..	...	...	120			
Dunmore-street	...	44	...	...	...	...	..	.	...	...	...	134	134	.....	.....
Total for year	...	1,587	..	...	..	...	...	..	...	...	..	4 839	12,992	12,992	4,256
	...	...	2,669	...	.	...	...	.	..	..	..	8,153			
KOGARAH, No. 18.															
Rocky Point-road	..	7	...	..	...	...	...	.	..	...	...	24	665	.....	.....
Do	...	.	210	..	...	.	...	...	...	...	...	641			
Gray-street	...	109	...	.	...	..	..	.	..	...	...	331	331	.....	.....
Derby-street	...	49 &c.	...	...	.	..	...	...	...	...	...	150	150	.....	.....
Carruthers-road	...	65	...	...	...	...	...	..	...	...	...	196	196	.....	.....
Total for year	...	230	...	.	...	...	...	.	...	...	..	701	1,342	1,342	440
	...	...	210	...	..	...	...	...	.	...	...	641			
LEICHHARDT, No. 19.															
Joseph-street	...	104	...	...	..	...	...	...	...	..	...	320	320	.....	.....
Helena-street	...	24	..	...	.	..	...	...	...	...	...	74	74	.....	.....
May-street	...	40	...	.	...	...	..	..	...	..	..	121	122	.....	.....
Do	..	...	1 cut	...	..	...	...	..	...	...		1			
Chester-street	...	57	...	...	...	.	..	...	...	..	...	177	177	.....	.....
Elswick-street	...	...	18	...	...	...	...	...	..	...	..	65	532	.....	.....
Do	...	...	..	151	...	...	..	..	..	...	..	467			
Parramatta-road	...	...	3 &c.	..	.	...	..	..	..	...	...	12	488	.....	.....
Do	...	...	.	..	116	...	...	...	.	...	...	476			
Edith-street	...	31	...	...	..	...	...	...	...	...	...	98	98	.....	.....
James-street	...	27	..	...	..	.	..	...	...	...	.	86	86	.....	.....
Total for year	..	283	..	...	...	...	...	..	...	...	..	876	1,897	1,897	572
	...	..	22	..	...	..	...	.	...	-	...	78			
	...	...	...	151	..	...		...	...	...	...	467			
	...	..	.	.	116	...	..	...	...	...	..	476			

MAINS LAID, 1891—*continued.*

District and Street.	No. and Size of Pipes.											Length of each Size.	Length of main.	Total length for district.	Total No. of pipes for district.
	3″	4″	6″	9″	12″	15″	18″	20″	24″	36″	42″				
LIVERPOOL, No. 20.												yds.	yds.	yds.	
Northumberland-street	...	183	..	...	...	..	...	...	..	..	...	557	557	.....	.....
Moore-street	...	149		...	...	...	...	...	...	...	...	449	449	.....	.....
George-street	...	275	...	...	..	..	...	...	...	...	...	839	839	.....	.....
Bigges-street	..	93	...	...	.	...	...	...	...	...	..	283	283	.....	.....
Terminus-street	..	212	...	..	...	...	...	...	..	...	..	642	642	.....	.....
Castlereagh-street	.	97	...	...	..	..	..	..	...	...	...	300	300	.....	.....
Bathurst-street	...	52	...	..	...	...	...	...	...	...	...	161	161	.....	.....
Moore-street	...	40	...	...	.	..	..	..	..	...	...	121	121	.....	.....
Speed-street		212	...	...	...	..	...	..	..	...	..	637	637	.....	.....
Scott-street	...	87	...	..	...	..	..	..	...	..	...	264	264	.....	.....
Macquarie-street	..	...	196	...	..	.	...	...	...	...	...	598	598	.....	.....
Scott-street	...	..	76	..	.	..	...	..	..	...	...	233	264	.....	.....
Do	...	9 &c.	...	..	..	...	...	..	...	...	...	31			
Great Southern Road	...	...	275	...	...	...	...	...	...	..	..	843	912	... ..	.....
Do	...	21 &c.	...	...	..	..	..	..	..	...	...	69			
Railway-street	...	45	...	...	.	..	..	..	..	...	...	133	133	.. ...	.....
Nagle-street	..	216	..	...	...	...	...	...	...	...	...	655	655	.....	.....
Mill-road	..	34	...	...	.	...	...	...	..	...	.	103	103	.....	... ..
Junction-street	...	36	..	.	..	...	..	...	...	...	..	108	108	... ..	.....
Charles-street	...	67	...	...	..	.	..	...	..	..	..	204	204	.....	.....
Short-street	...	42	...	..	...	.	...	...	...	...	..	127	127	.. ...	.....
Norfolk-street	...	59	...	...	..	.	...	...	...	...	...	179	179	.....	.....
Castlereagh-street	..	14	...	..	...	..	..	...	..	...	..	43	43	... ..	.....
Bernera-road	...	133	.	...	..	..	..	..	...	...	...	404	404	.....	.....
Gillespie-street	...	23	..	..	..	..	..	..	..	..	..	70	70	... ..	.....
Atkinson-street	...	206	...	...	..	..	..	...	..	...	...	624	624	.. ...	.....
Passfield-street	...	164	...	...	...	..	...	...	.	...	...	498	498	.....	.....
Bigges-street	..	104	...	...	...	...	...	...	...	...	...	307	307	. ....	.....
Liverpool Water Supply from	...	...	...	2,852	..	...	...	...	...	...	...	8,571			
Canal to Mt. Misery.	...	...	...	..	..	4	..	...	...	...	...	13	8,716	.....	... ..
Do	...	..	2	...	...	...	...	...	...	...	...	6			
Do	...	38	...	..	...	...	...	...	...	...	...	126			
Elizabeth-street	...	..	1,673	...	...	...	...	...	...	..	...	4,046	4,046	.....	.....
Scott-street	...	26	...	..	..	..	..	..	..	...	...	79	79	. ....	.....
Railway-street	...	26 &c.	...	...	...	..	...	...	...	...	..	88	88	.....	.....
Cecil Hills Reservoir	...	...	...	17 &c.	..	..	...	...	...	...	...	55			
Do	..	...	...	...	26 &c.	..	..	...	...	...	...	105	175	.....	.....
Do	...	...	...	...	...	5 cut	...	..	...	...	..	15			
	...	2,663	..	..	...	..	...	...	..	...	..	8,101			
	...	...	2,222	...	...	.	...	..	...	..	...	5,726			
Total for year	...	...	...	2,869	...	..	..	...	...	...	...	8,626	22,586	22,586	7,789
	...	...	...	...	26	...	..	...	...	...	...	105			
	...	...	...	...	..	9	..	...	...	...	...	28			
MACDONALDTOWN, No. 21.															
Concord-street	..	62	...	..	...	..	..	...	...	...	...	188	188	.....	.....
Total for year	..	62	...	...	...	...	...	...	...	...	...	188	188	188	62
MARRICKVILLE, No. 22.															
Grove-street	..	76	...	...	...	...	..	...	...	...	...	234	234	.. ...	.....
Premier-street	...	23	...	...	...	..	...	...	...	..	..	70	70	. ....	.....
French-street	...	40	...	...	..	...	...	...	...	..	...	121	121	.....	.....
Petersham-road	...	163	...	...	...	.	...	...	...	...	...	494	494	.... .	.....
West Albert-street	...	2	...	...	..	.	...	...	...	...	...	6	534	.....	.....
Do	...	...	169 &c.	...	..	..	..	...	...	...	...	528			
Total for year	...	294	...	...	...	...	...	...	...	...	...	925	1,453	1,453	463
	..	...	169	.	...	...	..	...	...	...	..	528			
NORTH BOTANY, No. 23.															
Botany-road	...	13 &c.	...	..	...	...	..	...	...	...	.	44			
Do	...	..	22 &c.	...	...	...	...	..	...	...	..	74	2,333	. ...	.....
Do	..	...	...	722	..	...	...	...	...	...	...	2,209			
Do	...	..	..	...	1 &c.	...	...	...	...	...	...	6			
Coward-street	...	38	..	...	...	...	..	...	.	...	..	123	2,444	.....	.....
Do	...	...	762	...	..	...	..	...	...	..	..	2,321			
Kent-road	..	33	...	...	...	...	...	...	...	...	...	101	570	.. ...	.....
Do	...	...	154 &c.	...	.	...	...	...	...	...	...	469			
Ponsonby-road	...	34 cut	...	...	..	...	..	...	...	..	...	94	1,334	.....	.....
Do	...	...	405 &c.	...	...	..	...	..	..	...	...	1,240			
Wellesley-street	...	20	...	...	...	..	..	...	...	...	...	61	1,057	.....	.....
Do	..	...	338	(cut)	...	...	..	..	...	...	..	996			
Gardener's-road	...	3	...	...	..	.	...	...	...	...	.	9			
Do	...	...	647	(cut)	..	..	..	...	...	...	...	1,947	2,280	.. ...	.....
Do	..	...	...	1 cut	.	...	..	..	..	...	..	1			
Do	...	..	.	..	72 cut	...	...	..	..	..	..	296			
	...	141	.	..	..	...	...	..	...	...	...	432			
	...	...	2,328	...	...	..	...	.	...	...	..	7,074	10,018	10,018	3,265
Total for year	...	...	...	723	...	..	..	...	..	...	...	2,210			
	...	..	..	..	73	...	...	...	...	...	...	302			
NORTH SYDNEY, No. 24.															
McLaren-street	...	23	.	...	...	..	..	...	..	...	.	68	68	.. ...	.....
High-street	.	53	..	..	..	..	..	...	..	..	...	164	164	.....	.....
Redan-street	...	88	.	...	..	...	..	..	...	...	...	269	269	.....	.....

MAINS LAID, 1891—*continued.*

District and Street.	No. and Size of Pipes. 3"	4"	6"	9"	12"	15"	18"	20"	24"	30"	42"	Length of each size.	Length of main.	Total length for district.	Total No of pipes for district.
N. SYDNEY, No. 24—*continued.*												yds.	yds.	yds.	
Bay View-street	...	147	...	...	...	...	.		...	...	..	447	447	.....	.....
Denison-street	..	38	...	..	..	...	...	...	..	...	...	117	117	.....	.....
Spring-street	...	60	...	...	...	...	...	..	...	...	...	190	190	.....	.....
Spit-road	...	..	148	...	...	..	...	...	...	...	...	448	448	.....	.....
Shadforth-street	...	162	..	...	...	...	...	...	...	...	...	497	497	.....	.....
Bloxsome-road	...	...	98	...	.	..	..	..	...	...	...	286	286	.....	.....
Alfred-street	...	...	18	...	...	..	...	...	...	...	...	56	56	.....	.....
Bent-street	..	147	...	...	...	...	...	..	...	...	...	447	447	.....	.....
Hayes-street	...	79	...	...	...	...	.	...	...	...	...	241	241	.....	.....
Glanalpine-street	...	68	...	...	...	...	...	...	...	...	...	208	208	.....	.....
Mistral-street	...	56	...	..	...	..	...	...	...	...	...	171	171	.....	.....
Macpherson-street	...	267&c	...	...	...	..	...	...	...	...	...	812	812	.....	.....
Avenue-road	...	35	...	...	...	...	...	...	...	...	.	110	110	.....	.....
Miller-street	...	5	...	...	...	...	...	...	..	...	...	15			
Do	...	...	158&c	...	...	...	...	...	...	...	...	483	527	.....	.....
Do	...	...	...	...	7&c	...	...	...	..	...		29			
High-street	...	55	...	...	...	...	..	..	...	..	...	167	167	.....	.....
Lane Cove Road	...	...	7	...	...	...	...	...	...	..	...	21			
Do	...	...	...	9&c	...	..	..	...	...	..	...	33	120	.....	.....
Do	...	...	...	...	...	19 cut	..	...	...	...	...	66			
Belmont-road	...	4	...	...	...	...	...	...	...	...	...	13			
Do	...	.	58	...	..	...	...	...	...	..	...	176	189	.....	.....
Total for year	...	1,287	...	..	...	...	...	...	.	...	...	3,936			
	...	...	487	...	...	...	...	...	...	...	...	1,470			
	..	...		9	...	...	...	...	...	...	..	33	5,534	5,534	1,809
	...	...	...	...	7	...	...	...	...	..	...	29			
	..	..	...	..	...	19	...	...	...	...	..	66			
NEWTOWN, No. 25.															
Wilson-street	...	..	18&c	...	...	...	...	...	...	...	..	70			
Do	...	...	...	3&c	..	...	...	...	...	...	...	23	1,164	.....	.....
Do	...	...	...	...	1&c	..	...	..	...	...	.	5			
Do	.	..	...	...	...	261	...	...	...	...	...	1,066			
King-street	..	1cut	...	...	...	...	...	...	...	...	...	1			
Do	...	...	1&c	...	...	...	..	...	...	...	...	3	119	.....	.....
Do	...	..	...	2	...	...	...	...	...	...	...	6			
Do	...	..	...	..	26	...	...	..	...	...	...	109			
Dickson-street	...	85&c	.	...	...	...	...	...	...	...	...	259	259	.....	.....
Holmwood-street	...	85&c	...	...	...	...	...	...	...	...	...	259	259	.....	.....
Australia-street	...	4&c	...	...	...	...	...	...	...	...	...	15			
Do	...	...	178&c	...	...	...	...	...	...	...	...	544	559	.....	.....
Wilford-lane	...	24	...	...	...	...	.	...	...	..	...	75	75	.....	.....
Wilford-street	...	54	.	...	...	..	...	...	...	...	...	165	165	.....	.....
Lennox-street	...	1&c	...	...	.	...	...	...	...	...	...	4			
Do	...	...	118&c	..	...	...	...	...	...	...	...	362	661	.....	.....
Do	...	...	...	98	...	...	...	...	..	...	...	295			
King-street	...	3	...	...	...	...	...	...	...	...	...	12			
Do	...	...	423	...	...	...	...	...	...	...	...	1,303	1,315	.....	.....
Church-street	...	7	...	...	...	...	...	...	...	...	...	21			
Do	..	...	92 cut	..	...	...	...	..	...	..	...	236	451	.....	.....
Do	...	...	..	65	...	.	...	...	...	...	...	194			
Prospect-street	..	...	3&c	..	...	...	...	...	...	...	...	12			
Do	...	...	...	107&c	...	...	...	...	...	...	...	331	343	.....	.....
Enmore-road	...	3	...	...	...	...	...	...	...	...	...	10			
Do	..	...	20	...	...	...	...	...	...	..	..	68	891	.....	.....
Do	.	...	...	265	...	...	...	...	...	...	.	813			
Campbell-street	...	2cut	...	..	...	...	..	.	...	..	...	4			
Do	...	...	162	...	...	...	...	...	...	...	...	503	507	.....	.....
Stanmore-road	...	6cut	...	...	...	...	...	..	..	...	...	16			
Do	..	..	2&c	.	..	...	...	..	..	...	...	10	179	.....	.....
Do	...	...	...	40&c	...	...	...	..	..	...	...	153			
Trade-street	..	...	30 cut	...	..	..	...	...	..	...	..	85	85	.....	.....
Bishopgate-street	...	3&c	...	...	...	...	...	...	..	.	...	11			
Do	...	...	99 cut	...	...	...	...	...	...	...		289	300	.....	.....
King-street	...	1	...	...	...	...	...	...	...	..	...	3			
Do	...	...	223	...	..	...	...	..	...	...	...	684	687	.....	.....
Bligh-street	...	28	...	...	...	.	...	..	...	...	...	83	83	.....	.....
Brown-street	...	15	...	...	...	...	...	..	...	...	...	44	44	.....	.....
Total for year	...	322	...	...	...	...	...	...	...	...	...	982			
	...	...	1,369	...	...	...	...	...	...	...	...	4,169			
	...	...	...	589	...	...	...	...	...	...	...	1,815	8,146	8,146	2,568
	...	...	...	...	27	..	...	...	...	...	...	114			
	...	...	...	...	...	261	..	...	...	...	...	1,066			
PADDINGTON, No. 26.															
Oatley-road	...	27	...	...	...	...	...	...	...	...	...	88			
Do	...	..	46	...	...	...	...	...	...	...	.	139	227	.	.....
Renny-street	...	...	24	...	...	...	.	...	.	...	...	73	73	...	...
Alexander-street	...	29	.	...	...	..	...	...	.	...		86	86	.....	...
Oxford-street	..	2	...	...	.	...	...	...	.	...	..	6			
Do	..	...	244	...	...	...	..	.	..	...	...	753			
Do	...	..	...	296	..	...	.	...	...	...	..	915	1,722	.....	...
Do	...	...	.	.	10	...	.	..	...	...	...	48			
Victoria-place	..	23	...	...	...	...	...	...	...	...	...	69	69	.....	.....

MAINS LAID, 1891—*continued.*

District and Street.	No. and Size of Pipes.											Length of each size.	Length of main.	Total length for district.	Total No. of pipes for district.
	3″	4″	6″	9″	12″	15″	18″	20″	24″	36″	42″				
PADDINGTON, No. 26—*con.*												yds.	yds.	yds.	
Victoria-lane	...	23	...	...	...	...	..	.	.	...	..	73	73	....	.....
Martin-street	.	45&c	...	...	...	...	...	..	.	.	..	144	144	...	.
Total for year	...	149	...	...	...	.	..	..	.	.	...	466	2,394	2,394	769
	...	..	314	...	..	...	...	.	..	.	..	965			
	..	...	..	296	...	..	.	...	..	.	...	915			
	...	...	...	...	10	...	.	.	..	...	...	48			
PETERSHAM, No. 27.															
Carrington-road	...	59	...	...	...	...	...	..	.	...	..	177	177	... .	.....
Total for year	...	59	...	...	...	...	...	.	...	...	...	177	177	177	59
RANDWICK, No. 28.															
Titania-street	...	23	...	...	...	...	..		.	...	...	72	72	.....	... .
Melody-street	...	28	.	...	...	...	...	...	..	...	.	85	85	.....	.....
Allison-street	...	88	.	...	...	...	..	...	..	...	...	267	267	.. ...	. . .
Oberon-street	.	76&c	...	...	...	...	..	...	..	...	..	235	235	.. ...	... ..
Henry-street	...	38	..	..	...	...	..	...	.	...	..	116	116	. ...	. . ..
Howard-street	...	66	.	...	...	...	..	...	...	.	.	204	204	.....	.. ..
Ethel-street	.	87	...	...	...	...	...	..	...	...	...	267	267	..	.....
Young-street	...	61	...	...		...	...	..	..	...	...	187	187	.....	.....
Doncaster-avenue	...	68	...	...	...	...	..	..	...	...	...	207	207	... ..	...
Carlton-street	...	68	...	.	...	.	...	...	..	...	...	204	204	.. .	... ..
Elsmere-street	...	50	...	...	...	...	...	...	...	...	...	151	151	..	.....
Bunnerong-road	...	72	...	.	.	.	...	...	...	...	...	218	218	..	... ..
Byron-street	...	...	131	.	..	.	...	...	...	...	...	403	403	.....	.....
Total for year	...	725	...	...	...	...	..	...	..	...	...	2,213	2,616	2,616	856
		...	131	...	...	..		...	..	...	...	403			
REDFERN, No. 29.															
Holden-street	...	...	...	.	.	38		...	.	..	..	140	140	...	.. .
Eveleigh-street	...	...	...	...	...	131	...	..	.	...		397	397	..	.. .
Wilson-street	...	.		3&c	...	...	.		..	..	...	15	921	. .	.....
Do	...	...	...		..	282	(cut)		..	...	.	906			
Holden-street	...	20	...		..	...		.	..	...		62	62	. ...	.
Eveleigh-street	...	213	...	...	...	...	...	..	..	..		675	675	.	.....
Jones-street	..	25&c	...	..		...	.	...	.		.	79	79	... .	..
Cooper-street	...	41	.	.	.	...	..	.	...	.	..	127	127	.....	... ..
Zamia-street		4	..	...	.	...	...	.	.	..	...	15	298	... ..	.. ..
Do	...	...	91	...	...	...	...	...		..	...	283			
Baptist-street	...	44	...	...	...	...	..	...		..	..	132	132	...	. ...
Kepos-street	..	14	...	..	..	...	.	.		.	.	133	133	..	... ..
Bourke-street	.	...	.	86 cut	.	...		.		.	...	253	253	.....	.....
Baronia-street	..	...	..	118&c	...	...	.	.	.	.	.	357	357	...	.. ..
Redfern-street	...		..	387	..	...		...	.	...	...	1,162	1,162	..	.....
Young-street	...	.		29	...	...	.		...	.	..	85	85	..	.....
Codrington-street	.	4		.	..	.	.	..	.	.	..	14	145		.....
Do	...	...	42&c	..	.	..	.	...	...	.		131			
Rosehill-street	...	3 cut		...	...	.	.	..	.	.	..	5	134	.....	.....
Do	.	...	...	41	..	...	.	..	...		..	129			
Ivy-street	...	3	..	...	...	.	.	.	.	..	.	10	150	... .	.. .
Do	...	...	49	.	...	...			.		..	140			
Golden Grove-street	...	2	..	...	...	..		..				6	67	. . .	. ..
Do	..	...	20	...	...				.	. .	..	61			
Victoria lane	...	20	...	...	...	...	..	...		..	.	68	68	. .	. .
Walker-street		13	..	.	. .	...		...	...		..	38	198	. ..	.....
Do	...	...	51&c	...	.	...	...	...	..	..		160			
James-street	. .	20	...	...	..		.	..		. .		85	85	. .	.. .
Phillip-street	...	...	22	..	...	.	.		...	.		67	67	.	. . .
Marryat-street	..	46	...	...	. .		..	..	..	.	. .	140	140	... .	.
Arthur-street	...	30	. .	...	..	...		. .	.	.		89	89	. . .	.
Total for year	...	541	. .	...	.		...	.		...	...	1,673	5,971	5,971	1,931
	...	...	276	...	...		...	..	..	.	.	854			
	...	...		661	...	...	.	...	.	. .		2,001			
	..	...	...	...	. .	451		...	...	.	.	1,443			
ROCKDALE, No. 30.															
Forest-road	...	32&c	.	...	...	...	.	...	...	.	...	102	1,191	. .	.. .
Do	...	..	.	357	.	.	.	.		...	. .	1,089			
Firth-street	...	73		...	...	...	. .		.	.	...	224	224	.	... .
Green-street	...	116	...	...	.	...	.	...	...		...	350	350	. .	.. .
Queen-street	...	31	...	...	...	..	.	..	...	..	. .	94	94	.. ...	.....
French-street	.	115	...	...	...	...	.	. .	.		..	348	348	. ....	.....
Earle-street	...	48	.	...	..	...	.	..		...	. .	146	146	.. .	.....
Sandringham-street	.	265	..	...	. .	...	..	.	.	.	.	809	809	.....	.....
Clareville-street	...	402	..	...	...	.	.	.	. .	. .	..	1,226	1,226	.....	... .
Rockdale-street	...	27	...	...	. .	...	.	.	...	.		81	81	.....	.....
Chapel-street	.	144	..	...	...	..		.	.		. .	438	438	.....	... .
Cairo-street	...	47	...	. .	...	...	...	...		.	.	145	145	.....	.....
Woolli Creek-road	...	41	...	...			.	.	...	...	...	125	125	. ...	.....
Russell-avenue	...	231	.	.	.	.	..	.	..			704	704	...	. ...
Lauff-lane	.	21	..	..	. .	...	...	...		...	.	65	65	.....	... ..

MAINS LAID, 1891—*continued.*

District and Street.	No. and Size of Pipes. 3″	4″	6″	9″	12″	15″	18″	20″	24″	36″	42″	Length of each size.	Length of main.	Total length for District.	Total No. of pipes for District.
ROCKDALE, No. 30—*continued.*												yds.	yds.	yds.	
Rocky Point Road	...	4	..	.	..	...	...	...	...	...	...	13			
Do	...	...	2	...	..	..	...	...	...	...	...	9	1,887	.....	.....
Do	...	..	...	615	...	..	...	..	...	...	..	1,865			
Barden-street	...	43	..	...	...	...	...	...	...	...	...	133	133	.....	.....
Sevenhoe-street	...	45	...	...	...	...	...	...	...	...	...	139	139	.....	.....
Stanley-street	...	17	...	...	...	...	...	...	...	...	...	52	52	.....	.....
Arncliffe-street	70	..	..	...	...	...	...	...	...	..	...	221	380	.....	.....
Do	...	51	...	...	...	...	..	..	...	...	...	159			
Forest-road	...	4	...	...	..	...	..	...	...	...	..	19	1,467	.....	.....
Do	..	...	474	..	..	...	...	...	...	...	...	1,448			
Wollongong-road	...	47 &c	...	...	...	.	...	...	...	...	...	147	1,626	.....	.....
Do	...	...	488&c	...	...	...	...	...	...	...	..	1,479			
Farr-street	...	...	354	...	...	...	.	...	...	...	..	1,075	1,075	.....	.....
Station-street	..	39	.	..	...	...	...	..	...	...	...	120	120	.....	.....
Mitchell-street	...	26	...	..	..	...	...	...	...	...	...	79	79	.....	.....
Gordon-street	...	29	...	..	..	..	...	...	...	...	...	90	90	.....	.....
Bryant-street	...	146&c	.	..	...	...	..	...	...	..	...	442	442	.....	.....
Queen-street	.	80	...	...	.	...	..	...	...	...	...	241	272	.....	.....
Do	...	...	9 &c	...	...	...	...	...	...	...	..	31			
George-street	...	42	...	...	..	.	...	...	...	...	...	129	129	.....	.....
Austral-street	...	140	...	...	...	...	..	...	...	..	...	426	426	.....	.....
Lord-street	...	78	...	...	..	...	...	...	...	...	...	231	231	.....	.....
Cameron-street	...	47 &c	...	...	..	..	...	..	..	...	...	150	150	.....	.....
Gipps-street	...	92	..	...	..		..	...	.	...	...	277	277	.....	.....
Do	...	93 &c	...	...	...	..	...	...	..	...	...	285	285	.....	.....
Tabrett-street	...	49	.	...	...	...	..	...	...	...	...	149	149	.....	.....
Bryant-street	..	45	...	..	..	...	...	...	...	...	...	134	134	.....	.....
Wickham-road	...	...	113	...	...	...	..	...	...	...	...	342	342	.....	.....
West Botany Road	...	2	...	...	.		...	...	...	..	..	6	205	.....	.....
Do	...	...	66	..	...	.	...	...	...	...	.	199			
Kyle-street	..	52	...	...	..	.	...	..	..	..	...	158	158	.....	.....
Duncan-street	...	50	...	..	...	...	...	...	...	...	...	154	154	.....	.....
Dowling-street	...	108	...	..	...	...	...	...	...	..	..	329	329	.....	.....
Watkin-street	...	32	...	...	...	...	...	...	...	...	...	98	98	.....	.....
Wazier-street	...	86 &c	..	..	..	...	...	...	...	...	...	262	262	.....	.....
Wollongong-road	...	7	..	..	...	...	...	...	...	...	...	21	694	.....	.....
Do	...	...	221&c	...	...	..	...	..	...	..	...	673			
Total for year	70	...	...	...	..	...	...	..	...	...	..	221	17,731	17,731	5,816
	...	3,047		...	...	...	...	...	..	...	...	9,300			
	...	...	1,727	...	...	...	...	...	...	...	...	5,256			
	...	...	...	972	...	.	...	...	...	...	...	2,954			
ROOKWOOD, No. 31.															
Joseph-street	...	22	...	...	...	...	...	...	...	...	...	69	936	.....	.....
Do	...	...	285&c	...	...	...	...	...	...	...	...	867			
Bridge-street	...	...	87	...	...	...	...	...	...	...	..	262	262	.....	.....
John-street	...	14 &c	...	...	...	...	...	...	...	...	...	48	655	.....	.....
Do	...	..	199&c	...	..	...	...	...	...	...	...	607			
Total for year	...	36	...	...	...	...	...	...	...	...	...	117	1,853	1,853	607
	...	...	571	...	...	...	...	...	...	...	...	1,736			
RYDE, No. 32.															
Great Northern Road	...	...	..	287	..	..	...	...	...	...	..	861	861	.....	.....
Total for year	...	...	...	287	...	...	...	...	...	...	...	861	861	861	287
SPECIAL CONTRACTS, No. 33.															
36 in. Rising Main to Paddington	...	...	..	16 &c	...	..	...	...	...	...	...	50	920	.....	.....
Do	...	...	...	...	...	.	...	...	11 cut	...	...	41			
Do	...	...	...	...	..	...	...	...	...	201&c	..	829			
24¾ in. Wrought-iron Main from Crown-street Reservoir to Woollahra	..	...	3 &c	...	...	...	...	...	24¾ in	..	...	20	3,269	.....	.....
	...	...	...	..	...	...	...	...	339&c	...	..	2,249			
Total for year	...	..	3	..	..	...	...	...	...	...	.	20	4,189	4,189	570
	...	...	...	16	..	...	...	...	...	.	...	50			
	...	..	...	...	...	...	...	...	350	...	...	3,290			
	...	...	.	...	...	...	...	...	...	201	...	829			
STRATHFIELD, No. 34.															
Coventry-road	...	35	.	..	.	...	...	..	...	...	.	108	108	.....	.....
Clarendon-street	...	77	...	...	...	...	...	..	...	...	...	234	234	.....	.....
Elwyn-street	..	69	...	...	..	.	...	...	..	...	...	212	212	.....	.....
Abbotsford-road	...	28	..	.	..	...	...	...	...	...	..	85	85	.....	.....
Cooper-street	...	193&c	...	...	.	..	.	.	..	...	...	588	823	.....	.....
Do	...	...	76 &c	...	...	..	...	...	..	...	...	235			
Salisbury-street	...	...	26	...	..	..	...	..	..	.	...	79	79	.....	.....
Total for year	...	402		..		...	...	...	...	...	.	1,227	1,541	1,541	504
	...	...	102	...	...	...	...	...	...	...	.	314			

MAINS LAID, 1891—*continued.*

District and Street	No. and Size of Pipes. 3″	4″	6″	9″	12″	15″	18″	20″	24″	36″	42″	Length of each Size.	Length of Main.	Total Length for District.	Total No. of Pipes, for District.
WAVERLEY, No. 35.												yds	yds.	yds.	
Watson-street	...	148	...	...	..	...	...	...	...	...	...	452	452	.....	.....
Bronte-road	1 &c.	...	..	...	.	...	...	...	...	...	...	4	732	.....	.....
Do	...	238	..	...	...	...	..	.	...	.	..	728		.....	.....
Denham-street	..	49	..	...	...	...	..	...		...	...	147	147	.....	.....
Frances-street	...	28	.	..	...	.	..	...	...	...	...	85	85	.....	.....
Salisbury-road	...	23	...	..	..	..	...	...	..	...	..	72	72	.....	.....
Leichhardt-street	.	31	...	...	...	...	...	..	...	...	...	96	96	.....	.....
Douglas-street	...	39	..	...	...	..	..	...	...	...	..	121	121	... .	.....
Bon Accord-avenue	...	34	...	...	..	...	...	..	..	...	...	99	99	... ..	.....
High-street	...	43	...	...	...	..	.	...	...	...	...	125	125	.....	.....
Geierstein-street	...	87	...	...	...	...	...	.	...	..	...	262	262	.....	.....
Kenilworth-street	...	76	.	...	..	...	..	...	...	..	.	124	124	.....	.....
Clifton-street	..	49	...	...	..	..	...	...	..	...	...	151	151	... ..	.....
Henderson-street	...	25	..	...	...	..	..	..	..	...	..	77	77	.....	.....
Busby-parade	...	30	...	...	...	...	...	...	..	...	...	92	92	.....	.....
Moore-street	...	58	..	...	..	..	...	...	...	...	..	176	176	.....	.....
Bondi-road	...	230	...	...	...	...	...	..	.	...	...	698	698	.....	.....
Total for year	1	...	...	...	...	...	...	...	...	...	...	4	3,509	3,509	1,189
	...	1,188	..	...	...	..	.	...	...	...	...	3,505			
WATERLOO, No. 36.															
Botany-road	...	...	19 &c	...	..	..	...	...	..	...	...	74	1,189	.....	.....
Do	...	...	...	188	...	...	...	..	...	...	..	568		.....	.....
Do	...	..	..	...	140	..	...	...	...	...	..	547		.....	.....
Do	...	...	...	117	...	...	...	..	...	...	..	355	355	. ..	.....
Mead-street	...	48	...	...	...	.	...	..	...	...	...	149	149	.... .	... ..
West-street	...	40	...	...	..	..	...	..	...	...	...	123	123	.....	.....
Epsom-road	...	...	..	...	83	..	...	...	...	...	...	329	329	.....	.....
Smith-street	...	26	...	...	...	..	...	..	..	...	...	80	80	.....	.....
Princes-avenue	...	7	...	...	...	..	...	...	...	...	...	22	22	... .	.....
Total for year	..	121	..	..		.	...	...	...	...	...	374	2,247	2,247	668
	...	..	19	...	...	..	...	...	..	..	.	74			
	..	...	...	305	..	...	...	...	...	..	..	923			
	...	...	.	...	223	...	...	..	...	...	...	876			
WILLOUGHBY, No. 37.															
Gordon-road	...	15 &c	...	...	.	...	...	...	.	...	...	48	1,028	.....	.....
Do	...	...	320	...	...	...	...	..	...	...	..	980		.... .	.....
Total for year	...	15	..	..	..	..	...	..	...	...	..	48	1,028	1,028	335
	...	...	320	...	...	...	...	...	..	...	..	980			
WOOLLAHRA, No. 38.															
Military Barracks	...	291	...	...	.	...	...	.	...	...	...	898	898	.....	.....
Old South Head Road	...	2 cut	...	..	..	...	...	...	...	...	...	5	727	.....	.....
Do	...	...	237	..	.	..	...	...	.	...	..	722		.....	.....
Adelaide-street	...	64	...	..	..	...	...	...	..	...	..	184	184	.....	.....
View-street	...	86	...	..	.	...	..	..	..	...	..	244	244	.....	.....
Australia-street	...	79	..	.	..	.	..	...	...	.	...	283	283	.....	.....
Bay-street	...	8 &c.	...	...	...	..	.	..	...	...	...	28	499	.....	.....
Do	...	.	5	..	...	..	..	...	..	.	...	17		... ..	.....
Do	..	..	...	169	.	.	..	...	.	...	..	454		.....	.....
William-street	...	2 &c.	...	.	...	..	...	...	...		...	8	462	... ..	.....
Do	..	..	1 &c.	...	...	.	...	..	...	..	...	4		.....	.....
Do	..	...	..	148	.	...	...	...	...	...	...	450		.....	.....
New South Head Road	...	5 &c.	...	..	..	...	..	..	..	...	..	18	1,223	.....	.....
Do	...	.	6 &c.	...	.	..	..	...	...	...	..	23		.....	.....
Do	...	...	..	394	...		..	..	...	..	..	1,182		.....	.....
Queen-street	...	1	...	...	...	...	..	...	...	...	...	3	498	.....	.....
Do	...	...	170	(cut)	...	..	...	...	..	...	...	486		.....	.....
Do	...	...	...	3	..	...	..	...	...	..	.	9		.....	.....
Derby-street	...	37 &c	..	...	...	..	...	..	...	..	..	117	117	.. ..	.....
Total for year	..	575	...	...	...	..	..	..	...	...	...	1,788	5,135	5,135	1,698
	...	...	419	...	..	..	...	...	...	...	...	1,252			
	...	...	..	704	...	..	..	...	...	...	..	2,095			
BY BOARD'S OPERATIVES, No. 39.															
Parramatta River Bridge	...	...	..	39	...	..	...	...	...	...	..	121	121	... ..	.....
42in. Duplication Connection, Gipps-street, City	...	...	...	...	..	...	...	...	...	..	7	30	30	... ..	.....
Total for year	...	...	..	39	.	...	...	...	...	...	7	121	151	151	46
												30			

Mains Cleaned, 1891.

District and Street.	Length of different Sizes. 3"	4"	5"	6"	9"	12"	Length of Main.	Total length for district.
							yds.	yds.
Alexandria, No. 1.								
Waterloo-road	357						357	
Total for year	357						357	357
Camperdown, No. 2.								
Dowling-street		184					184	
Burton-street		213					213	
Stephen-street		239					239	
Elizabeth-street		264					264	
Gordon-street	93	67					160	
Rose-street	79						79	
Bennett-street		104					104	
Isabella-street	70						70	
Church-street		956					956	
Eliza-street	69						69	
Wilson-street		71					71	
Perkins-street		126					126	
Lyons-road		137					137	
Lambert-street	68½	121½					190	
Campbell-street		292					292	
Brodie-street		320					320	
Smith-street		154					154	
Junction-street	80						80	
Pyrmont Bridge Road		515					515	
Grose-street		339					339	
University-street		325					325	
College-street		327					327	
Booth-street	103	63					166	
Frederick-street		120					120	
Thomas-street		271					271	
Brown-street		312					312	
John-street		139					139	
Susan-street		109					109	
George-street				176	759		935	
Fowler-street		304					304	
Gibbon-street		88					88	
Park-street	191	292					483	
Pidcock-lane	112						112	
Australia-street				445	300		745	
Derby-street				72	44		116	
Ross-street				191			191	
Eaton-street		108					108	
St. Mary's-street				447			447	
Bishopgate-street		223					223	
Wellington-street		124					124	
Regent-street		232					232	
Denison-street		470					470	
Total for year	865½	7,609½		1,331	1,103		10,909	10,909
City, No. 3.								
Pyrmont Bridge-road				280			280	
Little Edward-street		68					68	
Edward-lane		58					58	
Harwood-street		140					140	
Regent-street		313		314			627	
Mount-street	195	60					255	
Edward-street		70					70	
Chown-street	129	25					154	
Jones-street		60					60	
Crown-road	65	205					270	
Young-street		81					81	
Albert-street	63						63	
Newtown-road					282		282	
Myrtle-street					281		281	
Kensington-street				270			270	
Gould-street	159						159	
Outram-street	86						86	
Fowler-lane	105						105	
Wattle-street					219		219	
New-street	70						70	
Harvey-street		121					121	
Little John-street	35						35	
Bremner-street	80						80	
McCredie-street	50						50	
Alma-street		142					142	
Abercrombie-street					164		164	
Smithers-street	88						88	
O'Connor-street	93	134					227	
Marian-street		121					121	
Little Queen-street	49						49	
Wellington-street		184					184	

MAINS CLEANED, 1891—*continued.*

District and Street	Length of different Sizes.						Length of Main.	Total Length for District.
	3″	4″	5″	6″	9″	12″		
CITY, No. 3—*continued.*							yds.	yds.
Waterloo-place	122						122	
Cleveland-street	193	330		132	175		830	
Rose-street				150			150	
Maize-lane		79					79	
Levey-street		96					96	
Danger-place	165						165	
Queen-street		159					159	
Dick-street	63	33					96	
Henrietta-street		79					79	
Bowman-street		110					110	
Bank-street				258			258	
Jesmond-place	70						70	
Bourke-street				197	194	379	770	
Pine-lane		117					117	
Rose-street	52						52	
Finnigan's-lane	40	32					72	
Paint's lane	164	38					202	
Shepherd-street	94						94	
Victoria-street		431					431	
Burton-street	75						75	
Pine-street	60	76					136	
College-street						567	567	
Abattoir-road		374					374	
Pyrmont Bridge Road		208					208	
Mew-street		145					145	
Thomas-street		85					85	
Abercrombie-street			80				80	
Abercrombie-place		54	283				337	
May-street	221						221	
Howard-street		224					224	
Johnston-street	52	46					98	
Lane off Darling-street	95						95	
Owen-street	112						112	
Johnston's-lane			72				72	
Darling-street		675					675	
Chambers-street	149						149	
M'Arthur-street	214	188					402	
Mary Ann-street	219	92					311	
Crown-lane		143					143	
Jones-street	67	545					612	
Henry-street		58					58	
Lane off Henry-street		104					104	
Crown-road	990						990	
Allen-street	95						95	
Quarry-street	182	110					292	
Schlinter-lane	114						114	
Kirk-street	89						89	
Burlington-street		130					130	
Fig-street		127					127	
Bannister-lane		100					100	
Crown-lane		68					68	
Ultimo-street	39						39	
Experiment-lane		205					205	
Pyrmont-street	122	319		297			738	
Union-street		88		435			523	
George-street West				372			372	
Bunn-street		167					167	
Murray-street	137	150					287	
George-street West				261	106		367	
Beaumont-street		60					60	
Dale-street	137						137	
Middle street	137						137	
Tramway Sheds	882	50					932	
Irving-street	135						135	
Shepherd-street		147					147	
Greaves-lane		99					99	
Carlton-street	97	114					211	
Terminus-street	124						124	
Balfour-street	117						117	
Albion-street						176	176	
Little Hutchinson-street						54	54	
Botany-street		117		384		4	505	
Sophia-street	147						147	
Riley-lane	133						133	
Kippax-street		303					303	
Lacey-street	101						101	
Jesmond-street	85						85	
Auburn-street		66					66	
Adelaide-street		111					111	
Steel-street		94					94	
Little Norton-street	124						124	
Withers-lane		88					88	
Domain-terrace	52	140					192	
Tudor-street		141					141	
Total for year	7,533	9,297	435	3,350	1,421	1,180	23,216	23,216

MAINS CLEANED, 1891—*continued.*

District and Street.	Length of different Sizes.						Length of Main.	Total Length for District.
	3″	4″	5″	6″	9″	12″		
GLEBE, No. 4.							yds.	yds.
Kennedy-street	66	51	.....	.....	.....	.....	117	.....
Leichhardt-street	380	.....	.....	.....	.....	.....	380	.....
Total for year	446	51	.....	.....	.....	.....	497	497
LEICHHARDT, No. 5.								
Renwick-street	.....	529	.....	.....	.....	.....	529	.....
Jarrett-street	.....	303	.....	.....	.....	.....	303	.....
Excelsior-street	.....	336	.....	.....	.....	.....	336	.....
Thomley-street	.....	307	.....	.....	.....	.....	307	.....
Carey-street	.....	337	.....	.....	.....	.....	337	.....
Junior-street	.....	168	.....	.....	.....	.....	168	.....
Roseby-street	.....	151	.....	.....	.....	.....	151	.....
Rofe-street	.....	317	.....	.....	.....	.....	317	.....
Russ-street	.....	161	.....	.....	.....	.....	161	.....
Total for year	.....	2,609	.....	.....	.....	.....	2,609	2,609
NEWTOWN, No. 6.								
Church-street	.....	404	.....	.....	.....	.....	404	.....
Lennox-street	.....	136	.....	.....	.....	.....	136	.....
Trade-street	.....	84	.....	.....	.....	.....	84	.....
Albert-street	.....	114	.....	.....	.....	.....	114	.....
Albert-lane	.....	139	.....	.....	.....	.....	139	.....
Baltic-street	.....	.....	.....	219	.....	.....	219	.....
Bedford-street	.....	.....	.....	550	.....	.....	550	.....
Wellington-street	.....	452	.....	.....	.....	.....	452	.....
Oxford-street	.....	322	.....	.....	.....	.....	322	.....
Hordern-street	.....	357	.....	.....	.....	.....	357	.....
Egan-street	.....	220	.....	.....	.....	.....	220	.....
Rapier-street	.....	173	.....	.....	.....	.....	173	.....
Victoria-street	.....	222	.....	.....	.....	.....	222	.....
O'Connell-street	.....	288	.....	.....	.....	.....	288	.....
Chalder-street	.....	84	.....	.....	.....	.....	84	.....
Regent-street	.....	492	.....	.....	.....	.....	492	.....
Denison-street	.....	515	.....	.....	.....	.....	515	.....
Richard-street	205	.....	.....	.....	.....	.....	205	.....
Bligh-street	.....	111	.....	.....	.....	.....	111	.....
Prospect-street	.....	192	.....	.....	.....	.....	192	.....
Campbell-street	.....	548	.....	.....	.....	.....	548	.....
Elizabeth-street	.....	51	.....	.....	.....	.....	51	.....
Australia-street	.....	.....	.....	572	.....	.....	572	.....
Eliza-street	160	.....	.....	.....	.....	.....	160	.....
Mary-street	.....	94	.....	10	.....	.....	104	.....
Lennox-street	.....	44	.....	.....	.....	.....	44	.....
York-lane	33	.....	.....	.....	.....	.....	33	.....
King-street	.....	64	.....	998	.....	.....	1,062	.....
Forbes-street	.....	256	.....	.....	.....	.....	256	.....
Queen-street	.....	269	.....	.....	.....	.....	269	.....
Fitzroy-street	.....	260	.....	.....	.....	.....	260	.....
Georgina-street	.....	102	.....	.....	.....	.....	102	.....
Bucknell-street	.....	269	.....	.....	.....	.....	269	.....
Watkin-street	.....	394	.....	.....	.....	.....	394	.....
Brown-street	.....	288	.....	.....	.....	.....	288	.....
Erskinville-road	136	43	.....	.....	.....	.....	179	.....
Total for year	534	6,987	.....	2,349	.....	.....	9,870	9,870

Grand Total for Year 1891, City and Suburbs, 47,458 yards = 26 miles, 1,698 yards.

Mains Removed, 1891.

District and Street.	No. of Yards for Each Size Removed.						Total Length for District.
	3″	4″	6″	9″	12″	24½″	
City.							yds.
Cleveland-street	.....	1,294	.....	.....	.....	....	.....
Dowling-street	12	.....	.....	.....	.....	.....	.....
Domain-terrace	5	.....	.....	.....	.....	.....	.....
Crown-street	.....	.....	.....	.....	.....	11	.....
Market-street	.....	480	.....	.....	.....	.....	.....
Crown-street Reservoir	.....	10	.....	.....	.....	.....	.....
Pitt-street	.....	7	.....	.....	.....	.....	.....
Hay-street	.....	.....	.....	.....	35	.....	.....
Domain	.....	96	.....	.....	.....	.....	.....
Underwood-street	148	.....	.....	.....	.....	.....	.....
Randwick-road	32	15	.....	.....	.....	.....	.....
Marshall-street	.....	16	.....	.....	.....	.....	.....
Total	197	1,918	.....	.....	35	11	2,161
Alexandria.							
Buckland-street	.....	.....	5	.....	.....	.....	.....
Anderson-street	.....	3	.....	.....	.....	.....	.....
Total	.....	3	5	.....	.....	.....	8
Balmain.							
Gordon-street	.....	76	.....	.....	.....	.....	.....
Western-road	.....	.....	.....	5	.....	.....	.....
Goodsir-street	.....	22	.....	.....	.....	.....	.....
Total	.....	98	.....	5	.....	.....	103
Burwood.							
Wentworth-road	.....	26	66	.....	.....	.....	.....
Shaftesbury-road	.....	119	.....	.....	.....	.....	.....
Total	.....	145	66	.....	.....	.....	211
Drummoyne.							
Napier-street	.....	185	.....	.....	.....	.....	185
Fivedock.							
Carey-street	.....	100	.....	.....	.....	.....	100
Glebe.							
Derby-place	33	.....	.....	.....	.....	.....	.....
Derwent-lane	.....	74	.....	.....	.....	.....	.....
Phillip-street	.....	4	.....	.....	.....	.....	.....
Total	33	78	.....	.....	.....	.....	111
Newtown.							
Australia-street	.....	.....	690	.....	.....	.....	.....
King-street	.....	.....	19	.....	.....	.....	.....
Lennox-street	.....	167	.....	.....	.....	.....	.....
Church-street	.....	221	.....	.....	.....	.....	.....
Prospect-street	.....	213	.....	.....	.....	.....	.....
Campbell-street	.....	346	.....	.....	.....	.....	.....
Church-street	.....	156	.....	.....	.....	.....	.....
Total	.....	1,103	709	.....	.....	.....	1,812
Paddington.							
Renny-street	.....	48	.....	.....	.....	.....	48
Petersham.							
Palace-street	.....	35	.....	.....	.....	.....	35
Randwick.							
Centennial Park	.....	.....	508	.....	.....	.....	508
Rockdale.							
Rocky Point Road	.....	.....	.....	193	.....	.....	.....
Bay-street	.....	.....	30	.....	.....	.....	.....
Total	.....	.....	30	193	.....	.....	223
Strathfield.							
Carrington Avenue	.....	318	.....	.....	.....	.....	.....
Wentworth-street	.....	.....	40	.....	.....	.....	.....
Total	.....	318	40	.....	.....	.....	358
Woollahra.							
Old South Head Road	.....	5	.....	.....	.....	.....	5

Grand Total for City and Suburbs, 3 Miles, 588 Yards.

Mains Lowered, 1891.

District and Street.	No. of Yards for each Size Lowered.						Total Length for District.
	3"	4"	6"	9"	12"	15"	
							yds.
City.							
Kent-street			8				
George-street West		36					
Wilton-place	4						
Macarthur-street	20						
Mew-street		5					
Crown-road		10					
Lane off Sir John Young's Crescent	14						
Mount-street	16	12					
Dawes Point	3						
Young-street		8					
Day's-terrace		4					
Domain-terrace		4					
Washington-street	4						
Harris-street		8	8				
Little Buckingham-street		8					
Cleveland-street		9					
Crown-street Reservoir		7					
Swan-street		7					
Maddle-street	8						
Balfour-street	8						
Union-street			5				
Bourke-street			37	18	31		
Greaves-lane		7					
Carlton-street	8						
Surry-street		8					
Murray-street	6						
Totals	91	133	58	18	31		331
Alexandria.							
Lawrence-street			28				
Maddox-street		16					
Wyndham-street		8					
Victoria-street		85					
Victoria-lane		52					
Mitchell-street			9				
Totals		161	37				198
Ashfield.							
Old Canterbury-road			18				
Lyons-street		7	15				
Totals		7	33				40
Balmain.							
Campbell-street		7					
Burt-street		193					
Darling-road			10				
Totals		200	10				210
Burwood.							
George-street			16				
Totals			16				16
Camperdown.							
Elizabeth-street		19					
Wilson-street		7					
Perkins-street		10					
Lyons-street		7					
Smith-street		7					
Booth-street		5					
Frederick-street		7					
Bishopgate-street		7					
Totals		69					69
Drummoyne.							
Havelock-street		160					
Totals		160					160
Enfield.							
Punchbowl Road		8					
Totals		8					8
Fivedock.							
Wolseley-street		42					
Totals		42					42

MAINS LOWERED, 1891—*continued.*

District and Street.	No. of Yards of each Size Lowered.						Total Length for District
	3″	4″	6″	9″	12″	15″	
							yds.
GLEBE.							
Hereford-street		7	16				
Woolley-street		3					
Glebe Point Road				26			
John-street	8						
Denham-street			19				
Bridge-street		7					
Rosebank-street	5						
Total	13	17	35	26			91
LEICHHARDT.							
Trafalgar-street		32					
Alfred-street		14					
Carrington-street			12				
Wells-street	29						
Edith-street		125					
Annandale-street		15					
Albion street	14	9					
Church-street		13					
Balmain-road			13				
Marian-street			10				
James-street		109					
Total	43	317	35				395
MARRICKVILLE.							
Neville-street		16					
South-street		78					
Robert-street		20					
Total		114					114
NORTH SYDNEY.							
Sutherland-street		46					
Falcon and Miller Streets			26			37	
Berry-street			68				
Emmett-street		130					
Total		176	94			37	307
NEWTOWN.							
Holmwood-street		12					
Church-street		7					
Albemarle-street		42	22				
Missenden-road				9			
Total		61	22	9			92
RANDWICK.							
Dudley-street		25					
Total		25					25
REDFERN.							
Wells-street		10					
Douglas-street		8					
Morehead-street		6					
Little Cleveland-street	7						
Turner-street	4						
Cooper-street		5					
Total	11	29					40
ROCKDALE.							
King-street		63					
Avenel-street		39					
Total		102					102
STRATHFIELD.							
Broughton-street		14					
Abbotsford-road		31	26				
Meredith-street		13					
Florence-street		12					
Carrington Avenue		16					
Strathfield Avenue		9					
Alveston-street		12					
Woodward Avenue		43					
Total		150	26				176
WAVERLEY.							
Bondi road		16					
Wellington-street		27					
Total		43					43
WATERLOO							
Botany-road		17	8				
Total		17	8				25
WOOLLAHRA.							
Short-street		40					
Total		40					40

Grand Total, City and Suburbs, 1 mile, 682 yards.

List of Repairs effected during year 1891.

District.	Number in each District.	District.	Number in each District.
City	138	North Botany	1
Alexandria	4	North Sydney	5
Ashfield	3	Newtown	14
Balmain	2	Paddington	3
Burwood	2	Petersham	3
Camperdown	3	Randwick	3
Darlington	1	Redfern	33
Drummoyne	1	Rockdale	7
Fivedock	3	St. Peters	3
Glebe	18	Strathfield	2
Granville	3	Waverley	4
Hurstville	5	Waterloo	5
Kogarah	2	Woollahra	5
Leichhardt	4		
Macdonaldtown	3	Total No. for the year	281
Marrickville	1		

Number of Hydrants fixed during year 1891.

District.	By Board's Operatives.		By Contractors for Main Laying.		District	By Board's Operatives.		By Contractors for Main Laying.	
	Ball.	Screw-down.	Ball.	Screw-down.		Ball.	Screw-down.	Ball.	Screw-down.
City	782	405	64	145	Macdonaldtown	5		3	
Alexandria	64		11		Marrickville	157		15	
Ashfield	185		8		North Botany			149	
Auburn			140		North Sydney	159		89	
Balmain	357		15		Newtown	218		133	
Burwood	292		2		Paddington	241		35	
Botany			63		Petersham	350		2	
Camperdown	110		12		Randwick			34	
Canterbury	10				Redfern	70		75	
Concord			18		Rockdale	12		249	
Darlington			6		Rookwood			29	
Drummoyne	5		23		Ryde			13	
Enfield	11		56		St. Peters	103			
Fivedock			68		Strathfield	184		26	
Glebe	292		22		Waverley	135		59	
Granville	7		39		Waterloo	23		28	
Hunter's Hill			139		Willoughby			14	
Hurstville			209		Woollahra	78		58	
Kogarah	3		25						
Leichhardt	403		119			4,256	405	2,202	145
Liverpool			152						

Total Number Screw-down Hydrants fixed, 550. Total Number Ball Hydrants fixed, 6,458.

List of Branches inserted for large services, and other work, paid for by consumers and others during the year 1891.

District.	Number in each District.	District.	Number in each District.
City	26	North Sydney	5
Ashfield	1	Newtown	1
Burwood	2	Paddington	2
Campbelltown	1	Randwick	1
Concord	1	Rockdale	1
Fivedock	1	Ryde	1
Hunter's Hill	1	Redfern	3
Hurstville	1	Waverley	1
Liverpool	1	Woollahra	2
Macdonaldtown	1		
Marrickville	2		55

Total Number of Large Branches for City and Suburbs, 55.

Services cut off to prevent waste and non-payment of Rates during the Year 1891.

District.	To Prevent Waste.	For Non-payment of Rates.	District.	To Prevent Waste.	For Non-payment of Rates.
City	917	36	North Sydney	23	3
Alexandria	45		Newtown	74	6
Ashfield	13	8	Paddington	48	11
Balmain	23	2	Petersham	26	1
Burwood	3	8	Randwick	5	
Camperdown	27		Redfern	117	11
Darlington	21		Rockdale	2	
Drummoyne	1		St. Peters	12	
Glebe	100	6	Waverley	8	1
Granville	2		Waterloo	50	1
Hurstville	1		Woollahra	30	7
Leichhardt	33	7			
Macdonaldtown	8	5	Total No. for year	1,617	114
Marrickville	28	1			

Total for Year, City and Suburbs, 1,731

Materials Used for Alterations, Repairs, &c., by Board's Operatives.

District and Street.	No. and Size of Pipes Used, including Bends, Tees, Valves, &c.										Length of each size.	Total Length.	Total No. of Pipes Used.
	3″	4″	6″	9″	12″	15″	18″	20″	24″	30″			
											yds.	yds.	
Edith-street, St. Peters	...	1	..	..	...	..	..	...	..	...	1	1	.....
King and Macquarie Streets, City	..	...	..	..	5 &c.	...	...	...	...	...	30	30	.....
Crystal-street, Petersham	...	...	10 &c	..	...	...	...	...	...	...	40	44	.....
Do do	..	1 &c	...	...	...	...	...	...	...	.	4		.....
Georgina-street, Newtown	...	1 &c	.	..	.	...	...	...	...	...	4	4	.....
Balmain-road, Leichhardt	...	..	9 &c	...	...	...	..	.	...	...	60	60	.....
Bentley's Bridge, City	...	...	...	19 &c	...	...	...	...	..	...	63	63	.....
Abattoir-road, do	...	...	...	3	...	...	...	..	...	...	11	11	.....
Pumping Station, North Sydney	2 &c	...	...	...	..	...	...	...	..	.	7	19	.....
Do do	...	.	5	..	..	..	...	...	...	...	12		.....
Holmwood-street, Newtown	...	4 &c	...	...	...	..	...	...	...	...	15	15	.....
Dickson-street, do	...	4 &c	..	..	...	..	...	...	..	...	15	15	.....
Crystal-street, Petersham	...	...	...	14 &c	...	...	...	...	...	...	47	47	.....
Rose-street, City	..	7	...	...	...	...	...	...	...	...	20	20	.....
Shepherd-street, City	1 &c	...	...	...	...	...	...	.	...	..	4	4	.....
Burton-street, do	...	5	...	..	..	...	...	...	...	...	17	17	.....
Leichhardt-street, Glebe	1	...	...	..	...	..	.	...	...	...	3	3	.....
John-street, do	2 &c	...	...	..	.	...	...	...	..	..	8	8	.....
College-street, City	...	17	...	...	...	...	.	.	...	...	53	99	.....
Do do	...	...	4 cut	..	..	...	...	...	..	...	11		
Do do	...	...	..	1	...	..	..	...	...	...	3		
Do do	...	...	...	...	5 cut	...	...	...	...	..	4		
Do do	...	...	..	...	..	1 &c	...	...	...	...	28		
Alice and King Streets, Newtown	...	...	1 &c	...	..	...	...	..	...	...	6	31	.....
Do do	...	...	...	7	...	...	...	...	..	..	21		
Do do	...	...	...	...	1	..	...	...	...	...	4		
Abattoir-road, City	.	2 &c	...	..	..	...	...	...	...	.	8	8	.....
Excelsior-street, Leichhardt	...	8 &c	...	..	...	..	...	...	..	...	27	27	.....
Edward-street, Ashfield	...	1	...	...	..	...	...	...	..	.	3	3	.....
Rofe-street, Leichhardt	...	8 &c	...	..	..	...	..	...	...	...	26	26	.....
Thornley-street, do	...	8	...	...	..	...	...	...	...	..	24	24	.....
Roseby-street, do	...	2	...	...	..	..	...	...	...	...	6	6	.....
Junior-street, do	..	2	...	..	..	..	...	...	...	..	6	6	.....
Reuss-street, do	...	1 &c	...	..	...	...	...	...	...	...	5	5	.....
Macquarie-street, City	...	.	2 &c	...	..	...	...	...	...	..	8	8	.....
Wells-street, Redfern	2	...	..	..	...	..	..	..	..	...	6	6	.....
Campbell-street, Glebe	2 &c	..	...	...	...	...	...	...	...	...	9	9	.....
Lambert-street, Camperdown	...	1 &c	.	..	...	..		...	.	..	4	4	.....
Harbor-street, City	...	...	5 &c	...	...	...	...	...	..	...	17	17	.....
Mews-street, do	...	1	..	.	...	...	...	...	...	...	3	3	.....
Church-street, Camperdown	..	2 &c	...	..	...	...	...	...	...	...	9	9	.....
May-street, City	2 cut	...	.	...	...	...	...	...	...	...	5	5	.....
Howard-street, City	...	2 cut	...	...	...	...	...	..	..	...	3	3	.....
Pyrmont Bridge Rd., Camperdown	...	3 cut	..	..	..	...	...	...	...	...	4	4	.....
King-street, Newtown	...	...	3 cut	...	...	...	...	.	..	..	6	6	.....
Moore's-road, City	2 &c	.	...	.	..	...	...	...	.	..	9	9	.....
Bowman-street, do	...	1 &c	...	...	...	..	..	...	..	..	5	5	.....
Charlotte-place, do	..	...	2	...	...	...	...	...	.	...	6	9	.....
Do do	...	...	.	1 cut	...	..	...	...	...	..	3		
Waterloo-road, Alexandria	1	.	...	...	...	...	...	...	...	...	3	3	.....
Newtown-road, City	...	6 &c	...	...	...	...	...	..	...	...	19	30	.....
Do do	...	.	...	2 cut	...	...	...	...	..	...	11		
Cleveland-street, City	..	...	2 cut	...	...	...	...	...	.	...	5	8	.....
Do do	...	...	..	1	...	...	...	...	..	...	3		
Harvey-street, do	...	6 &c	..	...	...	..	...	...	.	...	20	20	.....
Bremner-street, do	1	..	...	...	...	...	...	...	...	...	3	6	.....
Do do	...	1	...	...	.	.	...	..	...	...	3		
Park and Elizabeth Streets, City	..	...	3 cut	...	...	...	..	...	..	...	7	10	.....
Do do	..	..	..	1	.	..		..	...	...	3		
Abercrombie-street, do	..	2 cut	...	...	...	..	..	...	.	.	4	9	.....
Do do	...	...	2 cut	..	.	..	..	..	...	24½	5		
Crown-street Depôt, do	...	..	...	...	..	..	...	..		9	99	99	.....
Wharf-street, do	...	1 &c	.	.	.	.	..	...	..	..	4	4	.....
Regent-street, do	.	...	7 cut	.	..	..	..	...	.	..	18	18	.....
Desmond-street, do	2 cut	...	..	.	.	...	..	..	.	..	5	5	.....
Tramway Sheds, Randwick	5 cut	...	...	...	..	...	..	...	..	..	13	18	.....
Do do	...	2 cut	..		..	.	..	...	.	.	5		
Macquarie-street, City	..	..	2 &c	...	...	..	...	..		...	9	9	.....
Phillip-street, do	4 &c	..	.	...	...	..	...	...	.	...	16	16	.....
Windmill-street, do	2 &c	..	..	..	..	..	...	...	...	...	8	8	.....
Gipps-street, do	...	...	..	3 &c	...	...	...	...	...	..	15	15	.....
Myrtle-street, do	...	4 &c	..		...	...	..	...	...	...	19	19	.....
Pyrmont-street, do	...	2 cut	...	..	..	...	..	...	...	...	3	3	.....
McCredie-street, do	...	8 &c	..	..	..	...	..	...	..	..	27	27	.....
Wattle-street, do	...	3 &c	...	...	...	...	...	...	..	..	19	19	.....
Crown-street Reservoir, City	...	15 &c	Fire	Service		...	...	...	...	...	47	47	.....
Outram-street, do	2 &c	...	..		..	...	...	.	..	...	7	7	.....
Goold-street, do	1	..	..	...	...	...	...	..	..	...	3	3	.....
Kensington-street, do	...	...	2	...	...	..	...	...	..	...	6	8	.....
Do do	...	1 cut	...	..	..	...	...	..	...	...	1		
Do do	1 cut	...	...	...	...	...	...	...	..	..	1		
Miller and Mount Streets, City	...	6 &c	.	.	...	..	..	...	...	...	26	26	.....
Chippen-street, do	...	...	1 &c	..	...	...	...	...	...	...	5	5	.....
Pitt-street, do	...	1	..	...	...	...	...	...	...	...	3	3	.....
Oxford-street, do	...	10	..	...	...	...	...	...	...	...	30	30	.....
Foveaux-street, do	...	5 &c	..	...	...	...	...	...	...	...	27	27	.....
Ferry-street, Balmain	...	2 cut	..	...	...	...	...	...	...	...	4	4	.....
Bourke-street, City	...	...	11 &c	...	..	..	...	...	...	...	44	56	.....
Do do	...	...	...	1 &c	...	...	...	...	...	...	12		

MATERIALS USED FOR ALTERATIONS, REPAIRS, &c., BY BOARD'S OPERATIVES—*continued.*

District and Street.	No. and Size of Pipes Used, including Bends, Tees, Valves, &c.										Length of each size.	Total Length.	Total No. of Pipes Used.
	3"	4"	6"	9"	12"	15"	18"	20"	24"	30"			
											yds.	yds.	
Miller and Falcon Streets, N. Sydney		...	1 &c	.	..		..	...	..	...	4	10	... ..
Do do ..	...	...	...	...	..	1 &c	..	...	..		6		.....
Maddison-street, Redfern	3 &c	...			.	..	..	..	..	..	11	11	. ...
Park-street, Camperdown	...	2	...	.	.	..	.	...	.	..	6	6	... .
Bigges-street, Liverpool	4 &c	..		...	.	...	...	...	...	.	14	14	. ..
Oxford-street, Paddington	7 &c	...	...	.	...	..	...	...	..	..	22	22	.....
Darling-street, City	...	3	...	...	.	...	..	..	..	...	9	9	.... .
Balmain-road, Leichhardt	...	.	.	.	3 &c	..	...	...	.	...	17	17	... ..
Fowler-street, Camperdown	...	1	...	.	..	...	..	..	...	...	3	3	.....
Darling-street, City	...	1 &c	...	...	..	..	..	...	...	...	8	8	. ..
Mary-street, Camperdown	...	.	2	..	...	...	...	...	...	...	6	6	.... .
Heaton-street, do	..	3 cut	...	..	..	...	...	...	...	.	5	5	...
Mary Ann-street, City	...	.	3 &c	.	...	..	...	...	...	..	11	11	.... .
Jones-street, do	...	3	...	..		...	.		..	.	9	9	.....
Fitzroy-street, do	...	2	...	...	..		...	...	...		6	6	... ..
Calder-lane, Redfern	3 &c	...	...	...	..	...			..	...	11	11	.....
Arthur-street, City	2 &c	...	..	..	.	..	...	...	...	...	10	13	.....
Do	...	1	...	...	...	...	.	...	...	..	3		... .
Bedford-street, Newtown	...	...	1 &c	..	...	.	...	...	...	.	4	4	.....
Crown-road, City	6 cut	...	...	..	...	..	..	...	...	...	14	14	.....
Fig-street, do	...	2 &c	...	...	..	..	...	...	...	...	9	9	. .
Ultimo street, do	...	5 &c	..	.	..	..	...	...	...	..	17	17	. ....
Australia-street, Camperdown..... .	...	...	...	1 &c	..	..	...		...	...	5	5	. ...
Agar-street, Marrickville	...	4	...	.	...	..	...	..	...	.	12	12	.....
Edward-lane, Redfern	4 cut	...	...	...	..	...	...	...	...	..	11	11	... ..
Albermarle-street, Newtown	...	5 cut	.	...	.		.	...	...	..	6	30	.. ..
Do do	...	...	6 &c	...	..	...	...	...	...	...	24		... ..
Hart-street, Redfern	...	2 &c	...	.	.	..	...	...	..	..	9	9	... .
Crown-road, City	...	2 &c	..	...	...	...	..	..	..	...	8	8	.....
Union-street, do	...	...	4 cut	...	...	...	..		..	...	8	8	. .
Regent-street, Newtown	...	2 cut	...	.	...	.	...	..	...	.	3	3	... ..
Australia-street, do	...	2	...	...	...	...	...	...	...	...	6	6	....
Harris-street, City.....	.	1 &c	...	.	...		...	..	...	...	4	8	.....
Do	...	...	1 &c	.	...	...	...	...	...	..	4		.....
Denison-street, Newtown.....	.	2 cut	...	.	.	.	..	...	...	...	4	4	... .
King-street,. do	...	...	3	...	...	...	...	...	...	.	9	9	.....
Thomson-lane, City	1 cut	.	.	..	...	...	...	.	...	...	2	2	... ..
Gipps-street, do	...	1 cut	...	...	..	...	...	...	...	.	2	2	.....
Druitt-street, do	..	.	.	..	1 &c	..	...	..	..	...	6	6	....
Gordon-street, Balmain	...	3		..	...	..	.	.	...	.	9	9	.. ..
Pyrmont Bridge Road, City	..	.	1	...	..	...	..	...	...	.	3	3	.....
Darling-street, Balmain	..	..	1	..	...	..	...	..	..	..	3	3	... ..
George-street West, City	.	..	6 cut	.	...	...	...	..	..	..	20	20	.....
North Parade, Auburn	.	..	6 cut	...	..	...	...	...	...	..	16	33	. ..
Do do	...	.	.	.	6 cut	..	..	.	..		17		.
Miller and Harris Streets, City	...	...	...	2 &c	...	..	...	...	.	...	11	11	.....
Balfour-street, do	1 &c	...	..	.	..	...	..	...	.	.	4	4	.. .
Bank-street, do	..	...	5 &c		..	...	...	.	...	..	21	21	.....
Cleveland-lane, do	2 cut	...	...	..	.	..	...	...	..	..	2	2	.... .
Abercrombie-street, do	. .	1 cut	...	.	.	..	...	...	..	..	1	1	.....
Bourke-street, do ..	..		1 cut	..	...	..	..	...	...	..	1	1	. ....
Bowman-street, do	...	1	..	.	.	...	.	..	...	...	3	3	. ....
Tramway Sheds, Randwick	4 &c	...	...	..	..	..	..	...	...	..	13	18	.. .
Do do	..	2 cut	...	...	...	...	...	...	...	..	5		... .
O'Connor-street, City	...	1	..	...	..	...	..	..	..	...	3	3	.....
Botany-street, do	...	...	...	...		..	..	1 cut	...	...	2	2	.....
Albion-street, do	..	..	..	..	1 &c	.	...	...	...	..	6	6	... ..
Do do	..	4 &c	..	..	..	...	.	.	...	...	15	15	.....
Dale-street, do	...	2 &c	.	.	.		...	..	...	...	8	8	.....
Little Hutchinson-street, City		1		...	.	..	..	..	...	..	3	5	.....
, Do do ..	..	..		..	1 cut	..	..	..	.	.	2		.....
Scott-street, Liverpool	2 &c	..		.		...	.	...		..	8	8	... ..
Young-street, Randwick	7 &c	.	. . .	..	..	...	...	...		..	23	23	... ..
Botany-street, City	...	17 cut	...	.	...	.	..	...	..		50	81	. . .
Do	..	..	3 &c	...	.	.	.	.	.	...	19		.....
Do	.	.	..	...	2 &c		.	...	.		12		.. .
Miller and Mount Streets, N. Sydney	...	..	...	2 cut	.		.		.	.	4	7	.. .
Do do	...	...	1	..	...	..		..	.		3		.... .
Steel-street, City . . .		1	..	...	.	...	...	...	..	..	3	3	. ....
Little Norton-street, City	2 cut	...	...	...	.	...	..	.	...	...	5	5	.....
Forest Road, Hurstville	..	6 &c	...	...	...	.	...	...	...	.	20	20	.....
Domain-terrace, City	...	3 cut	...	..	...	...	...	..	..	...	5	5	...
Cleveland-street, Redfern	...	...	..	...	...	...	5 cut	..	...	...	18	27	.. ..
Do do	...	...	...	...	.	..		1 &c	.		5		.....
Do do	..	..	...	...	...	...	...	...	..	1	4		.....
Lacey-street, City		2 &c	..	..		...	...	...		.	8	8	... ..
Tudor-street, do	...	2 &c	...		...		.	.	..	.	7	7	.. ...
Darling-street, Balmain		..	13 &c	...	.	.	..	.		...	44	44	. ....
	81		.	..	.	..	..	...	...	...	436		
	..	247	.	.	...	...	.	.		.	616		
	..		129				.	...	...		465		
	...		.	58	..		..	.	...	..	212		
Total No. for Year	...	...	..	.	25	...	.	...	...	..	98	1,989	559
	..	..	...	..	..	2	...	...	..	...	34		
	...			..	.	..	5	..	...	..	18		
	..	...	..	.	.		...	2	24 in.	...	7		
	...	...	..	...	...	..	...	...	9	...	99		
	..	...	..	..	...	...	..	..		1	4		

Grand total, 1 mile, 229 yards.

Return of Drillings, &c., 1891.

District.	Drillings.	Extensions.	Gas Engines.	Gully Shafts.	Water Troughs.
Suburbs.					
Alexandria	58	83			
Ashfield	205	355			
Auburn	6	4			
Balmain	100	236			
Botany	25	7			
Burwood	69	183			
Campbelltown	21	12			
Camperdown	26	94			
Concord	8	25			
Darlington	10	93			
Drummoyne	28	33			2
Enfield	33	16			
Five Dock	21	3			1
The Glebe	194	319	1	153	
Granville	79	41			
Guildford	1	2			
Hunter's Hill	51				
Hurstville	38	7			
Kogarah	38	35			
Leichhardt	179	453	1		
Liverpool	60	17			
Marrickville	144	294	1		
Macdonaldtown	17	87			
Newtown	91	186			
Petersham	109	250			1
Paddington	87	441			
Redfern	127	398	2		
Randwick	51	166			
Rockdale	143	49			
Ryde	4				
St. Peters	54	98			1
Strathfield	33	172			
Sydney North	217	291			2
Waverley	73	241	1		
Waterloo	50	173	1		1
Woollahra	93	475			
	2,543	5,390	7	153	8
City.					
Bourke Ward	43	164	11	2	
Brisbane Ward	58	160	11	12	
Cook Ward	107	426			
Denison Ward	160	222	1	4	1
Fitzroy Ward	73	359			
Gipps Ward	36	158	2		
Macquarie Ward	45	149	3	2	
Phillip Ward	59	187	1	2	
	581	1,825	20	22	1
Total, Suburbs	2,543	5,390	7	153	8
Total, City	581	1,825	29	22	1
Grand Total	3,124	7,224	36	175	9

Value of Material taken out of Ground, Cleaned and Tarred fit for Re-Issue.

Material.	Quantity.	Rate.	Amount. £ s. d.
3in. pipes	3	7/-	1 1 0
3in. ,,	2 cut	6/4	0 12 8
4in. ,,	104	10/4	53 14 8
4in. ,,	402 cut	9/2	184 5 0
6in. ,,	7	18/2	6 7 2
6in. ,,	438 cut	16/2	354 1 0
9in. ,,	4	34/4	6 17 4
9in. ,,	19 cut	30/6	28 19 6
12in. ,,	9 ,,	59/8	26 17 0
20in. ,,	1 ,,	5/0/2	5 0 2
5in. ,,	1 ,,	12/-	0 12 0
5in. ,,	101 ,,	10/8	53 17 4
Ball Hydrants	168	7/9	65 2 0
Base pieces	276	3/3	44 17 0
Hydrant S boxes, A	221	7/6	82 17 6
,, ,, B	165	6/11	57 1 3
S Down ,,	2	11/10	1 3 8
4in. flange risers	8	2/3	0 18 0
6in. ,,	72	2/6	9 0 0
9in. ,,	27	3/-	4 1 0
12in. ,,	13	3 8	2 7 8
15in. ,,	1	3/5	0 3 5
18in. ,,	3	4/9	0 14 3
3in. collars	19	3/8	3 9 8
4in. ,,	45	4/1	9 3 9
5in. ,,	4	5/4	1 1 4
6in. ,,	16	7/-	5 12 0
9in. ,,	7	10/8	3 14 8
12in. ,,	1	18/6	0 18 6
3in. end caps	2	1 3	0 2 6
4in. ,,	49	1 11	4 13 11
6in. ,,	47	3/6	8 4 6
9in. ,,	19	6/2	5 17 2
12in. ,,	13	9/4	6 1 4
15in. ,,	2	20/5	2 0 10
4in. × 3in. reducing pipes	9	4/5	1 19 9
6in. × 3in. ,,	2	9/3	0 18 6
5in. × 4in. ,,	1	9/11	0 9 11
6in. × 4in. ,,	4	7/9	1 11 0
9in. × 6in. ,,	2	13/3	1 6 6
4in. × 4in. Tee	8	10/3	4 2 0
6in. × 6in. ,,	5	16/2	4 0 10
9in. × 6in. ,,	2	27/8	2 15 4
9in. × 9in. ,,	2	2/0/11	4 1 10
12in. × 9in. ,,	1	2 16/10	2 16 10
12in. × 12in. ,,	1	3/1/5	3 1 5
Forward			1,068 14 8

Material.	Quantity.	Rate.	Amount. £ s. d.
Forward			1,068 14 8
4in. × 4in. × 4in. cross	2	11/-	1 2 0
6in. × 4in. × 4in. ,,	1	17/9	0 17 9
6in. × 6in. × 6in. ,,	1	23/9	1 3 9
9in. × 6in. × 6in. ,,	1	39/7	1 19 7
3in. hydrant pipes	1	5/-	0 5 0
4in. ,,	14	7/7	5 6 2
6in. ,,	10	12/6	6 5 0
9in. ,,	1	19/9	0 19 9
4in. valves	28	2.1/4	57 17 4
3in. ,,	6	1/8/6	8 11 0
6in. ,,	4	3/4/9	12 19 0
9in. ,,	1	6/2/2	6 2 2
3in. 1/16 bends	2	5/2	0 10 4
4in. ¼ ,,	3	6/6	0 19 6
4in. 1/16 ,,	1	6/-	0 6 0
6in. 1/16 ,,	3	10/3	1 10 9
9in. ½ ,,	1	25/2	1 5 2
9in. 1/16 ,,	1	24/1	1 4 1
12in. ½ ,,	1	1/18/7	1 18 7
Stop valve S boxes	13	6/7	4 5 7
,, no concrete	7	4/3	1 9 9
S. D. hydrants	6	30/-	9 0 0
9in. blank flange	1	18/8	0 18 8
12in. ,,	1	22/1	1 2 1
4in. flanged Tee pieces	1	10/11	0 10 11
3in. flange and socket	1	1/10	0 1 10
4in. ,, ,,	3	3/1	0 9 3
6in. ,, ,,	3	4/2	0 12 6
4in. ,, spigot	3	2/8	0 8 0
3in. ,, ,,	1	1/8	0 1 8
6in. spigot pieces	1	3/10	0 3 10
Loose flanges	3	2/7	0 7 9
3in. hydrant elbow	2	4/3	0 8 6
Galvanised iron piping	230ft.	/5¾ per ft.	5 10 3
Hydrant balls	28	1/11½ each	2 14 10
,, lugs	128	3/-	19 4 0
Sets concrete blocks	2	5/-	0 10 0
6in. collars	1	7/-	0 7 0
Lead	109 cwt.	15 3 per cwt.	83 2 3
Total			1,311 6 3
Amount of wages incurred cleaning and tarring			211 16 6
Balance			1,099 9 9

Amount Recoverable by Sale of Old Metal Derived from Unserviceable and Obsolete Castings, &c., taken out of Ground.

Particulars	Rate.	Amount. £ s. d.	Remarks.
Old gun metal, 1qr. 14lb.	4½d. per lb.	0 16 8	
Old brass, 6cwt. 1qr. 24lb.	4¾d. per lb.	12 2 3	
Old metal, 313 tons 13cwt. 3qr. 20lb.	£3 per ton.	941 1 9	
Total		954 0 8	

D. C. ROBERTSON, Inspector.

Board of Water Supply and Sewerage,
Sewerage Department, 21st January, 1892.

Sir,

I have the honor to submit, for the information of the Board, report on the working of the Sewerage Department for the year 1891.

Transfer of Sewers.

The following sewers and storm-water ducts constructed by the Government Sewerage Branch have been transferred to the jurisdiction of the Board in accordance with the provisions of the Amended Sewerage Act of 1889.

I. Sewers.

Main Northern Outfall:
- North-western Branch of Bondi Outfall Sewer from Castlereagh-street to George to Harrington-street.
- Bourke-street Branch from Liverpool-street to Victoria-street North.
- Riley-street Branch from Liverpool-street, northwards.
- North Shore Sewerage, subsidiary sewers in.

II. Storm-water Sewers.
Pyrmont Bridge Road.
University Reserve.
Phillip-street, Alexandria.
Alexandria Park.

The total length of sewers and storm-water ducts transferred from the Government to the Board during the years 1890–91, is shown in Appendix A, aggregating 47·54 miles.

Sewers Constructed by the Board.

Surveys and plans have been prepared, and contracts carried out in the City and various suburbs, for 113,678 lineal feet, or 21·53 miles of stoneware sewers, with the necessary manholes and lampholes. The sizes of sewers varying from 6-inches to 24-inches diameter. See Appendix B.

Length of Sewers under the Jurisdiction of the Board.

The total length of sewers now under the jurisdiction and being maintained by the Board is 149·44 miles.

New City Sewers.

The new deep sewers which will replace the existing combined system is making very good progress in George, Pitt, Market, and King Streets. Several large buildings which were commenced shortly after the Board decided to lay new and deeper sewers will be enabled to have much more commodious basements on account of the greater depth available through the sewers being laid deep. The work has been pushed on to enable the buildings referred to to be connected at the time required.

New sewers have been laid in other parts of the city, in some cases to provide drainage facilities, in others to replace sewers which had become useless. The aggregate length laid, of sizes varying from 24-inches to 6-inches diameter, is 4,881 feet. See Appendix B.

Contracts Let.

During the year, contracts to the amount of £83,590 have been let for various works, a large proportion of which are completed; the balance is making good progress.

The work of reticulation under the Board is carried on simultaneously with that under the Government. This system has been adopted with the view of affording sewerage facilities to the public at the earliest moment, and at the same time to place each section as revenue bearing, so that the Sewerage Fund has not to bear the interest on dead capital. I must again draw attention to the difficulty experienced by the Department in carrying out sewerage works in the suburbs, owing to the manner in which the lands have been sub-divided in the first instance. It is a matter of regret that a controlling authority does not exist for the purpose of checking the present unsatisfactory system of sub-division of residential areas.

Surveyors

Surveyors have been constantly engaged in preparing plans of sewerage systems for those boroughs not yet provided for.

Arrangements are nearly completed for the transfer of the Randwick Sewerage System to the Board's control.

The existing sewers at the Glebe have been carefully examined, and the lines, &c., laid down on plans with the view of ascertaining if the system or any portion of it can be worked in with the new sewerage system. The result of the examination is not satisfactory as regards quality of materials and method of construction.

Repairs to existing Sewers in the City.

The work of repairing the main sewers and branches of the old system has been pushed on during the year.

The Main Outfall Sewer discharging at Fort Macquarie has been repaired, and is now in good condition. The branches along Macquarie, Phillip, and Castlereagh Streets are being repaired, the inverts of the sewers in many places having to be renewed. The repairs now being effected will lengthen the life of these ducts, and increase their efficiency.

The Main Outfall of the south-western section along Hay-street has also been repaired, and the different branches discharging into same will receive attention.

The following return shews the quantity of work dealt with by the repairing gang, viz. :—

	Invert, feet super.	Pointing, feet super.
Northern Section	4,476	21,160
South-western Section	4,317	54,407
	8,793	75,567
During the year 1890...	3,503	30,489
Making a total of	12,296	106,056

The outfall sewers at Woolloomooloo Bay will have to be taken in hand this year, also the Tank Stream and sewers in the vicinity of same.

The inverts of the sewers appear to suffer most; this is accounted for by the blue metal and other grit which is carried into the sewers during rain storms. This material rolling along the invert wears the surface off by attrition. The material of which the inverts were originally constructed not being able to resist this wearing action suffers considerably; in some places it had entirely disappeared.

Very few accidents occurred to the pipe sewer section during the year—on a few occasions the joints of pipes were forced out by pressure; this was in each case due to the defective jointing material used in the first instance.

The Inspector reports that during the year 1,480 tons of silt were removed from the city sewers. This was disposed of at the different reclamation works being carried out under the Harbours and Rivers Department, a punt having been placed at the Board's disposal by the Engineer-in-Chief, C. W. Darley, Esq., for that purpose. The outfall sewers at Woolloomooloo Bay have all been cleared of silt, and the present state will be maintained in the future.

The manholes connected with the old system were not, when first built, carried to the surface, as is the case with modern sewers, and when the sewers are overcharged and working under considerable pressure the roadway is disturbed at places by the surcharge water. To obviate this, and also to give facilities for inspection, the manholes are being brought to the surface, and fitted with cast-iron surface covers.

The Tank Stream sewer has been found to be in very bad repair in places—this will be taken in hand and thoroughly repaired. All the sewage, which used formerly to flow into this sewer from the district south of Martin Place, is intercepted by the Bondi Outfall Sewer and carried to Bondi.

Suburban Sewers.

The whole of the sewers in the suburban district are in good working order. They have been regularly flushed during the year. The hydrants fixed by the Water Department for that purpose have proved very serviceable. No stoppages were reported, the whole appear to have acted very well, and fulfilled the purposes for which they were designed.

The Inspector reports that during the year the quantity of silt removed from the different main outfalls is by (*a*) Botany Outfall, 546 cubic yards; (*b*) Bondi Main Sewer, 836 cubic yards.

With regard to the silt generally, it is found to consist principally of road grit washed into the sewers off the public roads and streets. The quantity of silt in the Botany Outfall will be materially reduced when the City Council has completed their scheme for the disposal of storm-waters on the Surry Hills slope, and the gullies which were permitted, as a temporary measure, to be connected with the Bourke-street and Park Road sewers, are disconnected.

The accumulation of silt in the Bondi sewer will disappear in time, as the various branches are extended, as the depth of flow and velocity of current will be increased; the flushing arrangements can also be worked with greater effect than at present.

An examination of the outfall sewers from end to end show that they are in good condition; the various penstocks and flushing valves have been regularly attended to, oiled, and kept in good working order. The construction of an extra flushing valve at the upper section of southern outfall has been very serviceable for flushing purposes.

During the very heavy rainstorms, some of which might be termed abnormal, which occurred during the months of February, March, April, June, September, and November, several of the branch sewers in Paddington became surcharged, and overflowed at the manholes. Relief sewers have been constructed, which distribute the flow and relieve the places which formerly were congested. Maintenance men are allotted to each district to attend to the sewers during heavy rainstorms. They are to attend to any accidents which might happen, and at same time note information with regard to the condition of the sewers during such storms.

The storm-water drains have acted effectively during the prevalence of rain storms. Greater improvements could, however, be made by municipal councils in the provision of gullies to conduct the storm-water from roads and streets into the drains. On certain occasions it has been found that, although the roadway was flooded, the flow in main drains was found to be comparatively small.

The adequate provision of inlets to storm-water ducts is very important in the question of storm-water disposal, especially in low-lying localities. The very heavy or abnormal rainfalls are not, as a rule, of long duration, and the accumulation of water at one point should be avoided by the construction of gullies at suitable places to intercept and convey the flow into the main ducts.

In some parts of the city the sewers have been laid down with the object of conveying sewerage and a small percentage of rainfall, but, like all the sewers within the city limits, they have been used for conveying flood water from roads and streets, regardless of the size and discharging capacity of the drains. The effect of this arrangement is apparent after every rainstorm by complaints which are made to the Department of house drains being surcharged, and water from sewers being forced up through the sinks in yards and basements. In some districts an entire revision of the existing systems will be necessary before the drainage can be considered on a satisfactory basis. It should be mentioned, however, that on some complaints being investigated it was found that the cause of flooding was due to corporation gullies becoming choked by debris, leaves, &c., and therefore useless for carrying off storm-water.

Outlet Works and Sewage Farm.

The Foreman reports that during the year the quantity of sludge dredged from the precipitating chambers in the outlet house amounted to 1,600 cubic yards, being an increase of 35 cubic yards above the quantity for 1890. The slight increase in quantity, considering the extension of sewers during the year, is satisfactory.

The screens, traveller, grabs, valves, &c., and locomotive have been kept in good working order. The road over temporary bridge had to be straightened and made up several times, owing to the piles on farm side shifting slightly. The quantity of lime used at inlet house during the year was 18 tons against 21½ tons used the previous year.

Cottages for men employed on the works have been erected on the land resumed for that purpose, and are now in occupation.

The foreshore bank has been trimmed and grassed. Pine trees have been planted in the enclosure, and so far appear to be thriving. The land has been enclosed by a substantial fence with entrance gates, and is now secure from trespass.

Sewage Farm.

The death of the late manager, Mr. J. N. Oxley, left a vacancy which the Board filled up by appointing Mr. W. Brooks to the position of managing foreman.

The

The irrigation area has been considerably augmented during the year. The total area of cultivation plots available for irrigation is 38·5 acres.

An additional filtering tank on south side of farm has been constructed ; this has been provided with an effluent drain. The tank was put into use immediately after construction, and has since proved efficient. The area of tank is 4a. 2r. 29p. It is the manager's intention after he has made the soil fit for cultivation to sow with maize. The undermentioned crops have been raised during the year—sorghum, lucerne, cabbages, cauliflowers—and found a ready sale.

The income from sales amounts to £291 13s., a substantial increase on previous year. Owing to a quantity of crops being in the manager's hands, as well as refuse after crops have been disposed of, it was deemed advisable to have a few head of cattle and pigs to consume the spare or unsold crops. The Board purchased 16 head of dry cows and one bull, also six pigs. Styes had previously been provided for the latter. These have been constructed with concrete, and can easily be kept clean and wholesome. The whole of the stock, including the calves at foot, are in good condition, and thriving. The manager states that the cost of feeding is nil, and he looks forward to making a handsome profit from this section of the management. On the number of dry cows purchased an increase of 11 calves, or 61 per cent. has already taken place.

Plans have been prepared for forage shed and stalls for cows; this will be of weatherboard, enclosed with galvanized iron.

Analysis of Effluent Water.—The effluent water from the farm has been analysed by Mr. Hamlet, Government Analytical Chemist. The analysis shows that the effluent water still retains its standard of purity. The report of Mr. Hamlet being to the effect that it is as pure as some samples of potable water forwarded to him for analysis. Details of last analysis is shown in appendix marked C.

There is a considerable area of land between the original H.W.M. of the farm and embankment made by the Harbours and Rivers Department, which at present cannot be turned to any use, but when filled up with the dredgings from river will form a valuable addition to the Board's property.

During a period of dry weather I had gaugings taken at the main carrier to ascertain the quantity of sewage passing into the farm.

The observations commenced at 8 a.m., and were continued for 24 hours, a reading being taken every hour.

The observations show that the maximum flow is at 11 a.m., this slightly diminishes at 12 noon, and continues at nearly the same flow until 9 p.m., when there is a sensible diminution in the quantity discharged. The flow from 12 midnight until 8 a.m. next day being at the same rate. The total quantity that passed into the farm between 8 a.m. and 10 p.m. was 979,569 gallons, and between 10 p.m. and 8 p.m. next day the quantity discharged was 457,027 gallons.

House Sanitation.

The amended By-laws passed by the Board were approved of by the Executive Council, and came into force in June, 1891.

House Connections.

During the year, the number of houses connected to the sewers, in accordance with the By-laws, by the owners were—City, 541 ; North Sydney, 55 ; Redfern, 1,005 ; Paddington, 1,083 ; Waterloo, 631 ; Woollahra, 446 ; Alexandria, 94. Total, 3,855.

The number of houses connected to the sewers under the compulsory clauses of the Act, were—City, 19 ; Redfern, 140 ; Paddington, 17 ; Waterloo, 53 ; Woollahra, 35. Total, 264. Grand total for year 1891 is 4,119 houses. The returns for previous year were 4,765, which will show that the number of houses connected to the sewers under the Board's supervision is 8,884.

The number of houses connected to the sewers prior to the transfer of the City sewers to the Board's jurisdiction was, according to City Council's records, 18,000.

Plans Prepared.

In connection with the house drainage, 2,303 plans were prepared, and the fees for same returned to Accountant was £1,053 17s. The number for previous year being 2,184 makes a total of 4,487, and the aggregate amount of fees is £2,085 17s.

A contract has now been let for connecting houses in Borough of Paddington, under the compulsory clause, and one is being prepared for houses in Borough of Redfern.

Defective Drainage.—City Division.

Notice to Alter or Reconstruct House Drainage.

City Sanitary Inspector reports having served 505 first and 246 final notices on city properties to alter or reconstruct the private drainage. Out of the number, 251 properties have been reconstructed under the supervision of the Board's Inspectors; plans have been applied for for others, and will probably be carried out during the ensuing year.

The reports connected with some of the properties disclosed a dangerous state of affairs; in one case the pipe from one block of houses was found to be in such a leaking condition that the sewage, instead of flowing into main, passed from it into the neighbouring premises; in another, the existing drainage was so dangerous that the occupants had to leave the premises until the drains were reconstructed.

Inspection.

During the year a considerable number of inspections were made by the Inspector on request by letter. A considerable deal of good ensued from the inspections, as it showed that the sanitary arrangements of some of the first-class dwellings in the city were in a state decidedly dangerous to the occupants. The powers conferred on the Board have been effective in having these altered and made safe. This state of things has grown and developed under a system of permissive legislation, and it clearly shows that if no compulsory powers existed under the present Act, all attempts at effecting a change for the better would have proved useless.

Drainage Certificates.

The number of certificates issued to drainers, that work was carried out in accordance with By-laws, was 251. The public are availing themselves of this protection to a greater extent than heretofore.

Several drainers were summoned to appear before the President for breaches of the By-laws. These were dealt with by suspension, or cancellation of license; this action is having a good effect on the drainers as a body.

Suburban Division.

The Suburban Sanitary Inspector reports that several stoppages occurred in private drains, but on examination it was found that the block was due to carelessness on the part of the tenants; in each case the cause was easily removed. The number of certificates issued for drainage completed under the By-laws was 1,140. He reports that the observations made in the sewers, before and after ventilation, shows the humidity to have been decreased, and the air to be purer and lower in temperature. The brick and concrete work in the main sewers show to be drying up gradually in parts where formerly they were wet.

The manholes in Darlington, referred to in my previous report, are becoming dryer each year under the influence of ventilation; the slowness of the drying can be attributed to the porous bricks of which the manholes are constructed, and subsoil damp, which will gradually permeate the open material until it appears on the face.

Sanitary Plumbing.—Inspections.—Certificates.—Notices.

The Inspector of Sanitary Plumbing reports that during the year, 2,218 inspections were made, and 1306 certificates were issued to the plumbers and public that work was done according to By-laws.

It was found necessary to serve 230 first notices to alter or reconstruct defective sanitary plumbing. Some owners took immediate action, but in 201 cases it required final notices to be served before any steps were taken. Of the number, 77 have been dealt with, others are being carried out or tendered for.

Amongst the many properties inspected were several residential hotels, and to show the risks that residents are exposed to, a description of existing fittings of some of the places at the time of inspection is given:—

(*a*) In one large hotel, in the centre of the city, a soil pipe within the building was in a very bad state. There were two hopper pan closets on the second floor, these discharged into the soil pipe without any trap between pan and pipe. The soil pipe was not ventilated, and was connected direct with the old unventilated system. Several cases of typhoid fever occurred at this place, which directed attention to it.

(*b*) Another large hotel where a number of boarders reside, it was found that the soil pipe was composed of partly earthenware pipe and sheet iron; the latter had rusted and fallen away in many places. This was connected direct with the old unventilated system.

(*c*) In a large seminary a soil pipe was found to discharge into an old pit, the trap on top of which was broken; the sewer gas escaped from the pit and found its way by way of the rain water down pipe into the bedrooms.

Several

Several instances occurred where, on complaints being investigated, it was found that the cause was due to carelessness on the part of the plumber. Two instances will suffice to show how carelessness on the part of the workmen might have led to fatal results. In one case the front and sides of the soil pipe (unventilated) were soldered, but the back was left quite open, thus affording a direct opening for sewer gas into the house. In another case the branch from a soil pipe was left quite open, no doubt the plumber intending to close it up before he left the work; in this case numerous complaints were made by the occupants, and it was only by diligent search that the Inspector was enabled to find the cause. The foregoing cases are a few of the many which are brought under the notice of this office. In several private houses the state of the fittings was absolutely dangerous to the occupants. The manner in which some of the work was carried out clearly showed that it was in the hands of not only incompetent but unscrupulous persons to whom the health and life of their client was of no consequence. The use of inferior material and slovenly workmanship appears to be the ruling state of the cases investigated by the Board's officers. When it is considered that the fittings were, as a rule, concealed under floors—boxed up in out-of-the-way places—and in the majority of cases the occupants were in complete ignorance as to the situation of the fittings, it can easily be imagined that a family would be somewhat puzzled at the prevalence of throat affections and debilitating symptoms, until the advice of a medical man were sought. The By-laws of the Board are gradually effecting reforms of the old style—for it cannot be classed as a system, as there did not exist any uniformity, every plumber seeming to have a system of his own—and many dangerous cases have been dealt with, I am pleased to state, in many instances by the owners themselves. The reconstruction of the defective sanitary work in a city like Sydney must necessarily be a work of time; so far, however, considerable improvement has been effected, and the gradual absorbtion of crowded residential areas for commercial purposes and rebuilding in the main streets will, in a great measure, assist in placing the city in a good sanitary condition.

The amended By-laws have been, *inter alia*, useful in fixing the quality of material to be used in sanitary plumbing work; the minimum is fixed in each case. Any proprietor can, however, have heavier material if he wishes. The system of testing soil pipes and other fittings by hydrostatic pressure has been found extremely useful in detecting flaws in the pipes which would have, in the future, been a source of danger. This system gives the public more confidence, and, at the same time, makes the tradesman more careful in his work.

The connection of rainwater pipes direct with the main sewer is a considerable source of danger, and I have no doubt but that a large percentage of the sickness which has prevailed in the past is due to this cause. The hopper heads, in many cases, occur close under, or in close proximity to, bedroom or other windows, and many causes of complaints have been traced to the fact that the rainwater down pipes were acting as ventilators to the sewers. The points of the pipes are not air-tight, and the presence of hydrogen sulphide can be detected when pipes are painted at the joints. Wherever the Board deals with premises, the rainwater pipes are disconnected from the drains and rendered safe.

It is with pleasure I can report that in the carrying out of the By-laws there is a total absence of that friction which characterised the earlier days of the Board's control. The several rules laid down by the Board in dealing with existing buildings has been considerably appreciated by the public, without interfering with the efficiency of the system. This affects, more particularly, the poorer class of tenements.

The sanitary plumbing work is greatly improved. The workmanship displayed in some of the large jobs carried out last year was highly creditable to the firms dealing with same. I think the Board can fairly claim to have work carried out under its control which cannot be surpassed in any other city.

The institution of a sanitary section in connection with the Technical College will, I think, be rich in results in connection with the sanitary work of the city and suburbs. The number of plumbers attending the classes indicates a healthy state of things, and there is every indication that the plumber of the future will be a person whose qualifications will fit him for carrying out high-class work in connection with the sanitation of dwellings.

Examination of Licensed Plumbers.

During the year thirty-two persons presented themselves for examination; of this number twenty-three passed, the majority on first trial; some were allowed further trials; nine failed altogether, although they were allowed three trials. The subjects of examination being, a sketch showing arrangement of sanitary fittings in a house, the class of house being stated by the examiner, sketch of hot-water service to a dwelling, also plumbing bench work generally, the latter being a practical test.

Ventilation of Sewers.—First Installation.

The first installation of sewer ventilation by the vacuum-plenum system was made in the Boroughs of Darlington, and Golden Grove Ward, Borough of Redfern. Since the completion of the system in 1890, the results have been satisfactory. The inducts for air were arranged subsequently so as to obtain the maximum

maximum effect. As inspection boxes were not fixed to the shafts first erected, a section of sewer, 990 feet, viz., 495 feet of 12 inches, and 495 feet of 9 inches in diameter, was arranged so as to ascertain the ærating effect produced by the shafts.

An induct shaft was fixed at one end and an exhaust at the other. Anemometers were placed in each shaft and the readings carefully taken, so that the whole of the air passing into the sewer could be ascertained. The length of sewer operated upon was laid in the usual manner with cement joints; there were, however, several house drains which were connected to the sewer without any boundary trap. This would, no doubt, to a certain extent, interfere with the effect of the air current in the main sewer; the yard sinks and closets were all trapped. The results are as follows:—

No. 1 Return, from 1st March to 28th June: The air in sewer was changed on an average 2·35 times per hour, or every 25·5 minutes. On one occasion in this series the average time the sewer air was changed was once in two hours, and the test papers placed in exhaust shaft showed that hydrogen sulphide was present sufficient to discolour the paper. The average wind velocity was nine miles per hour.

No. 2 Return, from 10th July to October 2nd: The air was changed on an average 2·39 times, or every 25 minutes; average wind velocity, 8·93 miles per hour.

A test was also made at an intermediate point, viz., 200 feet from the induct shaft; the anemometer readings showed that at this point the aerating effect was equal to 21 per cent. of the wind force, whereas in the long length it did not exceed 13·8 per cent., showing a loss of 7·2 per cent. due to friction and other causes.

These observations were useful in determining the maximum distance at which shafts could be located in order to be effective for ventilation, the diameters of the sewers dealt with, of course, being considered.

The shafts in the first installation have been erected in some instances nearly two years, and have stood the pressure of heavy gales of wind which have occurred during that time. Some of the gales were very severe, the registered velocity at the Sydney Observatory being 50 miles per hour, and in one instance 64 miles per hour, being equal to a pressure of 12 5 lb. and 18 lb. per square foot respectively.

The Sanitary Inspector who has charge of the maintenance of the sewers affected by this installation, reports that great improvement is noticed in the air of the sewers when manholes are opened for inspection, &c.

The ventilating shafts erected prior to the inception of the Board's control have acted very well during the four years that they have been erected, the cost of maintenance being nil.

No. 2 Installation.

A contract was let during the latter part of 1890 for the manufacture and supply of ventilating shafts and fittings, and another contract for the erection of same.

The tubing for vent shafts was manufactured on a different principle from those of the former contract. The lengths were of best black iron rivetted longitudinally with ¼ inch rivets, having 1½ inch pitch; the guage of iron being, for bottom lengths, 16 B.W. guage, and for top section 20 B.W. guage. Each length after being rivetted up was immersed in a galvanising bath, and afterwards cleaned and set up. The contractor for manufacturing the shafts imported special machinery for shearing, rolling, and rivetting same. The shafts were symmetrical in form, with a moulded socket on each length. The tubes were attached to walls of buildings—preferably gable ends, by galvanised iron straps of neat design, and finished with an approved cowl—exhaust or induct, as required. The tubes were coated internally with asphaltum paint, and externally with two coats of best linseed oil paint of approved colour.

Area ventilated.

The total area traversed by sewers which have been ventilated is as follows:—

	Acres.
First Installation	128
Second „	1,539
Total	1,667

Pipe Sewers.

The total length of pipe sewers now ventilated is 365,579 lineal feet, or 69·16 miles of sizes varying from 6 inches to 24 inches in diameter.

Brick

Brick Sewers.

The length of brick and concrete sewers dealt with is 24,659 lineal feet, or 4·67 miles of varying sizes.

The observations made by anemometers at the shafts show that the air in the sewers when running 25 per cent. of their capacity varies from 1·47 to 18·59 times per hour.

The average work done by the induct shafts conducting air into the sewers varies from 1,397 cubic feet to 4,554 cubic feet per hour, and the work done by the exhaust shafts drawing sewer air from the sewers varies from 1,629 cubic feet to 3,019 cubic feet per hour. (See Appendix marked D.) The foregoing results have been obtained by anemometers placed in the inspection boxes at the foot of the shaft. The quantity measured would represent the air passing into the sewer without loss by friction of the shaft. The time occupied by each observation varied from eight to twenty minutes, according to circumstances. On ventilated systems all manholes and lampholes are closed down and made as air-tight as possible.

The number of observations made were:—In exhaust shafts, 500; in induct shafts, 240, being less than the total number erected. The average wind velocity during period of testing was 8·43 miles per hour. The number of exhaust shafts erected is 793, and, taking the average work as above, shows that 1,579,656 cubic feet, or 56·41 tons of sewer air is drawn from the sewers operated upon per hour.

The quantity of air which passes into the sewers by the induct shafts is, according to observation, 857,400 cubic feet, or 30·62 tons of atmospheric air per hour. The oxydising effect of this supply of pure air is apparent when it is considered that twenty-one parts out of every hundred is composed of oxygen.

The area dealt with, number of shafts, &c., &c., are shown in appendix. The result of testing shafts in the several districts by anemometers, also average work of shafts, are shown in Appendix E.

Several factory shafts have been utilised for sewer ventilation, with the cordial permission of the owners. The work done by these means is highly satisfactory.

The following list will show the aid to ventilation rendered by these shafts:—

	Cubic feet per hour.	Cubic feet per day.	
1. Tooth's Brewery, 9-in. connection ...	40,286 ...	966,864 ...	Tested three times.
2. Cameron's Tobacco Factory, utilising exhaust steam 6-in. connection ...	5,369 ...	128,856 ...	Tested twice.
3. Cornwell's Brewery, utilising exhaust steam 6-in. connection	4,522 ...	108,528 ...	Tested twice.
4. New York and Brooklyn Tobacco Factory, 6-in. connection	7,030 ...	168,720 ...	Tested twice.
5. Shaft, Crown-street Reservoir	6,857	164,568 ...	Tested three times.
6. Shaft, Crown-street Reservoir, Gipps-st.	4,444 .	106,656 ...	Tested twice.
7. Sewer-shaft at Hyde Park	51,424 ...	1,234,176 ...	Average of four weeks' test.
Total	119,922	2,878,368	

Shafts Nos. 1, 2, 5, 6, 7 are connected with the old unventilated system, Nos. 3 and 4 with the new system. There are many places where the waste steam can be utilised for ventilation purposes; these have been noted for future work.

Owing to complaints from the public in connection with the escape of sewer gas in certain portions of the old city system, shafts were erected at various points, and have proved efficient in remedying the nuisance. The average work of fourteen exhaust shafts was found to be, by anemometrical measurement, 38,057 cubic feet per hour, and for five induct shafts 13,452 cubic feet per hour. The average wind velocity was 6·5 miles per hour, the average time of each test being five minutes. Considering the low velocity of the wind, the work done by the shafts is satisfactory.

Notwithstanding the number of shafts erected, the objections have been comparatively few. These have been overcome by either a slight modification of site or design, and in others by the exercise of tact by the Inspector. This officer has been very successful in carrying out a work which is at all times liable to raise opposition, and although the Board is vested with extensive powers, no occasion arose where it became necessary to put them into force.

Several arrangements have been made in the city with owners to use their private drain for ventilating the public sewers. This has been done by carrying the shaft up at the rear of the premises, so as not to make the shaft conspicuous. Wherever high buildings occur, opportunity should not be lost to endeavour to make the above arrangements, as with an exposed wind range and the present perfection of cowls the number of shafts could be reduced.

Water Spray Inducts.

A trial was made in connection with an induced current by means of water sprays in a branch of the Bondi sewer with success. Through the courtesy of the Inspector-General of Police, a low shaft was fixed over a man-hole at the rear of Carter's Barracks, near the Benevolent Asylum. A connection was made with the Police Barracks service, and a check-meter was attached to the branch, so as to measure the quantity of water used. The water was passed down the shaft by means of a three-quarter-inch pipe with a spreader attached; this caused the water to spread in the form of a cone. The preliminary trials were not so successful, as far as the quantity of water used was concerned. The nozzle, however, was adjusted until the quantity of water was reduced to a minimum.

The results can be summarised as follows :—

Average quantity of water used per hour	213 gallons.
Air passed into sewer per hour	62,647 cubic feet.
Quantity of water used per diem	5,112 gallons.
Quantity of air passed into sewer per diem	1,503,528 cubic feet.

The quantity of air passing into the sewer per cubic foot of water being 1842·55 cubic feet. The cost for water per 1,000,000 cubic feet of air being about 3s. 4d. An improved nozzle is under trial, which will, it is anticipated, reduce the quantity of water without impairing the efficiency of ventilation.

The experiment was commenced on 13th October, 1891. Some time after it had been in operation I examined the sewer for some distance on either side of the shaft operated upon by the spray, and found it very cool and entirely free from odour, as compared with a section of unventilated sewer. The men who work in this section inform me that since the spray was started the air in sewer was pleasant compared to the condition prior to ventilation.

In July, 1891, the District Inspector made an inspection of the whole length of Bondi sewer and south-western branch, and at that time he reports as follows :—"Railway bridge to Benevolent Asylum, arch very wet, gas dense, smell most offensive. It is most desirable to have the sewer ventilated at this point at once. From the Benevolent Asylum to Garden Road, arch wet, gas dense, air nearly stationary." The sewer was examined lately by this same officer with overseer Lyons, and the report of the examination is very satisfactory. At the places before referred to, the instruments registered the air currents at 6,600 to 12,000 lineal feet per hour, which would indicate that considerable change takes place in the condition of the sewer air during the day; the above figures would represent 113,190 and 185,424 cubic feet of air per hour.

I examined a portion of the sewer in the vicinity of the spray and found the soffit of arch and sides above flow line dry, that they had been previously wet was clearly indicated by the appearance of the surface, the former slimy coating having the appearance of skin which was easily detached from the sides and arch.

A further examination was made, but on this occasion the spray was stopped. The Inspector reported that he tested at intervals of two chains and at every manhole, but in no case was there sufficient movement in the air to start the anemometer; what little movement there was showed to be in the same direction as the flow. The reason is apparent.

These examinations and tests show that the water spray is effective as an aid to sewer ventilation, and can be readily and inexpensively applied if there is a water main available.

The system of inducing currents of air by means of water can be applied with facility to the city system, the sewer shaft being utilised as the spray chamber, the air supply being drawn from pipes laid under the road to the building line and from shafts erected on buildings; wherever basements are available the air could be drawn from them, this would obviate the necessity for shafts and be of considerable benefit to the owners. This system can be dependent upon as a constant supply so long as the water is available; of course, during periods of drought, arrangements would be necessary to provide means for aerating the sewers at stated intervals during such contingency.

Great improvements have been effected in the manufacture of cowls, both induct and exhaust, but more especially with the former. The Department have hitherto been dependent on revolving inducts, which, although efficient as air inducts, are liable to get out of order through wear in the bearings or defects in the mechanical arrangements. There have been, however, two fixed inducts which, on being tested by the cowl tester, show a higher percentage of work than any of the revolving fittings. The introduction of fixed inducts means economy of maintenance and freedom from complaints.

After exhaustive tests and comparison of returns of daily wind velocities it is found that it would be safe to assume as the effective work of the shafts, the following, viz., for exhaust shafts 20 per cent. of wind force and for induct shafts 25 per cent. of same.

Temperature of Sewers.

The mean external temperature and humidity for years 1889-91 are shown in Appendix F. Temperature curves are also shown for sewers 10 and 40 feet deep respectively. The result of the observations made during the year is that where shafts have been erected a reduction in humidity occurs, and that the temperature of the sewers approximates to that of the external atmosphere. The difference in the curves indicates the aids to ventilation from causes within the sewer owing to the difference between external and internal temperature. The difference between the temperature curves of sewers 10 to 40 feet deep, indicates that earth temperature affects the condition of deep shafts, and is a factor in the air movements where the sewers have not atmospheric air passed into them.

Annual Death Rate.

Diagram marked Appendix G shows the annual death-rate from the year 1856 until 1891, kindly supplied by the Government Statistician, T. A. Coghlan, Esq., A.M. Inst. C.E. It will be seen that owing to an epidemic of Influenza, when the death-rate was abnormally high, it has had considerable influence in the general death-rate. The published returns show that for the year 1891 the deaths in city and suburbs from Influenza was 242.

The general death-rate for Sydney is given at 19·82. Excluding hospitals, the rate is given at 14·29 per 1,000 of population, the population being given at 110,620.

The month in which the greatest number of deaths occurred was November. The number given in city and suburbs is 835; of this number, 155, or 18 per cent., died of Influenza.

The suburbs show to have increased slightly, but if hospitals are excluded the curve will show a decrease on former years, as with the city death-rate. The west central suburbs, comprising Boroughs of Newtown, Camperdown, Macdonaldtown, and St. Peters, is shown to have the maximum rate of 15·24 per 1,000, the minimum being—Southern suburbs, Canterbury, Hurstville, Kogarah, Rockdale, with 9·28 per 1,000, the population of the former being 35,500, and the latter 13,140. It should be mentioned that the former localities are much older in settlement than the latter. The streets are narrow and the sanitary surroundings are unfavourable. Sewerage works are now being pushed on in these localities, a large portion being completed. The extension of the sewerage system should have a marked effect in these localities. Suburbs that have been dealt with, *i.e.*, by having an effective water supply and sewerage systems, compare very favourably. East central suburbs—Redfern, Darlington, Waterloo, Alexandria, Botany—show a rate of 14·07 per 1,000 of population. Eastern suburbs—Paddington, Randwick, Waverley, and Woollahra—show a rate of 13·20 per 1,000.

The most important statistics to this Department would be the zymotic death-rate for different localities, but under existing legislation it does not appear to be obtainable.

The general death-rate of the city can only be accepted as an average result. Some of the low-lying or otherwise unfavourably situated districts would probably have a high rate of mortality, whilst others would have a very low rate; it is to the former the sanitary improvements should be applied in the first instance, but to locate such districts is an impossibility under existing arrangements.

It is, however, satisfactory to note that the death-rate, as compared with other towns in England and the colonies, the comparison is favourable.

Appendix G shows the mean rainfall and death-rates for city and suburbs. Two additional curves have been added showing the population. It will be seen that, while there has been a gradual decrease in the city population since 1886, the population of the suburbs has increased to a very great extent.

In conclusion, I wish to return my thanks to the Government Astronomer, H. C. Russell, Esq., B.A., C.M.G., for the courtesy extended to this branch by the valuable information given during the year.

I have, &c.,

J. M. SMAIL, M. Inst. C.E.

APPENDIX A.

Table No. 1.

Sewers constructed by the Government Sewerage Department and transferred to Board.

Size of Sewer	8′ × 7′ 6″	7′ 2″ × 7′ 2″	7′ 10″ × 6′ 10″	7′ 8″ × 6′ 8″	7′ 4″ × 6′ 4″	7′ 2″ × 6′ 2″	6′ 10″ × 5′ 10″	6′ 10″ × 4′ 10″	5′ 6″ × 4′ 6″	5′ 4″ × 4′ 4″	5′ 1″ × 4′ 1″	4′ 6″ × 3′ 6″	4′ 0″ × 3′	4′ × 3′ 11″	3′ 9″ × 2′ 11″	3′ 6″ × 2′ 9″	3′ 6″ × 2′	3′ 3″ × 2′ 9″	3′ 2″ × 2′ 2″	3′ × 2′	Open Drain and Channel.	Circular. 2′ 6″ iron aqueduct.	3′ 0″	3′ 0″	Pipes. 24″	21″	15″	10″	12″	9″	6″	Total Length.
Length in feet																															
Constructed before passing of Act.	5,082	6,351	301	3,127	4,142	2,767	726	2,067	1,918	529	502	436	11496	3,366	447	4,401	363	378	9,189	2,109	5,828	3,134	3,438	13,200	2,437	(1,198) (745)	471	3,215	5,446	8,621	34,052	250	138,290 lin. ft.
1890	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	93	6	28	48	3,317	68,456	310	72,258 ,,
1891	..	..	..	..	..	..	..	..	..	..	..	1,891	..	..	..	757	..	..	5,859	..	..	..	3,448	..	..	..	..	1,157	1,600	2,102	6,715	..	21,530 ,,
																														Total	..	232,078 lin. ft. or 43·95 miles.

Table No. 1a.

Storm-water Ducts constructed by the Government Sewerage Department and transferred to Board.

Size of Duct.	13′ × 5′ 6″	12′ × 4′ 10″	7′ 4″ × 1′	5′ × 3′ 6″	3′ × 3′ 1″	3′ × 3′	2′ 9″ × 2′	4′ 9″ × 2′ 9″	4′ 6″ × 3′	4′ 6″ × 3′ 6″	3′ 6″ × 2′ 9″	3′ 4″ × 3′	4′ × 4′ Buckled Plates.	4′ open.	2′ 10″ × 3′ open.	Watercourse.	Circular. 4′	3′ 6″	3′	2′ 6″	2′	Pipes. 24″	21″	20″	18″	16″	15″	Total Length.
Length in feet.																												
Constructed before passing of Act	544	1,564	198	280	250	132	76	462	2,387	1,026	442	773	...	.	.	.	924	359	.	..	858	1,889	...	86	264	12	...	1,255 lin. ft.
1890	...			...	.	...	...	.		...	..	..	...	.	..	.	...	.	...	..	...	..	..	.	...	..	...	nil.
1891	.	.			.	862	...	.		...	..	...	530	58	648	822	56	..	263	1,406	921	...	396	...	165	...	334	6,450 lin. ft.
																										Total	.	12,006 lin. ft., or 3·59 miles.

January 14th, 1892.

APPENDIX B.

Sewers and Storm-water Drains constructed by the Board.

Locality.	3′ × 2′ U Shaped.	Circular. 5′ 6″	Circular. 4′	Circular. 2′ 6″	3′ 3″ × 2′ 2″	3′ × 2′	Pipes. 24″	21″	18″	15″	12″	9″	6″	Total Length in Feet.	
City Deep Sewers in lieu of Old System	...	..	..	..	.....	...	.....	.....	... .	419	1,088	162	... ..	4,881	
Do do	...	...	...	..	... .	...	50	192	.. ..	... .	867	1,036	137		
Paddington	...	..	..	...	.. .	..	... .	. . .	..... .	.....	.....	1,684	388	2,072	
Woollahra	..	..	...	...	. ..	...	.....	496	309	..	1,716	19,141	391	22,053	
Waverley	..	..	...	...	.. .	..	.. .	.....	.. ..	.....	832	17,160	38	18,030	
Randwick	...	..	..	..	.....	..	.....	.....	.. ..	.. .	. ...	1,195	.. .	1,195	
Redfern	...	..	..	..	... ..	..	.. .	. .	.... .	...	.. .	15,958	.. ..	15,958	
Waterloo	..	..	..	..	. . ..	..	.....	.... .	. ..	.....	.... .	7,055	.. ...	7,055	
Alexandria	..	...	...	...	.. ...	...	1,102	. ....	. . ..	.. . .	2,842	19,093	.....	23,037	
Macdonaldtown	...	..	...	..	.....	...	1,624	.....	... ..	.. ..	.. .,	4,082	.. ...	5,706	
Newtown	..	...	...	...	... ..	...	.... .	... ..	.....	.....	. . ..	13,691	.....	13,691	
1891 Totals	...	...	...	...	.....	...	2,776	688	309	449	7,345	101,157	954	113,678	Pipe sewers, or 21·53 miles.
1890 do	...	696	822	..	1,220	660	1,227	302	1,024	1,559	2,359	39,890	961	50,720	3,398 ft. concrete sewers, or 0·64 ,, 47,322 ft. pipe ,, or 8·97 ,,

Storm-water Drains.

1891 Totals	...	...	...	...	.....	...	.....	. ....	... ..	.....	.....	.....	.... .	....	Nil.
1890 do	298	...	...	924	.....	...	782	.....	47	260	239	... ..	.....	2,550	1,222 ft. concrete drains, or 0·23 miles. 1,328 ft. pipe ,, or 0·25 ,,

January 14th, 1892.

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APPENDIX C.

Government Laboratory, Sydney, 30th September, 1891.

ANALYSIS OF A SAMPLE OF WATER RECEIVED FROM SEWAGE FARM. (Labelled).

WELLS A AND B.		RESULTS EXPRESSED IN	
		Grains per Gallon.	Parts per Million.
Appearance in Two-foot tube ..... Clear, peaty		.....	.....
Odour on heating to 100° Fahr.		.....	.....
Chlorine as Chlorides	Well A	4·25	.....
	Well B	5·15	.....
Phosphoric Acid in Phosphates		Traces	.....
Nitrogen in Nitrates and Nitrites		None	.....
Do equivalent in Nitric Acid		.....	.....
Do existing as free Ammonia	Well A	.....	·02
	Well B	.....	·05
Organic Nitrogen, or "Albuminoid Ammonia"	Well A	.....	·28
	Well B	.....	·38
Oxygen absorbed in 15min. at 80° Fahr.	Well A	.....	1·25
	Well B	.....	1·60
Do do 3 hours do	Well A	.....	4·96
	Well B	.....	5·68
Hardness in degrees, Clark's Scale, before boiling		.....	.....
Do do do after do		.....	.....
Poisonous metals		.....	.....
Total Solid Residue dried at 220° Fahr.	Well A	19·85	.....
	Well B	30·01	.....

Culture Examinations for Pathogenic Organisms :—

General Observations on the Character of the Water.—These waters may be allowed to flow in creeks and rivers without creating a nuisance, their composition being equal to some waters actually used for drinking purposes.

W. M. HAMLET, Government Analyst.

APPENDIX D.

RETURN showing the extent and efficiency of the sewer ventilation shafts in the following districts during 1890 and 1891.

District.	Area.	No. of shafts.		Length of Pipes.									Sewers.		Cubic Contents in Feet. Full capacity.	Average work of Shaft per hour.		Times Changed per Hour.		Times Changed per Hour of 75% Cubic Contents.		Average No. of Times Changed per hour.	
		Induct.	Exhaust.	6″	9″	12″	15″	16″	18″	20″	21″	24″	Size.	Length.		Induct.	Exhaust.	Induct.	Exhaust.	Induct	Exhaust.	Full capacity	75 per cent. capacity
Surry Hills	94a.	45	94	...	27,989	1,927	...	152	312	...	610	...	3ft. x 2ft.	882	20,159	2,899	1,422	5·36	6·33	7·14	8·84	6·00	7·99
Redfern	336a.	36	121	150	63,133	7,025	...	1,905	.....	...	1,221	...	4ft. 6in. x 3ft. 4ft. x 3ft.	1,350 870	56,628	2,085	1,932	1·33	4·13	1·76	5·50	2·73	3·63
Lacrozia Creek ...	77a.	27	63	163	7,437	8,906	...	740	283	470	295	230	3·77ft. x 2·916ft. 3·52ft. x 2·54ft.	876 358	24,174	1,869	1,669	2·09	4·35	2·78	5·80	3·17	4·29
Waterloo	89a.	15	44	...	20,308	1,210	...	1,305	980	...	1,020	...	3ft. x 2ft. 3ft. 3in. x 2ft. 2in.	300 1,360	58,544	4,316	2,468	1·10	1·85	1·47	2·47	1·47	1·97
Alexandria	20a.	7	13	...	3,570	1,240	...	.....	.. ...	...	.....	...	....	...	2,551	4,554	3,019	12·50	15·38	16·66	20·52	13·94	18·59
Paddington.....	250a.	37	86	...	59,261	3,735	...	.....	.....	...	810	644	3·259ft. x 2·521ft. 3·77ft. x 2·916ft. 3ft. 6in. x 2ft.	360 440 420	41,579	3,486	1,818	3·10	3·76	4·14	5·01	3·43	4·57
Wollahra	77a.	14	21	...	17,560	.....	...	.....	... ..	..	.....	...	.....	.....	7,757	1,397	1,629	2·52	4·40	3·36	5·88	3·46	4·62
Strawberry Hills...	250a.	46	95	...	.....	45,889	...	2,458	2,240	...	... ..	...	3ft. 3ft. 6in. 4ft. 6in. 6ft.	878 1,340 826 1,500	91,847	2,626	2,164	1·32	2·24	1·75	2·97	1·78	2·36
Blackfriars and Pyrmont ...	346a.	54	93	1,420	41,622	19,748	255	7,470	1,680	..	150	60	3ft. x 2ft. 6in. 3ft. x 2ft. 3ft. 6in. 4ft. 6in. 4ft. x 2ft. 8in. 5ft. x 4ft. 6ft. 7ft.	497 1,940 570 5,750 2,620 80 1,280 660	186,730	3,457	2,410	1·00	1·20	1·33	1·60	1·10	1·47
Totals	1,539	281	630	1,733	240,880	89,680	255	14,030	5,495	470	4,106	934	.....	24,659									

APPENDIX E.

VENTILATION OF SEWERS.

Record of Tests.

Work of 500 Exhaust Shafts Tested.				Work of 240 Induct Shafts Tested.			
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.
500	996,292	23,911,008	167,377,056	240	685,963	16,463,112	115,241,784
Average Work of One Exhaust Shaft.				**Average Work of One Induct Shaft.**			
Number of Shafts.	Cubic Feet per Hour.	Cubic Feet per Day	Cubic Feet per Week.	Number of Shafts.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.
1	1,992	47,778	334,446	1	2,858	68,592	480,144

Total Number of Shafts Tested, Special Shafts not included—740.

Borough of Redfern.

Work of 74 Exhaust Shafts.						Work of 28 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per hour.
74	143,021	3,432,504	24,027,528	17 min.	6·41 12·83 7·90 8·47 10·65 4·55 7·05 2·90 6·40	28	68,307	1,401,528	9,810,696	17 min.	6·41 12·83 7·90 8·47 10·65 4·55 7·05 2·90 6·40
Average Work of One Exhaust Shaft.						**Average Work of One Induct Shaft.**					
One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per hour.	One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
1	1,932	46,368	323,376	17 min.	6·41 12·83 7·90 8·47 10·65 4·55 7·05 2·90 6·40	1	2,085	50,040	350,280	17 min.	6·41 12·83 7·90 8·47 10·65 4·55 7·05 2·90 6·40

Total Number of Shafts Tested in Redfern—102.

District of Blackfriars—City.

Work of 47 Exhaust Shafts.						Work of 30 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per hour.
47	97,487	2,339,688	16,377,816	20 min.	5·80 6·95 7·90 6·92 11·44	30	91,135	2,187,240	15,310,680	20 min.	5·80 6·95 7·90 6·92 11·44
Average Work of One Exhaust Shaft.						**Average Work of One Induct Shaft.**					
One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
1	2,074	49,776	348,432	20 min.	5·80 6·95 7·90 6·92 11·44	1	3,037	72,888	510,216	20 min.	5·80 6·95 7·90 6·92 11·44

Total Number of Shafts Tested in Blackfriars—78.

Borough of Paddington.

Work of 66 Exhaust Shafts.						Work of 30 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of Each Test.	Average Wind Velocity in Miles per Hour.
66	120,026	2,880,624	20,164,368	10 min.	6·11 13·81 9·62 6·59 4·50 10·97	30	104,576	2,509,824	15,568,768	10 min.	6·11 13·81 9·62 6·59 4·50 10·97
Average Work of One Exhaust Shaft.						**Average Work of One Induct Shaft.**					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per hour.	One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
1	1,818	43,632	305,424	10 min.	6·11 13·81 9·62 6·59 4·50 10·97	1	3,486	83,664	585,648	10 min.	6·11 13·81 9·62 6·59 4·50 10·97

Total Number of Shafts Tested in Paddington—96.

VENTILATION OF SEWERS—*continued.*

Borough of Woollahra.

Work of 17 Exhaust Shafts.						Work of 11 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
17	27,696	664,724	4,653,068	15 min.	8·33 7·95 6·59	11	15,371	368,904	2,582,328	15 min.	8·33 7·95 6·59
Average Work of One Exhaust Shaft.						**Average Work of One Induct Shaft.**					
One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
1	1,629	39,096	273,672	15 min.	8·33 7·95 6·59	1	1,397	33,528	234,696	15 min.	8·33 7·95 6·59

Total Number of Shafts Tested in Woollahra—28.

District of Pyrmont—City.

Work of 37 Exhaust Shafts.						Work of 22 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
37	101,608	2,438,592	17,070,144	9 min.	18·56 8·13 9·81	22	85,118	2,047,632	14,333,424	9 min.	18·56 8·13 9·81
Average Work of One Exhaust Shaft.						**Average Work of One Induct Shaft.**					
One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
1	2,746	65,904	461,328	9 min	18·56 8·13 9·81	1	3,878	93,072	651,504	9 min.	18·56 8·13 9·81

Total Number of Shafts Tested in Pyrmont—59

Borough of Waterloo.

Work of 43 Exhaust Shafts.						Work of 15 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
43	106,157	2,547,768	17,834,376	12 min.	10·89 10·56 7·95 10·72	15	64,741	1,553,784	10,876,488	12 min.	10·89 10·56 7·95 10 72
Average Work of One Exhaust Shaft.						**Average Work of One Induct Shaft.**					
One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
1	2,468	59,232	414,624	12 min.	10·89 10·56 7·95 10·72	1	4,316	103,584	725,088	12 min.	10·89 10·56 7·95 10 72

Total Number of Shafts Tested in Waterloo—58.

Borough of Alexandria.

Work of 12 Exhaust Shafts.						Work of 7 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time o each Test.	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
12	36,227	869,448	6,086,136	10 min.	11·86 7·95 10·72 10·56 10·89		31,87	765,048	5,355,336	10 min.	11·86 7·95 10·72 10 56 10·89
Average Work of One Exhaust Shaft						**Average Work of One Induct Shaft.**					
One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
	3,019	72,456	507,192	10 min.	11·86 7·95 10·72 10·56 10·89	1	4,554	109,296	765,072	10 min.	11·86 7·95 10·72 10·56 10·89

Total Number of Shafts tested in Alexandria—19

VENTILATION OF SEWERS—*continued.*

District of Strawberry Hills—City.

Work of 83 Exhaust Shafts.						Work of 43 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
83	179,610	4,310,640	30,174,480	8 min.	17·19 17·26 9·45 6·30 9·97 5·74 3·90	43	112,900	2,709,744	19,008,208	8 min.	17·19 17·26 9·45 6·30 9·97 5·74 3·90
Average Work of One Exhaust Shaft.						Average Work of One Induct Shaft.					
One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	One Shaft	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
1	2,164	51,936	363,552	8 min.	17·19 17·26 9·44 6·30 9·97 5·74 3·90	1	2,626	63,024	441,168	8 min.	17·19 17·26 9·45 6·30 9·97 5·74 3·90

Total Number of Shafts Tested in Strawberry Hills—126.

District of Lacrozia Valley—City.

Work of 50 Exhaust Shafts.						Work of 15 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
50	83,474	2,003,376	14,003,632	12 min.	5·28 5·73 7·90 7·90 7·41 8·40 7·95	15	28,044	673,056	4,711,392	12 min.	5·28 5·73 7·90 7·90 7·41 8·40 7·95
Average Work of One Exhaust Shaft.						Average Work of One Induct Shaft.					
One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
1	1,669	40,056	280,392	12 min.	5·28 5·73 7·90 7·90 7·41 8·40 7·95	1	1,869	44,856	313,992	12 min.	5·28 5·73 7·90 7·90 7·41 8·40 7·95

Total Number of Shafts Tested in Lacrozia Creek—65.

District of Surry Hills—City.

Work of 71 Exhaust Shafts.						Work of 30 Induct Shafts.					
Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.	Number of Shafts Tested.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
71	100,936	2,423,664	16,965,648	10 min.	4·60 3·87 9·37 4·11 5·89 7·27 7·60 5·78	30	93,593	2,246,352	15,724,464	10 min.	4·60 3·87 9·37 4·11 5·89 7·27 7·60 5·78
Average Work of One Exhaust Shaft.						Average Work of One Induct Shaft.					
One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test	Average Wind Velocity in Miles per Hour.	One Shaft.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind Velocity in Miles per Hour.
1	1,422	34,128	238,896	10 min.	4 60 3·87 9·37 4·11 7·68 7·27 7·60 5·89	1	2,309	57,576	403,032	10 min.	4 60 3·87 9·37 4·11 5·78 7·27 7·60 5 89

Total Number of Shafts Tested in Surry Hills—110.

C. H. L.

APPENDIX Ea—Table No 3.

Ventilation of Sewers.

District.	Ventilated Area in Acres.	No. of Shafts.	Length of Shafts.	Sewers Ventilated.										Total Length of Sewers Ventilated.
				Brick.	24″	21″	20″	18″	16″	15″	12″	9″	6″	
City	780	537	23,812	22,300	540	1,055	470	4,516	10,820	255	77,270	77,043	1,583	195,856
Redfern	207	157	6,415	....	...	1,222	.. .	...	783	.. .	1,025	30,001	150	30,181
Waterloo	110	59	2,413	6,350	..	1,020	..	980	1,305	....	1,210	20,388	...	30,250
Alexandria	34	20	742	..	....	..		. .	.	. . .	1,630	7,599	....	9,235
Paddington ...	250	123	5,363	1,220	644	810	..	...	.. .	....	3,735	59,261	....	65,670
Woollahra	77	35	1,409	Brick and concrete	.. .	....	..	. .	....	..	. . .	17,560	...	17,560
Petersham	12	6	262	4,174	10,896	. .	.	594	...	. .	594	. .	....	15,758
Total, 1891	1,470	937	40,443	33,050	11,580	4,107	470	6,039	12,908	255	91,470	211,857	1,733	373,519 lin. ft. or 70·74 miles.
,, 1890	270	337	12,639	40,032	. . .	. .	..	778	1,518	...	3,970	60,412	....	76,770 ,, or 14·68 ,,

Summary.

New Sewers	25·61 miles.
New Storm-water Drains	1·22 ,,
Added to Jurisdiction of Board, Total	26·83 ,,
Previously under ,,	122·61 ,,
	149·44

January 14, 1892.

The following are the rates and charges for water and sewerage:—

Water Rates.

1. The following rates and charges are those which the owners and occupiers of houses, tenements, and lands shall pay in respect of water supplied by the Board, that is to say:—

(For water supplied for domestic purposes otherwise than by measure.)

(I.) On every house, tenement, or land of twenty pounds assessed annual value and under, ten shillings per annum.

(II.) On every house, tenement, or land above the assessed annual value of twenty pounds, a rate of sixpence for each pound sterling on the amount of the valuation up to three hundred pounds inclusive; fivepence for each pound on the amount of the valuation in excess of three hundred pounds up to seven hundred pounds; fourpence for each pound on the amount of the valuation in excess of seven hundred pounds up to one thousand pounds; threepence for each pound on the amount of the valuation in excess of one thousand pounds up to four thousand pounds; and twopence for each pound on the amount of the valuation in excess of four thousand pounds.

(III.) Vacant lands of the assessed value of sixty pounds and over shall be subject to a rate of twopence for each pound sterling on the amount of the valuation.

(IV.) The like rates as those above mentioned shall be charged on all lands, tenements, and hereditaments not included in any valuation by the Municipal Council of the City of Sydney or Redfern, or of any Borough or Municipal District, and on all lands for the time being valued by the said Municipal Council of the City of Sydney or Redfern, or by such Borough or Municipal District, at a sum less than the true value thereof.

(For water supplied by measure.)

(V.) The charge for water supplied from stand-pipes shall be one shilling and sixpence per 1,000 gallons.

(VI.) The charge for water supplied from the mains by measure shall be one shilling and sixpence per 1,000 gallons.

(VII.) The charge for water supplied to shipping will be one shilling and sixpence per 1,000 gallons. Her Majesty's Navy will be supplied free of charge.

(For water for other than domestic purposes otherwise than by measure.)

(VIII.) The charge for water-troughs shall be twenty shillings per annum each.

(IX.) The charge for gas-engines shall be five shillings per annum for each engine of two-horse power and under, and for every additional horse power beyond two-horse power an additional charge of one shilling per annum for each horse power.

(X.) The charge for steam engines shall be one pound per annum up to three-horse power. No steam engine of more than three-horse power shall be supplied with water unless through meter.

(XI.) The charge for organs and such like shall be two pounds per annum up to one-half horse power. No organ or such like instrument of more than one-half horse power shall be supplied with water unless through meter.

(XII.) The charge for water used in the process of photography or any like process shall be two pounds per annum in each case.

(XIII.) The charge for water used in the business of cleansing tripe shall be ten shillings per annum in each case.

(XIV.) The charge for water used for tyring purposes shall be ten shillings per annum in each case.

(XV.) The charge for water used for ventilators and refrigerators shall be—for trade purposes, two pounds per annum; and for private purposes, one pound per annum in each case.

(XVI.) The charge for water used for dentists' lathes shall be one pound per annum in each case.

(XVII.) The charge for water used for the business of a laundry shall be ten shillings per annum. This shall only apply in cases where not more than three persons are employed.

The Board reserve to themselves the right of insisting upon a meter being fixed at any time, notwithstanding the fact that the special fee may have been paid.

2. Assessed rates shall be paid half-yearly in advance, whether a meter is used or not. In the case when a meter is used, the meter account will be rendered only when it is in excess of the assessment. Cheques and post office orders will be received in payment of rates; but if the cheque tendered by any person as payment for rates due is dishonored, the Board may cut off his service, and proceed for the recovery of the amount by warrant for distress or otherwise. Cheques and post office orders must be crossed in favour of the Board.

3. The minimum charge for water, whether supplied through meter or otherwise, for domestic purposes and for purposes other than domestic, is the assessed annual rate. If the water is supplied by meter, and the meter account exceeds the assessment (calculated at the rate of one shilling and sixpence per 1,000 gallons), then such excess shall be charged in addition to the assessment.

4. One meter may be allowed to supply several tenements when such tenements are occupied by one person or firm as a place of business or abode, and the meter account will be credited with the assessments of all such tenements. One service only will be allowed under these conditions, upon which the meter will be fixed, and all the water for such tenements must pass through such meter. Where peculiar circumstances entail a departure from the above, and two services are absolutely necessary, then there shall be a meter on each service pipe.

5. The Board may supply water for building purposes at the rate of five shillings per room, or by meter at one shilling and sixpence per 1,000 gallons; and the minimum charge by meter shall be ten shillings and sixpence for each work, which charge must be paid in advance. The Board may supply water for plastering rooms at two shillings and sixpence per room, and for the building of wash-houses, water-closets, coppers and chimneys, at five shillings each. The Board may supply water for the making and mixing of concrete for foundations of wooden blocks, stone cubes, or other form of permanent roadway or pavement, at the rate of one pound ten shillings per 1,000 square yards, by superficial measurement of road surface; and for all other concrete, brickwork, or masonry, at the rate of threepence per cubic yard as measured on the work.

6. Any person who maintains horses or cows may be supplied with water, without meter, from the domestic service for the sum of five shillings per annum for each animal, in addition to the assessed annual rate of the premises on which such animal is maintained or supplied with water.

7. All lands or premises on which any one or more head of horses or cattle shall be kept or maintained, whether such lands or premises are actually supplied with water from any main water-pipe of the Board or are otherwise ratable or not, shall be liable to an extra rate or charge (beyond and in addition to the assessed annual rate of the premises) of five shillings per head for each head of horses or cattle kept or maintained on such lands or premises.

8. The Board may supply water for gardens (and for such purpose may permit a hose and standpipe to be used) without meter, at the rate of ten shillings per annum for every 750 square feet superficial area, or part thereof, in addition to the assessed annual rate of the premises to which such garden belongs or is attached.

9. The Board may permit a supply of water for water-fountains or waterfalls of a size, construction, and form, and in a position previously approved by the Board, without meter, from the domestic service, for the sum of five shillings per annum for each such fountain or waterfall, in addition to the assessed annual rate of the premises on which such fountain or waterfall is maintained.

Sewerage Rates.

The following rates and charges are those which the owners and occupiers of houses, tenements, and lands shall pay in respect of sewerage, that is to say:—

(I.) On every house, tenement, or land, of seventeen pounds assessed annual value and under, ten shillings per annum.

(II.) On every house, tenement, or land above the assessed annual value of seventeen pounds, a rate of sevenpence for each pound sterling on the amount of the valuation.

(III.) Vacant lands of the assessed annual value of forty pounds and over shall be subject to a rate of threepence for each pound sterling on the amount of the valuation.

Description of Sydney Waterworks at end of 1891.

The supply of water is taken from the Nepean River, and two of its tributaries, the Cordeaux and Cataract Rivers, having a catchment area of 354 square miles; across the Nepean River is thrown a concrete dam 10 feet high, which is designed to divert the stream only, and lift it to level of crown of tunnel; the water is then taken by a tunnel 4½ miles in length to the Cataract River; another masonry dam, similar to that on the Nepean, is thrown across this river just below the outlet of the tunnel from the Nepean, and the water is thence conveyed by a tunnel for about 1¾ miles, and then by a series of open canals and tunnels, making a total distance from the source of about 40½ miles to the Prospect Reservoir; there are 11⅛ miles of tunnels, and about 28¾ miles of open canal from the catchment to the Prospect Reservoir.

Prospect Reservoir.

This Reservoir covers an area, when full, of 1,261 acres, and has a capacity of 10,812,313,000 gallons.

The dam is earth with a clay puddle core, and is 7,300 feet long, maximum height 84 feet, with slopes of 3 to 1 on the water side, and 2½ to 1, with two 15-feet berms on the outer side, and is 30 feet wide on the top; the water face is covered with heavy bluestone pitching; when quite full there will be 6,744,343,000 gallons available by gravitation.

The water is drawn off from the reservoir through a valve tower into pipes placed in a brick tunnel, carried outside and round the northern end of embankment, and is discharged through controlling valves into a basin, from which it then proceeds by an open canal for 5 miles to the Pipe Head Basin, situated 16½ miles from Sydney, and is then conveyed by a wrought-iron pipe 6 feet in diameter, to Potts' Hill, a distance of 5 miles.

Potts' Hill Balance Reservoir.

The water is delivered here into a 100,000,000 gallon tank, partly in excavation, partly in bank, the bottom of which is lined with hydraulic lime concrete, and the sides, which are laid to slopes of 1 to 1, are lined with dry coursed rubble; this work is designed to tide the City over any interruption of supply from Prospect, as well as to prevent fluctuation of head of pressure.

Screening Tank.

This tank is of brick in two concentric rings; the water is delivered into the outer ring and percolates through a series of copper gauze screens of 840 mesh to the inch. These screens are arranged so that the orifice which they fill can be closed, the screen taken out and scoured. From these tanks the water passes into the 48-inch cast-iron main, at Lewisham it is tapped by a 48 branch for filling the Petersham Reservoir, from Lewisham the water is conveyed to the Crown-street Reservoir by a 42-inch cast-iron main.

Crown-street Reservoir and Pumping Station.

Crown-street Reservoir, top water level is 141 feet above high-water mark, and is built of brick, and contains 3,250,000 gallons. At this place is situated the main pumping plant, consisting of two compound high-duty Worthington engines; engine No. 1 is capable of raising 500,000 gallons per hour with very great economy to the Paddington Reservoir, a height of 70 feet above the pump; engine No. 2 is capable of raising 210,000 gallons to Woollahra Reservoir, a height of 140 feet above the pump, and also of raising 200,000 gallons to Waverley, a height of 220 feet above pumps. The pumps are larger than are necessary for the present supply, and owing to the small storage capacity at Paddington and Woollahra the engines are not being worked to their greatest advantage, as they have to start and stop at short intervals.

Four 142-h.p. Babcock and Wilcox boilers generate the requisite steam.

Two Tangye duplex pumps (non-compound) capable of delivering 105,000 gallons per hour to Woollahra Reservoir; the duty of these pumps is very low, and they are now disused.

Paddington Reservoir.

Paddington Reservoir, top water level of which is 214 feet above high-water mark, or 73 feet above Crown-street, is built of brick, and contains 2,000,000 gallons, and is supplied by a 36-inch cast-iron main from Crown-street pumps, and distributes the water through a 24-inch cast-iron main, *via* Begg-street, and a 36-inch, *via* Park Road.

Woollahra Reservoir.

Woollahra Reservoir, top water level of which is 282 feet above high-water mark, or 141 feet above Crown-street, is built of brick, and contains 1,000,000 gallons, and is supplied by a 24¾-inch wrought-iron main from Crown-street, and distributes the water through a 20-inch main.

At this Reservoir is an engine which pumps the water to Waverley, through an 18-inch cast-iron pipe, a distance of one mile. The engine is a geared rotative Tangye engine fitted with Meyers' "cut-off" slide valve. This is about to be disused, as the Worthington engine No. 2 will effect the Waverley supply.

Waverley Reservoir.

Waverley Reservoir, top water level is 360 feet above high-water mark, and 78 feet above Woollahra, is built of brick-work, and contains 1,087,000 gallons; it distributes the water through a 15-inch main.

Petersham Reservoir.

This Reservoir is built of brick and contains 2,157,000 gallons; the top water level is 166 feet above high-water mark, and receives its supply by gravitation through a 48-inch cast-iron main, which branches off the 48-inch main at Lewisham, and distributes the water through two 18-inch outlets.

North Sydney Supply—Ryde Pumping Station, Ryde Hill Tank, and Chatswood Tanks.

North Sydney, which was supplied from Paddington by a sub-marine pipe up to the end of 1891, has since received its supply from Potts' Hill, the water being delivered through a cast-iron pipe partly 24-inch and partly 20-inch diameter into a balance reservoir, near the Ryde Railway Station; here a pair of powerful pumps raise the water through a 24¾-inch wrought-iron rising main into a 1,000,000 gallon wrought-iron tank at Ryde Village, at a level of 234 feet above high-water mark, and by a continuation of the same main into a pair of each 1,500,000 gallon wrought-iron tanks at Chatswood, at an elevation of 370 feet above high-water mark.

From the first-named tank the whole of Ryde, Gladesville, and Hunter's Hill get their supplies, and a 9-inch branch was extended over the Parramatta River and Iron Cove Bridges for the supply of the heights of Balmain.

The pair of iron tanks at Chatswood afford a liberal supply to North Sydney and Willoughby.

Campbelltown.

Campbelltown is supplied direct from the main canal by gravitation, a 6-inch pipe from the canal at 16 miles 40 chains being laid to the town, a distance of 2½ miles, and the reticulation consisting chiefly of 4-inch mains.

Liverpool.

Liverpool receives its supply by a 9-inch pipe from the main canal at Cecil Hills, which is extended as far as Mount Young, and thence by a 6-inch main to the town. This supply is very effective, giving, in places, a pressure of 91lb. per square inch.

Granville.

Granville is supplied by gravitation through a 15-inch main laid along Woodville Road, a distance of 2⅝ miles, from the 72-inch wrought-iron trunk main.

Ashfield.

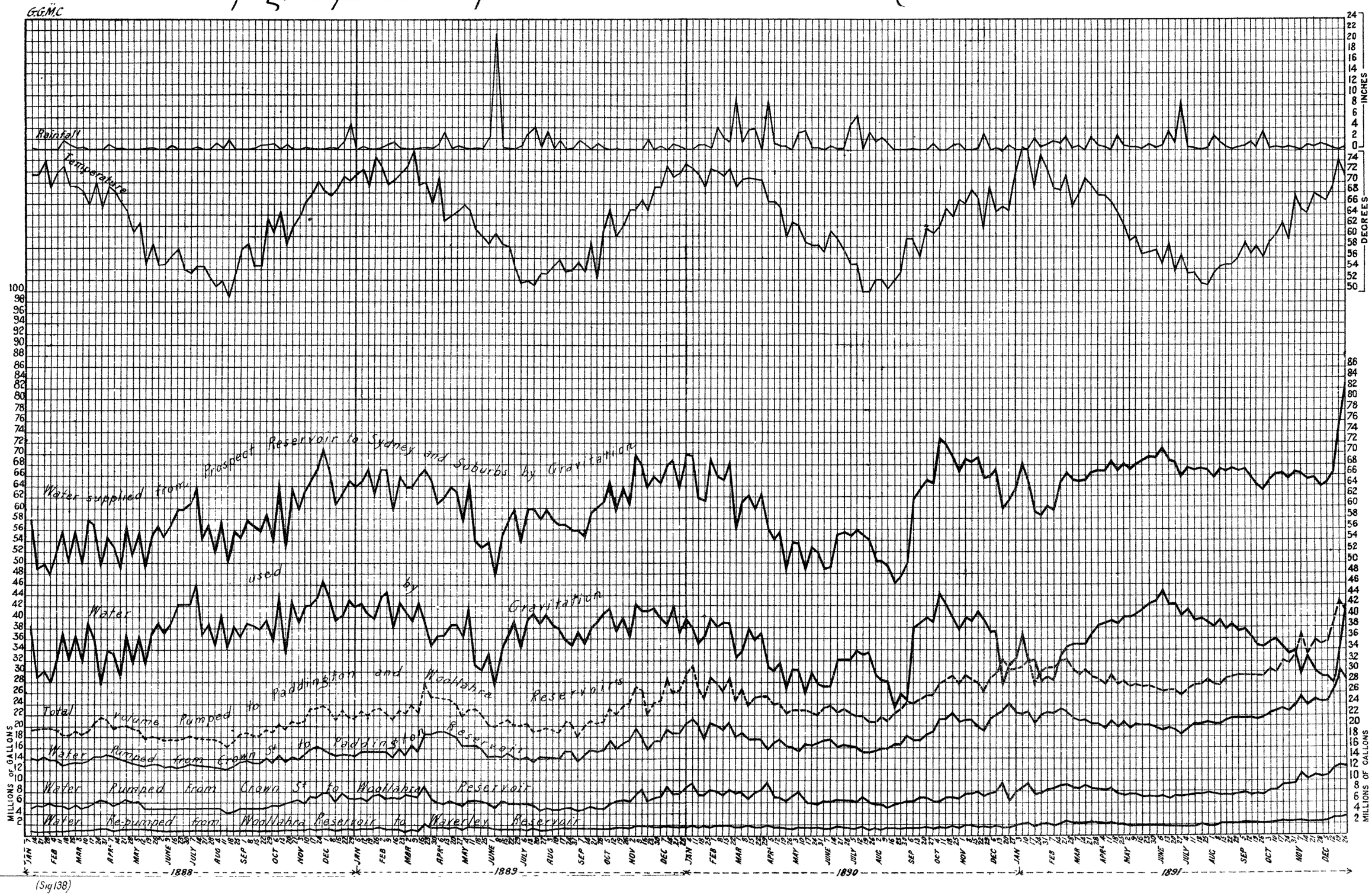
A part of Ashfield is too elevated to receive a supply by gravitation from Potts' Hill level, therefore, the loftier parts are supplied from the Woollahra Reservoir by the Petersham trunk main, which is isolated thrice per week from the reticulation and charged with Woollahra water, which it conveys to a 100,000 gallon tank of wrought-iron, erected on a brick circular support, at an elevation of 223 feet above high-water mark.

[Eight Plans.]

Sydney: Charles Potter Government Printer.—1892.

BOARD OF WATER SUPPLY AND SEWERAGE
SYDNEY

Table showing the Volume of Water supplied weekly from Prospect Reservoir by Gravitation to Sydney and Suburbs during the years 1888-1891 inclusively, the distribution of this water by Gravitation and by Pumping, the Mean Shade Temperature and the Rainfall for each week.



(Sig 138)

APPENDIX B.

WATER MAIN RETICULATION

DIAGRAM

Shewing Mileage of Water Main Reticulation of the City of Sydney & Suburbs

Mains laid Prior to the Control of the Board shewn in Black

Do. Since Do. Do. Do. Blue

SCALE 8 MILES TO AN INCH



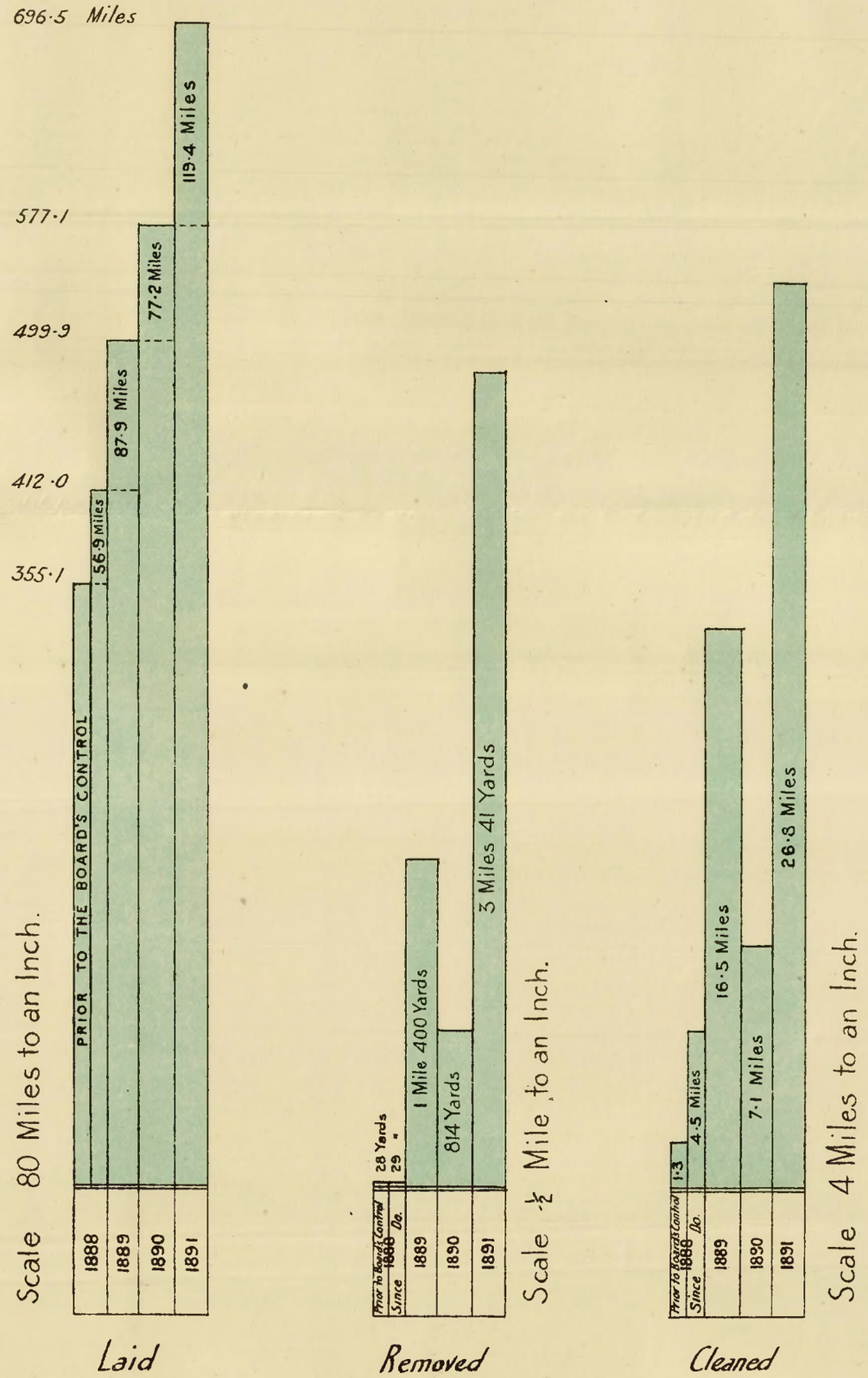
District	Prior to	Since	Totals
Alexandria	4·5	3·5	8·0
Ashfield	7·0	25·3	32·3
Auburn		4·5	4·5
Balmain	22·125	6·0	28·125
Botany		2·8	2·8
Burwood	10·0	12·0	22·0
Campbelltown		5·1	5·1
Camperdown	7·8	1·0	8·8
Canterbury		5·5	5·5
Concord	1·0	8·0	9·0
City of Sydney	99·5	25·3	124·8
Darlington	2·6	·6	3·2
Drummoyne		5·0	5·0
Enfield		5·0	5·0
Five Dock		4·2	4·2
Glebe	15·0	4·8	19·8
Granville		12·5	12·5
Hunters Hill		6·0	6·0
Hurstville		8·2	8·2
Kogarah		5·5	5·5
Leichhardt	28·8	10·0	38·8
Liverpool		12·8	12·8
Marrickville	13·6	16·6	30·2
McDonaldtown	4·5	·8	5·3
Newtown	16·6	7·8	24·4
North Botany		5·6	5·6
North Sydney	7·8	26·2	34·0
Paddington	11·6	4·6	16·2
Petersham	13·8	8·4	22·2
Prospect Sherwd		·25	·25
Randwick	8·8	9·0	17·8
Redfern	16·8	7·0	23·8
Rockdale		18·2	18·2
Rookwood		1·0	1·0
Ryde		·5	·5
St Peters	2·25	6·8	9·05
Strathfield	3·8	4·5	8·3
Waterloo	6·8	5·3	12·1
Waverley	12·0	4·8	16·8
Woollahra	11·25	10·9	22·15
Willoughby		·6	·6
Grand Totals =	327·9	312·2	640·1

G.G.M.C. 1891
(Sig 138)

N.B. The above does not include Trunk or Pumping Mains

DIAGRAMS

Shewing the Total Mileage of Trunk, Pumping & Reticulation Mains laid to the end of each Year also Mains Removed & Cleaned during each Year. from 1888 to 1891 inclusive



G.G.M.C.
(Sig 138)

Board of Water Supply & Sewerage, Sydney, N.S.W.

PLAN SHOWING THE LINE OF CONDUIT FROM THE CATCHMENT AREA TO THE CITY AND THE VARIOUS RESERVOIRS.

SERVICE RESERVOIRS

No	Name of Reservoir	Reduced Level of surface of Top Water over H.W.M.	Depth	Capacity in Gallons	Diameter of inlet pipe	Diameter of outlet pipe
1	Crown Street	141.00	15'6"	3,250,000	42"	2-20" 1-24"
2	Paddington	214.00	16'6"	2,000,000	36"	1-36" 1-24"
3	Woollahra	282.00	18'0"	1,000,000	20"	20"
4	Waverley	360.00	20'0"	1,087,000	18"	15"
5	Petersham	166.00	27'0"	2,157,000	48"	42" 18" 18"
6	Ryde Hill	234.00	22'0	1,000,000	24"	18"
7	Chatswood No1	370.00	32'6'	1,500,000	24"	20"
8	d° No2	370.00	32'6"	1,500,000	24"	

Scale. 2 ½ 1 ½ 0 1 2 3 4 Miles

— Prospect Reservoir —

Catchment Area above embankment	2400 acres
Area of Surface of Water when full	1261 acres
Total Contents (135 Contour)	10,812,313,000 gallons
" " (170 ")	4,067,970,000 "
Total Quantity available for supply to Canal	6,744,343,000 gallons

— Potts Hill Balance Reservoir —

Dimensions at Top Water Level.
Top Water Level 175·00 ft Length 1194 ft Width 894 ft
Area 24½ acres, Available depth 15 ft 6 in.
Total Capacity 108,185,401 gallons
Available Capacity 96,110,315 do
Capacity of works above Prospect 150 mill[n] gallons daily
Quantity of Water which Conduits will deliver (average since 1868) 95 mill[n] gallons daily.

— Water Levels —

The heights marked on the Line of Conduit denote the level of Water Surface when running full and are above High Water, Sydney Harbour.

— Tunnels —

			Miles
Nepean	Length	23507	= 4·45
Cataract	"	9724	= 1·85
Devine's No1	"	600	= ·11
" No2	"	2680	= ·51
Sugarloaf	"	3900	= ·74
Mt Anna	"	2250	= ·43
D° do (extension)	"	605	= ·12
Badgelly's	"	3780	= ·72
Mollesmain	"	700	= ·13
Box	"	400	= ·08
Cecil Hills	"	10610	= 2·00
Devils Back	"	950	= ·18
Calmsley	"	1230	= ·23
Trafalgar	"	650	= ·12
		61586 Feet	11·66

PENNANT HILLS · BEECROFT · CARLINGFORD · EASTWOOD · RYDE · RYDE RESERVOIR 234·00 24½ W.L. · Pipes · Pumping Station · LANE COVE RIVER · RAILWAY · NORTHERN · 370 ft RESERVOIRS · WILLOUGHBY · CHATSWOOD · MIDDLE HARBOR · MANLY · NORTH SYDNEY · Tank · Pump · HUNTERS HILL · PARRAMATTA RIVER · PORT JACKSON · BLACKTOWN · GREAT WESTERN RAILWAY · PARRAMATTA · PROSPECT 195 ft · Top Water Level · STORAGE RESERVOIR · Aqueduct · Canal · 30" Main · Trafalgar Tunnel · Weston's Tunnel · Sherwood Heights · Pipe Head Basin · 175·5 · GRANVILLE JUNCTION · GUILDFORD · ROOKWOOD · HOMEBUSH · BURWOOD · ASHFIELD · NEWTOWN · PETERSHAM · EVELEIGH · RANDWICK · ST PETERS · MARRICKVILLE · TEMPE · NORTH BOTANY · ARNCLIFFE · BOTANY · ROCKDALE · KOGARAH · CARLTON · HURSTVILLE · TANK 270·00 · BOTANY BAY · COMO · GEORGES RIVER · SMITHFIELD · FAIRFIELD · 6 ft Pipe Line · 4 ft Pipe Line · 24" Pipes · Screening Tank · BALANCE RESERVOIR 175 ft · POTTS HILL · TANK 223·50 · 36" Out. Pipe Line · 42" Out. Pipe Line · RESERVOIR 166 ft · COOK'S RIVER · Cecil Hills Tunnel 266·55 ft · RESERVOIR · 9" PIPES · 6" PIPES · LIVERPOOL · 278·76 ft · Box Tunnel 353·96 ft · Mollesmain Tunnel · Radgelly Tunnel · GREAT SOUTHERN RAILWAY · George's River · CAMPBELLTOWN · Mt Anna Tunnel 373·42 ft · Nepean River · 391·46 · Sugarloaf Tunnel · Engineer's Cottage · MENANGLE · Devine's Tunnel No 2 · Devine's Tunnel No 1 · DOUGLAS PARK · 416·81 ft · Cataract Tunnel · 426 ft · Cataract River · Nepean Tunnel · 439·5 ft · PHEASANT'S NEST PASS · Nepean River · Cordeaux River · Area of Watershed Cataract River 70 square miles. · Combined Area of Watershed of Nepean and Cordeaux Rivers. 284 square miles · ILLAWARRA RAILWAY · PORT HACKING · NATIONAL PARK · OCEAN · PACIFIC · COAL CLIFF · BULLI

LENGTH OF DIFFERENT CLASSES OF CONDUIT

TUNNELS	11 5/8 miles
CANALS	33¼ "
ACROSS PROSPECT RESERVOIR 30" PIPE	1¾ "
WROT IRON FLUMES 8FT. 7FT 6IN	½ "
PIPES 6FT	4⅞ "
CAST IRON PIPES 4 FT	7½ "
" " " 3 FT 6 IN	3¾ "
TOTAL	63¼ miles

The area supplied with water previous to Board's Control – MAY 1888 ..... shown thus
Extension of area by Board to end of 1890. " "
Added during 1891 " "

EHW
(Sig 138)

APPENDIX E.

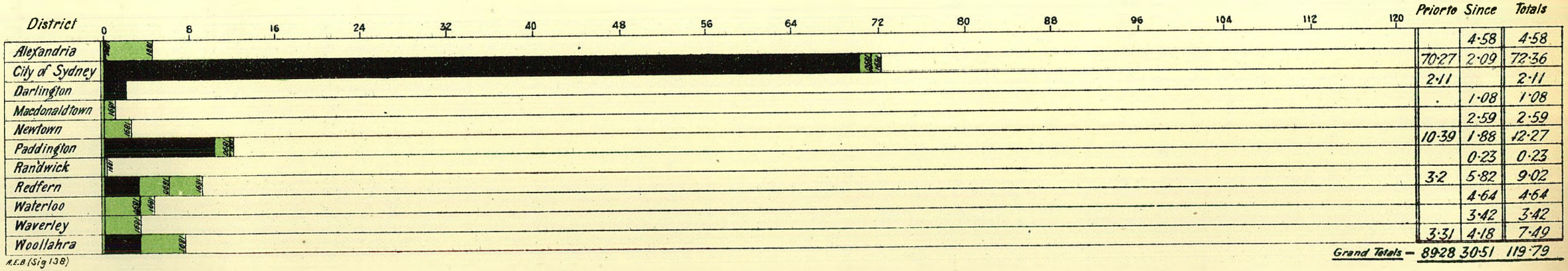
SEWERAGE RETICULATION
DIAGRAM

Shewing Mileage of Subsidiary Sewers of the City of Sydney & Suburbs.

Sewers laid Prior to the Control of the Board shewn in Black,

Do. Since Do. Do. Do. Green.

SCALE 8 MILES TO AN INCH



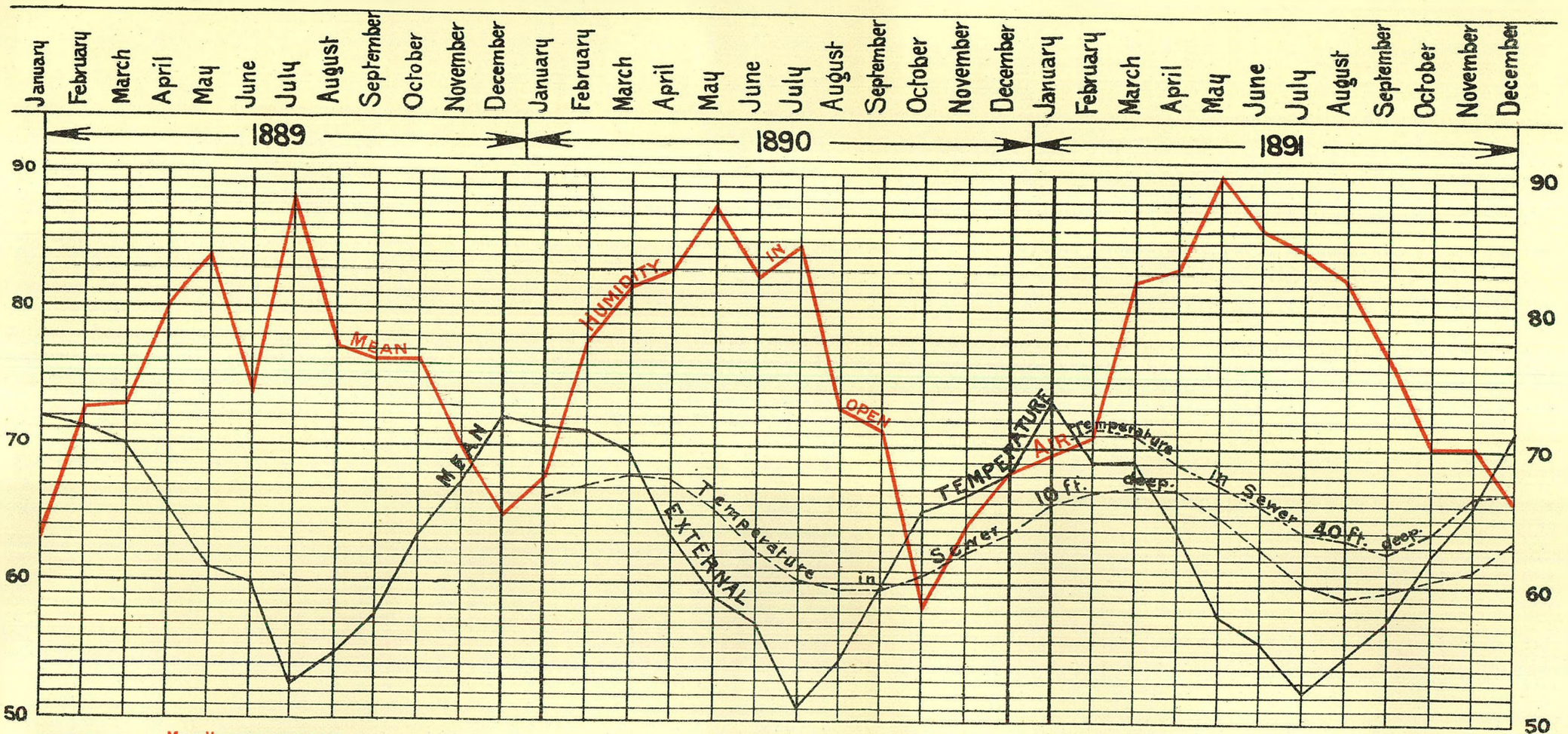
	Prior to	Since	Totals
Alexandria		4·58	4·58
City of Sydney	70·27	2·09	72·36
Darlington	2·11		2·11
Macdonaldtown	.	1·08	1·08
Newtown		2·59	2·59
Paddington	10·39	1·88	12·27
Randwick		0·23	0·23
Redfern	3·2	5·82	9·02
Waterloo		4·64	4·64
Waverley		3·42	3·42
Woollahra	3·31	4·18	7·49
Grand Totals —	89·28	30·51	119·79

M.E.B (Sig 138)

APPENDIX F.

DIAGRAM

Showing means of external temperature, temperature in Sewers 10 & 40 ft. deep & humidity for the years 1889, 1890 & 1891.



(Sig 138)

NOTE. FROM OBSERVATIONS NOW BEING TAKEN IT IS FOUND THAT THE TEMPERATURE IN THE VENTILATED SEWERS CLOSELY APPROXIMATES TO THAT OF THE OPEN AIR.

J.B.W. 9.2.92.

Appendix C.

Diagram Showing Death Rate of City of Sydney and Suburbs.

Death Rate per Thousand	Population Thousands	Rainfall Inches
32	400	80
31	380	76
30	360	72
29	340	68
28	320	64
27	300	60
26	280	56
25	260	52
24	240	48
23	220	44
22	200	40
21	180	36
20	160	32
19	140	28
18	120	24
17	100	20
16	80	16
15	60	12
14	40	8
13	20	4
12	0	0

Epidemics: Scarlet Fever; Influenza and Measles; Scarlet Fever; Measles; Measles & Scarlet Fever; Scarlet Fever; Whooping Cough; Measles; Whooping Cough and Typhoid Fever; Diphtheria & Measles; Whooping Cough & Diphtheria; Influenza

1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891

Rainfall at Sydney Observatory

Death Rate in City of Sydney

Death Rate in Suburbs

Population of City of Sydney

Population of Suburbs

14.29

13.23

(Sig 138)

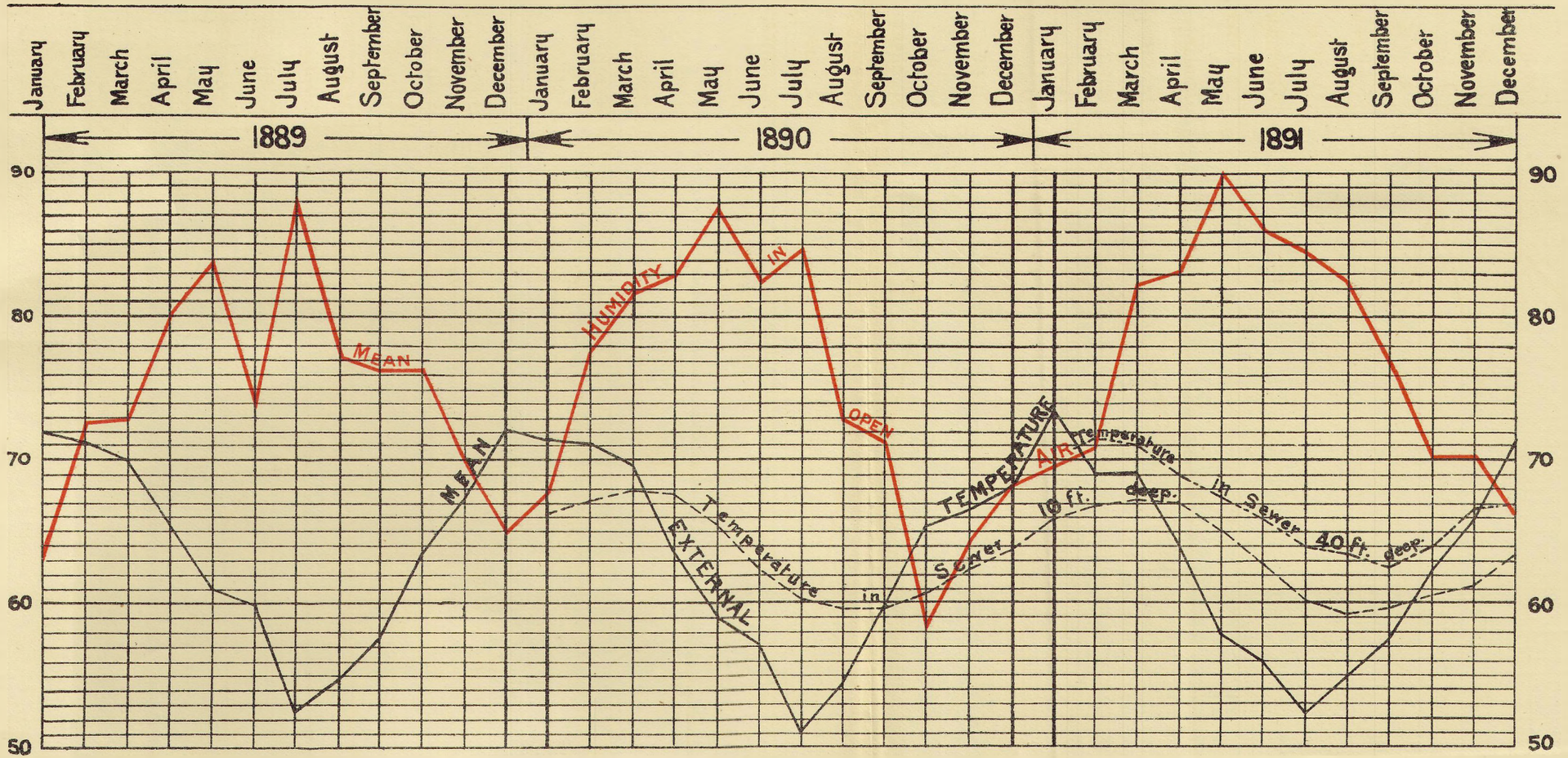
- Death Rate in City of Sydney
- Death Rate in Suburbs
- Population of City of Sydney
- Population of Suburbs
- Rainfall at Sydney Observatory
- Death Rate in City of Sydney and Suburbs, exclusive of Hospitals, Asylums & Gaols.

J.B.W. 29.2.92.

APPENDIX F.

DIAGRAM

Showing means of external temperature, temperature in Sewers 10 & 40 ft. deep & humidity for the years 1889, 1890 & 1891.



Mean Humidity in open air.
Mean Temperature in open air.
Mean Temperature in Sewer 10 Ft. deep.
Mean Temperature in Sewer 40 Ft. deep.

(Sig 138)

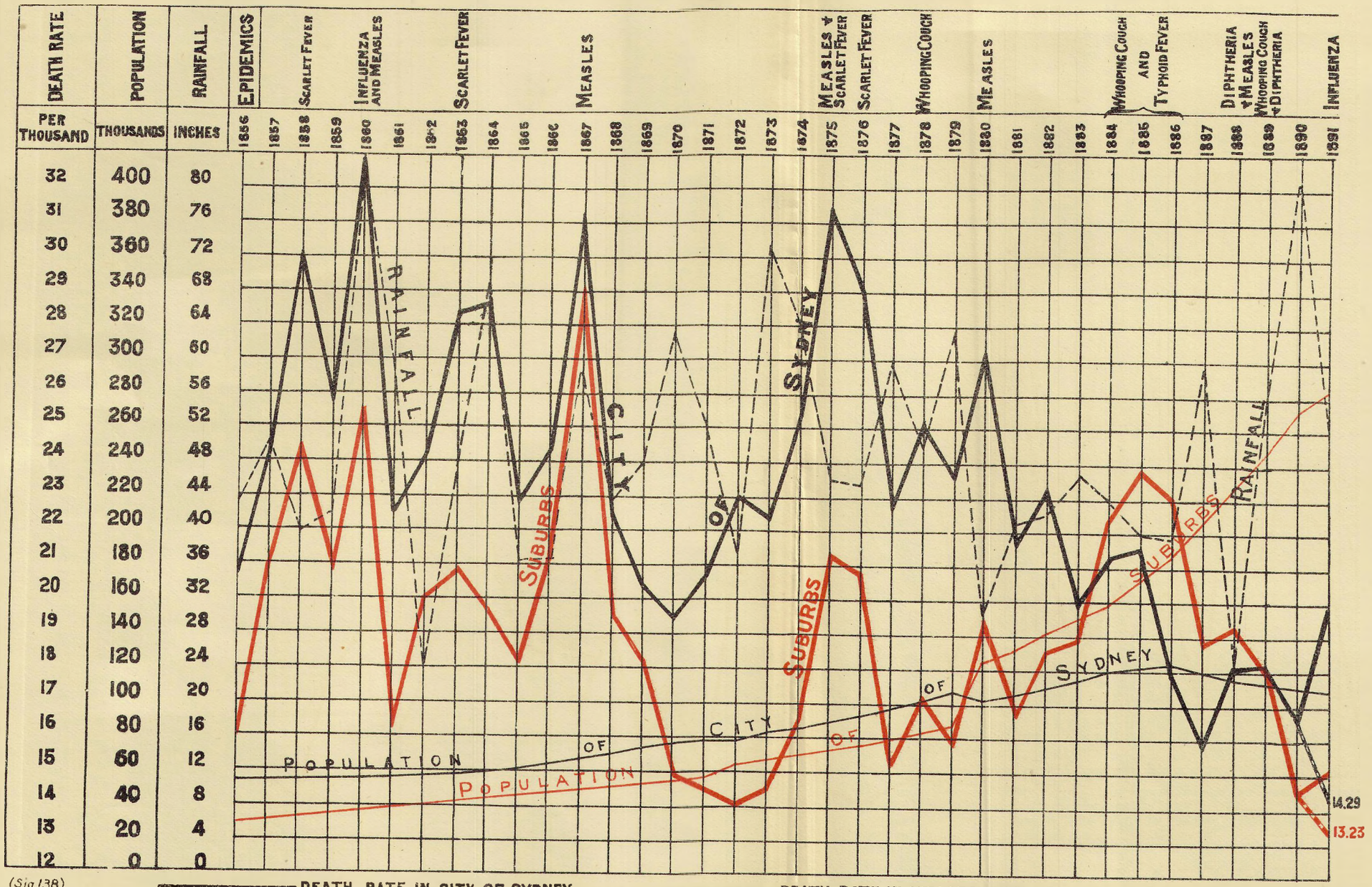
NOTE. FROM OBSERVATIONS NOW BEING TAKEN IT IS FOUND THAT THE TEMPERATURE IN THE VENTILATED SEWERS CLOSELY APPROXIMATES TO THAT OF THE OPEN AIR.

J.B.W. 9.2.92.

Appendix C.

Diagram Showing Death Rate of City of Sydney and Suburbs.

Death Rate per Thousand	Population Thousands	Rainfall Inches
32	400	80
31	380	76
30	360	72
29	340	68
28	320	64
27	300	60
26	280	56
25	260	52
24	240	48
23	220	44
22	200	40
21	180	36
20	160	32
19	140	28
18	120	24
17	100	20
16	80	16
15	60	12
14	40	8
13	20	4
12	0	0



(Sig 138)

- DEATH RATE IN CITY OF SYDNEY
- DEATH RATE IN SUBURBS
- POPULATION OF CITY OF SYDNEY
- POPULATION OF SUBURBS
- RAINFALL AT SYDNEY OBSERVATORY

- DEATH RATE IN CITY OF SYDNEY AND SUBURBS, EXCLUSIVE OF HOSPITALS, ASYLUMS & GAOLS.

J.B.W. 29.2.92.

Board of Water Supply & Sewerage

PLAN of City of Sydney & Suburbs

Shewing Extent of Main Sewers & Reticulation Completed and under Construction &c

31st December 1891.

HUNTERS HILL
DRUMMOYNE
BALMAIN
LEICHHARDT
GLEBE
CITY OF SYDNEY
PADDINGTON
WOOLLAHRA
CAMPERDOWN
PETERSHAM
NEWTOWN
REDFERN
WATERLOO
ALEXANDRIA
MARRICKVILLE
S. PETERS
NORTH BOTANY
ROCKDALE
BOTANY
RANDWICK
WAVERLEY
SOUTH PACIFIC OCEAN
PORT JACKSON
LANE COVE RIVER
ARDEN CREEK
A M A T T A
RIVER
FIVE DOCK BAY
LONG COVE
IRON COVE
ROSSLE BAY
JOHNSTONES BAY
DARLING HARBOUR
SYDNEY COVE
FARM COVE
NEUTRAL BAY
SUSSEX STREET
KURRABA
ROBERTSONS POINT
TAYLORS BAY
CHOWDER HEAD
GEORGES HEAD
INNER SOUTH HEAD
OUTER SOUTH HEAD
GREEN POINT
THE GAP
BOTTLE AND GLASS POINT
SHARK POINT
HERMIT PT
SHARK ISLAND
CLARK ISLAND
POINT PIPER
BARLING POINT
ROSE BAY
DOUBLE BAY
POTTS POINT
GARDEN ISLAND
Mrs MACQUARIES CHAIR
FORT DENISON
MACQUARIE FORT
BOWES POINT
MILLERS POINT
BALLAST POINT
GOAT ISLAND
WHITE HORSE PT
SNAPPER ISL.
SPECTACLE ISL.
COCKATOO ISLAND
PULPIT POINT
WRIGHTS PT
MANNS POINT
BALLS HEAD
BLUES PT
MILSONS PT
KIRRIBILLI POINT
BRADLEYS HEAD
PEACOCK PT
GLEBE ISLAND
ROSS ISLAND
BALLS HEAD BAY
BERRYS BAY
LAVENDER BAY
CAREMBOLA COVE
LITTLE SIRIUS COVE
MOSSMANS BAY
WATERVIEW BAY
SNAILS BAY
BLACKWATTLE BAY
DAWN FRASER PARK
Callan Park Lunatic Asylum
Leichhardt Park
Annandale
Moore Park
Sydney Common
Cemetery
Centennial Park
Pastoral and Agricultural Society's Show Ground
Cricket Ground
Randwick Race Course
Randwick Park
Bishopscourt
Waverley Cemetery
Waverley Park
BONDI BAY
BEN BUCKLER
HARBOURNE BAY
BROWNS BAY
NELSON BAY
GORDONS BAY
COOPERS BAY
SOUTH BONDI
SHARK POINT
50" C.I.
24" C.I.
21" C.I.
51" C.I.
39" C.I.
4'0"x3'0"
7'6"x6'8"
7'0"x6'10"
8'2"x7'2"
8'6"x7'6"
3'3"x2'3"

EXPLANATORY NOTE

Area in preparation under Survey &c shewn thus
Area under Construction not completed
Area constructed under Board
Area constructed prior to Boards control
Area constructed by Government

W.D.C. 22-2-92 [4-9-138]

1892-3.

NEW SOUTH WALES.

FIFTH ANNUAL REPORT

OF THE

METROPOLITAN

BOARD OF WATER SUPPLY AND SEWERAGE,

BEING FOR THE YEAR

1892.

Presented to Parliament by Command.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1893

668—*a*

[1,465 copies—Approximate cost of Printing (labour and material), £264 18s. 10d.]

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11. Sketch showing Approved Water-closet connections.
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16. Sanitary Exhibition, Medical School, University: View showing Defective and Absolute Fittings, also Ventilating Cowls.
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19. Sample Cowls used in connection with Metropolitan Sewerage Works.

1892-3.

NEW SOUTH WALES.

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE.

(ANNUAL REPORT FOR 1892.)

Presented to Parliament by Command.

To the Honorable the Secretary for Public Works,—

Sir, 16 February, 1893.

The Board of Water Supply and Sewerage have the honor to submit to you their Fifth Annual Report.

WATER.

2. The average daily consumption of water increased very considerably, viz., from an estimated consumption of 9,540,000 gallons to 12,129,000 gallons, and per head of estimated population from 26·11 gallons to 32·12. This recorded increase may partly be attributed to the large extension of mains, but mainly to an improved plan of gauge-weir for measuring the water, which was erected near Prospect during the early part of the year, thus enabling the consumption to be ascertained and recorded with more accuracy than has hitherto been possible.

3. During the year 89½ miles of pipes were laid, of sizes varying from 4 inches to 20 inches, and 537 screw-down hydrants, and 2,566 ball hydrants, fixed, and 29½ miles of mains cleaned. Many parts of the city and suburbs that had hitherto received a precarious supply during the hot weather were remedied, and a constant supply assured. A considerable delay in pipe-laying was caused for the want of 4-in. pipes, owing to the Government having directed that pipes required by the Board should be made in the Colony.

4. Prospect Reservoir was almost solely supplied, during the twelve months, from the Cataract River, that river carrying infinitely more than was required for the daily wants of Sydney, the valve on inlet to the Nepean tunnel being shut down.

5. The main-laying in the city was done by day labour, instead of by contract as heretofore and as obtained in the suburbs, on account of the numerous complaints received from shop-keepers and others whose business was interfered with by the dilatory operations of the contractor. It is satisfactory to record that no complaints have been received since the introduction of day labour, and the expense compares very favourably with the contract system.

6. The Water Engineer, in his report, calls attention to the question of the material used for the paving of the footpaths; this is a question of some moment to any authority who, in the construction of their works, have to take up the paving. Asphalt, or any similar method of paving, which is laid down in one continuous sheet, is obviously objectionable, as, however well the repair is made is always unsightly, not only is the appearance of the pavement spoiled, but its durability is affected. It is to be hoped that when the City Council consider this question, which it is understood is before them, that the necessity of taking up the pavements from time

to time to lay or repair water, sewer, gas or other pipes, will be borne in mind, and a class of pavement decided on that can be taken up and relaid without destroying its uniformity.

7. On the 1st of January, 1892, the No. 2 Worthington pump was started, and has worked satisfactorily throughout the year, pumping water to both the Woollahra and Waverley Reservoirs. This engine takes the place of the Tangye engines at Crown-street, which pumped to Woollahra, and of the engine at Woollahra, which formerly re-pumped to Waverley. Both these engines are kept in readiness in case of any accident to the No. 2 Worthington, and will be kept till the No. 3 engine is erected at Crown-street. This latter engine is now being constructed by Messrs. Mort and Co., of this city, and is designed to raise the water at the rate of 100,000 gallons per hour to the highest reservoir, viz., Waverley.

8. The object of this change is to concentrate all the pumping of water to the Metropolitan area, south of Port Jackson—with the exception of a small area, supplied by a gas-engine at Hurstville—at Crown-street; this change, both in the system and the character of the pumps, has had a very appreciable difference in the cost for fuel and maintenance, besides affording a more efficient supply. A trial was made in the spring to pump all the water required in 16 hours instead of 24, which, notwithstanding the increased requirements consequent on the large extensions of mains, was successful, but had to be discontinued as the summer approached, on account of the inability of the 48-in. main, supplying Crown-street from Potts' Hill Reservoir, to keep up the supply within the limited time. This contingency had been foreseen in laying out the water scheme for the supply of Sydney, and a second 48-in. main was laid during the year, and now only requires testing before being utilised.

9. The cost of pumping shows a great reduction over that of 1891 and former years, as the following will show:—1891: Cost of coal, £2,068; 1892: Cost of coal, £1,729. The duty developed by engines was as follows:—1891: 2,118,864,976 gallons pumped 100 feet for 3,500 tons of coal = 35,000,000 feet lbs. per cwt. of coal; 1892: 2,592,833,000 pumped 100 feet for 2,128 tons of coal = 67,000,000 feet lbs. per cwt. of coal. Allowance has been made for coal used for banking fires. The above shows an increase of duty of nearly 100 per cent. The following is a table showing the cost of raising one million gallons and one thousand gallons to 100 feet high at some of the largest waterworks, inclusive of cost of coals, oil, tallow, and ordinary repairs, but no interest on capital:—

Waterworks.	Authority.	Cost of raising 1,000,000 gallons 100 ft. high.	Cost of raising 1,000 gallons 100 ft. high.	No. of gallons raised 100 ft. high for one penny.
		£ s. d.	d.	
Grand Junction	Mr. Bateman	1 2 6	·27	3,703
East London	do	1 1 0½	·256	3,910
Gorton Engine	.....	1 11 7	·379	2,638
Green-lane Engine	Mr. Bateman	0 19 11	·239	4,184
Windsor	do	1 4 1	·289	3,460
Audley-street	do	1 3 5	·281	3,558
	Mr. Jas. Simpson	1 0 3	·243	4,115
	Mr. Hawksley	1 0 10	·250	4,000
Southwark and Vauxhall	Mr. Quick	0 13 10	·166	6,024
Average of above	.....	1 1 11¼	·263	3,779
Sydney Waterworks—				
1890	.....	3 2 6	·75	1,333
1891	.....	2 18 4	·70	1,430
1892	.....	2 0 0	·48	2,083

The cost in Sydney is about double the average cost in England, owing chiefly to the fact that the pumping is intermittent, added to which is the increased cost of fuel and labour here, and to the advantage arising from the extensive operations of the works quoted. The cost here, though, is 19 per cent under the average cost in America.

10. The proposal to construct a 20 million-gallon reservoir in the Centennial Park, as mentioned in our last Annual Report, was submitted to the Public Works Committee, and recommended by them to Parliament, at a cost of £86,000. This reservoir, when constructed, will enable the engines to work at greater economy than at present, and will enable the Board to have conserved in the city (together with the other reservoirs) sufficient water for three days' consumption, a very necessary provision.

11. On the 7th January a serious accident happened to the aqueduct about two miles on the city side of the Prospect Reservoir, one of the side walls carrying away for some distance; bulk-heads were immediately put in at either end of the washaway and iron pipes laid across the aqueduct, and the supply of water restored on the 10th; the wall was afterwards built up and strengthened by ties every 6 feet. It was a particularly fortunate circumstance that only a fortnight previous the 100 million-gallon reservoir at Potts' Hill had been filled for the first time, thus conserving sufficient for the city till temporary repairs had been effected.

12. The commencement of the construction of the cable tramway to Ocean-street by the Railway Department necessitated the Board removing all their water-mains and sewers along the line, either to the side of the roadway or to the footpath, and the lowering of others where intersected by the tramway. This work is being effected at the cost of the Railway Construction Department.

13. The scheme of supplying Liverpool with water was practically completed by the construction of a reservoir with an earthen dam at the take-off from the canal, which is capable of holding 4 million gallons. Owing to some carelessness in the construction, and also to an extraordinarily heavy downpour of rain, more like a water-spout, which fell before the dam had had time to consolidate, the dam was partially carried away, but was subsequently repaired and has since answered all requirements.

SEWERAGE.

14. The number of houses connected to the sewers during the year was 4,518, making a total of 31,402 houses connected and an estimated population served of 150,729.

There were 2·42 miles of sewers transferred to the Board which had been carried out by the Government, and 4·45 miles by the Randwick Council. The length of sewers laid by the Board was 22·50 miles, which, added to the foregoing, made a total of 29·37 miles for the year, and a grand total of 177·39 miles of sewers now under the jurisdiction of the Board.

The length of storm-water drains carried out during the year was 2·24 miles, making a grand total of 6·62 miles now controlled by the Board.

The length of ventilating shafts was increased to 49,089 feet, and the length of sewers ventilated to 79·25 miles.

15. The sewerage system of Randwick, as carried out by the local Council, has been transferred to the Board, the estimated value being £9,440; of this sum £9,000 was paid, and the balance is held over till the accounts relating to the receipts of rates have been adjusted.

Surveys are now being made by the Board to complete the reticulation of the eastern and western slopes of this Borough.

16.

16. The repairs to the old city sewers during the year were of a very extensive character, and will continue to be for some time to come an important charge on the annual working expenses.

The work of cleaning out the road detritus which finds its way into the sewers was very heavy, one-half of the maintenance staff were entirely employed on this work. It is to be regretted that so large an expenditure has to be incurred by the Board through the neglect of the Municipal Councils to properly cleanse their gully shafts. The quantity of such silt taken from the sewers in the city was 1,322 cubic yards; from the Bondi outfall, 1,312 cubic yards; Botany, 630 cubic yards; and from the catch-pit at Prince Alfred Hospital, 120 cubic yards; this catch-pit was put in some years ago for the purpose, and has answered very well, as the cost of cleaning out the silt from it was 3s. per cubic yard, as against 12s. per cubic yard of silt taken out of the main sewers. A 50-ton hopper barge has had to be constructed especially to deal with this work, the silt being conveyed to various Government reclamation works.

17. Numerous complaints continue to be received from persons whose premises have been flooded during heavy rainstorms, and, as in nearly every instance the complaint was due to scarcity of gully shafts or to the gully shafts being choked with street garbage, the responsibility lay with the local municipal authority, a fact which some of these bodies do not seem yet to comprehend.

The Board have under consideration the question of taking charge of all storm-water drains, but before this can be decided the point will have to be determined where—in the event of their so doing—will the responsibility of the Board commence, the formation and gradients of the roadways being no small factors in the question to be determined. One point seems very clear, that no storm-water drain can be taken over that is not thoroughly efficient for the duty required of it, and unless it has a sufficiency of properly designed gully shafts connected thereto, therefore, before a storm-water drain can be taken over by the Board from any local authority the latter body would have to put it into thoroughly efficient and working order.

18. In the interests of public health the compulsory drainage clauses of the Act have had to be put in force from time to time. This involves great labour to the Board, and great trouble subsequently in the collection of the charges, as often the owner is not in a position to pay the amount at once, but requires time, and to enable the Board to meet the owner in such cases further legal powers are necessary. The Board have made a provision for this in an Amending Bill, which for some time past has been in print, and which it is hoped will soon become law.

19. There were 1,115 shafts erected for sewer ventilation, the area dealt with being 1,671 acres, the length of pipe-sewers therein being 72·90 miles, and brick sewers 5·45 miles. The testing of these ventilating shafts has been systematically carried out, the result of which shows that the air of the sewers is changed from 13·62 to 1·13 times per hour.

The ventilation of sewers by water sprays was introduced with very satisfactory results, by a very simple contrivance, the work performed amounting to 2,064 cubic feet of air (thrown into the sewers) to one cubic foot of water used at a pressure of 35 lb. to the square inch.

The daily quantity of air thrown into the sewers by induct shafts and water sprays was 4,905,146 cubic feet, or 177 tons.

An officer of the Board, Mr. McKenzie, introduced an improved system of sewer ventilation by heat and cremation of the gases, a trial of which was made and proved so far successful as to induce the Board to have it tested on a larger scale. The results of this trial are not yet to hand.

20.

20. During the year 1,115 drainage certificates were issued by the Board to property-owners, certifying to the drainage of their premises having been carried out according to the by-laws of the Board. The issue of such a certificate is a great protection to the public, and it is surprising to find that, after two years, it does not seem to be so generally known as it deserves to be, or more applications for them would certainly be made.

There were 357 notices served for re-construction of defective drainage of premises in the city, in the large majority of cases these notices were readily complied with, compulsory action having to be taken in only a few. Notices were served to reconstruct the sanitary plumbing of 169 houses.

21. An arrangement was entered into between the Board and the Superintendent of the Technical College whereby the latter undertook to examine plumbers and drainers as to their fitness to obtain a license from the Board. This arrangement has been in every way satisfactory, and has had a beneficial influence on the number attending the Plumbing Class of this College, which two and a half years ago was only thirty-five, but has now risen to ninety-seven.

22. At the Medical Congress, and subsequently at the Arts and Crafts Exhibition, the Board exhibited samples of their water and sanitary fittings. Their exhibit elicited high commendation from the members of the Congress, and was also highly spoken of by the Press, and was a practical method of educating the public with regard to sanitary measures.

SEWAGE FARM, BOTANY.

23. The area under treatment was increased by 7·5 acres, making the total area cultivated 34 acres.

The average discharge of sewage was 1,838,000 gallons per twenty-four hours, from an area drained of about 1,079 acres.

The quantity of sludge removed from the screening tanks was 1,690 cubic yards, and the quantity of lime used for washing and precipitating previous to dredging was fifteen tons.

24. The crops were not so successful this year, owing to the frequency of south-easterly gales, the exposed position of the beds allowing the winds to sweep away the soil (sand) from the roots, leaving them bare.

The revenue was £217 14s. 3d., and the expenses were £887 17s. 1d.

25. The cattle and pigs did well and have increased in value, and will shortly be a large source of revenue.

26. It is the intention of the Board to lay down paddocks in artificial grasses for the purposes of agistment, the revenue from which it is hoped will materially help to pay the expenses incurred in getting rid of the sludge.

27. The analysis of the effluent, which is periodically made by Mr. Hamlet, the Government Analyst, shows that the effluent maintains its usual high state of purity. The bridge across Cook's River was repaired, and for the present rendered safe, but parts have been so riddled with the teredo, that before long it will have to be reconstructed, or some other method devised by which communication can be kept up.

FINANCIAL.

WATER.

28. The following table shows the working of the Water Branch :—

Year.	Revenue.	Working Expenses.	Capital Debt.	Percentage of Working Expenses to Revenue.	Percentage of Revenue on Capital Debt.	Interest on Capital Debt after Paying Expenses.
	£	£	£			
1888	*69,938	19,205	3,004,557	27·46	2·32	1·68
1889	138,923	36,568	3,088,068	26·32	4·49	3·31
1890	145,990	34,788	3,189,080	23·82	4·57	3·48
1891	165,831	38,291	3,306,649	23·09	5·01	3·85
1892	155,886	45,078	3,394,581	28·91	4·59	3·26

* This item is exclusive of £55,547 of arrears handed over by the City Council.

The decrease in revenue of about £10,000 is accounted for by the reduction of the Meter Rate from 1s. 6d. to 1s. per 1,000 gallons, the reduction of the consumption of water by meter owing to the heavy rainfall during the year, and the depression in trade; these causes are responsible for a loss of £18,000; the increase in Water Rates from the extension of mains makes up the difference between this loss and the actual loss on the revenue.

Though 89½ miles of mains were laid only 63 were revenue-producing, the remaining 26½ miles were laid in streets already returning revenue, but insufficiently supplied.

The increase in the working expenses is due to the maintenance of the canal, the control of which was transferred to the Board on 1st January; this item was also increased by the unfortunate accident to the aqueduct, mentioned above, and the accident to the Liverpool Dam.

The capital debt has only been increased by about £88,000, which moneys were expended on extension of mains.

The percentage of working expenses to revenue, of revenue on capital debt, and interest on capital debt, after paying expenses, are affected by the decrease in revenue and increase in working expenses already explained.

There is a debit balance on the year's transactions of £5,938 19s. 10d.

In September a great reduction was made in the working expenses of the Water Department, and a further reduction is now being made consequent on the practical completion of the works, which, by the end of the year, will be in thorough working order.

29. The following are the tables for Campbelltown and Liverpool :—

CAMPBELLTOWN.

Year.	Revenue.	Loans during the year.	Total Loans.	Maintenance.	Percentage of Net Revenue on Capital.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1889	128 18 0	2,174 15 11	2,174 15 11	95 8 0	1·5
1890	346 16 0	2,178 0 2	4,352 16 1	110 17 0	4·7
1891	408 15 0	79 14 2	4,432 10 3	140 17 0	6·04
1892	357 1 1	0 6 1	4,452 16 4	119 0 6	5·36

The decrease of percentage of net revenue on capital is accounted for by the reduction in the Meter Rate mentioned elsewhere.

LIVERPOOL.

LIVERPOOL.

Year.	Revenue.	Loan during the year.	Total Loans.	Maintenance.	Percentage of Net Revenue on Capital.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1891	236 18 3	11,806 9 6	11,884 18 9	80 9 8	1·31
1892	1,004 4 4	888 0 11	12,772 19 8	566 6 5	3·42

Owing to the break in the dam, the charge for maintenance is heavy this year, and but for it the percentage of net revenue on capital would have been about 7 per cent., or double what it is.

Neither of these towns are at present debited with any cost of working beyond the actual wages of the turncock and repairs, nor are they debited with any capital debt beyond that incurred in bringing the water to them from the canal. When their revenues are able to bear it they will be charged with a proportion of the debt incurred in the construction of the canal, and also their proportion of the working expenses of the Head Office.

SEWERAGE.

30. The following table shows the working of the Sewerage Branch :—

Year.	Revenue.	Working Expenses.	Capital Debt.	Percentage of Working Expenses to Revenue.	Percentage of Revenue on Capital Debt.	Interest on Capital Debt after paying Expenses.
	£	£	£			
1890	71,280*	22,249	1,281,045	31·21	5·56	3·82
1891	81,302	25,411	1,447,287	31·25	5·61	3·86
1892	87,927	27,305	1,606,948	31·05	5·47	3·77

* This item is exclusive of £10,519 of arrears handed over by the City Council.

There is an increase in the revenue of about £6,600, and an increase in the working expenses of nearly £1,900. The percentage of working expenses to revenue shows a reduction from 31·25 to 31·05. The debt has been increased by about £159,000, of this sum only £94,000 is returning revenue, inclusive of the £9,000 paid to the Randwick Council, on transfer of the sewerage works carried out by them in their borough; the balance is made up as follows :—Storm-water drains, £20,000; intercepting old city sewers and connecting same to Bondi outfall, £19,000; works carried out by the Government and debited to the Board, but not connected to, owing to want of funds, £26,000. In addition to the sum last mentioned further works to the value of £44,000 have just been completed by the Government, and will shortly be transferred to and become a charge against the Board. Contracts for reticulation works, to connect to the sewers covered by the two last items, amounting to about £37,000, have been accepted by the Board for some months but have not yet received your sanction. In connection with this we would point out that the non-completion of these contracts is in a great measure accountable for the decrease of the percentage of revenue on capital debt and for the decrease of interest on capital debt after paying working expenses. The Sewerage Construction Branch have also in hand, at the outfall at Arncliffe, works to cost about £200,000 which will form a charge against the Board, and will not be revenue returning until they are connected with the sub-mains.

GENERAL.

31. Appended on page 32 is the report of the Comptroller of Stores, from which it will be seen that the value of the issues for the year was £61,414, and the value of the receipts was £76,869, leaving a balance on hand to the value of £40,198. The orders on the Comptroller number 7,524, and it is satisfactory to report that the annual stock-taking proved that the duties of the Comptroller have been carefully and faithfully performed by him.

32. A very large contract for pipes was entered into with Messrs. Burns, Philp, & Co., who delivered in three shipments 55,728 pipes, of sizes varying from 4 inches to 15 inches in diameter, and 5,465 castings and valves of corresponding dimensions, to the value of £46,824 4s. Praise is due to these contractors for the expeditious and faithful way in which they carried out their very large contract without a hitch or complaint and within the time specified.

33. The assessor's report on page 23 gives some interesting information with regard to the detail working of the office in direct relation with the ratepayers. Notices to the number of 208,207 were issued in connection with 83,000 properties, or an average of 2·5 per property. It is satisfactory to be able to record that, notwithstanding the increase of rateable properties, there was a decrease of 566 summonses issued as compared to 1891.

34. The amount of outstanding rates and accounts for both water and sewerage is £35,446, as against £38,343 for the year previous.

35. Three districts became liable for water rates during the year, viz., Bankstown, which is not incorporated, and the Boroughs of Hunter's Hill and Ryde. Six municipalities became liable for sewerage rates, viz., Glebe, Macdonaldtown, Newtown, Petersham, Randwick, and Waverley.

36. Notwithstanding the general depression in trade, 4,318 new buildings were completed, as against 2,217 for the previous year.

37. The system of payment by special fees, instead of using a meter for water used for purposes other than domestic, has been more generally availed of, to the mutual satisfaction of ratepayers and Board.

38. Leaky taps are a great source of annoyance to the householder, and a cause of waste of water to the Board, and as, in the majority of cases, the only requirement was the insertion of a new washer, the Board provided their Waste Water Inspectors with the necessary appliances to stop the leak, and as this work is performed without charge, it has given very general satisfaction.

39. The meter testing and repairing and tap-testing department has efficiently performed its work. The expenses for labour and material was £1,144, and the receipts £1,008, besides which £166 1s. 11d. of work was done for the various branches of the Board, therefore, as only the actual labour and cost of material is included in this item, which may safely be reckoned as 50 per cent. cheaper than if the work had been done outside, this branch of the Board's office may not only be reckoned as economical, but remunerative.

40. Appended to this report are tables of information collected by the Board from various cities of Great Britain and the United States, containing *(a)* the charges for water rates, and for meter and special fees, &c., *(b)* size of reservoirs, revenue and cost of management of waterworks, *(c)* disposal of sewage, &c. These comparative tables are of great value to those interested.

41. The Medical Adviser to the Board, Dr. T. M. Kendall, in a report forwarded to the Board, congratulates them "on the efficient ventilation of their sewers, as two only of the cases of sickness during the year, of the Board's employees' can be ascribed to the effects of sewer-gas. One of these cases was that of a sewerage maintenance-man, working in an old, unventilated sewer in George-street, and the other was that of a water maintenance-man who, while laying a water-main in Woolloomooloo, near the Domain, accidentally broke into an old brick sewer. Both of these cases were due to the old system of sewerage, originated before the Board's existence, and consequently it will be quite right to assert that the system of sewerage ventilation originated and carried out by the Board is free from all injurious effects as far as their employees are concerned."

. Attached is Dr. Kendall's report on the general health of the area under the Board's jurisdiction, accompanied by a diagram showing the different degrees of the death rate.

42. The erection of the new offices was very much interfered with by the wet weather, but it is hoped that the Board will be able to occupy them by the end of April next.

43. Besides the various meetings for the purpose of visiting the various works under their control, the Board held 58 meetings at their offices, the attendance at which is shown by the following table:—

MEETINGS OF BOARD DURING 1892.

	Jan.	Feb.	Mar	April.	May.	June	July.	Aug.	Sep.	Oct.	Nov.	Dec.			
Meetings held	5	4	5	4	5	5	4	6	4	5	5	6	58 Meetings.		
													Present		Absent.
*T. Rowe	5	4	4	...	...	...	...	...	...	...	...	...	13	...	Nil.
C. W. Darley.....	5	4	5	4	5	4	4	5	4	5	5	5	55	...	3
B. Palmer	4	4	5	4	5	5	4	6	3	4	4	6	54	...	4
R. R. P. Hickson ...	5	4	5	4	5	5	4	5	4	5	5	5	56	...	2
† W. L. Vernon.....	...	..	1	4	4	5	3	5	4	4	5	5	40	...	5
Hon. J. D. Young, M.L.C.	5	4	5	4	5	5	4	6	4	5	5	5	57	...	1
G. W. Lander	5	3	5	4	5	4	4	5	4	3	4	6	52	..	6
J. Graham	5	4	5	4	5	4	4	6	4	1	5	4	51	...	7

* Appointment expired 25th March, 1892 † Appointed 25th March.

44. On the 25th March the period of four years for which the first President of the Board, Lieut.-Colonel T. Rowe, was appointed expired, and he was succeeded by Mr. C. W. Darley, M. Inst. C.E., who was a member of the Board from its initiation, the vacancy on the Board thus caused being filled by the appointment of Mr. W. L. Vernon, the Government Architect.

On the same date the elections were held to fill the vacancies caused by the retirement, by effluxion of time, of Mr. B. Palmer, the Vice-President, representing the City Council, and Mr. G. W. Lander, representing the Suburban Councils. Both of these gentlemen were re-elected, thus proving, if proof were wanted, the satisfaction of the ratepayers at the manner in which their interests had been conserved by their representatives.

45. Attached hereto are the Reports of the Water and Sewerage Engineers, and the various heads of branches, together with the balance-sheet.

REGINALD BLOXSOME,
Secretary.

C. W. DARLEY, M. Inst. C.E.,
President.

ANALYSIS.

Water Supply Table.

Year.	Average Daily Supply.	Total Supply for Year.	Number of Houses supplied.	Estimated Population supplied.	Average Daily Supply during year.		Mains.	
					Per House.	Per Head of Estimated Population.	Mains laid.	Mains cleaned.
	Gallons.	Gallons.			Gallons.	Gallons.	miles yds.	miles yds.
1888	8,144,169	2,972,621,623	61,718	296,246	132	27·49	53 893	4 890
1889	8,820,000	3,219,244,159	67,924	326,035	129	27·05	86 1,403	16 907
1890	8,486,034	3,097,402,486	71,501	343,204	118	24·70	75 866	7 278
1891	9,540,102	3,482,237,514	76,993	365,246	125	26·11	102 250	26 1,506
1892	12,129,152	4,439,273,390	78,926	378,885	153	32·12	89 915	29 741

Water Rates.

Year.	Gross Water Rates.	Cancelled.	Net Revenue.	Gross Receipts paid to Treasury.	Less Refunds, &c., by Treasury.	Net Receipts paid to Treasury.	Outstanding Accounts.	
							Rates.	Plumbers and Others.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1888	*125,762 3 0	276 4 0	125,485 19 0	90,039 9 11	937 14 6	89,131 15 5	40,791 2 6	948 10 9
1889	141,631 3 0	2,607 4 9	138,923 18 3	147,045 0 1	1,105 6 9	145,939 13 4	34,672 3 2	707 11 6
1890	149,316 0 2	3,325 10 10	145,990 9 4	158,949 17 0	60 11 1	158,889 5 11	24,691 7 0	2,067 8 6
1891	171,445 17 5	5,614 16 6	165,831 0 11	165,204 17 7	127 16 8	165,137 0 11	26,028 4 2	771 3 0
1892	160,325 8 9	4,438 16 9	155,886 7 0	163,024 16 8	204 13 4	162,820 3 4	19,168 9 1	3,120 9 3

* This item is inclusive of £55,547 of arrears handed over by the City Council.

Maintenance. Management.

Year.	Maintenance of Mains, &c.	Wages and Expenses.	Coals.	Rents.	Total Maintenance.	President and Board fees.	Salaries.	Stationery and Printing.	Advertising and Incidental.	Total Management.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1888	677 17 2	7,676 13 3	901 14 5	767 6 8	10,023 11 6	1,253 10 3	6,099 18 10	1,303 7 1	525 6 4	9,182 2 6
1889	3,289 3 2	13,850 5 10	1,429 13 10	1,766 10 0	20,385 12 10	1,708 12 6	12,346 15 8	933 9 11	1,193 13 7	16,182 11 8
1890	3,676 3 1	13,636 9 4	2,272 11 11	960 16 9	20,546 1 1	1,242 10 0	10,912 0 2	965 6 9	1,122 12 0	14,242 8 11
1891	5,665 6 7	14,165 6 3	2,653 6 3	1,107 9 4	23,606 8 5	1,242 10 0	11,204 3 1	948 0 9	1,290 2 1	14,684 16 11
1892	13,005 8 5	15,255 2 3	1,729 17 5	1,100 4 0	31,090 12 1	1,041 18 8	10,747 17 6	641 14 4	1,556 3 10	13,987 14 4

General Summary.

Year.	Revenue.	Total Maintenance.	Total Management.	Total Maintenance and Management	Interest.		Total Interest.	Depreciation.	Total Expenses.
					On Loan Capital.	On Debentures.			
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1888	125,485 19 0	10,023 11 6	9,182 2 6	19,205 14 0	50,976 7 3	4,300 0 0	64,276 7 3	.....	83,482 1 3
1889	138,923 18 3	20,385 12 10	16,182 11 8	36,568 4 6	101,477 5 5	4,150 0 0	105,627 5 5	2,446 8 8	144,641 18 7
1890	145,990 9 4	20,546 1 1	14,242 8 11	34,788 10 0	105,099 19 9	4,000 0 0	109,099 19 9	3,421 15 2	147,310 4 11
1891	165,831 0 11	23,606 8 5	14,684 15 11	38,291 4 4	107,981 11 8	4,000 0 0	111,981 11 8	3,916 18 0	154,189 14 0
1892	155,886 7 0	31,090 12 1	13,987 14 4	45,078 6 5	111,809 8 2	4,000 0 0	115,809 8 2	877 12 3	161,825 6 10

Sewerage Table.

Year.	Number of Houses Sewered.	Estimated Population served.	New Sewers Laid During the Year.		Existing Sewers.	Total Length of Sewers.	Storm-water Drains Laid.				Ventilating Shafts Erected.	Sewers Ventilated.
			By Board.	By Govt.			By Board.	By Govt.	Existing.	Total.		
			Miles.	Miles	Miles	Miles.	Miles.	Miles.	Miles.	Miles.	Feet	Miles.
1890	22,765	109,272	9·33	13·08	99·02	122·03	·77	Nil.	2·38	3·15	12,639	14·5
1891	26,884	129,043	21 53	4·46	122 03	148·02	Nil.	1·23	3·15	4·38	47,628	70·74
1892	31,402	150,729	26·95	2·42	148·02	177·39	1·47	·77	4·38	6·62	49,089	79·25

Sewerage Rates.

Year.	Gross Sewerage Rates.	Cancelled.	Net Revenue.	Gross Receipts paid to Treasury.	Less Refund by Treasury.	Net Receipts paid to Treasury.	Amount Outstanding.	
							Rates.	Compulsory Drainage, and Others.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1890	*85,291 9 7	3,491 18 7	81,799 11 0	74,180 6 7	48 5 10	74,132 0 9	7,619 4 5	.....
1891	83,731 10 11	2,423 12 7	81,302 18 4	80,555 16 8	50 1 7	81,252 16 9	8,320 2 10	3,224 14 3
1892	89,031 18 4	1,104 19 6	87,926 18 10	86,690 1 7	110 6 1	86,579 15 6	9,597 7 4	3,560 9 2

* This item is inclusive of £10,519 of arrears handed over by the City Council.

Maintenance. Management.

Year.	Maintenance of Sewers.	Wages and Expenses.	Sewage Farm Maintenance.	Rents.	Total Maintenance.	President and Board Fees.	Salaries.	Stationery and Printing.	Advertising and Incidentals.	Total Management.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1890	427 16 0	9,062 16 3	918 2 10	1,041 13 4	11,450 8 5	1,427 2 6	7,796 17 0	1,110 6 3	464 10 7	10,799 5 4
1891	1,109 19 7	12,034 8 9	829 18 7	1,000 0 0	15,624 6 11	1,242 10 0	7,180 7 6	889 7 8	475 2 9	9,787 7 11
1892	908 1 6	13,584 17 4	887 17 1	1,002 0 0	16,382 15 10	1,041 18 8	8,583 13 5	611 18 6	735 2 4	10,922 12 11

General Summary.

Year.	Revenue.	Total Maintenance.	Total Management.	Total Maintenance and Management.	Interest.		Total Interest.	Depreciation.	Total Expenses.
					On Loan Capital.	On Debentures.			
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1890	81,799 11 0	11,460 8 5	10,799 5 4	22,249 13 9	36,141 10 1	8,635 0 0	44,776 10 1	.....	67,026 3 10
1891	81,302 18 4	15,624 6 11	9,787 7 11	25,411 14 10	39,674 17 4	6,820 0 0	46,494 17 4	.....	71,906 12 2
1892	87,926 18 10	16,382 15 10	10,922 12 11	27,305 8 9	45,196 19 0	6,820 0 0	52,016 19 0	220 12 10	79,543 0 7

APPENDIX.

GOVERNMENT LABORATORY, SYDNEY.

RESULT of Analyses of the Sydney Water Supply; by WILLIAM M. HAMLET, Government Analyst.

Date.	Marks or Number of Sample.	Description.	Expressed in Grains per Gallon.				Expressed in Parts per Million.				Examinations for Organisms.	Appearance in standard 2-foot Tube.	Poisonous Metals.	General observations on character of water.
			Total Solid Residue, dried at 220°.	Chlorine as Chlorides.	Nitrogen as Nitrates and Nitrites.	Phosphates from animal impurity.	Free Ammonia.	Albuminoid Ammonia.	Oxygen absorbed in 15 min.	Oxygen absorbed in 3 hours.				
1892.		SYDNEY WATER SUPPLY—												
Jan. ..	..	Main, Avoca-street, Randwick	6·86	2·45	Trace	None	None	·10	·32	·63	....	Slightly turbid ..	None	The analyses show that the Nepean supply maintains its reputation as a drinking water of high quality.
,, ..	..	Crown-street Reservoir	6·58	2·45	do	do	do	·08	·25	·48	....	Clear	do	
,, ..	..	Near Inlet, Prospect Reservoir	5·88	2·45	do	do	do	·08	·25	·48	....	do	do	
,, ..	..	Basin, head of canal	5·00	2·45	do	do	do	·08	·20	·49	....	do	do	
22 Feb. ..	..	Crown-street Reservoir	6·44	2·4	do	do	·01	·10	·28	·60	....	do	do	The Crown-street and Randwick samples are of normal quality; the water from Botany is not sufficiently aerated.
,, ..	..	Belmore-street, Randwick	6·58	2·4	do	do	None	·08	·35	·72	....	do	do	
,, ..	..	Engine Pond, Botany	6·16	2·6	do	do	do	·14	·49	1·23	....	Clear, but slightly peaty.	do	
11 Mar. ..	.	Crown-street Reservoir	6·70	2·45	do	do	do	·08	·20	·41	....	Clear	do	These figures approach very nearly the mean annual compositions of the samples submitted to analysis, and indicate the normal standard of good quality of the City water supply.
,, ..	..	Fountain, Allison Road, Randwick	6·58	2·45	do	do	do	·08	·20	·41	....	do	do	
,, ..	..	Prospect Reservoir, near inlet	6·58	2·45	do	do	·01	·07	·31	·68	....	do	do	
,, ..	..	Basin, at head of canal	6·58	2·45	do	do	·01	·07	·31	·68	....	do	do	
29 April ..	..	Crown-street Reservoir	7·28	2·4	do	do	·08	·10	·20	·57	....	do	do	The waters were found to be clear and of the usual standard of excellence.
,, ..	..	Main, Belmore-street, Randwick	7·28	2·4	do	do	None	·00	·20	·42	..	do	do	
,, ..	..	Prospect Reservoir	7·28	2·4	do	do	·06	·08	·20	·42	....	do	do	
,, ..	..	Basin, at head of canal	7·28	2·4	do	do	·06	·07	·20	·57	....	do	do	
23 May ..	..	Crown-street Reservoir	7·00	2·35	do	do	None	·09	·42	·80	....	do	do	These results indicate a high degree of purity. The five parts of free ammonia in a hundred million parts of the water found in the sample from Prospect Reservoir totally disappears on reaching Sydney; the probable explanation is that it became precipitated by contact action with the rust in the mains.
,, ..	..	Mains, Avoca-street, Randwick	7·23	2·35	do	do	do	·06	·35	·66	....	do	do	
,, ..	..	Prospect Reservoir	6·72	2·35	do	do	·05	·12	·42	·73	....	do	do	
,, ..	..	Basin, at head of canal	6·72	2·35	do	do	·05	·12	·42	·73	...	do	do	
18 June ..	..	Crown-street Reservoir	6·02	2·40	do	do	None	·04	·36	·60	...	do	do	The results obtained show that the water maintains its usual degree of excellence.
,, ..	-	Mains, Avoca-street, Randwick	5·60	2·40	do	do	do	·07	·36	·59	....	do	do	
,, ..	..	Prospect Reservoir	6·58	2·40	do	do	·01	·10	·36	·60	....	do	do	
,, ..	..	Basin, at head of canal	6·58	2·40	do	do	·01	·10	·36	·60	...	do	do	
6 July ..	..	Main, Avoca-street, Randwick	6·44	2·30	do	do	None	·05	·32	·60	....	do	do	Maintains its high standard of excellence.
,, ..	..	Crown-street Reservoir	6·16	2·30	do	do	do	·06	·32	·60	....	do	do	
,, ..	-	Basin, head of canal	6·02	2·30	do	do	do	·06	·32	·60	...	do	do	
,, ..	..	Prospect Reservoir	6·02	2·30	do	do	do	·06	32	·60	...	do	do	
10 Aug. ..	..	Crown-street Reservoir	6·15	2·4	do	do	do	·08	·25	·51	....	Clear and bright	do	There is no difference in the quantities of ammonia distilled over from the water, and only a slight difference in the amount of oxygen consumed. From this it follows that the water must be of uniform composition, and it may be described as an excellent drinking water fit for all household purposes.
,, ..	.	Mains, Avoca-street, Randwick	6·16	2·4	do	do	do	·08	·25	·51	...	do	do	
,, ..	..	Prospect Reservoir	6·30	2·4	do	do	do	·08	31	·64	..	do	do	
,, ..	..	Basin, at head of canal	6·86	2·4	do	do	do	·08	·31	·64	....	do	do	
19 Sept. ..	..	Crown-street Reservoir	6·58	2·40	do	do	do	·08	·36	·84	..	Clear	do	The result this month show that there is a perceptible diminution in the amount of albuminoid ammonia in the water, caused by its contact with air in the system of distribution.
,, ..	..	Avoca street, Randwick	6·44	2·40	do	do	do	·09	·36	·84	....	do	do	
,, ..	..	Prospect Reservoir	6·30	2·40	do	do	do	·10	·41	·96	....	do	do	
,, ..	..	Basin, at head of canal	6·30	2·40	do	do	do	·10	·41	·93	.. .	do	do	
22 Oct. ..	..	Crown-street Reservoir	6·00	2·4	do	do	do	·22	·46	·90	....	do	do	The most important fact to be noted in connection with this month's analysis is that the water in Crown-street Reservoir contains an unusual amount of organic impurity. The purest specimen is that collected at Randwick.
,, ..	..	Service Pipe, Post Office, Randwick	5·88	2·4	do	do	do	·06	·31	·60	...	do	do	
,, ..	..	Prospect Reservoir	6·02	2·4	do	do	do	·09	·35	·80	....	do	do	
,, ..	..	Basin, head of canal	6·16	2·4	do	do	do	·09	·35	·80	....	do	do	
31 ,, ..	..	Crown-street Reservoir	..	..	....	..	..	..	..	..	....	.....	..	An excellent drinking water. There evidently has not been sufficient care and precaution taken in collecting the October sample from Crown-street. In future no person should be permitted to touch the stoppers of the bottles.
,, ..	..	(October Samples)	...	...	....	...	...	...	...	...	....	.....	...	
,, ..	..	Fresh Samples	6·0	2·4	Trace	None	None	·08	·46	·90	....	Clear	None	
11 Nov. ..	..	Tap at Randwick	6·44	2·35	do	do	do	·10	·32	·71	....	do	do	The results indicate a water of great organic purity. There is nothing unusual this month to call for special remark.
,, ..	..	Crown-street Reservoir	6·16	2·35	do	do	do	·08	·35	·84	....	do	do	
,, ..	..	Basin, head of canal	6·16	2·35	do	do	do	·08	·49	·96	....	do	do	
,, ..	..	Prospect Reservoir	5·88	2·35	do	do	do	·08	·40	·96	.. .	do	do	
16 Dec. ..	..	Crown-street Reservoir	6·30	2·4	do	do	do	·08	·36	·72	....	do	do	The average quality of the Sydney Water Supply is fully indicated by the above representative samples, and shows itself to be an excellent water, suitable for drinking and all domestic purposes.
,, ..	..	From the Mains	2·80	2·4	do	do	do	·08	·36	·72	....	do	do	
,, ..	..	Prospect Reservoir	6·30	2·4	do	do	do	·08	·36	·80	...	do	do	
..	..	Basin, head of canal	6·38	2·4	do	do	do	·08	·30	·75	....	do	do	

ANALYSIS of Approximate Cost of Water Main Reticulation in the City of Sydney and Suburbs and the Percentage of Revenue on Cost, for the Year 1891.

District.	1891.						
	Mileage of Mains.	Properties Liable	Annual Revenue.	Annual Revenue per Mile.	Annual Revenue per Property.	Approximate Cost.	Per Cent. on Cost.
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Alexandria	7·8	1,678	1,601 3 4	205 5 2	0 19 0	6,115 18 8	26·1
Ashfield	32·3	2,375	3,847 12 0	119 2 4	1 12 4	30,215 12 4	12·7
Auburn	2·5	116	143 17 8	57 10 0	1 4 8	1,789 6 8	8·0
Balmain	29·5	5,287	7,276 8 11	246 13 0	1 7 4	31,352 8 0	23·2
Botany	2·7	205	199 17 11	71 7 0	0 19 6	3,080 17 5	6·4
Burwood	22·0	1,326	2,362 15 10	107 7 11	1 15 7	19,997 9 5	11·8
Campbelltown	5·1	204	431 7 11	84 6 0	2 2 3	4,272 17 1	10·0
Camperdown	8·8	1,423	1,902 1 2	216 2 7	1 6 8	8,369 12 8	22·7
Canterbury	5·5	215	323 1 0	58 14 9	1 10 0	3,841 0 0	8·4
City of Sydney	124·8	22,946	84,016 15 8	673 4 2	3 14 1	125,729 18 4	66·8
Concord	9·0	278	804 4 8	89 7 2	2 14 3	8,336 5 4	9·6
Darlington	3·2	731	865 1 11	270 6 9	1 3 8	1,886 15 10	45·8
Drummoyne	3·6	213	262 18 1	73 0 0	1 4 8	3,899 10 0	6·7
Enfield	3·9	237	304 1 1	77 18 9	1 5 7	3,565 8 6	8·8
Five Dock	4·2	118	173 17 8	41 8 0	1 9 5	4,550 8 0	3·8
Glebe	19·8	3,576	4,878 17 2	246 8 0	1 7 2	15,264 5 4	31·9
Granville	12·8	669	608 7 7	47 10 2	0 18 1	14,585 11 0	4·1
Hunter's Hill	...	..	.....	.....	.....	.....	...
Hurstville	7·0	199	240 3 6	34 6 2	1 4 1	5,628 6 8	4·3
The Islands	1·1	21	263 2 2	239 3 7	12 10 7	3,000 0 0	8·7
Kogarah	5·5	262	329 5 5	59 17 0	1 5 0	4,615 18 0	7·1
Leichhardt	40·6	3,860	3,863 1 2	95 2 9	1 0 0	33,808 12 0	11·4
Liverpool	12·8	397	1,018 13 10	79 11 9	2 11 3	10,340 16 4	9·8
Macdonaldtown	5·3	1,183	1,032 10 9	194 16 2	0 17 5	4,222 4 0	24·4
Marrickville	30·0	2,868	3,270 4 11	109 0 2	1 2 9	27,986 0 0	11·6
Newtown	22·4	4,100	4,598 12 8	205 3 9	1 2 9	25,921 17 0	17·7
North Botany	1·25	101	68 16 10	55 0 9	0 13 7	1,845 7 0	3·7
North Sydney	35·2	3,311	5,044 5 3	143 6 0	1 10 5	36,495 6 8	13·8
Paddington	16·2	3,869	5,775 19 11	356 10 0	1 9 10	15,376 7 0	37·5
Petersham	22·2	2,329	3,092 15 1	139 6 8	1 5 7	19,410 3 0	15·9
Prospect and Sherwood	·25	26	40 1 6	160 6 0	1 10 9	277 13 6	14·4
Randwick	17·8	1,031	2,471 19 4	138 16 0	2 7 11	15,676 15 0	15·7
Redfern	23·3	4,519	14,726 15 0	632 0 9	3 5 0	22,452 7 0	65·5
Rockdale	16·6	759	1,013 7 0	61 0 9	1 6 8	16,325 0 0	6·2
Rookwood	...	...	.....	.....	.....	.....	...
Ryde	...	..	.....	.....	.....	.....	...
St. Peters	9·0	1,012	883 16 3	98 4 0	0 17 5	8,546 2 4	10·5
Strathfield	8·3	337	1,081 15 1	130 6 7	3 4 2	8,374 7 0	12·9
Waterloo	12·1	1,932	2,414 8 0	199 10 0	1 5 0	10,925 3 8	22·0
Waverley	16·2	1,855	3,154 13 6	194 14 4	1 14 0	13,881 3 10	22·9
Willoughby	...	...	.....	.....	.....	.....	...
Woollahra	22·1	2,137	4,531 19 2	205 1 2	2 2 4	16,246 2 6	27·8
Total	623·2	77,705	168,919 15 11	267 3 9	2 3 4	588,208 17 5	28·7

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ANALYSIS of Approximate Cost of Water Main Reticulation in the City of Sydney and Suburbs and the Percentage of Revenue on Cost, for the Year 1892.

District.	1892.						
	Mileage of Mains.	Properties Liable.	Annual Revenue.	Annual Revenue per Mile.	Annual Revenue per Property.	Approximate Cost.	Per Cent on Cost
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Alexandria	8 6	1,717	1,671 19 6	194 8 0	0 17 7	6,716 18 8	24·8
Ashfield	32·8	2,514	3,747 7 0	114 4 9	1 9 9	30,635 0 4	12·2
Auburn	4·9	191	163 8 8	33 6 0	0 17 0	2,205 5 0	7·4
Balmain	30·7	5,425	5,495 4 9	146 8 4	1 0 2	32,105 7 0	14·0
Botany	3·9	265	260 9 0	66 15 2	0 19 7	3,697 8 0	7·0
Burwood	22·2	1,335	2,349 11 2	105 16 7	1 15 4	20,125 0 0	11·1
Campbelltown	5·1	211	381 11 10	74 16 4	1 16 0	4,272 17 0	8·4
Camperdown	10·0	1,466	1,476 2 9	147 12 2	1 0 0	9,046 16 8	16 3
Canterbury	5·5	234	232 18 8	42 6 9	0 19 9	3,841 0 0	6·0
City of Sydney	144 8	23,253	75,240 19 2	519 12 0	3 4 7	144,605 14 0	52·0
Concord	10·5	385	592 19 5	56 9 2	1 10 9	8,999 4 0	6·5
Darlington	3·2	723	857 4 3	267 18 7	1 3 8	1,886 16 0	45·4
Drummoyne	6·3	295	392 13 8	62 6 7	1 6 7	5,061 13 6	7·7
Enfield	6·3	290	348 3 2	55 5 0	1 4 0	4,265 0 0	8·3
Five Dock	6·9	149	227 14 0	34 8 0	1 10 4	8,926 8 0	2 5
Glebe	21·6	3,651	4,640 9 7	214 16 7	1 5 4	16,734 2 4	27·7
Granville	15·4	759	1,041 10 10	67 12 4	1 7 4	16,380 0 0	6·3
Hunter's Hill	9·5	465	1,015 18 8	106 18 7	2 3 7	7,971 4 0	12·7
Hurstville	13·2	479	620 2 11	46 19 4	1 5 9	8,434 0 0	7·3
The Islands	1·1	22	494 9 0	449 9 0	22 9 6	3,000 0 0	16·4
Kogarah	6·7	316	399 10 7	59 12 5	1 5 2	5,372 6 6	7·4
Leichhardt	41·0	4,301	4,127 12 3	100 13 4	0 18 0	35,341 0 0	11·7
Liverpool	12·8	455	1,360 10 9	106 5 0	2 18 9	10,364 16 4	13·1
Macdonaldtown	5·3	1,231	987 15 4	185 15 9	0 16 0	4,222 4 0	23·3
Marrickville	30·8	3,038	3,514 8 7	114 2 0	1 3 0	28,377 0 0	12·3
Newtown	25·5	4,251	5,002 7 3	196 3 2	1 3 0	26,541 12 0	18·8
North Botany	6·7	318	237 10 7	35 8 9	0 14 9	2,673 18 0	8·8
North Sydney	37·2	3,435	5,651 9 5	151 18 10	1 12 9	38,730 15 0	14·5
Paddington	17·4	3,912	5,767 18 2	331 9 7	1 9 4	16,937 7 0	34·0
Petersham	23·3	2,447	3,236 17 2	138 18 2	1 6 4	20,299 4 0	15·9
Prospect and Sherwood	1·15	37	50 19 6	44 5 2	1 7 4	1,512 3 0	3·3
Randwick	20·5	1,149	2,506 10 8	120 6 2	2 3 7	17,315 15 0	14·4
Redfern	23·9	4,680	12,093 15 4	506 0 0	2 11 7	22,532 7 0	53·6
Rockdale	20·6	989	1,160 14 5	56 6 9	1 3 4	17,877 0 0	6·4
Rookwood	3·2	170	270 14 1	84 12 10	1 11 9	2,362 9 0	11·4
Ryde	5·9	303	382 4 8	64 15 4	1 5 2	4,778 8 0	7·1
St. Peters	9·0	1,018	872 11 0	96 18 9	0 17 0	8,546 2 4	10·2
Strathfield	9·7	437	1,111 17 5	114 12 2	2 10 9	9,900 17 0	11·2
Waterloo	12·2	1,994	2,167 13 0	177 13 4	1 1 7	11,003 7 0	19·6
Waverley	18·4	1,997	3,003 14 3	163 4 9	1 10 0	14,889 5 4	20·1
Willoughby	11·5	338	382 9 10	33 5 2	1 2 7	7,148 10 6	5·3
Woollahra	24·8	2,223	4,266 12 11	172 0 9	1 18 2	19,048 10 0	22·3
Total	729·05	82,928	158,472 7 5	217 7 2	1 18 2	664,684 11 6	23·8

INFORMATION supplied to the Metropolitan Board of Water Supply and Sewerage, Sydney, as to the Consumption of Water, Revenue, and Working Expenses, &c., by some of the Principal Cities of Australia, England, and America.

Name of City, &c.	Storage Capacity available for Consumption.	Average Daily Supply.	Pumped Daily.	Revenue.		Maintenance and Management.		Percentage of Pumped Water to Daily Supply.	Percentage of Working Expenses to Revenue.	
				1890.	1891.	1890.	1891.		1890.	1891.
	Gallons.	Gallons.	Gallons.	£	£	£	£	%	%	%
Adelaide	850,000,000	3,750,000	20,000	56,189	59,236	13,604	14,904	½	24	25
Melbourne	5,400,000,000	26,000,000	Gravitation.	193,274	200,745	26,118	27,574	Gravitation.	13	13
Sydney	6,744,343,000	9,540,000	4,205,000	145,990	165,831	34,788	38,291	44	23	23
Belfast	2,415,000,000	10,000,000	Gravitation.	40,150	41,372	11,608	12,825	Gravitation.	29	31
Bradford	1,748,000,000	9,000,000	Uncertain.	116,422	115,992	19,988	18,311	Uncertain.	17	16
Bristol	850,000,000	6,735,000	Gravitation.	89,059	92,607	23,506	25,238	Gravitation.	26	27
Dublin	2,400,000,000	12,500,000	Gravitation.	48,297	48,953	46,000	48,302	Gravitation.	95	99
Dundee	2,354,000,000	8,000,000	Gravitation.	44,645	45,868	4,717	5,378	Gravitation.	10	11
East London	615,000,000	44,304,997	44,304,997	261,627	277,959	108,740	118,206	100	41	42
Edinburgh	2,648,000,000	15,000,000	Gravitation.	84,226	86,184	19,171	27,386	Gravitation.	30	32
Glasgow	7,283,000,000	42,500,000	2,980,000	.....	167,021	.....	125,055	7	...	74
Kent (London)	10,555,000	13,534,618	13,534,618	134,576	135,688	41,837	48,313	100	31	36
Lambeth	Not supplied.	19,736,466	19,736,466	.....	237,214	.....	83,805	100	35	38
Leeds	3,907,520,000	13,000,000	6,000,000	92,773	97,652	18,413	19,255	46	20	19
Liverpool	17,000,000,000	19,145,284	8,019,684	234,904	241,586	76,261	85,286	41	32	35
Manchester	5,985,000,000	23,649,342	Gravitation.	221,551	232,675	61,256	62,579	Gravitation.	27	27
Nottingham	9,775,930	4,998,681	4,998,681	61,281	62,097	19,442	20,771	100	32	33
Newcastle-on-Tyne	3,060,000,000	14,000,000	6,000,000	92,493	98,335	19,979	22,857	43	22	23
Southwark and Vauxhall (London)	84,000,000	26,285,803	26,285,803	.....	215,230	.....	93,754	100	...	44
Baltimore U.S.A.	1,852,000,000	35,961,755	4,556,094	132,483	135,685	27,918	33,486	13	21	24
Boston „	690,400,000	36,180,800	13,600,000	357,214	.....	118,943	.....	37	33	...
Brooklyn „	125,881,548	44,160,000	44,160,000	296,722	.....	158,826	.....	100	53	...
Chicago „	Pumped direct into mains.	240,000,000	240,000,000	455,372	.....	190,185	.....	100	41	...
Cincinnati „ *	85,200,000	27,197,605	27,197,605	134,848	.....	12,347	.....	100	9	...
Cleveland „	96,000,000	25,789,662	23,049,938	.....	111,417	.....	23,508	89	...	21
Detroit „	Pumped direct into mains.	26,400,000	26,400,000	80,807	81,037	20,676	19,914	100	25	24
Montreal Canada	31,200,000	11,519,769	11,519,769	112,781	161,139	24,470	33,333	100	21	21
New York U.S.A.	16,000,000,000	128,000,000	16,000,000	609,648	702,737	114,583	127,085	13	19	18
Philadelphia „ *	695,431,051	106,100,000	106,100,000	491,049	.....	206,800	.....	100	42	...
Pittsburgh „	104,000,000	32,000,000	32,000,000	125,000	.....	20,833	.....	100	16	...
St. Louis „	24,000,000	32,000,000	32,000,000	235,851	.....	69,831	70,281	100	29	...
St. Paul „	12,800,000	6,400,000	2,800,000	61,358	62,143	7,816	7,694	45	12	12
Spring Valley, San Francisco „	24,000,000,000	16,000,000	10,400,000	315,914	.....	.....	.....	65	...	...
Toronto Canada	32,000,000	11,506,343	11,506,343	85,455	.....	35,860	.....	100	42	...

* These denote that the information as requested has not been furnished, but compiled from Annual Reports.

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INFORMATION supplied to the Metropolitan Board of Water Supply and Sewerage, Sydney, as to the Water Rates and Charges by some of the Principal Cities of Australia, England, and America.

Name of City, &c.	Assessment.					Meter.
	£25 house.	£50 house.	£100 house.	£150 house.	£300 house.	Per 1,000 gals.
Adelaide	1 5 0	2 10 0	5 0 0	6 11 0	8 16 0	1s. to 1s. 9d.
Melbourne	0 12 6	1 5 0	2 10 0	3 15 0	7 10 0	1s.
Sydney	0 12 6	1 5 0	2 10 0	3 15 0	7 10 0	1s.
Belfast	1 0 10	2 1 8	4 3 4	6 5 0	12 10 0	5½d. to 10d.
Bradford	1 15 0	3 5 0	5 10 0	8 0 0	15 0 0	6½d. to 9d.
Dublin	0 14 7	1 9 4	2 18 8	4 8 0	8 16 0	4d. to 6d.
Dundee	1 7 1	2 14 2	5 8 4	8 2 6	16 5 0	7d. to 8d.
East London	1 5 0	2 10 0	5 0 0	7 10 0	15 0 0	6d. to 9d.
Edinburgh	0 15 8	1 11 3	3 2 6	4 13 9	9 7 6	6d.
Kent (London)	1 8 0	2 10 0	4 0 0	6 0 0	12 0 0	10d.
Leeds	1 1 0	2 0 0	3 10 0	6 0 0	12 0 0	6d.
Liverpool	1 8 2	2 16 3	5 12 6	8 8 9	17 17 6	7d. to 10½d.
Manchester	1 5 0	2 10 0	5 0 0	7 10 0	15 0 0	4d. to 6d.
Nottingham	1 5 0	2 2 0	3 0 0	4 10 0	9 0 0	6d. to 1s.
Newcastle-on-Tyne	1 5 0	2 0 0	3 0 0	4 10 0	9 0 0	5d. to 1s. 2d.
Southwark and Vauxhall (London)	1 5 0	2 10 0	5 0 0	7 10 0	15 0 0	6d. to 9d. high level 25 per cent. addition, minimum consumption 25,000 gallons per quarter.
Baltimore, U.S.A.	From 12s. 6d. for 12 ft. house frontage to £2 12s. 6d. for 22 ft. and over house frontage.					4d.
Brooklyn „	For 1 storey house of 16 ft. frontage, 16s. 8d. 1 storey of 50 ft., £3 10s. 10d., to 5 storeys of 50 ft., £4 7s. 6d. Corner houses count both sides.					1s.
	Assessment.					
	£25 house.	£50 house.	£100 house.	£150 house.	£300 house.	
Boston „	1 0 10	1 0 10	1 0 10	1 5 0	1 9 2	4d. to 7d. per 100 ft. Minimum charge, £3 2s. 6d. per annum.
Chicago „	From 12s. 6d. for 12 ft. frontage to £6 2s. 9d. for 87 ft. frontage, in addition 2s. 1d. per occupier					4d. to 5d.
Detroit „ *	For each family, £1 0s. 10d. per annum.					2d.
	Assessment.					
	£25 house.	£50 house.	£100 house.	£150 house.	£300 house.	
Montreal, Canada	2 9 0	4 8 6	8 0 0	12 0 0	23 0 0	
New York U.S.A.*	From 16s. 8d. for 16 ft. house frontage of 1 storey to 75s. for 50 ft. house frontage of 5 storeys.					8d.
Philadelphia „	.....					4½d.
Pittsburg „	From 10s. 5d. for 1 room to £2 3s. 4d. for 10 rooms.					2½d. to 10d.
St. Louis „	From 2s. 1d. to 4s. 2d. per room, according to number of residents.					5d. to 1s. 3d.
St. Paul „	From 12s. 6d. for 1 family, 4 rooms, to 33s. 2d. of 10 rooms; above this 12s. 6d. per family.					5d. to 10d.
Spring Valley (San Francisco) „	From 32s. 6d. for buildings occupying 500 square feet or under, to 95s. for buildings covering 2,000 square ft.					2s. 4d.
Toronto, Canada	4s. 2d. per room, and 4s. 2d per inmate.					1s.

NOTE.—Where no amounts are specified under the above headings the required information has not been furnished.

*These denote that the information as requested has not been furnished, but compiled from Annual Reports.

INFORMATION supplied to the Metropolitan Board of Water Supply and Sewerage, Sydney—*continued.*

Special Fees.

Name of City, &c.	Baths.	Building purposes.	Gardens.	Gas Engines.	Stock.	Steam Engines.	Motors.	Urinals.	Washhand Basins.	Water Closets.
Adelaide	....	....	....	....	....	....	....	....	....	....
Melbourne	....	....	....	....	10/-	10/- per h.p.	....	....	....	....
Sydney	Nil	½d. per cubic yd. on cubical contents	10/- per 750 super. sq. ft.	5/- per 2 h.p.	5/-	20/- per 3 h.p.	40/- per ½ h.p.	Nil	Nil	Nil
Belfast	....	½d. to 1½d. per sq. yd.	....	2/6 per h.p.	5/- to 10/-	20/- per h p.	20/-	5/- to 50/-	5/- to 60/-	7/6 to £8
Bradford	3/ to 12/-	6/8 per cent. on contract	....	....	5/-	....	....	5/-	....	20/-
Dublin	....	....	20/- to 40/-	....	20/- to 40/-	....	....	....	....	....
Dundee	....	1 per cent. on cost	Special agreement	3/- to 5/- per h.p.	8/6	30/- per h.p.	....	20/-	....	20/-
East London	....	....	....	....	....	....	....	....	....	....
Edinburgh	....	....	10/6 to 21/-	....	5/-	Up to 9 h.p. 42/-	....	....	....	....
Kent (London)	....	....	....	....	....	....	....	....	....	....
Leeds	....	....	....	....	5/-	....	....	10/8	....	5/4
Liverpool	....	4d. in the £ on the building, or 5s. per £100 on contract	10/ per 100 sq. yds.	....	5/-	....	....	....	....	....
Manchester	10/-	½d. per sq. yd. of brick	10/- per 800 sq. yds.	....	10/-	....	....	....	....	10/-
Nottingham	....	1d. to 2d. per sq. yd.	....	Meter only	5/-	Meter only	Not allowed.	Meter only	....	4/- to 12/
Newcastle-on-Tyne	....	....	....	....	....	....	....	....	....	6/- to 10/-
Southwark & Vauxhall (London)	....	....	....	....	....	....	....	....	....	4/- to 12/-
Baltimore, U.S.A.	41/8	....	....	....	6/3	12/6 per h p.	....	....	....	....
Brooklyn ,,	12/6	2½d. per 1,000 bricks	....	....	8/4	....	....	....	....	8/4
Boston ,,	....	3½d. per 1,000 bricks	....	....	....	25/- per h p.	....	....	....	20/10 to 41/8
Chicago ,,	12/6	2½d. per 1,000 bricks	12/6 per 1,000 sq. feet	....	10/5	16/8 per h.p.	....	4/2	6/3	12/6
Detroit ,, *	....	....	....	....	....	....	....	....	....	....
Montreal, Canada	....	3d. per 1,000 bricks	....	....	8/4	29/2 per h.p.	....	4/2	....	16/8
New York, U.S.A.*	....	5d. per 1,000 bricks, 1/8 per 100 yards for plastering	....	....	4.2 to 8/4	41/8 per h.p.	....	8/4	....	20/10
Philadelphia ,, *	....	....	....	....	....	....	....	....	....	....
Pittsburgh ,,	From 10/5	5d. per 1,000 bricks	From 33/4	....	10/5	14/7 per h.p.	....	From 6/3 to 33/2	12/6	From 12/6 to £5/4/2
St. Louis ,,	....	5d. per 1,000 bricks, ½d. per sq. yard for plastering	9/9 for 25 ft. frontage	....	12/6	1/8 per sq. ft. of fire surface.	....	....	....	20/10 to 41/8
St. Paul ,,	8/4	5d. per 1,000 bricks.	12/6 for 50 ft.	20/10 for 7 h.p.	8/4	10/8 per h p.	20/10	12/6	....	8/4
Spring Valley (San Francisco) U.S.A.	1/8 to 3/9	6d. per 1,000 bricks	....	4/2 to 29/2 h p.	1/8	4/2 to 29/2 per h.p.	....	5d. to 1/8	....	1/- to 3/6
Toronto, Canada	....	2½d. per barrel of lime	From 16/8 ₱ 1,000 feet	25/ per h.p.	4/2	29/2 per h.p.	....	20,10	8/4	20/10

NOTE—Where no amounts are specified under the above headings the required information has not been furnished.

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THE

The Influence of the Board's Operations upon the Health of the City of Sydney.

The usual criteria of the health of a city are the general death-rate, the infant mortality, and the zymotic death-rate.

These criteria show a very marked decrease in the mortality of the past year, 1892, as compared with the previous years; and, as the mortality has diminished to very considerable extent during the period of the Board's operations, it will not be wrong to presume that this good result is due, in some measure at any rate, to the work performed by the Board; more especially as it is well-known that the institution of a good water-supply and a good system of sewerage is a very potent factor in the avoidance of preventable disease.

Typhoid fever, which was formerly our annual scourge, claiming in years gone by as many as 100 victims annually, is happily now so little with us that during the year 1892 only 19 persons died from this disease.

Out of the 87 deaths which were due during the past year (1892) to diarrhœal diseases, 60 per cent. occurred among children under one year of age, the result, most probably, of injudicious feeding. The state and nature of the soil has much to do with disease, more especially such diseases as typhoid fever and phthisis. Damp soil has a great effect in fostering phthisis, and, when we mark the decrease in the death rate from this disease during late years, we notice the good effect of the sewerage provided by the Board in our low-lying localities. In the appendix will be found various tables showing the number of deaths in the metropolis during past years, the deaths per 10,000 of the population from general causes, phthisis, and preventable diseases, and a statement of the beneficial effect of the institution of sanitary works in some of the towns of Great Britain. From these tables will be readily learnt the decrease in the general death-rate, in the death-rate from preventable diseases, especially enteric fever and from phthisis; and, further, how favourably the results obtained here since the institution of the Board will compare with those obtained in English towns after the establishment of sanitary works.

In estimating the zymotic death-rate I would have liked to have shown the results in the areas of the Board's operations, but owing to a want of sufficient data I have been unable to do so; and, for this reason, I have not gone fully into the suburban zymotic death-rate, although I have shown upon the chart.

If a monthly return of the addresses of persons suffering and dying from zymotic diseases was supplied to me, I should then be able to make a proper classification; and I hope the Board will make an official application for this return.

The zymotic death-rate for the City of Sydney was, at the end of December, 1891, 3 per 10,000 of the population, but it fell at the end of January, 1892, to 2·9, and at the end of February to 1·5. A slight increase in the number of deaths from diseases of a diarrhœal nature caused the rate to rise at the end of March to 1·8; but during the succeeding months it fell continuously till it stood at ·6 at the end of June. A minor epidemic of diphtheria raised the rate to ·8 at the end of July, but it afterwards decreased, so that at the end of September it was again ·6. At the end of October it rose to ·7, and the re-appearance of influenza and diarrhœa brought it, at the end of November, to 1·9. At the end of December, 1892, the zymotic death-rate for the City of Sydney rose to 3 per 10,000 of the population; but as the largest proportion of persons dying during this month from zymotic diseases consisted chiefly of young children, I do not think the sudden rise was due to defective sanitation.

THEO. M. KENDALL.

APPENDIX A.

METROPOLIS.

Year.	Population.	Deaths under-				Total Deaths.	
		One Year.		Five Years.			
		Number.	Rate per 10,000	Number.	Rate per 10,000.	Number.	Rate per 10,000.
1887	316,546	1,712	54·08	1,650	52·1	5,165	163·1
1888	333,551	2,128	63·4	3,080	91·1	6,313	189·2
1889	351,470	2,323	66·09	4,273	121·1	6,431	182·9
1890	370,357	1,854	50 6	2,516	67 9	5,591	150·9
1891	389,655	2,175	55·7	2,821	72·4	6,418	169·8
1892	406,480	1,830	45 0	2,442	60·0	5,512	135 6

DEATHS DUE TO PREVENTABLE DISEASES.

Disease.	1887.		1888.		1889.		1890.		1891.		1892.	
	No.	Rate per 10,000.	No.	Rate per 10,000.	No.	Rate per 10,000.	No.	Rate per 10,000.	No.	Rate per 10,000.	No.	Rate per 10,000.
Diphtheria	62	1·9	139	4·1	188	5·2	149	4·02	179	4·5	123	3·03
Enteric Fever	191	6·3	182	5·7	209	5·9	143	3 8	109	2·7	80	1·9
Diarrhœa	318	10 3	353	10 5	384	10 9	263	7·1	288	7 3	277	6·5
Total	571	11 4	674	20·2	771	21·6	555	14 9	566	14·5	480	11·8

APPENDIX A—*continued.*

DEATHS FROM TYPHOID AND ENTERIC FEVER, CITY OF SYDNEY.

Year.	Population.	Deaths.	Rate per 10,000
1879	98,824	77	7·79
1880	102,161	54	5·29
1881	104,370	58	5·56
1882	108,345	96	8·86
1883	112,980	77	6·82
1884	118,645	100	8·43
1885	122,175	93	7·61
1886	123,645	69	5·58
1887	122,770	46	3·75
1888	119,590	50	4·18
1889	116,490	59	5·67
1890	113,470	43	3·79
1891	109,090	29	2·66
1892	107,730	19	1·76

DEATH RATE FROM PHTHISIS IN THE METROPOLIS.

Year.	Rate per 10,000.
1888	16·8
1889	14·1
1890	14·7
1891	14·3
1892	12·0

HEALTH of the CITY and SUBURBS for 1892.

District.		Deaths during Quarter ending— March 31.	June 30	Sept. 30.	Dec. 31.	Total Deaths.	Population.	Rate of Deaths per 1000 Population.
Sydney		355	309	282	338	1,284	107,730	11·91
Hospitals, Asylums, &c		124	109	131	134	.....	.....	.....
Suburbs—								
North Western	Balmain	86	68	57	78	289	62,350	10·90
	Leichhardt	45	48	37	61	191		
	Glebe	52	35	51	62	200		
West Central	Newtown	65	42	36	53	196	37,610	11·43
	Camperdown	20	19	18	26	83		
	Macdonaldtown	14	21	11	35	81		
	St. Peters	23	15	14	18	70		
East Central	Redfern	80	65	50	84	279	49,100	13·64
	Darlington	15	14	10	11	50		
	Waterloo	40	28	29	44	141		
	Alexandria	34	27	16	53	130		
	Botany	17	18	13	15	73		
Eastern	Paddington	47	59	34	56	196	47,130	9·40
	Randwick	8	12	8	17	45		
	Waverley	31	20	23	24	98		
	Woollahra	31	21	18	34	104		
Western	Ashfield	35	21	28	31	115	55,070	10·13
	Burwood	34	35	32	34	137		
	Five Dock and Drummoyne	8	5	6	9	28		
	Marrickville	34	42	29	48	153		
	Petersham	32	33	28	34	127		
Southern	Canterbury	6	8	4	7	25	13,920	9·48
	Hurstville	6	8	7	8	29		
	Kogarah	7	5	4	10	26		
	Rockdale	15	14	13	10	52		
North Shore	N. Sydney and Willoughby	65	69	57	62	253	33,750	10·46
	Manly	14	13	6	9	42		
	Ryde and Hunter's Hill	12	16	14	16	58		
Hospitals, Asylums, &c.		131	106	116	121	374	.....	.....

SAVING OF LIFE.

Name of Town.	Population—1881.	Population—1892	Increase—per cent	Death-rate per 10,000—1884.	Death-rate per 10,000—1892.	Decrease—per cent.	Zymotic Death-rate per 10,000—1884.	Zymotic Death-rate per 10,000—1892.	Decrease—per cent.
London	4,019,361	4,263,294	6 07	203·0	171·0	15 76	33·0	33·1	.....
Brighton	112,954	116,424	3.07	180·0	150·0	16·67	17 0	23·1	.....
Portsmouth	113,059	163,667	23 00	194·0	154·0	20·62	30 0	28 9	3.66
Bristol	215,457	223,592	3 77	184 0	161 0	12·5	18 0	26·0	.....
Cardiff	93.468	166,181	77 79	244·0	173·0	29·1	48·0	42·4	11·67
Birmingham	421,258	483,526	14·78	214·0	184·0	14·02	39 0	37·7	3·33
Nottingham	205,298	215,395	4·68	229·0	153 0	34·19	38 0	33·9	10 77
Liverpool	573,202	518,790	*10 36	252·0	223·0	11·51	45 0	38·2	15·11
Manchester	338,296	510,998	51·05	264·0	203·0	23·1	36·0	35·9	·03
Oldham	122,676	131,221	9·50	245 0	175·0	24·49	35·0	37 7	.....
Bradford	209,564	219,262	4·62	201·0	164·0	18·40	24·0	26 9	.....
Leeds	327,324	375,540	14 73	242 0	186·0	23·14	49·0	43·3	11·63
Newcastle-on-Tyne	151,325	192,205	26·18	231·0	169·0	26·84	32 0	19·0	40·68

*Decrease. Area being altered.

Metropolitan Board of Water Supply and Sewerage—WATER REVENUE ACCOUNT for year ending 31st December, 1892.

Dr.	£ s. d.	£ s. d.	Cr.	£ s. d.	£ s. d.
To Balance brought forward		46,642 12 9	*Maintenance.*		
Water rates	115,146 15 10		By Repairs to machinery	146 0 2	
Meter accounts	32,292 11 5		Repairs to mains	2,611 16 7	
New mains revenue	1,478 7 3		Repairs to buildings	29 11 6	
Building supply	2,925 16 0		Repairs to reservoirs	68 0 0	
House supply	2,059 11 0		Working expenses and charges	2,176 8 1	
Drilling fees	590 2 0		Coals	1,729 17 5	
Sundry water supply	357 4 4		Meter tap testing account	1,144 7 1	
Plumbers' licenses	240 10 0		Rents paid	1,100 4 0	
Plumbers and others	269 14 0		Maintenance of canal	3,680 14 10	
Rents received	115 11 0		Repairs to aqueduct	2,774 10 9	
Stock account	2,547 0 0		Repairs to main conduit	373 19 5	
Garden account	1,013 10 0		Wages	15,255 2 3	
Meter testing account	1,008 11 2				31,090 12 1
Agistment	92 13 9		*Management.*		
Royalty	35 16 6		President's salary and Board fees	1,041 18 8	
Miscellaneous receipts	151 9 6		Salaries	10,747 17 6	
	160,325 3 9		Legal expenses	20 13 1	
Less—			Stationery and printing	641 14 4	
Rates cancelled	4,438 16 9		Advertising and incidental expenses	1,535 10 9	
		155,886 7 0			13,987 14 4
			Depreciation account		877 12 3
			Interest on Debentures—		
			£80,000, twelve months, to December, 1892	4,000 0 0	
			Interest on Loan Account—		
			£2,499,970, twelve months, to December 1892, at 4%	99,998 16 0	
			£339,160 5s. 10d., twelve months, to December, 1891, at 3½%	11,870 12 2	
					115,869 8 2
					161,825 6 10
			Balance		40,703 12 11
		£202,528 19 9			£202,528 19 9

Sydney, February 14th, 1893.

MELBOURNE GREEN,
Accountant.

Metropolitan Board of Water Supply and Sewerage—BALANCE-SHEET, WATER, 31st December, 1892.

Dr.	£ s. d.	£ s. d.	Cr.	£ s. p.	£ s. d.	£ s. d.
To amount advanced by Treasury Loans to May 25th, 1888	2,076,313 0 0		By Metropolitan Water Supply Works—amount expended to May 25th, 1888, from loans by New South Wales Government			2,499,970 0 0
Interest	423,657 0 0		Lands		143,102 14 2	
		2,499,970 0 0	Reservoirs	46,007 4 9		
Amount advanced by Treasury from Loan 52 V. 17 to Dec. 31st, 1890	150,000 0 0		„ Ashfield	2,362 14 1		
Amount advanced by Treasury from Loan 54 V. 33 to Dec. 31st, 1890	78,079 10 7		„ Hurstville	1,731 8 4		
			„ Cecil Hill, Liverpool	1,202 18 4		
Amount advanced by Treasury from Loan 54 V. 33 to Dec. 31st, 1891	111,080 15 3				51,304 5 6	
			Mains		241,453 18 8	
	£ s. d.	339,160 5 10	Buildings		22,370 8 7	
Amount advanced by Treasury from Loan 54 V. 33 to Dec. 31st, 1892	12,724 7 6		Machinery		36,812 7 5	
Amount advanced by Treasury from Loan 55 V. 35 to Dec. 31st, 1892	82,065 4 3	94,789 11 9	Working plant and tools		3,409 1 11	
			New Mains	357,328 1 9		
		433,949 17 7	„ Campbelltown	4,432 16 4		
City Council Water Fund		380,661 15 11	„ Liverpool	11,570 1 4		
Debentures		80,000 0 0	„ Smithfield	2 17 7		
Colonial Treasurer—Loan Account—new offices		46,059 15 3			373,333 17 0	
„ „ Stores Advance Account		30,004 7 8	Sundry Works		480 18 2	
„ „ Advance to Refund Over-payments		21 19 8	Meter testing account		501 9 11	
„ „ Advance for Summons Fees		250 4 4	New offices		50,822 14 9	
„ „ Advance Account for Wages		468 12 5	Furniture		1,789 0 2	
„ „ Board's Advance Account Vote, 1892		1,402 0 4	Stores		41,979 4 0	
Outstanding Accounts due to contractors		7,029 2 9	Samples account		32 14 9	
Contractors and others—amounts due for deposits on contracts		1,642 16 8				967,392 15 0
Rates overpaid		2,309 11 0	Rates outstanding		19,168 9 1	
Balance		46,703 12 11	Accounts „		3,120 9 3	
						22,288 18 4
			Summons fees		174 9 0	
			A.J.S Bank (summons fees)		75 16 4	
						250 4 4
			E.S. and A.C. Bank (contractors' deposits)			1,642 16 8
			Refund over-payment account, balance			21 19 8
			Colonial Treasurer—balance cash account		32,209 12 0	
			„ „ vote, 1891		183 17 8	
			„ „ trust account, wages, &c.		13 13 11	
						32,412 3 7
			Board's advance account, balance at bank			468 12 5
			Dishonored cheques			26 6 6
	£	3,524,473 16 6			£	3,524,473 16 6

Sydney, February 14th, 1893.

MELBOURNE GREEN,
Accountant.

Metropolitan Board of Water Supply and Sewerage—SEWERAGE REVENUE ACCOUNT for Year ending 31st December, 1892.

Revenue.	£ s. d.	£ s. d.
Balance brought forward		24,169 13 4
To Sewerage rates	83,407 5 8	
New sewers	1,642 18 10	
Sewerage service	1,947 1 9	
Drainers' licenses	147 0 0	
Sale of plans	1,013 2 6	
„ farm produce	217 14 3	
Drainers and others	9 2 0	
Compulsory drainage	372 19 10	
Rents received	285 8 6	
Miscellaneous receipts	89 5 0	
	89,031 18 4	
Less—		
Rates cancelled	1,104 19 6	
		87,926 18 10
		£112,096 12 2

Expenditure.	£ s. d.	£ s. d.
Maintenance.		
By Working expenses and charges	154 17 9	
Repairs to sewers	908 1 5	
Rents paid	1,102 0 0	
Wages	12,805 9 7	
Inlet and Outlet Houses	624 10 0	
Sewage farm maintenance	887 17 1	
		16,382 15 10
Management.		
President's salary and Board fees	1,041 18 8	
Salaries	8,533 13 5	
Stationery and printing	611 18 6	
Advertising, incidental expenses, &c.	735 2 4	
		10,922 12 11
Depreciation		220 12 10
Interest on—	£ s. d.	
City Council Debentures...	62,000 0 0—12 months at 6 %	3,720 0 0
„ „	38,000 0 0—12 „ 5 %	1,900 0 0
Redfern „	30,000 0 0—12 „ 4 %	1,200 0 0
	130,000 0 0	
Loans, 43 V. 11	400,000 0 0—12 „ 4 %	16,000 0 0
„ 46 V. 23	100,000 0 0—12 „ 3½ %	3,500 0 0
„ 48 V. 26	20,000 0 0—12 „ 3½ %	700 0 0
„ 50 V. 28	250,000 0 0—12 „ 3½ %	8,750 0 0
„ 52 V. 17	31,432 7 2—12 „ 3½ %	1,110 2 5
	801,432 7 2	
Sewerage Construction Branch, loans	£ s. d.	
to 31st December, 1891	149,288 14 4 at 3½ %	5,225 2 1
Waterloo loan, 52 V. 17	9,578 0 0 „ 3½ %	335 4 7
„ „ 53 V. 24	5,581 7 3 „ 3½ %	195 6 11
General „ 54 V. 33	77,675 4 7 „ 3½ %	2,718 12 8
Western Suburbs loan, 54 V. 33	3,469 1 5 „ 3½ %	121 8 4
Macdonaldtown loan, 53 V. 23	2,331 5 1 „ 3½ %	81 11 10
Paddington loan, 53 V. 23	3,860 0 0 „ 3½ %	135 2 0
Debentures and overdrafts paid	158,110 5 4 „ 4 %	6,324 8 2
		52,016 19 0
		79,543 0 7
Balance		32,553 11 7
		£112,096 12 2

Sydney, February 14th, 1893.

MELBOURNE GREEN,
Accountant.

Metropolitan Board of Water Supply and Sewerage—BALANCE-SHEET, SEWERAGE, 31st December, 1892.

Dr.	£ s. d.	£ s. d.	Cr.	£ s. d.	£ s. d.	£ s. d.
To amount advanced by Treasury—			By Government Sewerage Works, to 30th November, 1889			903,062 5 9
From Loans, 30th November, 1889	801,432 7 3		Sydney Municipal Council Works, 31st December, 1889		248,974 13 1	
,, Revenue, 30th November, 1889	101,629 18 6					
		903,062 5 9	Redfern ,, ,, 31st December, 1889	22,712 11 4		
,, Loans, 31st December, 1889	7,833 14 4		,, ,, New Sewers	7,287 8 8		
,, ,, ,, 1890	60,122 19 5				30,000 0 0	
,, ,, ,, 1891	81,332 0 7					
	149,288 14 4		Randwick Sewerage Works		9,000 0 0	
,, Revenue, 31st December, 1891	1,801 1 6		Darlington Council		5,000 0 0	
,, Loans, 31st December, 1892	83,840 13 4		New Sewers (Government)		234,930 9 2	
		234,930 9 2	,, (Board)		154,698 7 4	
,, Waterloo Loan, 52 V. 17		9,578 0 0	Ventilating shafts		16,729 6 9	
,, ,, ,, 53 V. 23 to 31st December, 1891	5,581 7 3		Land		340 6 8	
,, ,, ,, 53 V. 23 ,, 1892	1,327 2 4		New buildings		2,707 9 6	
		6,908 9 7	Sewerage farm stock		182 11 4	
,, General Loan, 54 V. 33, to 31st December, 1891	77,675 4 7		Sundry works	76 16 6		
,, ,, ,, 54 V. 33, ,, 1892	55,235 3 0		,, Sewerage farm	2,329 10 2		
		132,910 7 7			2,406 6 8	
,, Western Suburbs Loan, 54 V. 33, to 31st December, 1891	3,469 1 5					
,, Western Suburbs Loan, 54 V. 33, to 31st December, 1892	18,529 11 2		Flushing hydrants		274 14 10	
		21,998 12 7	Working plant and tools		1,763 4 2	
,, Macdonaldtown Loan, 53 V. 23, to 31st December, 1891	2,331 5 1		Furniture and fixtures		1,413 12 3	
,, Macdonaldtown Loan, 53 V. 23, to 31st December, 1892	3,259 2 10		Stores		57 4 0	
		5,590 7 11				708,483 5 9
,, Paddington Loan, 53 V. 23, to 31st December, 1891		3,860 0 0	Rates outstanding		9,597 7 4	
,, Contractor's advance, 54 V. 33		2,770 7 11	Accounts ,,		3,560 9 2	
Debentures, City Council		100,000 0 0				13,157 16 6
,, Redfern Council		30,000 0 0	Colonial Treasurer—			
City Council Overdraft and Debentures paid by Treasury		158,110 5 4	Balance Cash Account		27,002 6 9	
Outstanding accounts due to contractors		5,965 1 1	,, Trust Account		5 0 0	
Colonial Treasurer—Advance Account		2,283 2 5				27,007 6 9
Rates overpaid		1,189 13 10				
Balance as per Revenue Account		32,553 11 7				
	£	1,651,710 14 9			£	1,651,710 14 9

Sydney, February 14th, 1893.

MELBOURNE GREEN,
Accountant.

ANNUAL REPORT OF ASSESSOR'S DEPARTMENT.

Sir, 31st January, 1893.

I have the honor to submit to the Board a review of the work performed in this branch during the year 1892.

Rate Notices.

During the year 208,207 notices were served by the officers of this branch, being an increase of 16,993 above the number served in 1891, the average number served per serving day being about 800. The increase follows the laying of mains and sewers in parts which were not previously reticulated, new buildings erected, and final notices served for the recovery of rates.

New Mains and New Sewers.

The number of properties which became liable for rating from new mains and new sewers is 5,268, an increase of 858 over the number which became liable during 1891. This increase is caused by the extensive lengths of mains and sewers which were laid. Three new districts became liable for water rates during the year, viz., the Boroughs of Hunter's Hill and Ryde, also Bankstown, which is not incorporated. Six Municipalities became liable for sewerage rates, viz., Glebe, Macdonaldtown, Newtown, Petersham, Randwick, and Waverley.

New Assessments.

The new buildings assessed and rated by the Department during the year numbered 4,318, while in 1891 the number only reached 2,217.

The work of assessing the new buildings has been faithfully carried out, whilst the mutual interests of the public and the Department have been closely observed. It may be noticed, however, that notwithstanding the great depression experienced the new buildings completed during the year nearly doubled the number of those completed during the preceding year.

Building Fees.

The charge of ½d. per cubic yard on the cubical contents of buildings which came into operation on the first of the year, and superseded the former method of charging either by meter or at the fixed rate of 5s. per room, at first caused considerable discontent between the builders and the Department, but the concession which was afterwards made by allowing meters to be used where buildings were being erected for other than residential purposes, such as warehouses, &c., considerably smoothed the matter over—so much so that complaints are now but seldom heard.

The operation of the new by-law increased the revenue by £1,514 11s. 0d. over 1891.

Recovery of Rates.

The rates received during the year amounted to £245,879 1s. 2d., this being an increase of £4,034 10s. 11d. over the amount received during 1891. The arrears outstanding on the 31st December amounted to £35,446 14s. 10d.; this includes the accumulating arrears on churches and charitable institutions, which now amount to £2,893 19s. 4d., and for which no steps have been taken to recover: also the amount due by Government. There is an increase of 3,292 in the final notices served, but a decrease of 536 in the number of summonses issued as compared with 1891. There are two inferences which may be drawn from this:—firstly, ratepayers delay the payment of rates until the final notices are served; secondly, they now understand that if the amount is not paid by the expiry of the final notice that a summons will be issued.

The attendance of a cashier to receive rates at the suburban council chambers is now being more fully appreciated by the public, inasmuch that the following Municipalities, where a cashier had not previously attended, applied to have the same privileges extended to their districts, viz., Burwood, Ashfield, Camperdown, Auburn, and Rookwood.

From a general observation of the very depressed times experienced in all circles, and which have effected all classes of the people, rich and poor alike, the Board are to be congratulated upon the satisfactory increase in the amount received.

Summonses issued in 1892.

Balmain Court	311
Campbelltown Court	25
Central Court	1,227
District Court	343
Liverpool Court	13
Newtown Court	1,382
North Sydney Court	390
Parramatta Court...	111
Redfern Court	557
Ryde Court	70
Water Court	1,300
Total	5,729

Water

Assessor's Report—*continued.*

Water and Sewerage Service.

The Waste-water Inspectors having completed their house-to-house inspection of the under named districts, I am able to report the exact number of properties in these districts connected to the 31st December. The remaining districts are now in hand.

Districts.	Properties rated for water, including vacant land.	Properties connected to Water Service.	Properties rated for sewerage, including vacant land	Properties connected to Sewerage Service.
Burwood	1,335	1,038	.....	.....
Canterbury	234	39	.....	.....
Concord	385	171	.....	.....
Denison Ward	4,272	4,153	3,850	3,559
Darlington	723	723	723	720
Enfield	284	153	.....	.....
Homebush	93	21	.....	.....
Hurstville	479	159	.....	.....
Kogarah	316	153	.....	.....
Macquarie Ward	2,140	1,888	2,000	1,825
Marrickville	3,038	2,712	.....	.....
North Sydney	3,435	2,620	.....	.....
Phillip Ward	2,179	2,393	2,377	2,374
Rockdale	989	260	.....	.....

Special Fees.

Stock, Gardens, and sundry purposes.

The number of stock registered during the past year was 10,180, and applications received for gardens 1335, which shows an increase of 1,190 and 325 respectively over 1891. Applications for the use of water for sundry purposes by special fee have also been largely in excess of previous years. The Waste-water Inspectors have been busily engaged during the year in making a house-to-house inspection to ascertain whether water is being used for other than domestic purposes, also to report as to whether the water and sanitary appliances are in good working order. The results have been eminently satisfactory, and brought in an increase of £462 17s. 6d. for special fees over the amount received in 1891.

The new by-laws which came into force on the 1st January, by which the public could pay by agreement for water used for other than domestic purposes, in lieu of fixing meters, has been largely availed of and bids well to prove a great success.

Tap Repairing.

At the beginning of the year the Waste-water Inspectors were supplied with a kit of tools to enable them to turn off the water at the stop-cocks and repair the taps by fixing new washers thereto. This work being done without charge has naturally been largely availed of by the public. One notable fact is, that by far the greater number of taps repaired has been at North Sydney. The cause of this will undoubtedly be explained by the fact that a much greater pressure is obtained there since the supply has been obtained from the high reservoir.

Properties Rated.

The number of properties rated and supplied with water on the 31st December, 1892, are as under:—

	Rated.	Estimated supplied.
City and Suburbs	82,329	78,656
Campbelltown	211	156
Liverpool	455	114

H. J. BEAUMONT,
Assessor.

The Secretary.

ASSESSOR'S REPORT—*contd.*

SUMMARY of Properties Liable and Notices Delivered during 1892.

Ward or Borough.	No. of Properties liable.								No. of Notices delivered during 1892.									
	No. of Properties liable, 1st January, 1892.		New Houses on Old Mains becoming liable during Year.		Properties becoming liable through.		Total No. of Properties liable, 31st December, 1892.		Water and Sewerage Rates.	New Houses on Old Mains and Sewers.	New Mains, including Notices to Connect	New Sewers, including Notices to Connect.	Second Notices to Connect with Sewers.	Demand Notices for Payment of Sewerage Expenses.	Stock Notices.	No. of Final Notices Issued.	No. of Distress Notices Issued.	Total
	Water.	Sewerage.	Water.	Sewerage.	New Mains.	New Sewers.	Water.	Sewerage.										
Bourke Ward	1,167	1,152	40	30	.....	.....	1,207	1,182	2,114	40	.....	.....	.....	.....	2	395	5	2,556
Brisbane Ward	1,362	1,361	39	25	.....	.....	1,401	1,386	2,737	39	.....	.....	.....	.....	12	1,097	9	3,894
Cook Ward	6,208	5,795	73	72	.....	.....	6,281	5,867	12,180	73	.....	.....	.....	10	122	2,386	47	14,818
Denison Ward	4,204	3,494	68	65	.....	.....	4,272	3,559	8,549	68	.....	.....	.....	.....	130	1,846	46	10,619
Fitzroy Ward	3,598	3,376	14	17	.....	.....	3,612	3,393	7,224	17	.....	.....	.....	.....	33	1,829	20	9,122
Gipps Ward	1,905	1,718	23	20	.....	1	1,928	1,739	3,805	23	.....	2	.....	.....	10	451	6	4,297
Macquarie Ward	1,971	1,891	169	169	.....	.....	2,140	2,060	4,129	169	.....	.....	.....	.....	54	1,088	12	5,452
Phillip Ward	2,433	2,331	46	46	.....	.....	2,479	2,377	4,861	46	.....	.....	.....	20	67	1,154	22	6,170
Alexandria	1,676	851	47	23	54	281	1,777	1,155	3,482	47	108	580	30	.....	43	932	13	5,235
Ashfield	2,396	.....	99	.....	19	.....	2,514	.....	4,750	99	68	.....	.....	.....	20	1,091	11	6,009
Auburn	110	.....	7	.....	74	.....	191	.....	289	7	148	.....	.....	.....	.....	58	.....	502
Balmain	5,248	.....	130	.....	47	.....	5,425	.....	10,506	130	94	.....	.....	.....	72	1,443	43	12,288
Bankstown	.....	.....	.....	.....	6	.....	6	.....	.....	.....	12	.....	.....	.....	.....	.....	.....	12
Botany	172	.....	13	.....	80	.....	265	.....	382	13	160	.....	.....	.....	.....	98	1	654
Burwood	1,297	.....	37	.....	1	.....	1,335	.....	2,598	37	2	.....	.....	.....	72	594	19	3,322
Campbelltown	206	.....	5	.....	.....	.....	211	.....	441	5	.....	.....	.....	.....	.....	102	.....	543
Camperdown	1,440	11	26	11	.....	2	1,466	24	2,862	26	.....	4	.....	.....	37	240	14	3,183
Canterbury	216	.....	9	.....	9	.....	234	.....	443	9	18	.....	.....	.....	19	97	.....	586
Concord	304	.....	20	.....	61	.....	385	.....	607	20	122	.....	.....	.....	16	90	6	861
Darlington	716	716	7	7	.....	.....	723	723	1,478	7	.....	2	2	.....	22	243	3	1,767
Drummoyne	196	.....	32	.....	67	.....	295	.....	452	32	134	.....	.....	.....	24	89	2	733
Enfield	236	.....	12	.....	36	.....	284	.....	502	12	72	.....	.....	.....	20	91	1	698
Five Dock	87	.....	4	.....	58	.....	149	.....	208	4	116	.....	.....	.....	1	34	2	365
Glebe	3,582	.....	66	.....	3	46	3,651	46	7,351	66	6	92	.....	.....	107	1,847	19	9,488
Granville	645	.....	37	.....	63	.....	745	.....	1,319	37	126	.....	.....	.....	14	280	.....	1,806
Guildford	14	.....	.....	.....	.....	.....	14	.....	26	.....	.....	.....	.....	.....	.....	5	.....	31
Homebush	4	.....	7	.....	52	.....	63	.....	38	7	104	.....	.....	.....	8	9	.....	166
Hunter's Hill	.....	.....	29	.....	436	.....	465	.....	422	29	872	.....	.....	.....	5	124	.....	1,452
Hurstville	227	.....	45	.....	207	.....	479	.....	648	45	414	.....	.....	.....	38	35	5	1,185
Islands	20	.....	2	.....	.....	.....	22	.....	37	2	.....	.....	.....	.....	.....	.....	.....	39
Kogarah	255	.....	29	.....	32	.....	316	.....	524	29	64	.....	.....	.....	33	98	2	749
Leichhardt	3,869	.....	441	.....	11	.....	4,301	.....	7,817	421	22	.....	.....	.....	100	1,587	45	9,992
Liverpool	397	.....	12	.....	46	.....	455	.....	848	12	92	.....	.....	.....	.....	404	.....	1,446
Macdonaldtown	1,210	.....	21	14	.....	338	1,231	412	2,408	21	.....	796	.....	.....	11	387	6	3,629
Marrickville	2,881	.....	136	.....	21	.....	3,038	.....	6,085	136	42	.....	.....	.....	206	1,003	12	7,484
Newtown	4,128	.....	123	20	.....	756	4,251	776	8,277	123	.....	1,512	.....	.....	141	1,238	25	11,316
North Botany	124	3	21	.....	173	.....	318	3	438	21	346	.....	.....	.....	.....	141	8	954
North Sydney	3,188	.....	179	.....	68	.....	3,435	.....	6,641	179	134	.....	.....	.....	183	1,239	42	8,418
Paddington	3,760	3,250	147	145	5	.....	3,912	3,395	7,692	147	10	5	16	456	100	1,678	30	10,134
Petersham	2,331	.....	108	.....	8	.....	2,447	.....	4,680	108	16	.....	.....	.....	117	952	14	5,887
Prospect and Sherwood	25	.....	3	.....	9	.....	37	.....	54	3	18	.....	.....	.....	.....	11	.....	86
Randwick	1,023	.....	90	5	36	32	1,149	37	2,088	90	72	64	.....	.....	12	440	15	2,781
Redfern	4,539	3,580	141	293	.....	77	4,680	3,950	9,112	293	.....	243	154	168	142	1,672	37	11,821
Rockdale	777	.....	120	.....	92	.....	989	.....	1,690	120	184	.....	.....	.....	60	157	20	2,231
Rookwood	22	.....	16	.....	132	.....	170	.....	182	16	264	.....	.....	.....	.....	70	.....	532
Ryde	22	.....	22	.....	259	.....	303	.....	141	22	518	.....	.....	.....	8	63	.....	752
St. Peter's	984	.....	34	.....	.....	.....	1,018	.....	1,995	34	.....	.....	.....	.....	23	248	3	2,303
Strathfield	340	.....	30	.....	4	.....	374	.....	691	30	8	.....	.....	.....	2	180	4	916
Waterloo	1,936	1,392	57	250	1	109	1,994	1,751	3,907	250	2	222	25	112	74	479	17	5,086
Waverley	1,828	.....	97	6	72	485	1,997	491	3,709	97	144	970	151	4	25	976	12	6,088
Willoughby	25	.....	27	.....	286	.....	338	.....	151	27	572	.....	.....	.....	.....	68	.....	818
Woollahra	2,118	886	92	68	13	540	2,223	1,494	4,376	92	26	1,080	264	96	46	930	25	6,938
Totals	77,422	31,807	3,032	1,286	2,541	2,727	82,995	35,820	157,955	3,380	5,080	5,572	612	866	2,230	31,859	623	208,207

HERBERT J. BEAUMONT, Assessor.

ASSESSOR'S REPORT—*contd.*

STOCK AND GARDENS.

Ward or Borough.	Stock.						Gardens.					
	1891.			1892.			1891.			1892.		
	No. of Stock Registered.	Amount of Fees Paid for the Year.	Amount Outstanding on 31st Dec., 1891.	No. of Stock Registered.	Amount of Fees Paid for the Year.	Amount Outstanding on 31st Dec., 1892.	No of Gardens Registered.	Amount of Fees Paid for the Year.	Amount Outstanding on 31st Dec., 1891.	No. of Gardens Registered.	Amount of Fees Paid for the Year.	Amount Outstanding on 31st Dec., 1892.
		£ s. d.	£ s. d.		£ s. d.	£ s. d.		£ s. d.	£ s. d.		£ s. d.	£ s. d.
Bourke Ward	43	7 5 0	.....	35	7 7 6	0 5 0	6	6 10 0	.....	6	4 10 0	1 0 0
Brisbane Ward	165	23 12 6	.....	114	22 10 0	.....	2	1 15 0	.....	2	1 10 0	.....
Cook Ward	815	138 17 6	2 5 0	786	145 0 0	.....	6	6 0 0	.....	8	7 0 0	.....
Denison Ward	524	107 15 0	0 2 6	579	121 0 0	.....	3	1 10 0	.....	3	1 10 0	.....
Fitzroy Ward	485	87 10 0	0 10 0	410	79 0 0	.....	46	36 0 0	.....	61	45 15 0	0 10 0
Gipps Ward	81	14 5 0	.....	58	14 12 6	.....	4	2 0 0	.....	5	2 10 0	.....
Macquarie Ward	63	31 17 6	.....	215	42 0 0	.....	3	1 10 0	.....	3	1 0 0	0 10 0
Phillip Ward	322	57 2 6	.....	321	69 5 0	.....	2	4 0 0	.....	2	2 10 0	.....
Alexandria	263	52 15 0	.....	291	58 17 6	.....	2	1 0 0	.....	5	2 0 0	0 10 0
Ashfield	167	34 7 6	.....	200	44 10 0	0 15 0	89	81 0 0	4 10 0	104	83 15 0	0 10 0
Auburn	.....	.....	.....	7	1 12 6	.....	.....	.....	.....	.....	.....	.....
Balmain	460	91 7 6	1 0 0	453	93 5 0	1 12 6	50	32 0 0	4 5 0	59	39 5 0	.....
Bankstown	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Botany	.....	.....	.....	9	2 5 0	.....	.....	.....	.....	2	0 15 0	.....
Burwood	144	28 7 6	.....	255	48 17 6	0 7 6	39	26 0 0	2 0 0	56	31 15 0	1 10 0
Campbelltown	2	0 5 0	.....	17	4 5 0	.....	4	2 0 0	.....	4	2 0 0	.....
Camperdown	374	62 5 0	0 10 0	246	56 17 6	.....	7	3 10 0	.....	7	4 0 0	.....
Canterbury	16	2 7 6	.....	38	6 2 6	.....	.....	.....	.....	.....	.....	.....
Concord	52	7 2 6	0 2 6	59	8 2 6	.....	2	1 10 0	.....	2	1 10 0	.....
Darlington	136	25 0 0	.....	139	29 7 6	.....	.....	.....	.....	.....	.....	.....
Drummoyne	11	2 7 6	.....	32	5 15 0	.....	2	0 10 0	.....	5	2 10 0	.....
Enfield	24	4 12 6	.....	44	8 15 0	.....	3	2 10 0	.....	4	3 10 0	.....
Five Dock	1	0 5 0	.....	6	0 17 6	.....	.....	.....	.....	.....	.....	.....
Glebe	619	123 17 6	0 5 0	613	123 5 0	0 10 0	49	29 15 0	2 0 0	76	43 15 0	1 0 0
Granville	32	7 5 0	.....	54	10 17 6	.....	7	3 15 0	.....	7	3 10 0	.....
Guildford	1	0 5 0	.....	2	0 10 0	.....	.....	.....	.....	.....	.....	.....
Homebush	.....	.....	.....	7	0 17 6	.....	.....	.....	.....	.....	.....	.....
Hunter's Hill	.....	.....	.....	40	6 15 0	.....	.....	.....	.....	6	4 10 0	.....
Hurstville	.....	.....	.....	60	9 7 6	0 2 6	1	4 0 0	.....	2	0 5 0	.....
Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kogarah	21	2 5 0	.....	43	7 7 6	.....	5	5 10 0	2 10 0	5	8 0 0	.....
Leichhardt	546	109 15 0	1 0 0	575	106 15 0	2 5 0	54	42 0 0	3 10 0	64	42 0 0	0 10 0
Liverpool	22	3 0 0	.....	28	4 12 6	1 0 0	1	0 10 0	.....	1	0 10 0	.....
Macdonaldtown	87	19 10 0	0 5 0	84	16 17 6	0 15 0	1	1 0 0	.....	4	2 5 0	.....
Marrickville	267	53 10 0	.....	457	91 7 6	0 5 0	66	48 10 0	3 5 0	101	66 5 0	1 0 0
Newtown	489	94 10 0	0 15 0	595	117 12 6	0 10 0	26	22 5 0	.....	27	20 10 0	0 10 0
North Botany	2	0 5 0	0 5 0	10	2 5 0	.....	.....	.....	.....	1	0 5 0	.....
North Sydney	187	26 17 6	0 15 0	361	72 17 6	0 2 6	91	64 15 0	2 5 0	126	82 5 0	2 15 0
Paddington	497	97 5 0	.....	516	98 15 0	0 5 0	43	33 15 0	0 10 0	53	34 10 0	.....
Petersham	182	34 5 0	.....	284	52 17 6	0 5 0	85	71 5 0	2 0 0	113	74 15 0	1 10 0
Prospect and Sherwood	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....
Randwick	168	29 15 0	0 10 0	135	26 0 0	.....	51	40 15 0	.....	63	47 0 0	1 10 0
Redfern	503	128 17 6	0 10 0	616	124 12 6	0 10 0	16	11 5 0	.....	21	12 10 0	.....
Rockdale	12	1 15 0	.....	94	18 2 6	.....	15	15 0 0	.....	26	19 10 0	.....
Rookwood	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	0 5 0	.....
Ryde	.....	.....	.....	57	11 17 6	.....	.....	.....	.....	.....	.....	.....
St. Peters	157	35 7 6	.....	214	43 10 0	.....	2	1 0 0	.....	4	1 10 0	.....
Strathfield	26	4 0 0	.....	29	5 6 0	.....	16	20 10 0	.....	26	26 5 0	.....
Waterloo	404	82 2 6	0 10 0	425	82 2 6	0 2 6	10	5 5 0	0 10 0	12	6 0 0	.....
Waverley	243	52 12 6	.....	261	49 0 0	0 5 0	74	50 15 0	4 0 0	104	59 15 0	8 0 0
Willoughby	.....	.....	.....	5	0 17 6	.....	.....	.....	.....	1	0 10 0	.....
Woollahra	367	64 12 6	0 15 0	318	58 7 6	4 0 0	127	121 0 0	2 0 0	148	125 5 0	1 0 0
Totals	8,990	1,751 0 0	10 0 0	10,180	2,012 15 0	13 17 6	1,010	801 15 0	33 5 0	1,335	919 10 0	22 5 0

HERBERT J. BEAUMONT,
Assessor.

SUMMARY of Summons Work for 1892.

Ward or Borough.	1891.					1892.													
	No. of Final Notices Issued.	Summonses Issued.		Amount Outstanding on 31st December, 1891.		No. of Final Notices Issued.	Summonses Issued		Amount Outstanding on 31st December, 1892.		Disconnection Notices					No. of Executions.	Compulsory Drainage.	
		District Court.	Small Debts Court.	Water.	Sewerage.		District Court.	Small Debts Court.	Water.	Sewerage.	Action prevented through Paid before disconnection	Joint Service.	Water not connected to Premises.	Disconnected.	Total.		No. of Summonses Issued.	Amount sued for.
				£ s. d.	£ s. d.				£ s. d.	£ s. d.								£ s. d.
Bourke Ward	354	40	35	4,427 13 3	2,093 16 2	395	44	61	2,558 5 0	2,007 14 4	1	2	...	...	3	5	1	386 16 5
Brisbane Ward	1,061	59	110	1,695 1 8	791 8 2	1,097	56	120	1,122 17 0	766 13 10	10	2	3	3	18	7	1	120 13 6
Cook Ward	2,234	20	469	733 5 7	532 19 1	2,386	21	361	724 7 8	545 7 9	9	12	1	2	24	5	...	.....
Denison Ward	1,753	30	349	3,677 14 7	786 14 6	1,846	18	166	2,093 10 7	993 16 1	...	...	...	...	...	12	...	.....
Fitzroy Ward	1,718	11	323	1,090 8 6	490 19 4	1,829	13	244	1,004 15 3	611 5 10	7	2	...	2	11	8	...	.....
Gipps Ward	431	11	93	1,966 7 0	300 16 8	451	11	104	817 2 7	367 1 0	6	1	...	1	8	6	...	.....
Macquarie Ward	1,057	83	199	938 10 4	820 18 10	1,088	49	108	1,104 4 0	1,214 15 2	5	6	...	3	14	5	...	.....
Phillip Ward	1,143	20	192	1,372 15 8	3,051 19 7	1,154	16	110	1,360 19 11	938 7 9	2	...	...	...	2	11	...	.....
Alexandria	840	5	150	221 3 10	58 10 8	932	2	128	164 14 4	23 14 1	3	5	3	...	11	7	1	35 6 10
Ashfield	1,045	5	261	335 13 1	.....	1,091	2	195	338 18 1	.....	2	5	5	13	25	3	...	.....
Auburn	...	...	...	14 19 7	.....	48	...	14	32 8 3	.....	...	...	...	...	...	...	...	.....
Balmain	1,337	4	306	1,295 16 3	.....	1,443	6	311	696 8 4	.....	25	6	8	7	46	4	...	.....
Bankstown	.....	...	...	.....	.....	.....	...	...	0 7 0	.....	...	...	...	...	...	...	...	.....
Botany	1	...	1	11 2 5	.....	98	...	24	50 2 11	.....	...	...	...	...	...	...	...	.....
Burwood	533	5	107	257 14 3	.....	594	1	116	160 10 4	.....	4	...	2	1	7	16	...	.....
Campbelltown	84	...	10	87 15 1	.....	102	...	25	77 16 6	.....	...	...	...	...	...	...	...	.....
Camperdown	188	2	50	293 15 2	682 14 8	240	2	61	379 2 3	1,150 3 7	1	2	...	...	3	2	...	.....
Canterbury	84	...	30	24 12 8	.....	97	...	21	41 0 8	.....	...	...	3	...	3	...	...	.....
Concord	64	...	23	119 18 1	.....	90	1	25	62 15 4	.....	2	...	4	...	6	...	...	.....
Darlington	222	...	35	46 11 6	22 9 5	243	...	21	49 7 3	37 5 4	...	1	1	...	2	4	...	.....
Drummoyne	84	...	30	20 7 7	.....	80	...	29	26 7 11	.....	...	...	...	...	...	...	...	.....
Enfield	85	...	9	27 7 8	.....	91	...	31	27 12 3	.....	...	...	1	...	1	...	...	.....
Fire Dock	30	...	12	21 9 2	.....	34	...	8	12 18 2	.....	...	...	...	...	...	...	...	.....
Glebe	1,760	5	183	332 5 10	.....	1,847	1	161	331 0 4	11 6 10	2	...	...	2	4	8	...	.....
Granville	260	...	58	67 15 1	.....	280	...	56	199 18 5	.....	...	...	...	...	...	...	...	.....
Guildford	4	...	1	9 0 6	.....	5	...	1	14 10 0	.....	...	...	...	...	...	...	...	.....
Homebush	.....	...	...	18 0	.....	9	...	1	19 15 11	.....	...	...	...	...	...	...	...	.....
Hunter's Hill	.....	...	...	.....	.....	124	...	44	963 14 0	.....	...	...	3	...	3	...	...	.....
Hurstville	32	...	...	23 18 10	.....	35	...	44	54 12 1	.....	5	...	1	...	6	1	...	.....
Islands	.....	...	...	146 8 4	.....	.....	...	...	291 1 2	.....	...	...	...	...	...	...	...	.....
Kogarah	91	...	7	40 11 8	.....	98	...	37	38 11 5	.....	...	...	...	...	...	2	...	.....
Leichhardt	1,516	6	815	386 9 4	.....	1,587	8	309	345 9 2	.....	9	6	2	6	23	9	...	.....
Liverpool	...	...	...	131 11 5	.....	494	...	13	359 9 6	.....	...	...	...	...	...	...	...	.....
Macdonaldtown	351	...	37	124 12 3	.....	387	...	51	73 11 0	8 10 10	...	1	...	...	1	1	...	.....
Marrickville	935	16	193	345 17 3	.....	1,003	2	205	376 1 0	.....	5	3	...	6	14	8	...	.....
Newtown	1,152	6	346	367 0 7	.....	1,238	3	232	289 12 10	23 18 10	1	6	...	2	9	6	...	.....
North Botany	.....	...	...	6 0 5	16 3 4	141	...	37	21 6 4	23 3 6	...	...	2	...	2	...	...	.....
North Sydney	1,162	2	372	770 9 10	.....	1,239	1	390	593 6 10	.....	4	...	4	1	9	4	...	.....
Paddington	1,527	3	329	704 4 4	387 7 7	1,678	6	272	416 17 2	319 8 0	4	8	2	4	18	13	1	26 2 6
Petersham	849	1	217	196 11 6	.....	952	...	173	183 13 5	.....	7	3	1	2	13	7	...	.....
Prospect and Sherwood	7	...	3	.....	.....	11	...	4	4 15 5	.....	...	...	...	...	...	...	...	.....
Randwick	387	5	121	236 16 0	.....	440	2	107	254 0 0	7 10 6	2	1	1	2	6	3	...	.....
Redfern	1,533	5	290	1,868 16 5	227 15 2	1,672	4	212	637 6 7	377 12 5	3	3	...	4	10	13	5	211 13 7
Rockdale	142	...	28	169 3 8	.....	157	...	131	175 18 7	.....	...	...	1	1	2	5	...	.....
Rookwood	.....	...	...	.....	.....	70	...	36	108 13 1	.....	...	...	...	...	...	...	...	.....
Ryde	.....	...	...	.....	.....	63	...	...	63 13 5	.....	...	...	...	...	...	...	...	.....
St. Peters	223	1	60	71 0 11	.....	248	...	36	66 4 2	.....	1	3	2	...	6	1	...	.....
Strathfield	149	...	23	53 17 4	.....	180	2	52	34 8 3	.....	3	...	1	1	5	1	...	.....
Waterloo	415	2	119	408 15 6	41 3 2	479	6	135	271 10 2	49 7 1	1	7	6	...	14	1	3	75 18 0
Waverley	883	6	160	215 14 2	.....	976	3	170	227 18 11	56 7 10	4	...	1	2	7	6	...	.....
Willoughby	.....	...	...	.....	.....	68	...	...	108 8 2	.....	...	...	...	...	...	...	...	.....
Woollahra	836	1	201	371 13 8	24 6 6	930	4	167	397 10 0	71 16 10	6	7	5	1	19	4	4	100 6 5
Government	.....	...	...	781 0 0	.....	.....	...	...	.....	.....	...	...	...	...	...	...	...	.....
Sundry Plumbers, Drainers, and others	.....	...	...	788 11 8	3,224 14 3	.....	...	...	3,155 13 7	3,560 9 2	...	...	...	...	...	...	...	.....
									22,292 8 6	13,165 16 7								
Less overpayments	.....	...	...	.....	.....	.....	...	...	3 10 2	8 0 1	...	...	...	...	...	...	...	.....
Totals	28,567	354	5,856	26,799 7 2	11,544 17 1	31,859	284	5,360	22,288 18 4	13,157 16 6	134	92	63	66	355	188	16	956 17 3

HERBERT J. BEAUMONT, Assessor.

Assessor's Report—*contd.*

Summary of Rates, Fees, &c., for Water.

Ward or Borough.	No. of Properties Liable.	Water Rates.	Meter Accounts.	New Mains.	House Supply.	Stock.	Gardens.	Special Fees.	Building Fees	Revenue for 1892.	Less Rates Cancelled or Removed.	Net revenue.	Arrears from Previous Years.	Total Water Rates receivable to 31st Dec., 1892.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d	£ s. d.	£ s. d.
Bourke Ward	1,140	10,541 11 6	3,682 6 5	.....	195 13 2	8 12 6	5 10 0	44 3 6	74 11 10	14,553 8 10	418 19 10	14,133 9 0	4,427 13 3	18,561 2 3
Brisbane Ward	1,401	7,397 16 5	1,619 14 8	.....	110 7 3	30 10 0	1 10 0	29 10 0	63 0 9	9,257 9 1	240 0 5	9,017 8 8	1,695 1 8	10,712 10 4
Cook Ward	6,281	7,589 13 11	1,040 6 4	.....	35 16 1	198 10 0	7 0 0	8 17 6	127 6 0	9,007 9 10	157 2 7	8,850 7 3	733 5 7	9,583 12 10
Denison Ward	4,272	6,536 14 6	5,886 15 6	.....	91 19 6	150 15 0	1 10 0	17 7 6	54 2 4	12 739 4 4	111 7 2	12,627 17 2	3,677 14 7	16 305 11 9
Fitzroy Ward	3,612	6,702 2 6	705 6 0	.....	285 2 3	103 10 0	47 15 0	9 5 0	77 8 4	7,930 9 1	224 9 5	7,705 19 8	1,090 8 6	8,796 8 2
Gipps Ward	1,928	4,420 5 3	2,040 2 6	.....	27 11 3	17 2 6	2 10 0	3 0 0	32 1 9	6,522 13 3	173 3 0	6,349 10 3	1,966 7 0	8,315 17 3
Macquarie Ward	2,140	8,320 5 9	834 6 11	.....	337 14 7	52 17 6	1 10 0	45 18 4	47 1 11	9,639 15 0	224 4 2	9,417 10 10	938 10 4	10,356 1 2
Phillip Ward	2,479	4,091 14 7	1,727 5 0	.....	38 19 2	79 15 0	2 10 0	12 15 0	65 0 8	6,017 19 5	591 2 7	5,426 16 10	1,372 15 8	6,799 12 6
Alexandria	1 777	1,235 5 7	242 9 3	12 10 0	12 4 7	75 17 6	2 10 0	7 5 0	59 14 1	1,637 16 0	22 9 5	1,615 6 7	221 3 10	1,836 10 5
Ashfield	1,980	3,174 16 1	241 10 7	4 8 4	34 17 8	50 0 0	93 0 0	5 12 6	149 8 7	3,753 13 9	45 7 5	3,708 6 4	335 13 1	4,043 19 5
Auburn	191	121 13 3	10 17 9	30 19 0	0 19 11	1 12 6	.....	.....	3 9 11	169 12 4	11 8 11	158 3 5	15 19 17	173 3 0
Balmain	5,425	4,432 10 10	642 10 6	7 14 7	39 2 9	118 2 6	44 10 0	14 0 0	123 2 5	5,421 13 7	43 1 10	5,378 12 1	1,295 16 3	6,674 8 4
Bankstown	6	.....	.....	0 10 5	.....	.....	.....	.....	.....	0 10 5	.....	0 10 5	.....	0 10 5
Botany	265	183 18 0	35 3 0	17 6 2	3 0 1	2 5 0	0 15 0	2 0 0	1 13 6	245 15 9	4 1 10	241 13 11	11 2 5	252 16 4
Burwood	1,335	1,920 4 4	209 7 9	0 8 8	17 17 3	63 7 6	35 15 0	1 5 0	74 18 9	2,322 4 3	30 15 4	2,291 8 11	257 14 3	2,549 3 2
Canterbury	234	163 1 11	23 15 11	6 3 1	1 13 7	7 2 6	.....	.....	.....	245 15 9	4 1 10	241 13 11	11 2 5	252 16 4
Concord	385	344 4 3	181 8 9	16 0 7	6 14 5	11 12 6	1 10 0	1 0 0	2 16 6	565 7 0	5 7 11	559 19 1	119 18 1	679 17 2
Darlington	723	703 17 9	96 15 7	.....	1 3 11	37 2 6	.....	2 5 0	9 18 8	851 3 5	10 12 1	840 11 4	46 11 6	887 2 10
Drummoyne	295	264 7 2	31 3 10	18 15 3	5 4 9	7 10 0	2 10 0	3 0 0	23 3 10	355 14 10	5 9 5	350 5 5	20 7 7	370 13 0
Enfield	284	268 19 5	28 0 2	16 6 4	1 19 4	9 0 0	3 10 0	.....	8 10 10	336 6 1	7 1 2	329 4 11	27 7 8	356 12 7
Five Dock	149	157 7 0	16 17 6	24 17 8	0 10 3	0 17 6	.....	2 0 0	.....	202 9 11	1 17 0	200 12 11	21 9 2	222 2 1
Glebe	3,651	3,882 16 3	426 8 3	0 8 2	23 17 0	161 17 6	45 0 0	8 17 6	59 4 8	4,613 9 4	43 18 0	4,569 11 4	332 5 10	4,901 17 2
Granville	745	587 0 4	368 2 9	22 19 2	23 9 0	11 17 6	4 0 0	0 15 0	18 8 0	1,036 11 9	7 16 0	1,028 15 9	67 15 1	1,096 10 10
Guildford	14	25 12 6	5 17 5	.....	.....	0 10 0	.....	.....	.....	31 19 11	2 11 3	29 8 8	9 0 6	38 9 2
Homebush	63	18 17 6	72 15 0	19 6 6	2 3 4	0 17 6	.....	.....	.....	113 19 10	.....	113 19 10	0 18 0	114 17 10
Hunter's Hill	465	341 8 2	262 5 9	325 18 10	10 18 4	7 15 0	4 10 9	2 2 6	13 1 5	968 0 0	10 10 8	957 9 4	.....	957 9 4
Harstville	479	261 8 6	172 8 5	52 14 1	12 17 1	9 10 0	4 5 0	0 5 0	38 19 10	552 7 11	11 6 3	541 1 8	23 18 10	565 0 6
Islands	22	187 1 11	286 6 10	.....	18 19 8	.....	.....	1 15 0	.....	494 3 0	53 2 6	441 0 6	146 8 4	587 8 10
Kogarah	316	267 4 9	29 2 0	13 16 9	7 7 1	8 7 6	8 10 0	1 0 0	27 12 11	363 1 0	7 0 5	356 0 7	40 11 8	396 12 3
Leichhardt	4,301	3,094 3 10	488 9 3	2 0 4	50 12 8	143 5 0	46 10 0	7 12 6	220 14 4	4,053 7 11	75 1 2	3,978 6 9	386 9 4	4,364 16 1
Liverpool	455	796 18 5	274 1 0	416 0 0	6 14 4	7 7 6	0 10 0	1 15 0	19 7 1	1,522 13 4	518 9 0	1,004 14 4	131 11 5	1,136 5 9
Macdonaldtown	1,231	804 6 2	106 0 11	.....	4 4 7	21 17 6	2 5 0	0 5 0	33 7 5	979 6 7	6 9 3	965 17 4	124 12 3	1,090 9 7
Marrickville	3,038	2 891 17 9	173 9 8	5 2 3	42 1 1	109 5 0	73 15 0	8 12 6	148 19 7	3,458 2 10	37 6 4	3,420 16 6	345 17 3	3,766 13 9
Newtown	4,251	4,061 16 3	179 9 6	.....	31 2 3	143 15 0	22 10 0	13 7 6	126 10 9	4,578 11 3	55 10 4	4,523 0 11	367 0 7	4,890 1 6
North Botany	318	120 11 9	22 18 4	62 13 3	19 9 0	2 10 0	0 5 0	13 0 0	5 3 7	246 10 11	24 14 2	221 16 9	6 0 5	227 17 2
North Sydney	3,435	4,343 14 9	628 13 4	42 13 4	172 6 0	81 10 0	90 15 0	27 5 0	185 13 11	5,572 11 4	72 8 10	5,500 2 6	770 9 10	6,270 12 4
Paddington	3,912	4,419 16 5	923 17 10	0 9 5	43 2 0	129 17 6	37 0 0	5 15 0	156 0 2	5,725 16 6	47 17 8	5,677 18 10	704 4 4	6,382 3 2
Petersham	2,447	2,749 10 2	130 12 0	2 18 0	33 2 7	62 5 0	83 5 0	6 10 0	125 15 4	3,193 18 1	23 18 11	3,169 19 2	195 11 6	3,366 10 8
Prospect & Sherwood	37	32 9 9	8 18 6	0 12 2	0 19 0	0 15 0	.....	1 0 0	.....	44 14 5	1 2 9	43 11 8	.....	43 11 8
Randwick	1,149	1,824 4 3	329 4 3	24 13 8	45 15 7	36 0 0	51 0 0	2 5 0	143 19 9	2,448 12 6	20 9 9	2,428 2 9	236 16 0	2,664 18 9
Redfern	4,680	4,444 12 8	6,229 16 4	.....	41 14 9	164 10 0	13 10 0	11 5 0	122 10 10	11,027 19 7	65 0 1	10,962 19 6	1,308 16 5	12,331 15 11
Rockdale	989	745 12 5	144 16 10	49 1 0	35 12 9	19 5 0	22 0 0	3 12 0	101 6 9	1,121 7 3	16 6 6	1,105 0 9	169 3 8	1,274 4 5
Rookwood	170	109 10 2	49 18 9	59 18 0	26 16 11	.....	0 5 0	1 0 0	.....	247 8 10	18 14 2	228 14 8	.....	228 14 8
Ryde	303	70 2 7	221 2 9	95 16 5	8 1 8	12 17 6	.....	0 10 0	1 6 0	409 17 8	3 2 6	406 15 2	.....	406 15 2
St. Peters	1,018	695 11 0	71 8 9	.....	4 7 0	53 12 6	1 10 0	2 0 0	37 6 3	865 10 6	14 5 6	851 5 0	71 0 11	922 5 11
Strathfield	374	733 9 4	115 10 9	0 9 11	11 7 9	6 0 0	27 5 0	.....	63 3 4	957 6 1	6 12 10	950 13 3	53 17 4	1,004 10 7
Waterloo	1,994	1,458 15 3	533 8 11	0 10 6	22 12 1	109 2 6	6 0 0	5 15 0	26 18 5	2,163 2 8	40 10 3	2,122 12 5	408 15 6	2,531 7 11
Waverley	1,997	2,435 15 6	164 0 0	19 12 10	33 1 10	71 15 0	73 0 0	2 0 0	100 1 11	2,949 7 1	39 0 8	2,910 6 5	215 14 2	3,126 0 7
Willoughby	338	104 9 1	26 19 2	92 16 5	13 2 3	0 17 6	0 10 0	.....	11 7 4	250 1 9	2 9 11	247 11 10	.....	247 11 10
Woollahra	2,223	3,460 14 6	491 10 0	11 16 2	48 6 0	78 17 6	135 15 0	10 15 0	84 10 11	4,232 5 1	56 13 5	4,175 11 8	371 13 8	4,547 5 4
Sundry Plumbers & others.	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,504 7 11	781 0 0	1,723 7 11	788 11 8	2,511 19 7
Totals	82,995	115,146 15 10	32,292 11 5	1478 7 3	2,059 11 0	2,517 0 0	1,013 10 0	357 4 4	2,925 16 0	160,325 3 9	4,438 16 9	155,886 7 0	26,018 7 5	181,904 14 5

HERBERT J. BEAUMONT, Assessor.

Ward or Borough.	Summary of Sewerage Rates. No. of Properties liable.	Sewerage Rates. £ s. d.	New sewers. £ s. d.	Sewerage service. £ s. d.	Revenue for 1892. £ s. d.	Less rates cancelled or removed. £ s. d.	Net Revenue for 1892. £ s. d.	Arrears from Previous Years. £ s. d.	Total sewerage rates receivable to 31st Dec., 1892. £ s. d.	General Summary of Rates, Fees, &c., for Water and Sewerage. Gross Total water and sewerage rates receivable to 31st Dec., 1892. £ s. d.	No. of Summonses Issued.	Amount sued for during 1892. £ s. d.	Amount paid without Summons. £ s. d.	Total paid during 1892. £ s. d.	Arrears to 31st December, 1892. £ s. d.
Bourke Ward	1,182	14,483 9 6	.....	272 1 5	14,755 10 0	154 6 0	14,601 4 11	2,093 16 2	16,695 1 1	35,256 3 4	105	1,387 11 3	29,302 12 9	30,690 4 0	4,565 19 4
Brisbane Ward	1,386	9,338 18 3	.....	132 8 1	9,471 6 4	216 14 10	9,254 11 6	781 8 2	10,035 19 8	20,748 10 0	176	1,582 8 4	17,276 10 10	18,858 19 2	1,889 10 10
Cook Ward	5,867	8,862 7 8	....	46 8 9	8,908 16 5	131 9 10	8,777 6 7	532 19 1	9,310 5 8	18,893 18 6	382	1,073 2 5	16,551 0 8	17,624 3 1	1,269 15 5
Denison Ward	3,559	7,669 10 9	....	98 19 10	7,768 10 7	52 18 8	7,715 11 11	786 14 6	8,502 6 5	24,807 18 2	184	1,319 4 3	20,401 7 3	21,720 11 6	3,087 6 8
Fitzroy Ward	3,393	7,355 11 1	....	17 8 11	7,373 0 0	5 10 7	7,367 9 5	490 19 4	7,858 8 9	16,654 16 11	257	548 1 10	14,490 14 0	15,038 15 10	1,616 1 1
Gipps Ward	1,739	4,332 0 9	0 17 0	34 6 11	4,367 4 8	39 16 8	4,327 8 0	300 16 8	4,628 4 8	12,944 1 11	115	502 16 1	11,257 2 3	11,759 18 4	1,184 3 7
Macquarie Ward	2,060	10,754 13 5	.....	469 9 7	11,224 3 0	266 11 0	10,957 12 0	820 18 10	11,778 10 10	22,134 12 0	157	1,239 8 6	18,576 4 4	19,815 12 10	2,318 19 2
Phillip Ward	2,377	5,383 3 7	.....	48 10 5	5,431 14 0	64 7 10	5,367 6 2	1,051 19 7	6,419 5 9	13,218 18 3	126	782 9 10	10,137 0 9	10,919 10 7	2,299 7 8
Alexandria	1,155	729 3 3	97 4 5	16 0 0	842 7 8	29 3 8	813 4 0	58 10 8	871 14 8	2,708 5 1	130	122 15 3	2,397 1 5	2,519 16 8	188 8 5
Ashfield	...	.....	.....	.....	.....	.....	.....	.....	.....	4,043 19 5	197	204 18 11	3,490 2 5	3,705 1 4	338 18 1
Auburn	...	.....	.....	.....	.....	.....	.....	.....	.....	173 3 0	14	14 19 5	125 15 4	140 14 9	32 8 3
Balmain	...	.....	.....	.....	.....	.....	.....	.....	.....	6,674 8 4	317	334 7 6	5,643 12 6	5,978 0 0	696 8 4
Bankstown	..	.....	.....	.....	.....	.....	.....	.....	.....	0 10 5	...	.....	0 3 5	0 3 5	0 7 0
Botany	..	.....	.....	.....	.....	.....	.....	.....	.....	252 16 4	24	16 0 1	186 13 4	202 13 5	50 2 11
Burwood	...	.....	.....	.....	.....	.....	.....	.....	.....	2,549 3 2	117	228 8 5	2,160 4 5	2,388 12 10	160 10 4
Campbelltown	..	.....	.....	.....	.....	.....	.....	.....	.....	444 16 2	25	8 6 0	318 13 8	366 19 8	77 16 6
Camperdown	24	519 8 0	1 2 7	7 16 10	528 7 5	1 15 0	526 11 5	682 14 8	1,209 7 1	2,963 12 0	63	68 8 0	1,365 18 2	1,434 6 2	1,529 5 10
Canterbury	...	.....	.....	.....	.....	.....	.....	.....	.....	233 0 1	21	18 17 6	173 1 11	191 19 5	41 0 8
Concord	...	.....	.....	.....	.....	.....	.....	.....	.....	679 17 2	26	29 11 5	587 10 5	617 1 10	62 15 4
Darlington	723	844 17 10	.....	1 13 10	846 11 8	.....	846 11 8	22 9 5	869 1 1	1,756 3 11	21	36 8 7	1,633 2 9	1,669 11 4	86 12 7
Drummoyne	...	.....	.....	.....	.....	.....	.....	.....	.....	370 13 0	20	43 16 6	300 8 7	344 5 1	26 7 11
Enfield	...	.....	.....	.....	.....	.....	.....	.....	.....	356 12 7	31	13 9 7	315 10 9	329 0 4	27 12 3
Five Dock	...	.....	.....	.....	.....	.....	.....	.....	.....	223 2 1	8	12 6 6	196 17 5	209 3 11	12 18 2
Glebe	46	.....	23 11 8	.....	23 11 8	0 7 0	23 4 8	.....	23 4 8	4,925 1 10	162	189 1 8	4,393 13 0	4,582 14 8	342 7 2
Granville	...	.....	.....	.....	.....	.....	.....	.....	.....	1,096 10 10	56	43 4 8	853 7 9	896 12 5	199 18 5
Guildford	...	.....	.....	.....	.....	.....	.....	.....	.....	38 9 2	1	2 0 0	21 19 2	23 19 2	14 10 0
Homebush	...	.....	.....	.....	.....	.....	.....	.....	.....	114 17 10	1	0 11 6	93 10 5	95 1 11	19 15 11
Hunter's Hill	...	.....	.....	.....	.....	.....	.....	.....	.....	957 9 4	44	37 9 5	651 5 11	688 15 4	268 14 0
Hurstville	...	.....	.....	.....	.....	.....	.....	.....	.....	565 0 6	44	27 0 8	483 7 9	510 8 5	54 12 1
Islands	...	.....	.....	.....	.....	.....	.....	.....	.....	587 8 10	...	.....	306 7 8	306 7 8	281 1 2
Kogarah	...	.....	.....	.....	.....	.....	.....	.....	.....	396 12 3	37	20 12 11	337 7 11	358 0 10	38 11 5
Leichhardt	...	.....	.....	.....	.....	.....	.....	.....	.....	4,364 16 1	317	335 4 2	3,684 2 9	4,019 6 11	345 9 2
Liverpool	...	.....	.....	.....	.....	.....	.....	.....	.....	1,136 5 9	13	48 10 10	728 5 5	776 16 3	359 9 6
Macdonaldtown	412	.....	169 5 9	7 7 9	176 13 6	0 15 0	175 18 6	.....	175 18 6	1,266 8 1	51	29 2 4	1,155 3 11	1,184 6 3	82 1 10
Marrickville	...	.....	.....	.....	.....	.....	.....	.....	.....	3,766 13 9	208	179 5 7	3,211 7 2	3,390 12 9	376 1 0
Newtown	776	.....	469 14 8	4 0 7	473 15 3	0 16 10	472 18 5	.....	472 18 5	5,362 19 11	235	253 1 3	4,756 7 0	5,049 8 3	313 11 8
North Botany	3	7 0 2	.....	.....	7 0 2	.....	7 0 2	16 3 4	23 3 6	251 0 8	37	26 19 8	179 11 2	206 10 10	44 9 10
North Sydney	...	.....	.....	.....	.....	.....	.....	.....	.....	6,270 12 4	391	292 14 5	5,372 5 1	5,664 19 6	605 12 10
Paddington	3,395	4,789 16 9	.....	57 9 7	4,847 6 4	29 11 11	4,817 14 5	387 7 7	5,205 2 0	11,587 5 2	278	519 18 0	10,331 2 0	10,851 0 0	736 5 2
Petersham	...	.....	.....	.....	.....	.....	.....	.....	.....	3,366 10 8	173	157 5 6	3,025 11 9	3,182 17 3	183 13 5
Prospect & Sherwood	...	.....	.....	.....	.....	.....	.....	.....	.....	43 11 8	4	3 8 9	35 7 6	38 16 3	4 15 5
Randwick	37	.....	18 17 5	0 17 1	19 14 6	.....	19 14 6	.....	19 14 6	2,684 13 3	109	181 7 0	2,241 15 9	2,423 2 9	261 10 6
Redfern	3,950	4,944 1 2	30 19 2	453 8 2	5,428 8 6	35 19 11	5,392 8 7	227 15 2	5,620 3 9	17,951 19 8	216	437 1 3	16,499 19 5	16,937 0 8	1,014 19 0
Rockdale	...	.....	.....	.....	.....	.....	.....	.....	.....	1,274 4 5	131	80 13 11	1,017 11 11	1,098 5 10	175 18 7
Rookwood	...	.....	.....	.....	.....	.....	.....	.....	.....	228 14 8	36	21 10 4	98 11 3	120 1 7	108 13 1
Ryde	...	.....	.....	.....	.....	.....	.....	.....	.....	406 15 2	...	.....	343 1 9	343 1 9	63 13 5
St. Peters	...	.....	.....	.....	.....	.....	.....	.....	.....	922 5 11	36	31 3 3	824 18 6	856 1 9	66 4 2
Strathfield	...	.....	.....	.....	.....	.....	.....	.....	.....	1,004 10 7	54	77 10 9	892 11 7	970 2 4	34 8 3
Waterloo	1,751	1,292 5 0	70 5 4	230 15 1	1,593 5 5	43 9 7	1,549 15 10	41 3 2	1,590 19 0	4,122 6 11	141	295 6 10	3,506 2 10	3,801 9 8	320 17 3
Waverley	491	386 11 3	359 9 11	5 13 10	751 15 0	14 6 2	737 8 10	.....	737 8 10	3,863 9 5	173	247 15 0	3,331 7 8	3,579 2 8	284 6 9
Willoughby	...	.....	.....	.....	.....	.....	.....	.....	.....	247 11 10	...	.....	139 3 8	139 3 8	108 8 2
Woollahra	1,494	1,675 3 2	301 10 11	42 5 1	2,018 19 2	16 19 0	2,002 0 2	24 6 6	2,026 6 8	6,573 12 0	171	284 15 11	5,819 9 3	6,104 5 2	469 6 10
Compulsory Drainage, Plans, Fees, &c.	...	.....	.....	.....	.....	.....	2,134 12 1	3,224 14 3	5,359 6 4	7,871 5 11	16	956 17 3	198 5 11	1,155 3 2	6,716 2 9
															35,458 5 1
Less Overpayments	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	11 10 3
Total	35,820	83,368 1 7	1,542 18 10	1,947 1 9	86,858 2 2	1,104 19 6	87,887 14 9	11,544 17 1	99,432 11 10	281,337 6 3	5,660	14,407 9 0	231,471 12 2	245,879 1 2	35,446 14 10

HERBERT J. BEAUMONT, Assessor.

ASSESSOR'S REPORT—*contd.*

SUMMARY OF ARREARS on 31st December, 1892.

Ward or Borough.	House Properties.		Vacant Land.		Churches & Charities.		Government.		Municipal.		Meters.	Total.		Increase on Previous Years.		Decrease on Previous Years.	
	Water.	Sewerage.	Water.	Sewerage.	Water.	Sewerage.	Water.	Sewerage.	Water.	Sewerage.	Water.	Water.	ewerage.	Water.	Sewerage.	Water.	Sewerage.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Bourke Ward	305 17 8	460 15 10	114 1 3	166 14 1	6 15 0	7 17 6	941 7 6	1,372 6 11	.....	.....	1,128 15 1	2,556 16 6	2,007 14 4	.....	.....	1,870 16 9	86 1 10
Brisbane Ward	199 10 1	232 19 8	141 8 11	169 5 0	96 10 6	85 19 6	45 16 1	11 14 3	125 8 4	266 15 5	513 3 1	1,121 17 0	766 13 10	.....	.....	573 4 8	14 14 4
Cook Ward	260 2 9	292 2 9	24 8 2	51 18 11	185 8 3	114 17 4	61 10 0	80 10 4	5 14 5	5 18 5	237 4 0	724 7 7	545 7 9	.....	.....	8 18 0	.....
Denison Ward	136 18 8	166 14 4	184 10 5	265 1 2	72 16 9	126 11 7	236 4 3	434 19 4	9 0 0	10 10 0	1,454 5 6	2,003 10 7	993 16 1	.....	12 8 8	.....	.....
Fitzroy Ward	148 9 2	182 10 0	35 18 5	46 18 6	72 18 9	68 14 4	539 14 8	812 9 0	8 10 0	10 10 0	193 9 3	1,003 15 3	611 5 10	.....	207 1 7	1,584 4 0	.....
Gipps Ward	118 11 6	107 19 2	66 10 8	94 17 4	43 11 6	57 0 3	138 14 8	93 12 10	5 14 3	8 11 5	444 0 0	817 2 7	367 1 0	.....	66 4 4	1,149 4 5	.....
Macquarie Ward	507 15 8	600 18 9	42 14 7	53 11 0	184 17 6	181 12 2	236 17 7	373 12 6	.....	.....	130 8 8	1,102 9 0	1 214 15 2	143 18 8	393 16 4	.....	.....
Phillip Ward	205 2 1	262 10 5	27 13 8	29 16 10	101 16 3	103 16 2	104 0 3	508 6 10	21 8 4	28 17 6	900 14 4	1,360 19 11	938 7 9	.....	.....	11 15 9	113 11 10
Alexandria	39 17 2	18 0 7	15 16 5	.....	7 14 0	2 5 6	3 15 0	3 8 0	.....	.....	97 11 9	164 14 4	28 14 1	.....	.....	56 9 6	34 16 7
Ashfield	153 0 7	.....	5 16 0	.....	71 6 8	.....	62 6 8	.....	.....	.....	44 2 2	332 12 2	.....	.....	.....	3 0 11	.....
Auburn	28 2 2	.....	.....	.....	1 3 8	.....	2 4 0	.....	.....	.....	0 18 5	32 8 3	.....	17 8 8	.....	.....	.....
Balmain	124 13 7	.....	7 2 10	.....	86 5 9	.....	41 3 0	.....	.....	.....	432 10 8	604 16 10	.....	.....	.....	601 0 5	.....
Bankstown	0 7 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0 7 0	.....	0 7 0	.....	.....	.....
Botany	10 19 1	.....	.....	.....	3 12 8	.....	1 19 8	.....	.....	.....	33 11 6	50 2 11	.....	30 0 6	.....	.....	.....
Burwood	49 14 7	.....	10 15 5	.....	27 19 0	.....	24 9 9	.....	1 5 0	.....	44 9 1	158 12 10	.....	.....	.....	99 1 5	.....
Campbelltown	22 10 9	.....	1 17 6	.....	20 9 7	.....	20 12 6	.....	3 0 0	.....	9 6 2	77 16 6	.....	.....	.....	9 18 7	.....
Camperdown	33 13 9	1 2 7	4 0 0	.....	16 10 6	365 5 0	287 13 0	793 16 0	.....	.....	37 5 0	370 2 3	1,150 3 7	85 7 1	467 8 11	.....	.....
Canterbury	5 2 4	.....	7 10 0	.....	31 8 7	.....	12 1 3	.....	.....	.....	4 13 6	49 15 8	.....	16 3 0	.....	.....	.....
Concord	17 4 11	.....	11 19 7	.....	7 15 6	.....	3 15 0	.....	1 7 0	.....	20 13 4	62 15 4	.....	.....	.....	57 2 9	.....
Darlington	8 5 3	11 4 8	.....	.....	3 12 0	4 4 0	17 8 0	20 6 0	1 15 0	1 10 8	18 7 0	49 7 3	37 6 4	2 15 9	14 15 11	.....	.....
Drummoyne	10 19 8	.....	7 18 0	.....	1 17 6	.....	2 3 2	.....	.....	.....	3 10 0	26 7 11	.....	0 0 4	.....	.....	.....
Enfield	10 15 1	.....	0 6 9	.....	5 8 2	.....	4 7 9	.....	.....	.....	6 14 6	27 12 3	.....	.....	.....	0 4 7	.....
Five Dock	8 9 6	.....	0 10 3	.....	1 5 11	.....	2 5 0	.....	.....	.....	0 7 6	12 18 2	.....	.....	.....	8 11 0	.....
Glebe	29 10 1	11 6 10	1 0 6	.....	72 10 9	.....	20 6 3	.....	.....	.....	205 17 9	329 5 4	11 6 10	.....	11 6 10	3 0 6	.....
Granville	111 16 10	.....	3 12 5	.....	17 13 2	.....	15 19 6	.....	.....	.....	49 13 0	198 14 5	.....	131 18 4	.....	.....	.....
Guildford	2 0 0	.....	12 10 0	.....	.....	.....	.....	.....	.....	.....	.....	14 10 0	.....	5 9 6	.....	.....	.....
Homebush	7 4 9	.....	0 9 2	.....	.....	.....	.....	.....	.....	.....	12 2 0	19 15 11	.....	4 14 5	.....	.....	.....
Hunter's Hill	39 4 1	.....	5 4 2	.....	6 17 6	.....	87 7 9	.....	.....	.....	129 0 6	267 14 0	.....	267 14 0	.....	.....	.....
Hurstville	22 5 8	.....	5 13 8	.....	2 9 5	.....	6 3 8	.....	.....	.....	17 18 0	54 9 7	.....	30 10 0	.....	.....	.....
Islands	.....	.....	.....	.....	.....	.....	112 15 4	.....	.....	.....	168 5 10	281 1 2	.....	134 12 10	.....	.....	.....
Kogarah	9 16 10	.....	7 1 1	.....	10 7 1	.....	9 7 5	.....	.....	.....	1 19 0	38 11 5	.....	.....	.....	2 0 3	.....
Leichhardt	151 7 8	.....	3 16 3	.....	46 1 0	.....	72 17 9	.....	0 5 0	.....	68 6 11	342 13 11	.....	.....	.....	43 15 5	.....
Liverpool	157 2 10	.....	1 0 0	.....	18 11 6	.....	154 13 8	.....	2 2 6	.....	24 19 0	358 9 6	.....	226 18 1	.....	.....	.....
Macdonaldtown	9 19 9	3 15 8	1 4 9	.....	9 17 6	.....	9 13 3	4 15 2	.....	.....	42 1 0	72 16 0	8 10 10	.....	8 10 10	51 16 3	.....
Marrickville	209 4 7	.....	23 4 2	.....	67 5 5	.....	25 10 9	.....	.....	.....	48 11 1	373 16 0	.....	27 18 9	.....	.....	.....
Newtown	97 12 0	20 8 5	7 17 4	0 3 8	85 3 0	2 2 4	48 17 4	1 4 5	.....	.....	49 2 8	288 12 10	23 18 10	.....	23 18 10	78 7 9	.....
North Botany	19 9 8	23 3 6	1 11 8	.....	.....	.....	.....	.....	0 5 0	.....	.....	21 6 4	23 3 6	16 5 11	7 0 2	.....	.....
North Sydney	189 2 10	.....	74 5 5	.....	53 2 8	.....	121 0 0	.....	.....	.....	164 4 5	601 15 4	.....	.....	.....	168 14 6	.....
Paddington	76 19 8	85 14 2	5 13 5	5 19 4	50 5 0	34 11 3	85 6 7	191 14 1	1 5 0	1 9 2	197 2 6	416 12 2	319 8 0	.....	.....	287 12 2	67 19 7
Petersham	35 13 3	.....	2 18 9	.....	31 8 6	.....	92 2 11	.....	.....	.....	19 15 0	181 18 5	.....	.....	.....	14 13 1	.....
Prospect and Sherwood	4 15 5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4 15 5	.....	4 15 5	.....	.....	.....
Randwick	60 18 13	7 10 6	50 14 4	.....	27 6 9	.....	10 17 6	.....	3 12 6	.....	99 0 0	252 10 0	7 10 6	15 14 0	7 10 6	.....	.....
Redfern	163 17 6	289 2 5	11 7 4	17 0 9	44 9 6	21 11 8	40 10 9	46 4 8	0 17 3	3 12 11	375 14 4	636 16 7	377 12 5	.....	149 17 3	731 19 8	.....
Rockdale	51 4 9	.....	1 0 10	.....	1 18 5	.....	11 0 6	.....	.....	.....	110 13 9	175 18 3	.....	6 14 7	.....	.....	.....
Rookwood	25 3 2	.....	0 15 2	.....	1 10 0	.....	71 17 11	.....	.....	.....	9 6 10	108 13 1	.....	108 18 1	.....	.....	.....
Rydo	39 10 1	.....	.....	.....	5 4 0	.....	1 0 10	.....	.....	.....	17 18 6	63 13 5	.....	63 13 5	.....	.....	.....
St. Peter's	27 5 6	.....	1 6 2	.....	7 10 6	.....	10 0 6	.....	.....	.....	20 2 6	66 4 2	.....	.....	.....	4 16 9	.....
Strathfield	9 10 2	.....	7 5 2	.....	7 18 9	.....	7 13 0	.....	.....	.....	1 11 6	34 8 3	.....	.....	.....	5 5 7	.....
Waterloo	27 14 11	29 14 5	0 17 3	1 0 1	41 13 0	5 15 9	13 7 3	12 16 10	.....	.....	186 15 3	270 7 8	49 7 1	.....	8 3 11	133 7 10	.....
Waverley	127 1 6	49 17 1	18 11 11	0 15 0	25 14 6	4 6 7	16 2 6	1 9 2	.....	.....	85 13 6	218 3 11	56 7 10	2 9 9	56 7 10	.....	.....
Willoughby	56 18 4	.....	30 16 3	.....	2 4 7	.....	4 14 0	.....	.....	.....	13 15 0	108 8 2	.....	108 8 2	.....	.....	.....
Woollahra	96 3 0	28 11 9	16 5 10	3 10 6	74 13 0	29 8 5	67 2 11	9 17 2	.....	.....	139 15 3	392 19 0	71 16 10	21 5 4	47 10 4	.....	.....
Totals	4,824 19 2	2,876 12 2	1,001 0 9	911 16 11	1,693 0 0	1,200 19 4	3,909 17 8	4,278 3 0	191 9 7	337 15 6	7,070 1 1	19,090 8 3	9,605 7 6	1,487 17 4	1,602 8 9	7,640 15 9	317 4 2

HERBERT J. BEAUMONT, Assessor.

Ward or Borough.	Inspections.	Special Inspections.	Re-inspections where Notices had been served.	Total number of Inspections and Re-inspections.	Notices served to Pay Special Fees or Fix Meters.											No. of Informations.	Amount of Fines.
					Stock.	Gardens.	Bakeries.	Engines.	Laundries	Photography.	12 Bedrooms or over.	Sundries.	To abate Waste.	Total Notices Served.	Taps Repaired.		£ s. d.
Bourke Ward	825	52	36	913	2	.....	.....	2	.....	1	1	4	21	31	.....	1	.....
Brisbane Ward	.....	68	12	80	12	.....	.....	6	.....	.....	.....	6	6	30	.....	1	.....
Cook Ward	.....	186	63	249	122	.....	.....	.....	.....	.....	.....	1	16	139	.....	2	.....
Denison Ward	4,310	111	232	4,653	130	.....	.....	6	.....	... ..	.....	9	143	288	3	9	0 10 0
Fitzroy Ward	.....	118	36	154	33	1	1	2	1	.....	.....	1	7	46	5	9	.....
Gipps Ward	.....	25	16	41	10	.....	.....	1	.....	.....	.....	.....	11	22	... ..	1	0 5 0
Macquarie Ward	2,118	77	223	2,418	54	.....	1	5	3	7	2	10	110	193	2	5	.....
Phillip Ward	2,432	159	129	2,720	67	.....	.....	.....	1	.....	1	3	82	154	3	6	0 10 0
Alexandria	.....	227	15	242	43	.....	.....	.....	.....	.....	.....	.....	... ..	43	1	8	.....
Ashfield	.....	164	12	176	20	.....	.....	.....	.....	.....	.....	.....	1	21	2	4	0 10 0
Auburn	.....	3	.....	3	.....	.....	.....	... ..	.....	.....	.....	.....	1	1	.....	.....	.....
Balmain	.....	134	21	155	72	.....	.....	.....	... .	.....	... .	4	2	78	1	4	0 10 0
Bankstown	.....	.....	. ....	.....	... ..	.....	... ..	. ...	... ..	.....	.....	.....	.....	.....	.....	.....	.....
Botany	.....	3	.....	3	... ..	.....	.....	.....	... ..	.....	.....	.....	.....	... ..	.....	.....	.....
Burwood	1,283	160	77	1,520	72	.....	.....	. ....	.....	.....	.....	2	5	79	6	2	0 10 0
Campbelltown	.....	.....	... ..	... ..	.....	.....	.....	.....	.....	.....	.....	. ....	.....	.....	.....	.....	.....
Camperdown	.....	151	29	180	37	.....	.....	.....	.....	1	.....	.....	.....	38	.... .	2	2 5 0
Canterbury	218	6	14	238	19	... ..	1	.....	.....	... ..	.....	.....	.....	20	.....	.....	.....
Concord	357	20	8	385	16	... ..	.....	. ....	.....	.....	.....	.....	.....	16	... .	1	.....
Darlington	725	9	33	767	22	... ..	.....	1	. ....	... ..	.....	.....	17	40	6	1	1 0 0
Drummoyne	.....	16	17	33	24	.....	.....	.....	.....	... ..	.....	.....	.....	24	.....	.....	.....
Enfield	276	7	28	311	20	.....	.....	.....	.....	.....	.....	.....	1	21	.....	.....	.....
Five Dock	... ..	2	.....	2	1	.....	.....	.....	.....	.. .	.....	.....	... ..	1	.....	.....	.....
Glebe	2,239	101	50	2,390	107	5	1	.....	.....	.....	.....	4	4	121	... ..	8	1 10 0
Granville	33	17	11	61	14	... ..	.....	.....	.....	.....	.....	.....	.....	14	1	.....	.....
Guildford	.....	1	... ..	1	.....	.....	.....	.....	.....	.....	... ..	.....	... ..	.....	.. ...	.....	.....
Homebush	53	.....	10	68	8	.....	.....	.....	.....	.....	.....	.....	... ..	8	.....	.....	.....
Hunter's Hill	.....	18	1	19	5	.. ...	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	.....
Hurstville	348	2	29	379	38	1	.....	.....	.....	.....	.....	.....	.....	39	.....	1	.....
Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	... ..	.....
Kogarah	273	8	25	306	32	.....	.....	... ..	.....	.....	... ..	.....	.....	32	.....	2	2 0 0
Leichhardt	.....	459	48	507	100	.....	.....	.....	.....	.....	... ..	.....	1	101	.....	1	.....
Liverpool	.....	.....	.....	... ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Macdonaldtown	.....	90	11	101	11	.....	.....	... ..	.....	.....	.....	1	.....	12	.....	6	1 0 0
Marrickville	3,046	272	185	3,503	206	1	1	1	.....	.....	.....	8	1	218	1	29	0 10 0
Newtown	1,500	310	71	1,881	141	.....	... ..	.....	.....	2	.....	3	5	151	.....	17	5 10 0
North Botany	.....	.....	.....	... ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Sydney	3,370	95	181	3,646	183	4	2	.....	1	.....	.....	8	38	236	47	8	.....
Paddington	3,205	108	221	3,534	100	6	... ..	.....	2	1	.....	4	95	208	20	16	5 0 0
Petersham	2,331	241	96	2,671	117	2	1	.....	.....	.....	1	7	10	138	1	1	.....
Prospect and Sherwood	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Randwick	... ..	30	4	34	12	.....	.....	.....	.....	.....	.. ...	.....	.....	12	.....	1	.....
Redfern	4,087	195	149	4,431	142	.....	.....	2	.....	.....	.....	8	64	216	4	2	0 9 0
Rockdale	863	25	96	984	60	.....	1	. ....	.....	.....	.....	.....	.....	61	2	3	1 0 0
Rookwood	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....
Ryde	. ....	11	4	15	8	.....	.....	.....	.....	.....	.....	.....	... ..	8	.....	.....	.....
St. Peters	... ..	62	15	77	23	.....	.....	.....	.....	.....	.....	.....	.....	23	.....	2	0 10 0
Strathfield	... ..	37	1	38	2	.....	.....	.....	.....	.....	.....	.....	1	3	.....	... ..	.....
Waterloo	.. ...	46	41	87	74	... ..	.....	1	.....	.....	.....	1	2	78	1	1	.....
Waverley	.....	47	21	68	25	1	.....	.....	.....	.....	.....	.....	1	27	.....	6	3 0 0
Willoughby	.....	... ..	... ..	.....	.....	.....	.....	.....	.....	... ..	.....	.....	.....	.....	.....	.....	.....
Woollahra	.....	67	29	96	46	2	.....	.....	1	.....	.....	.....	2	51	.....	5	1 0 0
Totals	33,900	3,943	2,300	40,142	2,230	23	9	26	9	12	5	84	648	3,046	106	165	£27 9 0

HERBERT J. BEAUMONT, Assessor.

ANNUAL REPORT OF STORES BRANCH, CROWN-STREET.

Sir, 16th January, 1893.

I have the honor to report on the work done in this branch during the past year.

The total value of the receipts was £76,869 6s. 4d, while the total issues amounted to £61,414 5s. 4d. as set forth in the Abstract and Summaries at the end of this Report.

Annual Contracts.

The Contracts for supplies to the Board under my supervision have been faithfully carried out by the firms enumerated below:—

Article.	Contractor.	Rate.	Amount paid by Board.
			£ s. d.
Building material	R. B. Chambers	25 per cent. over schedule	995 0 9
Cartage	E. F. Sutton (till June)	25 per cent. under schedule	864 9 7
Do	A. Cook, *vice* Sutton, bankrupt	17 per cent. under schedule	804 5 0
Castings	Pope, Maher & Co.	14 per cent. over schedule	1,882 1 1
Cement	Jules Renard & Co.	12s. 9d. per cask	895 1 0
Coal	Thomas Saywell	Quoted prices	1,768 9 10
Lead	J. Barre Johnstone	£13 8s. 9d. per ton	2,504 2 1
Stores (general)	J. Keep & Son	12 per cent. under schedule	2,503 1 10
Timber	W. S. Preddy	2½ per cent. under schedule	295 4 10
Uniforms	Hordern Bros.	Quoted prices	203 2 11

Depots.

The stores standing to debit of this Branch are spread over the depots named below, for economy of cartage and convenience in case of breaks to water-mains, &c.:—Crown-street, Moore Park Road, Paddington, Newtown, Leichhardt, North Sydney, Ryde and Chatswood.

Stock-taking.

The annual stock-taking of all goods on store charge was conducted in August by the Examiner of Accounts, with myself, and the report thereon was duly adopted by the Board.

Imports.

The largest contract yet entered into for iron pipes was carried out this year by Messrs. Burns, Philp & Co., who landed here in three shipments 55,800 pipes of 4″, 6″, 8″, 10″, 12″ and 15″ diameters, and 5,627 castings and valves of similar dimensions, of which quantities 55,728 pipes and 5,465 castings and valves, value £46,824 4s. 0d. were received—the shortage of 72 pipes, and 162 castings, represents goods damaged in transit and rejected on examination at the depots. Apart from above quantities, there were also received from other sources 2,000 6″ pipes, value £1,625 3s. 8d.; 2,016 4″ pipes, value £965 16s. 1d.; and 1,060 3″ and 4″ pipes, value £449 6s. 0d.

Colonial Manufactures.

Under this head were received 10,309 special castings, &c., amounting in value to £5,582 0s. 1d., made up as follow:—

Firm.	Articles.	Quantity.	Rate.	Value.
				£ s. d.
Pope, Maher & Co.	Special castings	5,579	£10 per ton, plus 14 per cent.	1,882 1 1
,,	Bell hydrants	1,000	6/9 each	337 10 0
,,	,,	2,000	7/9 ,,	775 0 0
,,	Screw-down hydrants	855	30/ ,,	1,282 10 0
,,	Surface boxes	475	10/3 ,,	242 9 0
G. & C. Hoskins	4″ and 6″ stop valves	400		1,062 10 0
			Total	£5,582 0 1

Conveyance of Goods.

The following expenses were incurred for freight of goods on issue:—£1,668 14s. 7d. for cartage and £267 9s. 10d. for trainage.

Issues.

7,524 orders for stores were satisfied; on each order was an average of 4·43 items, giving an aggregate of 33,331 operations on stock by way of issues alone.

Sale

COMPT. OF STORES REPORT—*continued.*

Sale of Condemned Stores.

This realised :—

		£	s.	d.
Cast-iron, sold to Pope, Maher, & Co., under contract, 319 tons 7cwt. 1qr., @ £3 per ton		958	2	0
Wrought-iron	Sold by public auction 7th July, 1892.	29	19	4
Brass and gun-metal		26	16	11
White metal		1	4	0
Total		£1,016	2	3

Manufactures by Board's Operatives.

Raw material issued to the carpenters, blacksmiths, and concrete-workers amounted to £1,121 17s., and the new work converted therefrom was £1,643 6s. 8d., or an advance of £522 9s. 10d., representing the time of the men employed.

ABSTRACT OF RECEIPTS AND ISSUES, showing only the value of such goods as have passed through this Branch during the year, and is exclusive of many large items that are delivered on to Board's works in progress and charged direct thereto by the respective Engineers for Water Supply and Sewerage :

Description.	Balance on hand Dec. 31, 1891.	Receipts.	Issues.	Balance on hand Dec. 31, 1892.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
A—Water Pipes	7,895 18 9	50,065 6 6	37,670 14 4	24,472 18 9
B—Stop Valves	1,644 8 11	3,666 15 6	2,119 3 4	3,267 3 6
C—Special Castings	9,454 11 7	9,480 15 10	8,255 15 0	10,554 16 10
D—General Stores	1,243 4 4	13,656 8 6	13,368 12 8	1,903 11 3
Totals	£20,238 3 7	£76,869 6 4	£61,414 5 4	£40,198 10 4

It should, perhaps, be mentioned that the apparent gain between the sum of the 1891 balance plus receipts, and the sum of the 1892 balance plus issues, is due to variations in prices of goods received, while goods issued are obviously charged out at a uniform rate for clerical economy.

Summaries of Receipts and Issues.

These show a classification of the foregoing abstract :

SUMMARY A.—WATER PIPES.

Description.	Balance on hand, 31/12/91.		Received.		Issued.		Balance on hand, 31/12/92.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	No.	£ s. d.	No.	£ s. d.	No.	£ s. d.	No.	£ s. d.
3-inch, cast iron	4	1 7 4	238	79 3 1	83	27 6 8	159	56 4 9
4 „ „	299	154 9 8	27,749	12,219 8 10	27,044	11,948 2 2	1,004	428 11 8
5 „ „	11	5 17 4	1	0 10 8	1	0 10 8	11	5 17 4
6 „ „	822	730 19 0	31,690	24,289 17 1	19,644	15,635 19 7	12,868	9,910 16 9
8 „ „	...	.....	3,000	3,369 5 2	684	866 0 0	2,316	2,618 13 6
9 „ „	1,901	3,217 0 0	23	26 6 4	1,164	1,954 7 2	760	1,290 13 6
10 „ „	193	308 7 5	1,112	1,749 13 2	445	704 1 5	860	1,357 4 9
12 „ „	1,422	727 18 8	566	1,529 19 1	1,130	3,366 13 6	858	2,314 19 0
15 „ „	35	139 18 2	1,298	4,851 6 10	775	2,917 17 3	558	2,098 3 7
18 „ „	90	342 18 2	51	255 7 0	33	170 15 6	108	540 19 0
20 „ „	71	373 6 1	100	541 5 1	4	15 9 7	167	893 12 4
24 „ „	20	169 16 6	66	555 17 3	6	51 7 6	80	674 6 3
	Feet.		Feet.		Feet.		Feet.	
30 „ „	148	154 8 8	7	6 7 2	11	9 18 4	144	130 13 0
36 „ „	914	1,523 6 8	65	108 12 3	5	2 5 0	974	1,624 3 4
42 „ „	22	41 10 6	...	.....	...	.....	22	41 7 4
24¾ „ wrought iron	5	4 14 7	510	482 7 6	...	.....	515	486 12 8
Total on charge by Number	4,868	6,171 18 4	65,894	49,467 19 7	51,013	37,658 11 0	19,749	22,190 2 5
Total on charge by Feetage	1,089	1,724 0 5	582	597 6 11	16	12 3 4	1,655	2,282 16 4
Total values		7,895 18 9		50,065 6 6		37,670 14 4		24,472 18 9

Compt. of Stores Report—*continued.*

Summary B.—Stop Valves.

Description.	Balance on hand, 31/12/91.		Received.		Issued.		Balance on hand, 31/12/92.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity	Value.
		£ s. d.		£ s. d.		£ s. d.		£ s. d.
3-inch	33	47 0 6	2	2 17 0	30	42 15 0	5	7 2 6
4 „	89	183 18 8	381	788 12 6	340	706 14 8	130	274 12 6
6 „	119	385 5 3	310	984 18 3	285	938 0 3	144	513 0 0
8 „	.....	.....	30	131 12 6	9	39 9 9	21	92 2 9
9 „	20	172 3 4	76	383 3 8	17	85 12 9	79	397 19 3
10 „	.....	.....	20	128 10 0	6	38 11 0	14	89 19 0
12 „	23	230 19 2	24	186 3 6	13	110 14 2	34	287 14 6
15 „	4	65 9 6	19	269 16 0	6	85 4 0	17	249 18 0
18 „	5	104 10 0	8	136 15 3	2	29 10 9	11	214 18 3
20 „	.....	.....	9	184 8 0	2	35 1 0	7	161 7 0
24 „	.....	.....	2	63 15 6	.....	.....	2	63 15 6
30 „	2	144 10 0	2	140 0 11	.....	.....	4	280 1 10
36 „	2	180 0 0	2	170 2 2	.....	.....	4	350 2 2
42 „	1	145 0 0	.....	.....	.....	.....	1	145 0 0
24¼ „	.....	.....	1	31 17 9	.....	.....	1	31 17 9
Air valves	23	35 12 6	12	47 15 0	10	7 10 0	25	91 5 0
Relief valves	.....	.....	3	16 7 6	.....	.....	3	16 7 6
Totals	321	1,644 8 11	901	3,666 15 6	720	2,119 3 4	502	3,267 3 6

Summary C.—Special Castings.

Description.	Balance on hand, 31/12/91.		Received.		Issued.		Balance on hand, 31/12/92	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity	Value.
	No.	£ s. d.	No.	£ s. d.	No.	£ s. d.	No.	£ s. d.
Bends	716	1,287 16 3	1,297	1,242 7 7	1,049	563 15 1	964	1,966 1 8
Base Pieces for Surface Boxes	4,895	795 8 9	338	54 8 6	2,233	362 17 3	3,000	487 10 0
Caps, End	985	208 0 3	585	73 9 5	1,096	143 13 2	474	138 4 7
Collars	222	279 2 8	3,658	1,169 0 5	3,274	869 4 4	606	504 10 5
Cross Pipes	313	605 16 2	160	301 3 5	176	237 11 10	297	642 2 10
Hydrants, Ball	489	189 9 9	3,270	1,207 4 3	2,526	918 19 6	1,233	477 15 9
„ Screw-down	156	234 0 0	866	1,299 0 0	554	831 0 0	468	702 0 0
Hydrant Pipes	1,489	1,217 18 10	1,648	911 19 6	2,157	1,019 16 3	980	1,069 19 3
Reducing Pipes	272	297 9 9	521	247 14 9	455	212 18 9	338	320 11 11
Risers, Flanged for Hydrants	557	97 17 8	1,078	120 12 2	877	106 19 9	758	105 16 5
Surface Boxes, „	6,258	2,456 0 4	1,699	651 17 2	3,624	1,446 8 8	4,333	1,736 7 8
Tee Pipes	571	932 0 0	1,415	1,601 8 5	1,271	1,151 6 3	715	1,334 9 6
Miscellaneous	1,032	853 11 2	1,034	600 10 3	1,207	391 4 2	859	1,039 6 10
Totals	17,955	9,454 11 7	17,569	9,480 15 10	20,499	8,255 15 0	15,025	10,554 16 10

Summary D.—General Stores.

Description.	Balance on hand, 31/12/91.		Received.		Issued.		Balance on hand, 31/12/92.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Ts. cwt. q. lb.	£ s. d.	Ts. cwt. q. lb	£ s. d.	Ts. cwt. q. lb.	£ s. d.	Ts. cwt. q. lb.	£ s. d.
Bolts and Nuts	2 2 1 13	51 9 9	3 0 3 21	68 0 0	3 9 1 26½	80 19 5	1 13 3 12½	39 10 2
Coals for melting Lead	1 4 1 0	1 6 1	85 2 1 14	59 9 6	86 6 2 14	62 4 3	.....	.....
Coals for pumping	.....	.....	2,645 16 2 7	1,744 12 11	2,645 16 2 7	1,744 12 11	.....	.....
Lead for jointing Pipes	0 11 2 27	8 19 1	205 15 0 19	2,773 13 8	194 15 0 7	2,629 3 7	11 11 3 31	150 11 0
Yarn „ „	0 9 1 0	17 0 9	3 10 3 27	139 11 10	3 15 0 14½	147 17 8	0 5 0 12½	19 12 1
	No.		No		No		No.	
Bricks, common	308	0 15 5	56,764	141 16 3	56,261	135 19 11	811	2 0 7
	Sets.		Sets		Sets.		Sets.	
Concrete Blocks for Hydrant Surface Boxes	333	83 5 0	3,701½	925 7 6	2,171	542 15 0	1,863½	465 17 6
			Casks.		Casks.			
Cement	.....	.....	1,471½	903 19 6	1,451½	925 1 11	20½	12 16 7
Miscellaneous Stores	.....	1,077 8 3	.....	6,899 17 4	.....	7,099 18 0	.....	1,207 3 4
Totals	.....	1,213 4 4	.....	13,656 8 6	.....	13,368 12 8	.....	1,903 11 3

COMPT. OF STORES REPORT—*continued.*

DIGEST OF ISSUES, showing apportionment of the various works of the Board.

Water Service.	£	s.	d	Sewerage Service.	£	s.	d.
Charged to Loans—				Charged to Loans—			
New mains	48,804	6	0	New sewers	248	3	7
Working plant	674	10	8	Working plant	324	0	7
Furniture and Fixtures	136	3	0	Furniture and Fixtures	79	4	1
Manufacturing account	1,121	17	0	Buildings	29	7	11
Machinery	131	19	0	Charged to Revenue—			
Reservoirs	43	10	7	Repairs to sewers	692	5	2
Liverpool Water Supply	12	11	9	Botany sewage farm	77	15	9
Buildings	52	16	8	Working expenses	56	7	3
Sealed samples	1	1	3				
Repair of old pipes, &c., taken out of ground	95	13	2				
Main conduit	17	16	4				
Charged to Revenue—							
Repairs to mains	1,953	5	10				
Working expenses	641	2	5				
Plumbers and others	3,773	8	9				
Condemned stores	35	4	0				
Meter, &c., branch	164	14	6				
Repairs to main conduit	91	14	4				
Coals for pumping	1,744	12	11				
Pumping expenses	419	12	10				
Total	£59,916	1	0	Total	£1,498	4	4

A. ELLICE FLINT,
Comptroller of Stores.

The Secretary.

FIFTH

FIFTH ANNUAL REPORT OF THE ENGINEER FOR WATER SUPPLY.

Board of Water Supply and Sewerage,
Sydney, 31st January, 1893.

I HAVE the honor to forward the Fifth Annual Report of operations carried on during the year 1892 in this branch of the Board's service, setting forth also such incidents as transpired during the year which were considered of sufficient importance to record, together with supplementary reports of operations conducted in the sub-branches, prepared by the respective heads of those sub-branches, viz., the maintenance of the canal, the Prospect Reservoir and the Potts' Hill Reservoir and screening tanks, the pipe-laying branch, the pumping branch, meter and tap-testing branches, with the year's result in a tabulated form. A return of meters fixed, removed and otherwise dealt with, prepared by the meter clerk, is also added, with such other information as may be deemed of interest to the Board and the public.

The Supply into Prospect Reservoir.

The rainfall for 1892 has been so copious and evenly distributed as to keep this reservoir brimming over throughout the year. No opportunity was therefore given for testing the resources of the Board to meet the requirements of a dry season.

The wetness of the season was such as to entail heavy work on the part of the Board's labour gangs on the canal to repair slips, leaks, &c.

This reservoir has been supplied solely from the Cataract River, that source proving very greatly in excess of all requirements. Therefore the Nepean tunnel was not called into requisition.

The Supply from Prospect Reservoir.

The supply delivered from Prospect Reservoir as measured over the gauging weir (and approximated for the time when that weir was not available) amounted to 4,439,273,890 gallons, or about six-tenths of its available storage capacity, or averaging all the year round 12,129,158 gallons per day, or about 32·12 gallons per individual per day.

The 100,000,000-gallon reservoir at Potts' Hill enabled the Board, after the repairs of the aqueduct, to tide over the summer without unduly lowering the supply in Crown-street, which had previously been a source of complaint from the want of the second main from Potts' Hill, now about to be completed.

The supply was kept up notwithstanding the increased demand created by the Ryde pumps for North Sydney, Willoughby, Ryde, &c.

Quality of Water.

The quality of the water is perhaps unsurpassed in any part of the world, being clear, bright, and sparkling as drawn from the tap, and certified from an exhaustive monthly analysis to be of a very high character in every respect. It has been thought that a very small quantity of lime would improve it, and a report requiring information on this point has been asked for from the Government Analyst.

Distribution.

The distribution of the water is now so perfect and complete as to leave no room for complaint from the public of inadequate pressure, as was predicted in my last report, with the exception of Waverley, where a small elevated area near the reservoir will require an elevated tank.

Pipe Laying.

As predicted in the report for 1891, the work in this branch will very shortly have dwindled down to very small proportions, the reason being that the Board will have overtaken the bulk requirements of the public in all centres having a sufficient population to yield the small revenue required by the Board. A great proportion of the work done by the Board for the last two years has been to improve the supply to parts of the city supplied but inadequately. In the detail schedule herewith the proportion done in this way has been classified separately in the tables herewith in order to show that the revenue arising from the year's transactions is loaded with this heavy handicap.

Ocean-street Tram.

The undertaking of this work by the railway construction branch is entailing on the Board the necessity of removing some old mains, replacing others by new, and other operations, costing considerable sums, but which cost, with the exception of that incurred in laying mains previously intended to be laid by the Board irrespective of the tram, will be recouped by the Railway Department.

Renewals

Water Engineer's Report—*continued.*

Renewals of Mains.

The completion of the work of renewals of inadequate mains was done by gangs employed on day-wages by the Board, the contractors who had undertaken the city pipe laying for two years having failed to satisfy the Board. At first it appeared that the work done in this way was more costly than if done by the contractors, but later on the Board's men contrived to compete with and even exceed in cheapness the contractor's work. When the work was finished two gangs amounting to forty-five men had to be discharged. They had been ganged by men taken from the main cleaning gang, who will now resume their proper work, of which there is a great deal to be done, because some of the lines of main cleaned in past years are now calling for fresh attention, inasmuch as after they are cleaned they are unprotected by the coating as new pipes are.

The increasing tendency to use sheet pavements as footpaths, though making an excellent surface, will hereafter entail trouble when, for any reason, such as pipe laying or service laying, they are disturbed. I have, therefore, submitted a proposal to encase service pipes by means of an earthenware pipe sufficient also to contain the gas service, but the difficulty of determining who shall pay the cost seems to stand in the way of a decision.

Pumping Plants.

The two compound duplex Worthington pumping engines at Crown-street have given every satisfaction throughout the year. No. 2 engine was completed and started on regular work on the 1st day of January, 1892; some few modifications had to be made later on, which when attended to, showed the engine to possess the same adequacy for the work which was exhibited by No. 1 engine.

When No. 2 engine was finally proved to be equal to take up the work of both engines, it was determined to give No. 1 a thorough overhaul, which, as it had not been done since the engine was started was much required, meantime No. 2 engine raised all the water required to Paddington, Woollahra, and Waverley, but to do so it had to work continuously night and day for one month.

The Crown-street depôt received the final operation designed by the Board to render it complete and may now be considered a most orderly and effective establishment, comprising the 3½ million gallon brick covered reservoir; pumping establishment; stores department, with stores for both water and sewerage departments; complete testing machinery and staff for meters and all water fittings; repairing shop, &c.; cement, and other test-rooms for sewerage materials; engineers residence, and old disused engine-house, all in an orderly and cleanly condition.

The Ryde Pumping Plant.

These engines have maintained their exceptional efficiency since their start, though several serious defects in strength of parts exhibited themselves—notably were the valve chambers found of insufficient strength for the head of pressure to Chatswood; they have been strengthened in a manner that bids fair to sustain all likely strains, but in order to be prepared for the possibility of accidents, the President has ordered designs for new valves and castings to be prepared, which would be used to replace the existing ones in case of accident without loss of time.

The Ryde Boilers.

Early in their existence a fireman discovered that the parts in contact with the fire were badly bulged to the extent of being considered dangerous, later on this was traced to be the effect of a deposit of lubricating oils derived with the feed water from the jet condenser—the practice of feeding from the condenser was discontinued, and new bottoms were put in the boilers. Another similar bulging later on was found to be due to a deposit on the bottom of the boiler of a quantity of zinc powder put on the boiler to mitigate the corrosive effect of the water, since this was removed no further fault has been found. The reservoir and premises are in orderly condition and all working well.

Waverley Engines.

A pair of rotative engines capable of raising 100,000 gallons of water per hour from Crown-street to Waverley Reservoir is in active course of construction in the establishment of the Mort's Dock Engineering Co.; when these and the duplicate main from Potts' Hill are completed, it is expected that the whole of the Board's pumping can be done within two watches of eight hours' each.

The four Babcock and Wilcox boilers at Crown-street will suffice to provide steam for the whole of the engines at Crown-street.

Gas Engine.

The only other pumping establishment now used by the Board is that at Carlton, consisting of a gas engine capable of raising 8,000 gallons of water per hour from Carlton (where it is received by gravitation) to the 20,000-gallon tank at Penshurst. This

Water Engineer's Report—*continued.*

This little engine has been placed in charge of the local turncock, and has worked without repairs for about two years, at a velocity beyond its guarantee against a head of pressure, including friction of 10½ lb. per square inch.

Old North Shore Engines.

The pair of small Blake engines, formerly used at North Shore, have been stored at Carlton with a view shortly, of erecting them there, as apart from the increasing consumption in this locality, it is advisable for the Board to have a duplicate in the event of an accident to the gas-engine; moreover, the gas-engine occupies too much of the turncock's time, owing to its having to be run at a great speed to meet requirements.

Old Botany Engines.

The old Botany engines are periodically moved, and the boilers warmed in rotation, ready for eventualities.

The old rotative engines at Crown-street are entirely disused and are only awaiting the completion of the No. 2 trunk main and of the Waverley engines to be awaiting the Board's decision as to their disposal, as well as the old and new engines at Botany.

Old Blake Engines.

The old pair of Blake's have been dismantled and are ready for sale or other disposal.

The Board's Tank Reservoirs.

The Board own the following iron tanks for impounding and distributing local supplies of water thrown into them by various pumps, in addition to the brick reservoirs, used for similar purposes:—That at Ashfield, at Ryde Village, two at Chatswood, and one at Hurstville, all of which are in excellent order; the pair at Chatswood will shortly require a coat of paint outside, and perhaps inside.

The pair of tanks formerly at North Shore are stored with a view of finally being used as supplementary tanks to feed limited areas of elevated hills in the vicinity of Chatswood and Hurstville.

A fine pair of 25,000-gallon tanks, formerly used for salt water by the City Council, are stored awaiting funds for their erection at Waverley; also to feed some elevated small areas.

Prospect Dam.

This great work is maintaining its stability and usefulness to the full, having been kept brim full for 1½ years. This is a severe test for an earthen bank, and gives confidence in its durability.

Liverpool Dam.

The small dam constructed as a storage dam for the town of Liverpool, has, since the final repairs, given every satisfaction, and the water in it has cleared so as to be fit for use.

Early in the year, when the dam was nearly completed, and was being gradually filled from the canal, an abnormal rainstorm fell, filling it and exceeding the capacity of the by-wash, rose unduly on the sides, finally causing a rupture *through* the body of the dam, by piercing a series of holes.

The last-named fact convinced the Board that the work had been improperly done. A commission of inquiry declared that the work and supervision had both been scandalously neglected, inasmuch as instead of selected clayey materials being used in the hearting, sandy loam had been dumped in without regard to the specification. The work was repaired by the insertion of a puddle core.

Aqueduct.

On the 7th January, the parapet walls of the aqueduct at Sherwood gave way, and fell into the creek, but by working continuously night and day they were replaced in a stronger form; by the 10th the city supply was restored, having meantime been met from the water impounded in the 100 million gallon reservoir at Potts' Hill, and from Botany.

Areas of Previously Precarious Supply.

Early in the year, all those elevated localities which had thereto suffered from a precarious water supply received a permanent remedy, and no complaints of any moment were received throughout the year.

The Watershed.

The drainage area of the Nepean, Cataract, and Cordeaux Rivers was visited by the ex-President and Engineer on a tour of inspection, and with one exception, viz., the Piggeries, on the Dowdle's Folly Creek, nothing was seen to cause the least uneasiness as to pollution.

Even that caused by the Piggeries has not concerned the Board hitherto, as water from this district has not been taken into the supply, but allowed to flow down the Nepean.

A partial survey was made for a reproclamation, with an amended description, which will be completed as soon as possible.

Contract

Water Engineer's Report—*continued.*

Contract for Imported Pipes and Castings.

In 1891, the Board entered into a contract for the importation of 6,850 tons of pipes with appropriate castings and valves with a Sydney importing firm, which was satisfactorily completed, and a sufficiency of pipes for all present requirements remains on hand of all sizes with the exception of 4-inch pipes.

Local Contract for 15,000 4-inch Pipes.

In March last, the Board advertised for tenders for the manufacture in the Colony of 15,000 pipes, or 45,000 yards; but, from various causes, the Government did not close on any of the offers. These are now included in the general Government contracts.

Centennial Park Reservoir.

In the month of July, the Public Works Committee took evidence in the matter of the erection of a 2),000,000-gallon tank at the Centennial Park, to form a substitute for the present Paddington 2,000,000-gallon brick reservoir, which is too low and too small.

The work was recommended to Parliament, and the estimated cost, £86,000, has been placed on the Estimates for 1893.

Liverpool and Campbelltown.

The towns of Liverpool and Campbelltown are now in the enjoyment of a water supply abundant for all their requirements for many years, and, as the work in both these towns was not more than could be attended to by one turncock, an experiment to conduct both schemes by one man has been so far successful, but, lest an accident happen at night, or at any hour when the turncock is absent, it is intended to subsidize a local plumber to be in attendance during such accidents, to turn off the water pending repairs, when it is expected there will be no room for complaint

The Board has now met the wants of all places asking for a water supply within their distribution area; the next place likely to require it is a strip of land lying contiguous to the line of railway between Crow's Nest Point and Hornsby.

Prospect and Sherwood as well as Smithfield are contemplating steps with the same view.

Further removal of old Mains.

Several areas of the older parts of the town and immediate suburbs, whose supply has become inadequate for the increased population, and the pipes being much corroded, will call for attention during this year.

The Canal between Cataract and Prospect.

This work kept up the supply at the Prospect Reservoir without any interruption of consequence and without great repairs; but it is evident that a continuous outlay will be called for on some parts to prevent the sides from falling into serious disrepair. Other parts of the canal, by far the major portion, show but little sign of deterioration, some none at all.

The defective portions are those where schistoze rock has been used for the lining which was imperfectly metamorphosed. At the time this stone was passed, there was no appearance different from that which has stood so well, but it now shows its instability by disintegrating under the influence of the weather.

It is being closely and constantly watched, and defects are attended to as they develop.

Gangway over Woodhouse Creek.

Owing to the refusal of the owners of the land to allow the Board's operatives to pass over the old bridge at this creek, the Board sanctioned the erection of an iron and timber gangway to be erected above the pipe aqueduct capable of allowing the passage of a man on horseback; this work was done and the approaches made thereto.

Gauge Weir at Prospect.

When the gauge weir at the pipe head basin was about to be removed, a more exact type of gauge weir was constructed close to the Prospect Reservoir outlet, which will now form the permanent indicator of the quantities of water delivered out of the Prospect Reservoir for city and suburbs.

The 72-inch Main.

This main is fulfilling its function without causing any undue expenditure, and is being closely watched for deterioration or leakage.

The Screening Tanks.

These works continue to effect the screening of the whole of the water delivered to the city and suburbs through a mesh of 840 to the square inch, thus freeing it from floating insects, spawn, and other impurities, just as the water enters the two mains which convey it in a close pipe until delivered into the Board's reservoirs at Petersham and Crown-street.

Water Engineer's Report—*continued.*

Irrigation.

Some desultory applications have been made to the Board for water from the canal to irrigate land on either side of the same, but, for several reasons, no effect has been given to any project. Probably the copious rains of the last few years have rendered irrigation unnecessary, but these seasons are universally acknowledged to be exceptional. No doubt applications will be numerous (as a great deal of good land exists on either side of the canal) when the Board has determined on the terms upon which consumers can be supplied.

If irrigation were to become very popular, it would be necessary, in order to enable the Board to deliver water at all seasons of the year, to erect subsidiary dams at convenient situations; but, as this would be gigantic, it has engaged the anxious attention of the Secretary and myself, with the result, as conveyed in the Secretary's report, that the only safe policy for the Board to follow is to first determine on a rate per 1,000 gallons at which water can be delivered to consumers direct out of the canal, leaving it to the consumer to construct impounding reservoirs or tanks for their own use.

This course is necessitated by the absence of any positive assurance to the Board that, in the event of the Board constructing subsidiary dams, water would be brought in sufficient quantities to yield a revenue commensurate with the outlay; indeed, it is fairly certain that no such revenue would be derived for many years.

Meantime, it will be well to freely publish the fact that the Board is prepared to consider applications for water for irrigation.

Quantity of Water pumped from the Crown-street Reservoir to the various other Reservoirs during the years 1879 to 1892 inclusive, showing the consumption of Coal, also from Ryde to Ryde Hill and Chatswood :—

From Botany to Crown-street Reservoir.

Year.	Water pumped.	Coal consumed.
1879	1,488,297,152 galls.	6,365 tons.
1880	1,522,843,440 „	6,320 „
1881	1,281,692,592 „	4,997 „
1882	1,364,004,000 „	4,808 „
1883	1,729,537,200 „	5,510 „
1884	1,590,107,040 „	5,754 „
1885	1,729,441,440 „	6,237 „
1886	1,864,123,400 „ (Nepean water partly received)	7,240 „
1887	1,047,638,880 „ „ „	4,040 „
1888 } 1889 }	No water was raised from Botany, as the Nepean scheme was complete.	
1890	9,615,120 galls.	49 „
1891	Nil.	27¾ „
1892	19,536,910 „ (Accident to Aqueduct)	105½ „

From Crown-street to Paddington, Woollahra, and Waverley.

Year.	To Paddington.	To Woollahra.	To Waverley.	Coal consumed.
1879	480,205,500 galls.	Nil. galls.	Nil. galls.	758 tons.
1880	511,906,510 „	„ „	„ „	599 „
1881	372,323,963 „	17,767,046 „	„ „	508 „
1882	453,060,680 „	36,410,630 „	„ „	559 „
1883	571,414,074 „	55,382,384 „	„ „	739 „
1884	569,034,960 „	83,867,744 „	„ „	817 „
1885	568,146,150 „	94,959,800 „	„ „	704 „
1886	585,848,540 „	124,994,480 „	„ „	972 „
1887	633,380,590 „	190,100,040 „	„ „	1,192½ „
1888	724,914,200 „	300,112,240 „	„ „	1,613¼ „
1889	843,068,150 „	339,163,150 „	„ „	1,683½ „
1890	992,457,890 „	367,108,960 „	„ „	2,355½ „
1891	1,141,030,760 „	451,200,880 „	„ „	2,882½ „
1892	1,325,649,600 „	378,592,520 „	123,438,830 „	1,927¾ „

From Woollahra to Waverley.

Year.		Coal consumed.
1887—From April 2 to December 31	19,317,700 galls.	.....
1888—From January 1 to December 31	61,236,931 „	181 tons.
1889— „ „ „	80,679,780 „	197 „
1890— „ „ „	85,113,600 „	228 „
1891— „ „ „	121,828,160 „	272 „
1892— „ „ „	21,314,520 „	46 „

Pumped at North Shore.

Year.		Coal consumed.
1890	30,420,740 galls.	231½ tons.
1891	58,404,440 „	347¾ „
1892	960,780 „	6 „

Pumped by Ryde Pump.

Year.	Ryde to Ryde Hill.	Ryde to Chatswood.	Coal consumed.
1892	68,209,000 galls.	123,957,000 galls.	506 tons.

Cost

41

Water Engineer's Report—*continued.*

Cost of Raising Water.

Taking the expenses of coal stores and wages for the Crown-street, as well as the Ryde pumping establishment, the cost of raising 1,000,000 gallons 100 ft. was £2 0s. 0d. or about a half-penny per 1,000 gallons.

In 1891 the cost was £2 18s. 6d. per 1,000,000 gallons, or a little under three-farthings per 1,000 gallons raised 100 ft., an economy of 33 % in favour of 1892.

The total length of mains of all sizes laid up to the present in city and suburbs amount to 729½ miles, not including trunk mains; including trunk mains, 784¾ miles.

The total number of screw-down hydrants to be used for the extinction of fires, street watering and flushing, &c., is 1,443, including city and suburbs. The total number of ball hydrants for similar purposes is 13,889.

While replacing old mains with new the old are carefully taken up, and, if in a fit condition, are cleaned, coated and used as new. The same applies to fittings, castings, &c. The value of such materials recovered in 1892 amounts to £2,658 12s. 6d.

I have the honor to forward a report from the Engineer-in-Charge at the Crown-street pumping station, the Superintendent of the canal and works from the Nepean to Potts' Hill, the Inspector of Pipe-laying, the Meter Tester, and the Meter Clerk, bearing on operations in their respective branches.

I have also to express my satisfaction at the efficiency and continuous improvement in the discharge of their respective duties on the part of the Board's staff in this branch, as well as their zeal in the Board's interest.

J. TREVOR JONES,
Engineer for Water Supply.

The Secretary.

Sir, Prospect Reservoir, Prospect, 10th January, 1893.

I have to report for your information the state of the work between the Pheasant Nest and Pott's Hill. In doing so, I will first refer you to the breakaway at aqueduct, below the Prospect Reservoir, which took place on the morning of the 7th January. The water was cut off for four days during the time of effecting the temporary repairs.

It was again cut off on the 13th June following for four days, after the permanent repairs were completed, to allow of the removal of the 4-feet pipes from the aqueduct which had been used for temporary supply of water. Advantage was taken on this occasion to carry out the following works, viz:—

Making good at pipe head basin the cement concrete lining, and backing same, and removing the temporary timber structure erected by Messrs. Hudson Bros. for their supply of water to Sydney.

The erection of a gauging weir in canal near valve house for recording the quantity of water sent out of Prospect Reservoir.

The repairs to a slip in canal at about 3¼ miles below the reservoir, and which could only be effected when water was out of canal.

Advantage being also taken to remove all vegetable matter from canal.

These works were executed in the four days, and water turned on again. In both cases of stoppage Sydney was supplied from Pott's Hill Reservoir.

Some few other repairs, rendered necessary by exceptionally heavy rains, have been done to canal above the reservoir, but nothing to call for special mention.

The works generally are in fairly good order, excepting some of the canal pitching between the reservoir and Kenny Hill. The stone in places through which the canal passes is of an inferior quality, and will not stand exposure to the weather. The needed repairs can be carried on from time to time, as may be required, without interfering with the supply of water to Sydney.

Some of the canal embankments below the reservoir will require repairs, and those with concrete lining the water will have to be cut off a few days at a time to allow of it being done. The embankment with stone pitching can be repaired when water is running in canal, as I believe it is only the upper part of the puddle requires attention.

The works in connection with the reservoir are in good order, and the reservoir has now been standing full for the past eighteen months, and the embankment shows no signs of weakness.

The trees have made good progress, adding much to the appearance of the place. Some sixty other trees were planted this year at west end of embankment.

The expense for maintenance has been reduced, notwithstanding two extra permanent workmen having been taken on.

Yours obediently,
W. WAKEFORD,
Superintendent, Prospect.

The Water Engineer.

Sir

Sir, 30 January, 1893.

I have the honor to submit the Annual Report of Work done during the year 1892.

Main-laying.

Pipes of various sizes, numbering 50,629, were laid, giving a total length of 89 miles 917 yards. It is satisfactory to note that there have been no leaks through defective work.

Main-cleaning.

A distance of 29 miles 741 yards was cleaned. The greater portion of this work was executed during the first six months of the year. During the latter half of the year the work was retarded, owing to the disbandment of two of the gangs.

Hydrants Fixed.

During the year 537 screw-down and 2,566 ball hydrants were fixed in the city and suburbs.

Cleaning and Coating Pipes Park Road Department.

Excellent work has been done at this branch. The value of material taken out of ground amounts to £2,658 12s. 6d. after deducting wages, cartage, &c.

D. C. ROBERTSON,
Inspector.

Engineer of Water Supply.

SUMMARY of Work done during Year 1892.

Mains laid	50,629 pipes = 89 miles 917 yards.
„ cleaned	29 „ 741 „
„ removed	9 „ 12,74 „
„ lowered	2 „ 763 „
„ repaired	No. 235
Hydrants fixed	Screw-down, 537; ball, 2,566
Private works, paid for by plumbers and others for large branches	No. 109
Leaks, services cut off to prevent waste	No. 1,812
Services cut off for non-payment of rates	No. 87
Horse troughs supplied	No. 13
Gas-engines „	No. 22
Gulley-shafts „	No. 51
Main drillings to connect services	No. 3,934
Extensions from existing services	No. 2,332
Value of material taken out of ground, cleaned and tarred fit for reissue and old metal	£2,658 12 6

Abstract of Mains laid during 1892.

District.	Number of different sized Pipes.												Lengths of different sized Pipes, including bends, valves, &c., in yards.											Total No. of Pipes for District.	Total length of Mains for District, in yards.
	3″	4″	6″	8″	9″	10″	12″	15″	18″	20″	24″	30″	3″	4″	6″	8″	9″	10″	12″	15″	18″	20″	24″	30″		
1 Alexandria	...	123	1	...	197	...	1	...	...	...	...	...	...	381	1	...	595	...	1	...	...	...	...	...	322	978
2 Ashfield	...	235	2	...	56	...	1	...	...	...	...	..	...	725	3	...	165	...	1	...	...	...	...	...	294	894
3 Auburn	...	44	85	...	100	...	...	...	...	...	...	...	...	125	262	...	306	...	...	...	...	...	...	...	229	693
4 Balmain	...	566	116	...	...	...	...	...	...	...	...	...	...	1,766	358	...	...	...	...	...	...	...	...	...	682	2,124
5 Botany	...	640	...	...	...	...	...	...	...	...	.	...	...	1,897	...	...	...	...	...	...	...	...	...	...	640	1,897
6 Burwood	...	128	...	...	...	...	...	...	...	...	...	...	...	391	...	...	...	...	...	...	...	...	...	...	128	391
7 Camperdown	...	404	300	...	...	...	...	...	..	...	...	...	...	1,776	300	...	..	...	...	...	...	...	...	...	704	2,076
8 City of Sydney (by Board's Operatives)	6	1,327	8,516	279	240	209	196	280	16	5	...	...	11	4,228	26,830	844	762	606	776	1,157	59	13	...	...	11,074	35,286
9 Concord	...	726	137	...	8	...	...	...	...	...	...	...	...	2,191	419	...	29	...	...	...	...	...	...	...	871	2,639
10 Drummoyne	...	688	316	...	...	...	...	...	...	...	...	...	...	2,099	960	...	...	...	...	...	...	...	...	...	1,004	3,059
11 Enfield	...	743	40	...	...	...	...	...	...	...	...	...	...	2,261	124	...	...	...	...	...	...	...	...	...	783	2,385
12 Five Dock	...	235	496	...	...	..	265	370	...	...	...	...	...	711	1,513	...	...	...	1,062	1,510	...	...	..	...	1,366	4,796
13 The Glebe	...	331	728	...	3	...	...	...	...	...	...	...	...	1,018	2,262	...	10	...	...	...	...	...	...	...	1,062	3,290
14 Granville	...	727	560	...	...	...	...	...	...	...	...	...	...	2,786	1,778	...	...	...	...	...	...	...	...	...	1,287	4,564
15 Hunter's Hill	...	1,319	633	...	1	...	..	...	...	...	...	...	...	4,035	2,068	...	1	...	...	...	...	...	...	...	1,953	6,104
16 Hurstville	...	2,861	64	...	...	...	..	...	...	...	..	..	...	8,799	92	...	...	...	...	...	...	...	...	...	2,925	8,891
17 Kogarah	...	422	275	...	...	...	...	...	..	...	...	...	...	1,289	843	...	...	...	...	...	...	...	...	...	697	2,132
18 Leichhardt	...	1,045	4	...	145	...	...	...	...	...	...	...	...	3,544	4	...	436	...	...	...	...	...	...	...	1,194	3,984
19 Liverpool	...	14	...	...	3	...	1	...	..	...	...	...	...	47	...	...	11	...	4	...	...	...	...	...	18	62
20 Marrickville	...	328	42	...	...	...	1	...	...	...	...	...	...	1,008	125	...	...	...	1	...	...	...	...	...	371	1,134
21 North Botany	..	352	277	...	...	...	15	..	...	...	...	...	...	1,065	851	...	...	...	69	...	...	...	...	...	644	1,985
22 North Sydney	...	1,098	762	..	...	...	...	...	...	...	...	...	...	3,349	2,294	...	...	...	...	...	...	...	...	...	1,860	5,643
23 Newtown	...	508	168	.	...	...	...	...	...	...	...	...	...	1,410	523	...	...	...	...	...	...	...	..	...	676	1,933
24 Paddington	1	167	183	127	19	94	96	10	...	...	...	...	1	510	583	385	53	289	387	39	...	...	..	...	697	2,247
25 Petersham	...	165	519	...	...	...	..	...	...	...	..	...	...	931	1,173	...	...	...	...	...	...	...	...	...	684	2,104
26 Prospect and Sherwood	...	174	1	...	264	...	...	66	...	...	...	...	...	518	1	...	805	...	...	268	...	...	...	...	505	1,592
27 Randwick	...	1,457	139	...	1	...	...	...	...	...	..	...	...	4,396	419	...	1	...	...	...	...	...	...	...	1,597	4,816
28 Redfern	...	...	76	...	1	...	...	1	...	...	...	...	.	..	226	...	2	...	...	1	...	...	...	..	79	229
29 Rockdale	...	1,223	273	...	2	...	...	...	..	...	...	...	...	3,510	820	...	2	...	...	...	...	...	...	...	1,498	4,332
30 Rookwood	...	548	27	...	...	...	537	1	...	...	...	...	...	1,676	89	...	...	...	2,166	1	...	...	...	...	1,113	3,932
31 Ryde	...	2,069	894	111	1	...	21	...	...	...	...	...	...	6,349	2,784	332	7	...	82	...	...	...	...	...	3,096	9,504
32 Strathfield	...	112	547	...	2	...	130	...	...	...	...	...	...	336	1,664	...	8	...	519	...	...	...	...	...	791	2,527
33 Waterloo	...	79	...	...	..	...	1	...	...	...	...	...	...	236	...	...	...	...	1	...	...	...	...	...	80	237
34 Waverley	...	853	78	...	...	...	...	...	...	...	...	...	...	2,571	245	..	...	...	...	...	...	...	...	...	931	2,816
35 Willoughby	...	4,581	1,631	...	2	121	1	1	...	...	...	...	...	13,939	4,976	...	4	374	1	1	...	...	...	...	6,337	19,295
36 Woollahra	...	468	1,132	...	1	...	...	...	...	...	...	...	...	1,411	3,452	...	1	...	...	...	...	...	...	...	1,601	4,864
37 Mains laid by Board's Operatives in connection with alterations, repairs, etc.	127	483	161	...	20	2	19	15	2	6	1	1	266	1,257	406	...	41	4	47	68	9	20	1	3	837	2,122
Total for Year	134	27,243	19,183	517	1,066	426	1,285	744	18	11	1	1	278	84,541	58,398	1,561	3,239	1,273	5,117	3,045	68	33	1	3	50,629	157,557

Grand Total—Number of Pipes, 50,629=89 miles, 917 yards.

725

Sir, The Waterworks Reservoir, Crown-street, Sydney, 7 January, 1893.

I have the honor to make the following report upon the working of the pumping engines, &c., and Water Supply for the year ending 31st December, 1892:—

1. The casualty to the water supply aqueduct on 7th January, 1892, necessitated starting the Botany engines to assist in keeping up the water supply. Pumping was continued till the 12th January, when the normal supply was restored. The quantity of water pumped from Botany to Crown-street Reservoir during that time was 19,536,910 gallons. At Botany a boiler fire has been kept banked throughout the year in readiness, and changed alternately for the purpose of drying boiler bottoms and flues. The engines have been turned round by purchase every week.

2. No. 1 Worthington pumps have been pumping daily to Paddington Reservoir throughout the year, except during a period when they were laid up for general overhaul from 6th September to 5th October, when their pumping was taken up by No. 2 Worthington. They were then fitted with new piston rings throughout, new piston-rod ends and nuts, all valve gear let together, steam valves examined and adjusted, corless valve spindles trued up and gudgeons rebushed, air and water compressions fitted with new connecting pins and rods bushed, feed pump connecting rods rebushed, air pump buckets drawn, foot valves adjusted, one defective replaced by a new one, head and bucket valves replaced by new ones, all connections stripped and brasses let together, main pump plungers drawn and all valves examined, eighteen dozen defective valve spindle nuts replaced by brass ones, two dozen new valve springs replaced defective ones, main pump scraped and painted internally, safety arrangements cleaned, examined and adjusted. These pumps are now working satisfactorily.

3. No. 2 Worthington pumps have been pumping daily from the commencement of the year to Woollahra Reservoir; and, from the 14th February, 1892, to Waverley Reservoir, with the exception of a few days stoppage for adjusting, painting, &c., on four separate occasions before being taken over, during which time the pumping was taken up by the old Blake pumps, which are now demolished and thrown out of use. No 2 Worthington pumps were fitted with new air compressor lever, and new head and bucket air-pump valves. These pumps are now doing their work satisfactorily.

4. The pumps at Woollahra were doing the Waverley pumping till 13th February, 1892, when a casuality happened, the discharge pipe bend being ruptured, carrying away air vessel. They were made good and pumping done by them for a few days in April and June, when they worked satisfactorily. After this the pumping was done regularly by No. 2 Worthington engines.

5. The Blake pumps took up the pumping to Woollahra during the few days when the No. 2, Worthington pumps were being adjusted.

6. The North Sydney pumps were discontinued at the commencement of the year, and only did pumping from the 16th to the 22nd January, 1892, when they were ultimately removed as unnecessary, the Ryde pumps doing all the required supply.

7. The Ryde pumps have been running from the commencement of the year. A regular record has been kept of the pumping and supply of these pumps from the commencement of April last. It was considered advisable to strengthen the valve chambers of both engines by shrinking on bands round the weak parts. With this exception the work carried out has been of the ordinary description necessary for maintaining efficiency.

8. The quantity of water pumped by the Worthington pumps at the Crown-street works to Paddington during the year is 1,325,649,600 gallons, showing an increase of nearly 184·619 million gallons on the previous year; and, in the pumping of the last quarter of the year, an increase of over 32·050 million gallons on that of the corresponding quarter of the previous year.

9. The quantity of water pumped to Woollahra by the No. 2 Worthington and Blake pumps during the year was 378,592,520 gallons, being 72·6 million gallons less than the previous year. This apparent falling off is caused principally by the Waverley Reservoir being supplied direct from Crown-street, instead of, as formerly, from Woollahra.

10. The quantity of water pumped direct from Crown-street to Waverley Reservoir during the year was 123,438,830 gallons, and from Woollahra to Waverley Reservoir 21,314,520 gallons, making a total of 144,753,350 gallons, showing an increase of over 22·925 million gallons on the previous year; and in the pumping of the last quarter of the year an increase of over 634·200 gallons on that of the corresponding quarter of the previous year.

11. The quantity of water pumped by the North Sydney pumps to the high-level tanks during the early part of the year was 960,780 gallons.

12. The quantity of water pumped by the Ryde pumps, from the 1st April, 1892, to Ryde Hill was 68,209,000 gallons, and to Chatswood 123,957,000 gallons.

RETURN of Water pumped and Coal consumed from 1st January to 31st December, 1892.

From.	To.	Water pumped.	Coal consumed.		
		Gallons.	Tons.	cwt.	qr.
Crown-street	Paddington	1,325,649,600	961	7	0
„	Woollahra	365,152,880	578	9	3
„ —By Blake pumps on several occasions	„	13,439,640	75	0	0*
„	Waverley	123,438,830	282	18	0
In keeping fires banked whilst running engines conjointly on trial			30	0	0
			1,927	14	8
Woollahra	Waverley	21,314,520	46	1	0
Botany	Crown-street	19,536,910	79	0	0
„ consumed in keeping boiler fire banked during the year			26	12	0
North Sydney	High level tanks	960,780	6	0	0
Ryde Works from 1st April	Ryde Hill	68,209,000	505	17	2
	Chatswood	123,957,000			

* Approximate.

RETURN of Water pumped and Coal consumed for quarter ending 31st December, 1892.

From.	To.	Water pumped.	Coal consumed.
		Gallons.	Tons. cwt. qr. lb.
Crown-street	Paddington	357,091,100	261 4 2 0
„	Woollahra	89,033,300	122 5 0 0
Whilst running the two engines conjointly, for banking fires, &c.			30 0 0 0
Crown-street	Waverley	40,174,600	92 7 0 0
Ryde Works	Ryde Hill	20,991,000	166 16 1 14
„ „	Chatswood	44,490,000	

J. FYFE,
Engineer for Pumping.

The Engineer for Water Supply.

Sir, Meter Tester's Office, Sydney, 27 January, 1893.

I have the honor to submit the following reports for the year ending 1892 :—

Water Fittings.

The number, class, and size of all Water Fittings tested, including those stamped, defective, and condemned, is 64,120. Of this number, 62,631 were passed and stamped as correct; 679 returned as defective; and 810 condemned. Last year the number tested was 65,606. Of this number, 5,164 were returned as defective, and 905 were condemned. The increase of fittings stamped and passed this year is 3,076, and the decrease in the defective fittings 4,467; also a decrease in the number of condemned fittings of 95, showing clearly the great improvement in the class of water fittings submitted this year as compared with last year.

Water Meters.

The number, class, and size of Water Meters tested and repaired during the year was 1,059. Of this number, 186 were for country towns, leaving 873 for the metropolitan area. Last year the number tested for the same area was 1,344, showing a decrease of 471 meters. This was due largely to the use of water being granted for garden and other purposes at a special fee; also the restriction of meters being used for building purposes.

Country Meters.

From the various country towns there have been received 186 Water Meters for test, &c. Of this number, 110 were repaired. The repairing of Water-Meters by the Board's employees has proved itself a great advantage to the licensed plumber, also to the consumer or owner, namely, in relieving the plumber of a great responsibility, and also in lessening the cost to the consumer, and the guarantee given by the Board to maintain all meters repaired by this department for a period of twelve months. The interest of the Board and the consumer is a special study in all work executed by this department.

Electrical Indicators.

The Julius Sax Electrical Recording Instruments, in connection with the Crown-street Pumping Station and the Paddington, Woollahra, and Waverley Reservoirs, have been working satisfactorily, only requiring the periodical attention of a mechanic to attend to the batteries and connections, &c. There have been two or three interruptions in the lines during the year, caused by the severe gales, which are unavoidable.

Bristol Recording Gauges.

The Bristol Recording Gauges have been connected to the water-mains in the various parts of the city, giving good results as to detecting sudden shocks in the mains, and clearly showing the slightest fluctuation of pressure.

The staff in connection with this department have given every satisfaction, being fully employed repairing water meters, and testing taps and various mechanical and mathematical instrument work in connection with the different departments.

NEW

New and old Meters tested, repaired, &c., for towns outside the Metropolitan Area.

Name of District	J. Tylor & Sons, N.P.										R. Laidlaw & Sons.								Guest and Chrimes.										Siemens & Halske.								Davies, Shephard, & Co.				J. Tylor & Sons, O.P.		Dewrance & Co.		John Danks & Sons				D. R. Droop.		Totals.		
	½"		¾"		1"		1½"		3"		½"		¾"		1"		1¼"		¾"		1"		1½"		3"		4"		½"		¾"		1"		1½"		1"		3"		1½"		¾"		3"		6"		¾"		New.	Old	Repaired.
	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.			
Newcastle	25	.	69	5	6	..	1	1	..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	..	1	..	..	..	..	..	10	.	1	..	..	..	..	..	..	..	..	..	1	.	..	1	.	1	117	8	85
Richmond	..	..	..	..	2	..	..	..	.	..	..	..	2	.	..	1	..	..	2	..	2	..	1	..	..	..	..	..	..	..	..	..	3	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	14	1	8
Goulburn	..	..	6	..	..	..	1	..	1	..	..	..	..	..	..	..	.	..	..		..	..	..	..	.	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	8	..	2
Bourke	..	..	..	..	..	..	.	..	..	..	..	..	6	..	1	..	1	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	.	8	..	....
Orange	..	..	5	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	.	.	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	5	..	5
Manly	..	..	2	..	..	..	..	.	.	..	..	..	..	..	..	..	..	.	2	..	..	..	..	..	..	..	..	..	..	.	..	.	..	.	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	5	.	1
Bathurst	..	..	..	2	..	..	..	..	..	..	..	..	..	..	.	.	..	..	..	..	..	..	..	..	.	..	..	..	..	.	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	3
Armidale	..	..	..	..	1	..	..	..	..	..	.	..	.	..	1	..	..	..	..	..	..	..	.	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1
Parramatta	..	..	..	..	..	..	..	.	..	..	..	..	..	..	1	.	..	.	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	....
Hay	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	....
Wagga	..	..	..	.	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	2	.	..	..	..	..	.	.	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Hawkesbury River	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	.	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	.	2	2
Cootamundra	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	.	..	.	2	..	..	..	..	..	.	..	.	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	....
New Caledonia	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	.		..	..	..	..	..	..	..	..	..	1	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	. ..
Cobar	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Totals	25	..	82	7	9	..	2	1	1	..	1	..	9	..	3	1	1	..	9	..	2	..	1	..	1	..	3	..	1	..	12	2	5	..	1	..	1	..	1	..	..	1	1	..	1	.	..	1	..	1	172	14	110
																																																		14		

Country Meters	186
Metropolitan Meters	873
Grand Total	1,058

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Meter Tester's Report—*continued.*

METERS, 1892.

New Meters tested before connection, and Old Meters disconnected for adjustment during the year 1892.

Name of Manufacturer.	⅜″		½″		¾″		1″		1¼″		1½″		2″		2½″		3″		4″		Totals.		
	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	New.	Old.	Rep'd
J. Tylor & Sons, N.P.	2	..	26	8	178	35	15	9	..	..	7	2	5	..	..	..	1	2	1	1	235	57	182
Guest & Chrimes	1	..	1	1	62	36	18	29	7	13	8	14	3	6	1	..	1	5	..	10	102	114	137
Siemens & Halske	..	..	0	1	96	22	7	10	15	3	2	2	..	..	..	..	..	..	..	..	129	38	85
J. Tylor & Sons, O.P.	..	..	..	3	..	34	..	11	..	16	..		..	3	..	2	1	5	..	3	1	83	
R. Laidlaw & Sons	..	..	..	..	21	11	4	1	1	..	1	..	1	..	..	..	1	..	..	..	29	1	24
D. R. L. Droop	..	..	..	..	..	13	..	3	..	..	..	5	..	4	..	..	..	4	..	..	..	34	30
Davies, Shephard, & Co.	..	..	..	..	5	7	..	2	..	..	..	..	..	..	..	..	1	..	4	1	10	10	12
Dewrance & Co.	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3
H. Meinecke	..	..	..	..	..	3	..	1	.	..	..	..	..	..	..	..	..	..	..	.	..	4	4
John Danks & Sons	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
*Kent Meter	..	..	..	..	2	..	..	.	..	..	1	..	1	..	.	..	..	..	..	..	4	..	..
*London Meter Co.	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	3	..	-
*Parkinson Meter	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..
*Fuller Patent	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Totals	3	..	36	14	304	170	48	66	23	32	21	20	10	13	1	2	5	16	5	15	516	357	566
																					357		
Total																					873		

* These Meters were tested for Hydraulic Power Company.

Tests of Water Meters as required by the Metropolitan B. W. S. and S.

Every Meter, before it can be certified to as correct, must pass the following test for sensitiveness:—

⅜ inch Meter must register correctly at	8	gallons per hour	The Board allows a margin of 20 per cent. on Sensitive tests and 5 per cent. on the full Flow Tests as follows: Turbine meters 5 per cent. slow, fan meters 2½ per cent. fast and 2½ per cent. slow.
½ " "	15	"	
¾ " "	20	"	
1 " "	40	"	
1¼ " "	60	"	
1½ " "	80	"	

Scale of Charges for testing Meters.

		s.	d.
Charge for testing	⅜ inch Meter at Depôt	2	0
" "	½ " "	2	6
" "	¾ " "	3	6
" "	1 " "	5	0
" "	1¼ " "	5	6
" "	1½ " "	6	6
" "	2 " "	7	6
" "	2½ " "	8	6
" "	3 " "	10	0
" "	4 " "	15	0
" "	6 " "	20	0
" "	tap and other brass fittings	2d.	each

The charge for repairs will be made proportionate to the time such repairs have occupied and cost of material used.

TAPS,

METER TESTER'S REPORT—*continued.*

TAPS, 1892.

NUMBER, Class, and Size of Taps, &c., tested during the year 1892.

Class of Fitting.	Size.	Months.												Total.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
	In.													
Bib Taps	¼	....	62	..	...	...	...	...	...	...	...	....	....	62
Do	½	256	72	60	190	180	104	74	158	59	192	319	1	1,665
Do	¾×⅝	791	1,359	1,727	646	609	1,277	1,029	1,840	1,569	1,973	2,403	2,230	17,453
Do	¾	561	361	525	387	607	515	214	753	292	936	409	1,048	6,608
Do	1	....	62	46	30	9	10	.. .	....	2	.....	47	16	222
Do	1¼	....	...	....	12	6	....	. ..	....	....	....	....	....	18
Do	1½	....	. ..	....	18	....	....	....	....	....	...	....	....	18
Do	2	....	....	....	....	. .	..	....	..	. ..	.	11	....	11
Main Cocks	½	..	...	....	...	2	...	....	...	1	....	...	..	3
Do	¾	400	552	522	317	179	292	227	306	737	419	857	721	5,619
Do	1	....	....	....	12	2	42	....	....	1	3	....	3	63
Path Cocks	½	....	....	7	....	2	32	46	21	1	...	5	...	114
Do	¾	62	640	495	262	271	562	381	398	763	387	843	936	5,955
Do	¾-1	..	..	....	...	....	....	....	.. .	144	....	.	....	144
Do	1	.. .	...	24	36	2	10	22	15	....	116	68	115	408
Do	1¼	....	....	27	75	6	60	12	9	6	18	....	....	219
Do	1½	19	12	6	24	6	6	6	2	6	12	....	....	99
Do	1¾	. ..	.. .	....	....	....	2	....	....	.	....	..	....	2
Do	2	2	1	....	12	9	6	6	1	....	12	..	....	49
Do	1¼–2	..	.. .	. ..	....	..	..	....	....	21	....	....	..	21
Do	2½	....	....	.	6	....	12	....	..	....	.	. ..	....	18
Ball Valves	½	49	163	129	....	1	61	281	96	36	22	62	....	900
Do	¾	483	715	1,172	229	475	705	702	225	174	798	311	332	6,321
Do	1	38	222	45	....	1	75	240	58	21	154	22	16	893
Do	1¼	....	....	.. .	....	. ..	3	..	6	....		6	....	15
Do	1½	. ..	6	....	. .	1	.. .	....	2	...	....	..	....	9
Do	1¾	..	.	....	.. .	....	.	....	1	..	....	..	....	1
Do	2	29	6	. ..	. ..	....	....	.	..	. ..	....	....	..	35
Shower Cocks	½	443	1,032	603	215	988	342	375	376	575	628	466	216	6,263
Do	¾	37	39	410	6	238	245	168	283	133	883	25	120	2,087
Do	1	.	. .	....	....	46	....	. ..	.. .	..	48	6	18	118
Do	1½	11	....	....	....	..	....	..	....	. ..	.. .	....	.	11
Do	2	5	....	..	....	. ..	....	..	..	....	..	....	.	5
Plated Cocks	½	..	8	60	59	9	41	48	164	4	18	47	23	481
Do	¾	19	13	18	2	....	.. .	2	. ..	5	5	6	....	70
Do	1	13	. ..	3	6	1	24	. ..	..	1	..	2	12	62
T. & S. Unions	½	....	..	22	25	2	36	120	74	1	12	276	72	640
Do	¾	252	561	328	212	544	505	331	156	793	373	457	369	4,911
Do	1	. .	. .	1	....	2	3	. ..	1	....	.. .	...	12	19
Do	1¼–2	....	. ..	....	....	..	....	..	163	.. .	....	..	....	163
Do	1½	....	....	....	....	. ..	..	36	12	....	70	....	.	118
Do	1¾	....	..	.. .	..	....	....	6	6	....	18	. ..	1	31
Do	2	.	..	....	.	.. .	.	3	3	....	6	....	3	15
Wheel Valves	½	. ..	. .	. ..	....	.	....	..	4	.	....	1	....	5
Do	1	..	....	3	. ..	..	4	. ..	3	..	....	3	. .	13
Do	1¼	....	....	1	....	....	1	1	1	..	..	....	.	4
Do	1½	....	..	2	1	....	3	1	1	10	....	....	1	19
Do	2	17	2	21	6	....	1	12	6	19	20	12	7	133
Do	2½	38	22	23	13	20	....	33	2	24	7	11	.. .	193
Do	3	...	. ..	.	. ..	....	1	1	2	..	.. .	3	..	7
Special Plug Cocks	½	4	2	.	..	....	...	. ..	....	. ..	....	....	....	6
Spring Cocks	½	....	..	..	....		....	.	..	1	.. .	68	25	94
Do	¾	...	2	..	. ..	..	....	. ..	....	1	....	.. .	25	28
Hydrants	½	....	....	..	. ..	....	5	4	7	...	..	....	..	16
Do	1	..	.. .	....	. ..	....	.	....	....	2	....	. ..	....	2
Cast-iron Locks	3	....	....	...	....		..	..	...	..	5	. ..	....	5
Do	4	....	...	. ..	. ..	. ..	....	..	...	. .	1	. .	....	1
Regulating Plug Cistern Cocks	½	....	....	. ..	. .	....	8	..	....	.	....	.. .	5	13
Do	¾	8	..	.	. ..	..	....	.. .	....	.. .	....	11	. .	19
Do	1	....	....		....	..	..		....	14	.. .	....	115	129
Fittings Stamped	....	3,542	5,814	6,280	2,801	4,218	4,999	4,357	5,244	5,421	6,646	6,787	6,492	62,631
Do Defective	....	76	13	80	9	88	74	52	17	111	49	73	37	679
Do Condemned	....	72	.. .	36	25	4	40	1	5	19	134	....	474	810
													Grand Total	64,120

Engineer for Water Supply.

W. J. ADAMS,
Meter Tester.

Annual Report of Progress in Meter Clerk's Department During 1892.

6 January, 1893.

The number of New Meters fixed during the year 1892 is as follows:—

Sydney and Suburbs	514	(49 of these were for B.P.)
Government	17	
	531	
Number disconnected	325	
Net increase	206	

The number of Meters in operation on December 31, according to the Meter Reader's Return, is:—

Sydney and Suburbs	4,295
Government	148
	4,443

Total number of Meters fixed from commencement:—

Sydney and Suburbs	6,062
Government	186
	6,248
Total disconnected	1,805
	4,443

Three hundred and forty-five meters became inoperative during the year; these, with few exceptions, were promptly repaired and refixed.

The decrease in the number of meters fixed is to be attributed to the alteration in By-law in reference to water used for building purposes. Under these conditions only 49 meters were fixed in 1892, as against 388 meters in 1891. An adjustment of these figures proves the number of meters for other uses is maintained, although special fees are available for many purposes. The revenue arising from meters has been seriously affected by the reduction in price of water, the depression in trade, and the wet season. Under improved conditions this will no doubt recover.

E. R. ABSELL,
Meter Clerk.

Engineer for Water Supply.

Description of Sydney Waterworks at End of 1892.

The supply of water is taken from the Nepean River, and two of its tributaries, the Cordeaux and Cataract Rivers, having a catchment area of 354 square miles; across the Nepean River is thrown a concrete dam 10 feet high, which is designed to divert a portion of the stream only into the tunnel, and lift it to level of crown of the same; the water is then taken by a tunnel 4½ miles in length to the Cataract River; another concrete dam, similar to that on the Nepean, is thrown across this river just below the outlet of the tunnel from the Nepean, and the water is thence conveyed by a tunnel for about 1¾ mile, and then by a series of open canals and tunnels, making a total distance from the source of about 40½ miles to the Prospect Reservoir; there are 11⅜ miles of tunnels, and about 28¾ miles of open canal from the catchment to the Prospect Reservoir. Several chasms are crossed, some by inverted syphons, others by pipe aqueducts.

Prospect Reservoir.

This reservoir covers an area, when full, of 1,261 acres, and has a capacity of 10,812,313,000 gallons.

The dam is earth with a clay puddle core, and is 7,300 feet long, maximum height 84 feet, with slopes of 3 to 1 on the water side, and 2½ to 1, with two 15-feet berms, on the outer side, and is 30 feet wide on the top: the water face is covered with heavy bluestone pitching; when quite full there will be 6,744,343,000 gallons available by gravitation.

The water is drawn off from the reservoir through a valve tower into pipes placed in a brick tunnel, carried outside and round the northern end of embankment, and is discharged through controlling valves into a basin (at the end of this basin is placed a gauge weir, from which can be read the quantity passing over daily), from which it then proceeds by an open canal for 5 miles to the Pipe Head Basin, situated 16¼ miles from Sydney, and is then conveyed by a wrought-iron pipe 6 feet in diameter, to Potts' Hill, a distance of 5 miles.

Potts' Hill Balance Reservoir.

The water is delivered here into a 100,000,000-gallon tank, partly in excavation, partly in bank, the bottom of which is lined with hydraulic lime concrete, and the sides, which are laid to slopes of 1 to 1, are lined with dry coursed rubble; this work is designed to tide the city over any interruption of supply from Prospect, as well as to prevent fluctuation of head of pressure.

Screening Tank.

This tank is of brick in two concentric rings; the water is delivered into the outer ring, and percolates through a series of copper gauze screens of 840 mesh to the inch. These screens are arranged so that the orifice which they fill can be closed, the screen taken out and scoured. From these tanks the water passes into the 48-inch cast-iron main, at Lewisham it is tapped by a 48 branch for filling the Petersham Reservoir, from Lewisham the water is conveyed to the Crown-street Reservoir by a 42-inch cast-iron main. A second main 4 feet in diameter, partly of wrought iron and partly of cast, is now about completed, to supplement the above, the capacity of which was becoming inadequate.

Crown-street Reservoir and Pumping Station.

Crown-street Reservoir top-water level is 141 feet above high-water mark, and is built of brick, and contains 3,250,000 gallons. At this place is situated the main pumping plant, consisting of two compound high-duty Worthington engines; engine No. 1 is capable of raising 500,000 gallons per hour with very great economy to the Paddington Reservoir, a height of 70 feet above the pump; engine No. 2 is capable of raising 210,000 gallons per hour to Woollahra Reservoir, a height of 140 feet above the pump, and also of raising 200,000 gallons per hour to Waverley, a height of 220 feet above pumps. The pumps are larger than are necessary for the present supply, and owing to the small storage capacity at Paddington and Woollahra the engines are not being worked to their greatest advantage, as they have to start and stop at short intervals.

Four 142-h.p. Babcock and Wilcox boilers generate the requisite steam.

Two Tangye duplex pumps (non-compound) capable of delivering 105,000 gallons per hour to Woollahra Reservoir; the duty of these pumps is very low, and they are now disused.

Paddington Reservoir.

Paddington Reservoir, top-water level of which is 214 feet above high-water mark, or 73 feet above Crown-street, is built of brick, and contains 2,000,000 gallons, and is supplied by a 36-inch cast-iron main from Crown-street pumps, and distributes the water through a 24-inch cast-iron main, *via* Begg-street, and a 36-inch, *via* Park Road.

Woollahra Reservoir.

Woollahra Reservoir, top-water level of which is 282 feet above high-water mark, or 141 feet above Crown-street, is built of brick, and contains 1,000,000 gallons, and is supplied by a 24¾-inch wrought-iron main from Crown-street, and distributes the water through a 20-inch main.

At this reservoir is an engine which heretofore pumped the water to Waverley, through an 18-inch cast-iron pipe, a distance of one mile. The engine is a geared rotative Tangye engine fitted with Meyers' "cut off" slide valve. This is now disused, as the Worthington engine No. 2 effects the Waverley supply.

Waverley Reservoir.

Waverley Reservoir, top-water level is 360 feet above high-water mark, and 78 feet above Woollahra, is built of brick-work, and contains 1,037,000 gallons; it distributes the water through a 15-inch main.

Petersham Reservoir.

This reservoir is built of brick and contains 2,157,000 gallons; the top-water level is 166 feet above high-water mark, and receives its supply by gravitation from Potts' Hill through a 48-inch cast-iron main, which branches off the 48-inch main at Lewisham, and distributes the water through two 18-inch outlets.

North Sydney Supply—Ryde Pumping Station, Ryde Hill Tank, and Chatswood Tanks.

North Sydney, which was supplied from Paddington by a sub-marine pipe up to the end of 1891, has since received its supply from Potts' Hill, the water being delivered through a cast-iron pipe partly 24-inch and partly 20-inch diameter into a balance reservoir, near the Ryde Railway Station; here a pair of powerful pumps raise the water through a 24¾-inch wrought-iron rising main into a 1,000,000-gallon wrought-iron tank at Ryde Village, at a level of 234 feet above high-water mark, and by a continuation of the same main into a pair of each 1,500,000-gallon wrought-iron tanks at Chatswood, at an elevation of 370 feet above high-water mark.

From the first-named tank the whole of Ryde, Gladesville, and Hunter's Hill get their supplies, and a 9-inch branch was extended over the Parramatta River and Iron Cove Bridges for the supply of the heights of Balmain.

The pair of iron tanks at Chatswood afford a liberal supply to North Sydney and Willoughby.

Campbelltown.

Campbelltown is supplied direct from the main canal by gravitation, a 6-inch pipe from the canal at 16 miles 40 chains being laid to the town, a distance of 2½ miles, and the reticulation consisting chiefly of 4-inch mains.

Liverpool.

Liverpool receives its supply by a 9-inch pipe from the main canal at Cecil Hills, which is extended as far as Mount Young, and thence by a 6-inch main to the town. The supply is very effective, giving, in places, a pressure of 91 lb. per square inch. In order to tide over any possible interruption to the flow in the canal a 4,000,000-gallon earthen reservoir has been constructed close to the canal, which can be expanded to 35,000,000 if required.

Granville, Auburn, and Rookwood.

Granville is supplied by gravitation through a 15-inch main laid along Woodville Road, a distance of 2⅓ miles, from the 72-inch wrought-iron trunk main.

Rookwood and Auburn receive their supply by means of a 12-inch main along Joseph-street from Potts' Hill.

Ashfield.

A part of Ashfield is too elevated to receive a supply by gravitation from Potts' Hill level, therefore, the loftier parts are supplied from the Woollahra Reservoir by the Petersham trunk main, which conveys the water to a 100,000-gallon tank of wrought-iron, erected on a brick circular support, at an elevation of 223 feet above high-water mark.

Hurstville, Kogarah.

The bulk of the supply to Kogarah is given by gravitation from 12-inch mains connected with the Petersham Reservoir system. The higher portions are supplied with water pumped by a gas engine from the small pumping station at the Carlton Railway Station through the 6-inch service mains into a 20,000-gallon cast-iron tank on brick supports at Penshurst.

ENGINEER

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ENGINEER FOR SEWERAGE—ANNUAL REPORT.

Water Supply and Sewerage Department,

Sir, Sydney, 30 January, 1893.

I have the honor to submit my Third Annual Report on the working of the Sewerage Department for the year 1892, for the information of the Board.

Transfer of Sewers.

The following sewers and storm-water ducts, constructed by the Government Sewerage Department, have been transferred to the control of the Board in accordance with the provisions of the Amended Sewerage Act of 1889.

Sewers—

Bourke-street extension.

Alexandria and Macdonaldtown branch sewer.

Northern main sewer, Glebe section.

Storm-water ducts—

Iron Cove storm-water channel.

The total length of sewers and storm-water ducts transferred to 31st December, 1892, is shown in Appendix A, aggregating 3·19 miles.

Sewers Constructed by the Board.

During the year surveys and plans have been prepared, and contracts carried out in the city and suburbs for sewers of various sizes, and aggregating 118,793 feet, or 22·5 miles, including man-holes, lamp-holes, and flushing stations.

Relief sewers have been carried out at Circular Quay, Barcom Glen, Devonshire-street, and Redfern, and the old system of sewers at the Queen's Wharf has been re-designed and carried out in conjunction with the improvements effected at that place by the Government.

The sewers constructed with discharges into the harbour have had their outlets fixed at high-water mark, so as to ensure a clear discharge at any state of the tide. This is an improvement on the old system, as under same the outlets were tide-locked during high water, and the effect of a heavy rain storm occurring concurrently with a high tide, was detrimental to the sewers or basements connected therewith.

Overflow sewers have been constructed in connection with the old outfall sewer at Macquarie Point, at Phillip and Loftus Streets, the weirs levels of each are so arranged that they will work when the flood water commences to back up at the different relief points. The design of the sewers had to be varied according to existing circumstances. In one instance the duct had to be in duplicate with a composite covering composed of 70-lb. steel rails and concrete, in another a combined sewer had to be constructed with the storm-water duct on top, and foul-water sewer underneath. The latter arrangement admitting of the foul-water sewer being continued at a future date, and being connected with the Bondi outfall; the storm-water duct discharging as at present into the existing sewer, which now takes both storm-water and sewerage, but which will eventually be used for storm-water only.

The total length of relief ducts constructed is 7,787 feet, or 1·47 miles, making a grand total of sewers, &c., constructed during the year of 23·97 miles. See Appendix marked B.

The aggregate amount of contracts for new sewers let during the year was £39,820, and the amount expended out of Loan Account for new works was £65,620.

The length of sewers constructed during the year would have been greater, but owing to the want of funds on Loan Account, several contracts aggregating 22·5 miles of sewers, cost £37,750, have not yet received Ministerial approval.

The new deep sewers within the city are making steady progress, those that have been completed have been availed of in connection with new buildings, extensions have also been made in other parts of the city to provide drainage facilities as required. See Appendix marked B.

The total length of the sewers at present under the jurisdiction of the Board is 177·39 miles.

It is to be regretted that funds were not available for works referred to, as it results in the Board not being in a position to collect revenue in connection with works handed over by Government, which under the circumstances will represent dead capital.

The amount expended by the Government on sewerage works and storm-water ducts during the year was £83,840 13s. 4d., of this amount only £18,640 1s. 4d. is revenue bearing, as the reticulation sewers were constructed simultaneously with the main sewers. The balance represents city intercepting

sewers,

ENGINEER FOR SEWERAGE REPORT—*continued.*

sewers, which will only produce a slight increase in new revenue, also storm-water ducts, which are utilised for storm-water relief in connection with the new system and for temporary sewerage purposes pending completion of the Western Suburbs sewerage scheme. A drainage rate will be struck in connection with the latter works when the Amending Act is passed by the Legislature.

The aggregate, however, for the year represents an increase of 2·44 miles over the previous one.

The principle adopted of throwing open the sewerage reticulation of a district in sections as completed has been followed with good results as regards convenience to the public, who have been anxious to have the improved sanitary facilities, and in connection with revenue returns.

Another principle adopted by the Board has given great satisfaction, except in isolated cases, by carrying the branch sewers through private land where no accommodation lanes exist. This plan has overcome a great difficulty. Where objections were raised it was principally on account of a manhole or lamp hole being built in the yard. This was met by paying a small amount of compensation, which will convey to the Board the right of entry for maintenance purposes. The Board's solicitor in each case conducted the legal procedure.

I may state that prior to the work being carried out preliminary notices were served on each owner intimating the intention of the Board, and thus giving ample time to object or otherwise. This system reduces the cost of connecting to the owner, and obviates the construction of two sewers by the Board where one would suffice.

The amount paid for compensation during the year was £207, which would be 0·3 per cent. on the cost of works.

Pipes discharging at different points on the foreshore are being gradually extended into deep water, and provided with discharge chambers with outlets at high water. This arrangement has acted very well from a sanitary stand-point, as well as relieving the existing sewer of pressure during time it is tide-locked.

The whole of the works have been satisfactorily completed by the different contractors without accident or damage of any import. Several complaints have been made as to alleged damage by blasting rock in shafts, but on inquiry it has been found that damage was due to other causes.

Plans will be prepared early this year for drainage of low-level zones which are contiguous to gravitation areas, and the surveys for reticulation of Western Suburbs will also be taken up.

The transfer of the sewerage system of Randwick, as carried out by the Council, has been completed, and the sewers are now under the control of the Board. Surveys are in progress for dealing with the reticulation of the remainder of eastern slope, as well as providing sewers for the western slope of the Borough.

Repairs to Existing Sewers in the City.

The repairing gang has been kept fully occupied during the year. Several of the brick sewers of old system have been thoroughly repaired—George-street South, Macquarie-street North, and Tank Stream north of Post Office; in addition to which old shafts have been brought direct to surface, or by side-chambers where they occurred under a tram-line, and fitted with proper iron covers. This work facilitates the cleansing and maintenance generally of the old sewers, and brings them more in accordance with modern sanitation.

As stated in my last report, the damage to sewers is principally caused by the road metal, detritus, &c., carried into the sewers during heavy rain storms. In many cases the inverts had been seriously damaged and the sewage water found its way into the surrounding soil through the defective bottom. Many unused connections were closed up, and existing inlets repaired.

The work done is shown by the following return:—

1892.	Invert repaired, feet super.	Painting, feet super.	Arches repaired, feet lineal.
Northern Section	2,542	36,014	
Southern „	516	943	68
	3,058	36,957	68
1890–91	12,296	106,056	
Making a total of	15,354	143,013	68

The abnormal rain storms which occurred during the past year found out weak spots in many of the old pipe-sewers of the city, the defects being chiefly due to faulty jointing material used in the first instance, the sewers at times being under considerable pressure, many of them being blocked by the silt, &c., from the various roads; the whole of the old city system being constructed on the "combined" system.

The

Engineer for Sewerage Report—*continued.*

The following sewers have been repaired:—Agar-street, Lassetter's Yard, Riley-street, Buckingham-street, George-street North, Argyle Cut, West-street, Evans' Road, Macleay-street, and Billyard Avenue, Challis-street, Foveaux-street, Forbes-street, Bayswater Road, Grantham-street, Cowper-street, Blackfriars, Bourke-street, Woolloomooloo, Harmer-street, Lower Fort-street, Gibbs & Co.'s Wharf, M'Kee-street, Ultimo, Bland-street, Woolloomooloo, Sussex-street, Brougham-street, Darling-street, Darlinghurst.

The outlet valve at Macquarie Point has been repaired and put in good order.

Twenty-two subsidences over old sewers were repaired during the year. Considering the mileage of sewers in the city the number is small.

Many of the old wooden covers over manholes and lamp holes on the old city sewers had become defective and dangerous to traffic. The Board having approved of these being removed and proper iron covers being substituted, 71 new covers were fixed in the following places:—

Chapman-street, Darlinghurst	1	Ultimo-street	1
Surry-street	2	Athlone-place	1
Harwood-lane	1	Lower Edward-street	2
Harwood-street	1	Pitt-street	4
Pyrmont-street	4	Argyle Cut	1
Allen-street	2	Cumberland-street	1
Union-street	4	Hannam-street	1
Thomas-street	3	Taylor-street	2
Wattle-street	3	Chisholm-street	1
Mary Ann-street	3	Chisholm-lane	1
Harris-street	7	Crown-lane	2
Sussex-street	1	Pyrmont Bridge Road	3
William Henry-street	2	Edward-street	1
Quarry-street	2	Crown Road	1
Ada-lane	1	Jones-street	2
Fig-street	1	Quarry-lane	1
Fig-lane	1	Schlinker's-lane	1

The old shafts on the following sewers have been brought to the surface, and fitted with proper covers:—

Macquarie-street	6	George-street	1
Tank Stream	2	Adelaide-street	1
Loftus-street	2	Brougham-street	1
Phillip-street	3	Waterloo-street	1
Bathurst-street	1	Pyrmont Bridge Road	1
Shar's-lane	1	Harrison-lane	1
Young-street	1	Elizabeth-street	3
King-street	1	Foveaux-street	1

The cleaning out of the road silt in the old main sewers taxes the maintenance staff to the utmost. Fully 50 per cent. of the labourers are engaged constantly on this work, either flushing or lifting silt at convenient places. This refers to the heavier matter which is not carried off in suspension by the stormwater. The quantity of dry weather sewage, compared with the stormwater, is so small that there is not sufficient velocity to carry the heavier matter to the outfall; this necessitates flushing it to a convenient place and raising to the surface. The Inspector informs me that the whole of the sand used by the City Council in sanding the streets finds its way into the sewers, but I think that this material, from its weight, as compared with basaltic mud, is carried into the Harbour during heavy rain-storms. There is no doubt that if the new intercepting sewers could be entirely disconnected from the old system and have smaller lateral sewers connected with them, the silt difficulty would disappear. This, however, will be a work of time. The quantity of silt taken from the sewers and loaded at Duke-street Wharf during last year was 1,322 cubic yards.

This service was originally carried out by punts placed at the disposal of the Board by the Engineer-in-Chief for Harbors and Rivers, but as this service was a constant one, and at times the above Department required all the punts they had, and could not spare one, the Board approved of my recommendation to have a 50-ton hopper barge constructed for this service. The barge was completed in December, and immediately put in use with satisfactory results.

The silt is not allowed to accumulate to any extent on the wharf, only while the punt is being towed to some of the reclamation works being carried out by the Government. The punt has proved water-tight, and has been faithfully built.

Owing

Engineer for Sewerage Report—*continued.*

Owing to the severity of some of the rain-storms which occurred during last year many of the sewers in the low-lying parts of the city were surcharged to some extent, fortunately without damage to the works. Although instances occurred where houses were flooded, this was to a great measure due to a scarcity of gullies, or those in existence being choked with rubbish and leaves of trees. The heaviest storm occurred on the 10th January, 1892, when the fall, as recorded by the Government Astronomer, was as follows:—In 20 minutes 1·5 inches had fallen, or at the rate of 4½ inches per hour, the total fall for the 24 hours being 1·83 inches; it will be seen from these records that 82 per cent. of the total fall fell in 20 minutes.

The farm manager reported the fall at the farm at 1·83 inches for the 24 hours, so that the rainfall was general over the Metropolitan area, other storms of much less severity caused flooding of property, but on investigation it was found that the damage was entirely due to surface flooding from roads or streets, for which the Board is not responsible under the Act. Although it does not appear clear to authorities having control of the roads that such is the case.

The question of responsibility has been a vexed one for some time past, but there is every probability of a definite understanding being arrived at shortly. It is quite apparent that provision could not be made for carrying off such abnormal falls of rain without making a serious charge upon the rates.

Suburban Sewers.

The whole of the sewers in the suburban districts are in good order and condition; each length of sewer is flushed at least once a week; a number of hydrants have been fixed by the water Department at various terminal points of sewers; the water from same, however, is only used when necessary. The house sewage, owing to being so diluted, has been found sufficient for ordinary flushing.

This work can be carried on in short sections with facility, as each manhole can be made a flushing station, by inserting a board in a groove constructed in the bottom for that purpose.

The quantity of silt taken out of the Bondi and Botany outfalls is, Bondi 1,312 cubic yards, Botany 630 cubic yards, and from catch-pit at Prince Alfred Hospital 120 cubic yards. The latter was an experiment put in some years ago on a line of pipe sewers, to which road gullies were connected. So far it has acted successfully in intercepting silt, which would have otherwise found its way into Bondi outfall sewer, and where the cost of cleaning has not exceeded 3s. per cubic yard; it would have cost about 12s. per cubic yard if it had to be taken from the main sewer.

There were eleven cases of partial flooding through sewers being surcharged during the very heavy rainfall. These only occurred during the period of maximum rainfall. Some of the cases were found to be due to defective corporation gullies.

The storm-water sewers in the suburbs have fulfilled the conditions for which they were designed, although I find the same defect exists, as referred to in my last annual report, viz., the insufficiency of gullies in certain low-lying localities. It is obvious that the lower levels are the weak points in a district, and where there is a possibility of the storm-water escaping the intercepting points at the higher levels, it would naturally collect at the lower points and cause the roads, streets and, in all probability, the houses abutting on same to be inundated. The danger is accentuated by the fact that gratings of gullies during the first shedding very often get blocked with garbage, paper, &c. I have personally witnessed this in a district where I know the scavenging is well carried out. What must the condition be in districts where this work is carried out in only a perfunctory manner. Storm-water is a varying quantity, and very often assumes uncontrollable proportions—fortunately, only for short periods. This fact makes the necessity for ample provision in gullies apparent. The outfall sewers to Bondi and Botany are in good condition. The penstocks and valves have been attended to weekly, and are in good working order.

The extension of the storm-water sewers through Macdonaldtown and Alexandria Park by the Government has effected a great improvement in the district as well as providing overflows for the sewerage system.

Outlet Works and Sewage Farm.

The building, screening chambers, machinery and valves are in good order; the internal ironwork and roof has been painted during the year by the staff; the workmen's cottages are in good condition, and the trees, with two exceptions, are thriving.

The foreman reports that the quantity of sludge removed from the screening chambers, syphon and outlet wells during the year is 1,690 cubic yards, showing an increase of 90 cubic yards over 1891. The increase is small considering the length of tributory sewers added to this outfall.

The quantity of lime used for washing and precipitating prior to dredging was 15 tons, as against 18 tons in 1891.

The locomotive and trucks are kept in good running order, although the fine sand which the farm is composed of wears the brasses of the locomotive considerably. The

Engineer for Sewerage Report—*continued.*

The existing bridge has had to be repaired during the year. An examination of the timber work showed that a large portion of the cross-bracing had become quite riddled with the *teredo*. New bracing was substituted, which rendered the structure safer. The sliding span was considerably damaged through the carelessness of the master of a craft passing through in tow of a steamer. This accident entirely cut off traffic communication with the farm. The ironwork was, however, repaired and the rollers of sliding arm bushed with gun-metal, which was not done in the first instance; this admits of the span being opened with greater facility than heretofore. Fender pieces, with wrought-iron stays, were also fixed to protect the span in the event of future collisions.

The structure requires careful watching, as some of the piles are considerably affected by the *teredo*, and in the near future it will become necessary to provide some other means of communication between the farm and inlet house across Cook's River.

Sewage Farm.

The manager reports that the filtering and irrigating areas continue to be in good condition and fulfil the object for which they were intended. Last year was a wet one, and considerable quantities of water found its way on to the farm during the very heavy rainfalls. This, however, is turned into the river by the storm-water outlets, except the first shedding, which is passed into the tanks. The crops have not been so successful as in previous years. The manager states that the south-east gale which prevailed during the time crops were young had a destructive effect on them, in several instances the whole crop being destroyed by the drift sand.

The exposed position of the filtration areas on south side of carrier renders them unsuitable for agriculture, and it has been decided as a matter of economy to sow perennial grasses in some of the tanks and feed cattle on same.

This system must be adopted in future extensions westwards, as to lay out any more cultivation beds would incur more expense for labour, which would not be justifiable under the circumstances.

By laying out the areas on the westward side into grass paddocks and either agisting or fattening cattle for market would be more profitable than cultivating them, irrespective of the difference in first cost of formation, the present irrigation areas on the north side of the main carrier being cultivated as at present to absorb the sludge and dispose of dry weather sewage.

The cattle sheds and piggeries are in good order, and the stock are on the whole in good condition.

The total revenue for the year was £217 14s. 3d., which is a falling off as compared with 1891. This has been caused by climatic agencies before referred to, also to the accident to the bridge at a time when the manager had a large quantity of produce ready for market. This had to be utilised by feeding the cattle, &c., on the farm, so that no cash return was obtained.

An analysis of the cattle and pig account shows in the first by sales—and value of stock on hand, a credit balance of £57 11s. 6d., on the second a credit balance of £13 7s. 7d.

The manager has been instructed to have only suitable cattle on the farm, with the view of establishing a profitable source of revenue. The breed of pigs has greatly improved, and I look to this agency being one of profit in the future, as there is a splendid run, clean quarters, and wholesome food available.

The want of suitable means of transport across the river has prevented the manager from availing himself of the many applications for agistment. The persons not caring to make a wide detour by Rockdale to get on to the farm, or risk the horses by swimming the river. To meet this difficulty, a truck has been constructed for carrying cattle, &c., across the river into the farm; approaches are now being made, and lines laid in connection with same. The truck will also admit of dealers' carts and others being taken over, and loaded up on the farm, thus saving the great expense of handling the produce which heretofore was a considerable item against the receipts.

Further extensions have been made for filtration purposes on east side of main carrier, which will enable the manager to dispose of the sewage more intermittantly than heretofore; and cannot but have a favourable influence on the character of the effluent; this bed has been provided with an effluent drain. The great difficulty in laying effluent drains in sandy soil on this farm is to exclude the fine sand, while at the same time admitting the sub-soil water; this I think, has been successfully accomplished by using gasket joint packing, and covering the pipes with fine ti tree.

The effluent water has been forwarded every quarter to the Government Analyst; the analysis except in one instance, maintained its usual high state of purity; details of last analysis is shown in Appendix marked C.

The

ENGINEER FOR SEWERAGE REPORT—*continued.*

The flow of sewage in the main carrier was gauged during period of dry weather with the following results:—

The observations commenced at 2 p.m, and were continued for 24 hours; a reading on gauge being taken every hour. The observations showed that the maximum flow was at 12 noon; this slightly diminished at 1 p.m., and continued at nearly the same flow until 10 p.m., when there was a sensible diminution in the quantity. The flow from 12 midnight until 8 a.m. next day, being nearly at the same rate. The total quantity of sewage being 1,837,820 gallons, or an average flow of 76,575 gallons per hour; the gaugings show that the flow between 8 a.m. and 2 p.m., was 33 per cent. of the total quantity between 2 p.m. and 8 p.m., 30 per cent.; between 8 p.m. and 2 a.m, 22 per cent.; and between 2 a.m. and 8 a.m, 14 per cent.

House Sanitation.

The number of houses connected to the metropolitan and suburban sewers under the supervision of the Board's affairs is, viz.:—

	1890.	1891.	1892.	Total.
City	961	541	1,070	2,572
Suburban	3,804	3,578	3,448	10,830
				13,402
Number connected under City Council prior to passing of Act				18,000
				31,402

The totals shown for the city are for most part reconstruction of old drainage, and for new buildings erected in lieu of old ones.

The analysis of the house drainage work for 1892, shows the number in the different suburbs as follows:—Alexandria, 517; Camperdown, 9; Glebe Point, 8; Macdonaldtown, 250; Newtown, 413; Petersham, 2; Paddington, 361; Redfern, 630; Randwick, 26; Waterloo, 300; Waverley, 351; Woollahra, 531; North Sydney, slop water only, 50; city, 1,070. Total, 4,518.

Drainage Plans.

The number of drainage plans prepared during the years 1890-91 and 92 are, viz.:—

	1890.	1891.	1892.	Total.
Plans prepared ...	2,212	2,303	2,485	7,000
Plan fees	£1,033 0s. 0d.	£1,088 15s. 0d.	£1,087 13s. 6d.	£3,209 8s. 6d.

Houses connected under compulsory clauses of the Act—

	1890.	1891.	1892.	Total.
City ...	Nil.	19	6	25
Suburbs	Nil.	245	240	485
Rate per house ...	Nil.	£14 14s. 0d.	£12 10s. 0d.	Average ... £13 12s. 0d.

The number of houses surveyed and located on official plans are, viz.:—

1890.	1891.	1892.	Total.
2,077	1,980	2,056	6,113

The number of plans of new buildings submitted by architects, &c., were:—1890-91, 611; in 1892, 253. Total, 864.

The contracts let for compulsory drainage were, viz.:—1890, nil; 1891, £3,974 17s. 1d.; in 1892, £3,084 4s. 2d. Total, £7,059 1s. 3d. This branch of the work involves considerable labour in preparation of contracts and collection of charges when completed. The latter is owing in the majority of cases to persons being unable to discharge the expenses incurred in carrying out the provisions of the existing Act, when demand is made for same. The work could be carried out more extensively if the Act provided a system whereby persons in poor circumstances could pay by instalments. Under existing provisions risk is incurred by the Board in carrying out a necessary work of public health in not recovering the outlay incurred. Until an instalment system can be legally provided the compulsory section of the existing Act must be carried out with caution.

Drainage Certificates.

The number of certificates issued to the public in connection with house drainage work since the initiation of the system are, viz.:—

	1891.	1892.	Total.
City	251	272	523
Suburbs	1,140	843	1,983

Notwithstanding the publicity given by the Board that they issue certificates notifying that drainage work of premises has been carried out in accordance with the by-laws, it is surprising that the public generally should be unacquainted with the fact. In the course of official business property owners have stated to me that they were in ignorance of the Board instituting such a protection to the public, and expressed their satisfaction of the system.

Defective

Engineer for Sewerage Report—*continued.*

Defective Drainage.

The City Inspector reports that 357 "first notices" and 145 "final notices" to reconstruct defective drainage were served during the year; of this number, in 126 cases the drainage was reconstructed according to the by-laws, and a large number would be commenced at the beginning of 1893. In many instances the existing drainage was not only defective, but highly dangerous to the health of the occupants. Many of the lines of drainage were difficult to find. In one terrace of 27 houses the fittings were in such condition as to account for typhoid fever occurring in one of them. The old style gullies, receptacles for filth existed, the traps of which were either broken or had disappeared, the public sewer being thereby put into direct communication with the premises.

In another case, when testing the existing drain which passed under premises occupied by a medical man, the lower portion was found to be full of sulphur fumes from the testing machine. This clearly proved that the joints of the drain were defective; and, as the same was connected with the old system of sewers, the effect on the occupants can be imagined. It might be mentioned that the pressure put upon the testing machine would not exceed that which would occur in the public sewers under certain conditions.

The foregoing have been selected out of the many cases of types of old drains reconstructed under the Board. It is gratifying to be able to state that in the majority of cases when notices have been served the owners have readily complied with the Board's requests, compulsory action only having to be taken in a few cases; also that the necessity of having drains properly laid and ventilated is becoming more recognised by the public, the applications for information and advice from the Board's officers on these matters being very much on the increase.

The suburban inspector reports that in the districts under his charge 39 stoppages were reported; 17 of these occurred through the yard gullies having silted up through inattention by the occupants; 21 occurred at the boundary traps, through substance being forced down through the closet pan. When it is considered that the total number of houses in the suburbs connected to the sewers is 10,482 the number of stoppages is very small in comparison—not more than 0·37 per cent.

In addition to supervising the connecting of 3,448 houses to the sewers, the assistant inspectors have inspected 816 houses in the boroughs dealt with in 1890–91 to see if fittings, &c., were kept clean and free of obstruction. The reports were very favourable. The assistants were instructed to point out the necessity of keeping the yard sinks clear of grease and silt. This system of inspection will be carried on as the duties of the assistants will permit.

Several cases of defective drainage have been reported to the office by the City Inspector of Nuisances, also by the suburban inspectors, which has had the effect of the Board taking action with favourable results to the health of the occupants.

These officers have many opportunities in their official duties—more especially in the city—of finding out defective drainage, and their cordial assistance in this important matter is of great service to the Board, and I take this opportunity of acknowledging same. The different services working harmoniously together can only be fruitful with good results.

Sanitary Plumbing.

The work of this branch has considerably increased during the year, in inspecting and testing the fittings of existing buildings, such as the new Lands and Works offices, Board's new offices, arcades, and other large buildings, each requiring different arrangement of detail, according to circumstances.

The greatest difficulty in this branch is to reconstruct the sanitary fittings on modern lines in buildings, which have been designed in the first instance without regard to sanitary principles, to endeavour to render the building safe, combined with economy to the owner, is the object kept in view.

The inspector reports that on the whole there is an improvement in the carrying out of the work, the majority of plumbers endeavouring to do their work in a satisfactory manner. Although there are instances on the other hand where some give considerable trouble.

The testing of soil and waste pipes and fittings connected thereto by hydrostatic pressure has been the means of detecting defective work, not only in existing but in new fittings. This test is the one now generally adopted by all sanitary authorities as the only one which can be relied upon to ensure work being thoroughly sound. The number of soil pipes tested on this principle during the year was 247, in the most cases with satisfactory results. A case is quoted of a large building where hundreds of persons are employed, the application of the water test discovered a leak which could not be discovered by other means. It appears that when the closet was removed it was found that the plumber had in boring for the screws tapped the lead bend. Another difficulty which has been overcome is the proper flushing of floors under urinals. This is arranged by placing a tray under the urinal and carrying a small pipe down from urinal flush pipe to the tray, so that both urinal and tray is flushed simultaneously.

ENGINEER FOR SEWERAGE REPORT—*continued.*

I have examined many places which have had urinals fitted up at considerable expense which have, for want of attention in the way of flushing floors become very offensive. This and other detail work is being gradually improved. Of the many cases of dangerous fittings in buildings which have come under the notice of the Board during the year, the following may be mentioned:—

(*a*) In a dwelling where some of the family were attacked by a serious illness, gastic fever, the following defective arrangements were found:—The closet upstairs was found to be of the "old pan and container" type in a most defective state and leaky, the floor under the closet was quite rotten, underneath was a cistern which caught the overflow from the closet; this cistern supplied the bath and the family with water for drinking. A medical man was called in and recommended that an inspection be made by the Board's officers—the result of same is as above.

(*b*) In a large block of offices, four stories high, on each flat was a water closet ventilated by taking the vent from each and connecting it with flue. The soil pipe also terminated in the flue. The outlet of the flue was in the parapet with ordinary openings used for air bricks. The effect of this novel arrangement was entirely opposite to that intended by the architect. When the wind was from a certain quarter the whole of the sewer gas in the soil pipe, for there was no intercepting traps between building and main sewer, was forced into the rooms. This was detected when applying the smoke test.

(*c*) Another and more distressing case, as it resulted in the death of an only daughter of the parents, from typhoid. An inspection was made at the request of the parent, and the result showed that there was great probability that the illness in the first instance was due to faulty sanitary arrangements. It was found that the house drain was connected direct with main sewer, and soil pipe from upstairs w.c. was unventilated; the waste pipe from bath was connected direct to the soil pipe, and in all probability, as it occurs in nine cases out of ten, the waste plug was never replaced after use; sewer gas would pass up into the sleeping apartments. It was also found that the rain-water pipes were connected to sewer direct, the hopper head of leader being in close proximity to a window. Numerous soil pipes have been found with open joints, no attempt at caulking them being made.

During the year 169 first notices to alter or reconstruct sanitary plumbing have been served, of which sixty-five cases have been attended to by the owners; seventy-six final notices have also been served, of which forty-three cases have been attended to; the remaining case will be dealt with in the early part of 1893, when it is to be hoped that the Amended Bill will become law, so as to ensure the Board recovering cost of carrying out the provisions of the Act in case of recalcitrant owners.

The number of new buildings erected throughout the city during the year represents an important factor in the reconstruction of the domestic sanitary work, because every new building is a unit in the abolition of the old and initiation of the new system.

The different exhibitions given by the Board in connection with the Medical Congress and Exhibition of Arts and Crafts has been fruitful in good results as regards educating the public generally as to the necessity of a change from the system of the past. The various importers, master plumbers, and others cordially responded to the invitation of the Board to send samples of sanitary fittings and plumbing work old and new. Arrangements were made to show the different fittings in working order, and explanations were given by the Board's officers, which contributed greatly to the success of the exhibitions. Among the exhibits were samples from the Water Department of the approved domestic water fittings, alongside those which had been condemned; also lengths of pipes and old type plug cases which had been underground for numbers of years, and samples of improved hydrants, &c.

The various implements used for cleaning mains, detecting leaks, also a most instructive exhibit of water meters in section, showing the mechanism for registering the quantity of water; one of the meters was shown in working order. Photographs showing views of the Sydney Water Supply from source of supply to delivery. A recording gauge for registering the depth of water over measuring weir at Prospect Reservoir was also exhibited, and attracted considerable attention on account of its simplicity of construction and fine workmanship; this machine was designed by the Engineer-in-Chief for Harbours and Rivers and Government Water Supply, and was locally made. Water pressures gauges, also locally made, were exhibited; these were considered quite equal to the imported article. Electrical indicators and alarm bells, as used between Crown-street pumping station and the different reservoirs were also exhibited in working order.

Among the various sanitary sittings exhibited were samples of improved closets, urinals, lavatory and bath-room requisites, and flushing cisterns for different descriptions of dwellings, also an automatic flush latrine closet for factories, schools, and other places where large numbers have to be provided for. Specimens of galvanised-iron used for sanitary purposes were also shown by the manufacturers

Perhaps

Engineer for Sewerage Report—*continued.*

Perhaps the most instructive portion of the sanitary section was the various samples of old sanitary plumbing fittings taken out of the different dwellings dealt with by the Board, alongside of which were samples of modern plumbing work by master plumbers and pupils at the plumbing school of Technical College. A comparison of the work showed at a glance to non-technical visitors the great improvement which had been effected in this important branch in the preservation of public health. Samples of various induct and exhaust cowls, with their efficiency as such, together with types of the various traps, gullies, reflux valves, grease traps, &c., approved by the Board, were shown; also the various machinery used in testing old fittings and instruments required in connection with obtaining temperatures of sewers and testing cowls.

Models showing the system carried out by the Board were worked by the officers for the instruction of the public, to the satisfaction and instruction of the latter. The system of inducing currents of air into sewers, or exhausting same by means of a fine spray of water from an improved nozzle, was also shown in working order. This was so much thought of that it has been adopted by the proprietor of a café for the ventilation of his dining-rooms, which are located in basement, with success. I was informed by the proprietor that it has enabled him to overcome a difficulty which all the other systems, after trial, failed to do.

The public press commented very favourably on the efforts of the Board in exhibiting the various fittings, and in one case it was stated that they (the Board) "are to be congratulated upon what was probably the most complete collection of sanitary appliances ever exhibited in the Australian Colonies."

Examination of Licensed Plumbers.

The Board's officers not having sufficient time, owing to increase of work or proper work-rooms, to carry out the examination of applicants for plumbing licenses as to their capability to carry out sanitary plumbing of dwellings, it was arranged between the Board and the Hon. the Minister for Public Education that such examinations should in future be held at the Technical College in connection with the plumbing school, and that a certificate from the examining board would be deemed a sufficient guarantee for this Board to issue a license. This arrangement is in accord with modern ideas; for confirmation of which, we have only to look to the efforts being made in Great Britain by the plumbing craft to have some recognised authority to test the capability of a person before he will be permitted to carry out plumbing work in connection with dwellings. In the absence of any state authority, the Worshipful Company of Plumbers in London instituted a system of national registration for plumbers. At the present time this system is in vogue in almost all the principal and provincial towns in the United Kingdom. In addition to examination and registration, schools of plumbing have also been established at various centres for persons wishing to qualify for examination and for apprentices.

In America and Canada the rules are even more stringent than in the United Kingdom, for in addition to having to pass a severe examination, a plumber must enter into a bond with the authorities varying from 1,000 to 500 dollars before he will be allowed to carry on his trade.

It may not be out of place to mention here that, in an address by Sir Philip Magnus, at the University College, Nottingham, in presenting the certificates of registration granted by the Plumber's Company of London, stated "that the Plumber's Company had entered upon a very important work in their system of registration, which had taken deep root, and was now flourishing in very many of the principal towns of England, Wales, Scotland, and Ireland. It was intended to place on a register the names of those plumbers who were capable of conscientiously and intelligently performing their work. He thought it quite as important to register plumbers as to register medical men; for plumbing, if properly carried out, had the effect of preventing disease, which was, after all, better than curing it. But it was perfectly useless to establish a register for qualified plumbers, unless the plumbers were also provided with facilities for qualifying themselves. There was scarcely any art which touched so many branches as the plumber's art did. He ascribed the success of the plumbers' classes mainly to the fact that the workmen had taken the greatest possible interest in the movement, and both the masters and the operatives were fully alive to the great importance of technical education."

That the same feeling pervades the plumbers and operatives of this city is instanced by the fact that 2½ years ago the number attending the plumbing class at the Technical College was 35; the number has increased to 97 at the present time. Many of these, I am informed, attend other technical classes of the college.

The arrangements of the college are such as to afford facilities for plumbers acquiring a high technical education, and there is every evidence of the Sanitary section extending its influence.

Ventilation of Sewers.

The various shafts erected in connection with the subsidiary and other sewers have been tested during the year with satisfactory results. The testing is carried out by anemometrical measurements, the instruments being all checked and regulated prior to work commencing. The

Engineer for Sewerage Report—*continued.*

The total number of shafts erected is 1,115, and the area dealt with aggregates 1,671 acres. The length of pipe sewers ventilated, varying in size from 6 inches to 24 inches in diameter, is 384,931 lineal feet, or 72·90 miles; the length of brick sewers, of various sizes, ventilated is 28,803 lineal feet, or 5·45 miles. The number of times air of sewers is calculated to be changed per hour, taking air-space at 75 % of the whole area, varies from 13·62 to 1·13 times. The average efficiency of shafts from observations showed that the exhaust shafts were equal to 14·83 per cent. of wind force, and the induct shafts 13·95 per cent. See Appendices marked D and E.

Several heavy gales occurred during the year, which severely tested the stability of the shafts. From information obtained from the Sydney Observatory, the velocity of the wind varied from 120 miles to 42 miles per hour. Several of the shafts which were in exposed positions in the track of gales were blown down; the number, however, for the whole year did not exceed 10, or nearly 0·9 per cent. of the whole number. Considering the force of the gusts, and the unsupported length of the shafts the number of accidents is very small.

In several cases the Board has been able to arrange with private persons to use their house drains, when such are located in favourable situations. During the year the reticulation sewers in connection with the North Shore scheme carried out by the Government were transferred to the control of the Board. To afford the residents facilities for disposing of their slop-water, instead of discharging it into the gutters, the Board consented to the sewers being used on the ground of public health, pending the completion of the outfall works. This work had not long been in existence when complaints were made of smell of sewer gas from the open ventilators in the street. It was then decided to treat the sewers in the same manner as the others. Ventilating shafts, induct and exhaust, were erected at various points, which stopped all complaints, and gave general satisfaction to the residents.

The various factory shafts used in connection with sewer ventilation with the cordial assent of the owners have proved efficient during the year, in some cases the test observations did not show such good results as in previous year. This was owing to causes which will no doubt be remedied by the owners, the results may, however, be considered good, the following table shows the results of tests:—

Place.	Cubic feet per hour. 1891.	1892.	Cubic feet per day. 1891.	1892.	Remarks.
Tooth's Brewery, 9-in. connection	40,286 ...	29,348 ...	966,864 ...	704,352 ...	Tested three times.
Cameron's Tobacco Factory, utilising exhaust steam 6-in. connection ...	5,369 ...	7,068 ...	128,856 ...	169,632 ...	Tested twice.
Cornwell's Brewery, utilising exhaust steam 6-in. connection	4,522 ...	7,265 ...	108,528 ...	174,360 ...	Tested twice.
New York and Brooklyn Tobacco Factory, 6-in. connection	7,030 ...	7,418 ...	168,720 ...	178,032 ...	Tested twice.
Stack, Crown-street Reservoir old Pumping Engine	6,857 ...	27,456 ...	164,568 ...	65,894 ...	Tested three times.
Stack, New Engine House ...	4,414 ...	1,507 ...	106,656 ...	36,168 ...	Tested twice.
Obelisk, Hyde Park	51,424 ...	*	...1,234,176 ...	*	... Closed for testing purposes.

* See returns by Water Spray Ventilation.

During the year a ventilating fan for exhausting air from, or forcing air into, the sewers was put under offer to the Board, and it was decided to test the efficiency of same in the Obelisk at Hyde Park, this being originally erected by the first Commissioners of sewers for ventilating a section of the old city system. The fan was an ordinary one, driven by a jet of water impinging on the periphery of a fly-wheel, fitted with buckets very much like an overshot wheel. Some extra power was to be obtained by cast-iron balls sliding between bosses fitted on arms of fly-wheel and sliding between the bosses of periphery. The machine, after careful working and testing, showed a very low percentage of efficiency, and was not adopted, as it was found that the shaft would exhaust nearly as much by natural ventilation.

In order to utilise this shaft to the greatest extent, a water spray nozzle was fixed in the duct connecting the base of shaft with main sewer. The nozzle was connected with the high pressure service, and the work done is as under:—

Cubic feet of air exhausted per hour	97,811	Cubic feet of air exhausted per day	2,347,464
Consumption of water per hour	64 gallons.	Pressure in main ...	55 lb. per square inch.

The quantity of air exhausted per cubic foot of water is equal to 9,551·85 cubic feet.

Taking

ENGINEER FOR SEWERAGE REPORT—*continued.*

Taking the totals of the work of the different shafts, &c., the quantity of sewer air exhausted from the sewers dealt with per diem is 44,692,190 cubic feet.

The water spray induct, which was tentatively fixed in connection with the south-western branch of the Bondi outfall, has proved so beneficial in aerating a large section of that branch that it has been permanently arranged as an induct station. This place was kept under observation, and anemometrical readings were taken for a period extending over 309 days. The results showed during that time 414,272,074 cubic feet of fresh air was forced into the sewer. The work done per cubic foot of water was equal to 2,061·21 cubic feet of air. This comparatively low result is due to the low pressure in the main, which did not exceed at a maximum 35 lb. in the square inch. Further, the induced current had to work against a head due to rise of temperature in the sewer air, which at times is considerable. The above quantity of air would represent a daily supply of 1,340,686 cubic feet. The same beneficial effects of this aerating station referred to in my last report is noticeable. When the water is turned off for a period the air in the sewer becomes stagnant, and men cannot work in it, but on being turned on the effect is to cause a current to be set up and conditions of air to be changed.

During the year an improvement was made at the junction of the main outfall and the different branches. The water in the old tunnel which originally supplied the city with water from the Lachlan Swamps, now Centennial Park, not being used for domestic purposes, was allowed to run by a vertical pipe into the Bondi outfall sewer. As the water entered the sewer at a very low level it was decided to utilise the same for ventilating purposes. This was effected by tapping the offlet pipe at a higher level, and leading the water into a vertical pipe with a bell mouth at the lower end, inside which was fixed a cone, leaving an annular space for the water to pass through.

The effect of this arrangement was to cause the water to fall in parabolic from and draw the air down into the sewer. This junction was the source of numerous complaints, and the cause of the nuisance was easily arrived at. The different branches discharging into the main outfall intercepts the old city system, which is in a great measure unventilated, and the gases given off by the sewage having no vent until this point was reached, caused a strong upflow of very offensive sewer air. When the vertical pipe, or "trompe," was fixed, and water turned into it, the effect was very marked, the up current was at once reversed, and a strong current of fresh air was drawn into the shaft through the surface opening. The quantity of air passed into the main sewer, as tested by properly adjusted anemometers, was equal to 106,677 cubic feet per hour, or 2,560,248 cubic feet per diem. This work is performed by water which formerly was running to waste, and costs practically nothing. The effect of this air passing into the sewer is noticeable as far as Deep Dene, nearly a mile from the point of induction.

Taking the total working of the different induct shafts and water sprays, the quantity of fresh air thrown into the sewers as yet dealt with aggregates 4,905,146 cubic feet per diem, or 177 tons. The oxydising effect of this supply on the air of the sewers is apparent, when it is considered that of the quantity 21 parts out of every 100 is composed of oxygen, equal to 37·17 tons.

During the year important information has been collected in connection with dealing with the outfall and main sewers traversing the city as to suitable sites for exhausts and inducts; this information has been collated, and plans of location prepared, with view of dealing with this portion of the system during 1893. The greatest difficulty is experienced in the city in obtaining suitable positions for exhausts, as from the size of the sewers to be dealt with the ordinary type of shaft is unsuitable, and shafts of large diameter would be necessary. It is found that the greater number of the shafts can be located so as not to be unsightly or be very prominent. With regard to inlet points, the difficulty can be overcome by constructing inlet chambers either in the footways or in cellars or areas, where available, and forcing the air in by water spray nozzles of the improved type. The inlets can be protected by a valve worked by the water from main. The action of this valve will be automatic, and is intended to prevent the back flow of sewer air on to footpaths, or into cellars or areas, as the case might be, in the event of water in street main being shut off. The plans and specifications for next contract are well advanced.

An improved system of sewer ventilation of cremating the gases was brought under the notice of the Board, and a trial was made in the presence of the members and officers of the Board. The results of this test were so far favourable as to induce the Board to have it tested on a large scale.

The locality selected for the experiment was where a system of reticulation sewers was in progress, and a reliable test as to the efficiency of the system on a more extended scale could be made. It was considered that if the system gave good results on the section referred to, it would be capable of application to others, and even to dealing with the main outfalls. The system may be briefly described as drawing the air from the sewers by means of artificial draught and cremating the gases before they pas into the atmosphere. The system has been tried in England, but in a different form to the one under consideration.

The

ENGINEER FOR SEWERAGE REPORT—*continued.*

The patentee erected a shaft adjacent to the Macdonaldtown branch sewer, and made the connection between the two. After the furnace was started some difficulty was experienced by the shaft being interfered with by either mischievous boys or persons with some object. I advised the patentee to fix his gas in such a manner that it could not be tampered with.

When the shaft was reported as ready I had several tests made, with satisfactory results. On another occasion the results were not so satisfactory. The shaft was examined, and it was found that if the construction of the shaft, as regards the upper part of flue, was altered, much better results would be obtained. This was done with a rearrangement of crematory arrangements. The result of the tests were satisfactory, and quite equal to those witnessed by the Board in the first instance.

The results of tests and information as to comparative cost, &c., are being collated, and will be submitted in a separate report. With the different systems at the command of the Board, I have every reason to think that the sewers can be more efficiently and economically ventilated than heretofore.

The difficulties referred to are incidental to all new systems when under trial, especially when the conditions are not constant.

Circulars were forwarded by the Secretary to the sanitary authorities of the principal cities of the United Kingdom, America, and Canada, requesting information as to various matters connected with disposal of sewage and ventilation systems adopted. The replies received to date are shown in a table. It will be seen from same that in the majority of cases the sewers are ventilated by open ventilators in the road, and, where permission can be obtained, by shafts attached to dwellings. In some cases the sewers are on a par with the old Sydney system—being ventilated by rain-water pipes and gullies.

Annual Death Rate.

It will be seen, from the diagram, that the death-rate of the city and suburbs is lower for 1892 than previous years. The death-rate, as given by the Government Statistician, is, for city 16·54, suburbs 12·49, and, excluding hospitals, city 11·92 and suburbs 10·90. It will also be noticed that the population of the suburbs is gradually increasing, whereas that of the city is decreasing.

As referred to in my previous report, the zymotic death-rate would be of service to this Department as a guide to where the conditions of local or domestic sewerage need inquiry. It has been arranged with the Secretary that information be obtained from the various sources as to information of deaths from zymotic diseases, in order that charts could be compiled. The medical officer has obtained information which no doubt he will include in his report. I think, on the whole, the death-rate of the city for year ending December, 1892, will compare very favourably with that of other towns which are considered as standards.

Diagram is also shown, showing the humidity and surface temperature, also earth temperatures, in sewers 40 and 10 feet respectively. During the latter part of the year the temperatures at 40 feet and 10 feet are practically identical, when at a period there should be a difference between the surface and sewer temperatures.

A return of the drawing office work performed during the years 1890-91-92 is shown in Appendix marked F.

Diagrams are shown illustrating the system carried out by the Board under different circumstances in connection with house drainage, and dealing with wastes from lavatories, baths, and internal water closets. These may be taken as ordinary types. The arrangement of the fittings will vary according to circumstances

The information and returns supplied to this Department by the Government Astronomer, H. C. Russell, Esq., C.M.G., has been of great assistance, and I take this opportunity of returning my thanks for his courtesy.

I have, &c.,

The Secretary. J. M. SMAIL, M. Inst. C.E.

APPENDIX F.

RETURN of work done in Drawing-office and Heliotyping-room—

	1890.	1891.	1892.	Total.
Drawings prepared	95	200	135	330
Tracings prepared	325	172	281	778
Drawings mounted	1,086	1,649	1,553	4,288
Heliotypes printed	610	1,061	875	2,546

APPENDIX A.

TABLE No. 1.

SEWERS constructed by the Government Sewerage Department and transferred to Board.

Size of Sewer.	8' x 7' 0"	8' 2" x 7' 2"	7' 10" x 6' 10"	7' 8" x 6' 8"	7' 4" x 6' 4"	7' 2" x 6' 2"	6' 10" x 5' 10"	6' 10" x 4' 10"	5' 6" x 4' 6"	5' 4" x 4' 4"	5' 1" x 4' 1"	5' 0" x 4' 0"	4' 9" x 3' 9"	4' 6" x 3' 6"	4' 6" x 3' 0"	4' 0" x 3' 11"	3' 9" x 2' 11"	3' 6" x 2' 4"	3' 6" x 2' 0"	3' 3" x 2' 6"	3' 3" x 2' 2"	3' 2" x 2' 2"	3' 0" x 2' 0"	Open Drain and Channel.	Circular. 3' 6" iron aqueduct.	Circular. 5' 6"	Circular. 3' 0"	Circular. 2' 6"	Pipes. 24"	Pipes. 21"	Pipes. 18"	Pipes. 16"	Pipes. 12"	Pipes. 9"	Pipes. 6"	Total Length.
Length in feet.																																			
Constructed before passing of Act.	5,082	6,354	391	3,127	4,142	2,767	720	2,067	1,918	529	502	..	..	436	11,496	3,360	447	4,401	363	378	9,189	2,109	5,823	3,134	3,488	13,200	2,437	..	1,193 / 746	471	3,215	5,446	8,524	34,052	250	141,728 lin. ft. = 26·85 miles.
1890..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	93	6	28	48	3,317	68,456	310	72,258 ,, = 13·68 ,,
1891	..	..	..	..	..	..	..	..	..	..	..	..	..	1,891	..	..	..	757	..	..	5,859	..	..	..	3,448	..	..	..	....	..	1,157	1,600	2,102	6,715	..	23,529 ,, = 4·46 ,,
1892	..	..	..	..	..	..	..	..	..	..	..	3,718	1,152	1,020	454	..	..	..	..	..	2,233	..	..	..	..	..	..	3,494	....	..	720	.	..	..	..	12,796 ,, = 2·42 ,,

Total .. 250,311 lin. ft., or 47·41 miles.

TABLE No. 1A.

STORM-WATER DUCTS constructed by Government Sewerage Department and transferred to Board.

Size of Duct.	Elptical 5' 4" x 8' 11½"	12' 0" x 5' 6"	12' 0" x 4' 10"	7' 4" x 4' 0"	5' 0" x 3' 6"	3' 0" x 3' 4"	5' 0" x 3' 0"	4' 0" x 3' 0"	4' 0" x 2' 9"	4' 6" x 3' 6"	4' 2" x 3' 9"	3' 0" x 2' 9"	3' 4" x 3' 0"	Buckled Plates 4' 0" x 4' 0"	Open. 10' x 6'	Open. 4'	Open. 2' 10" x 3' 0"	Watercourse.	Circular. 5' 4"	Circular. 4' 0"	Circular. 3' 6"	Circular. 3' 4"	Circular. 3' 0"	Circular. 2' 6"	Circular. 2' 0"	Pipes. 24"	Pipes. 21"	Pipes. 20"	Pipes. 18"	Pipes. 16"	Pipes. 15"	Total Length.
Length in feet.																																
Constructed before passing of Act....	.	544	1,564	103	230	250	132	76	462	2,337	1,026	442	773	..	....	..	..	..	..	924	359	..	..	....	858	1,889	..	86	264	42	..	12,556 lin. ft. = 2·38 miles
1890..	..	.	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1891...	..	..	....	..	..	..	962	.	..	..	....	..	..	539	....	58	648	822	..	56	..	..	263	1,406	921	....	396	..	165	..	334	6,470 lin. ft. = 1·23 miles.
1892	385	..	....	..	.	..	.	..	..	....	....	..	..	..	1,325	..	..	..	83	686	..	853	..	. .	..	....	..	..	..	..	..	4,080 ,, = 0·77 ,,

Total .. 23,106 lin. ft., or 4·38 miles

APPENDIX B.

Sewers and Storm-water Drains constructed by the Board.

Sewers.

	U shaped.			Circular.						Pipes.							Total length in feet.	
	4′ 6″ x 2′	4′ x 1′ 6″	3′ x 2″	5′ 6″	4′	3′ 6″	3′	′ 6″	2′ 4″	3′ 3″ x 2′ 2″	3′ x 2′	24″	21″	18″	16″	12″	9′	6″		
Alexandria	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,093	...	2,093	
Camperdown	...	...	...	...	...	...	...	.	...	...	...	...	...	..	...	1,594	11,920	716	14,230	
City Deep Sewers	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	1,160	2,424	...	8,498	
City	...	...	...	...	..	...	...	..	...	...	...	724	...	...	620	176	2,750	644		
Darlington	..	...	...	...	...	...	...	...	..	...	...	..	.	..	...	...	...	...	.....	
Glebe	...	...	...	..	...	..	...	...	...	...	...	...	..	..	...	..	3,517	..	3,517	
Macdonaldtown	...	..	...	..	..	...	...	...	..	...	...	...	...	...	661	...	5,572	549	6,773	
Newtown	..	...	...	...	...	...	...	...	...	...	...	...	...	...	397	944	38,076	2,221	41,638	
North Sydney	..	..	...	...	...	...	...	..	...	...	...	...	...	...	...	...	660	...	660	
Paddington	...	...	...	...	...	...	..	...	...	..	...	...	...	...	...	...	11,671	...	11,671	
Petersham	...	..	...	..	...	...	...	..	...	...	...	...	..	...	...	...	4,649	140	4,789	
Randwick	...	...	...	...		...	.	...	...	...	..	...	...	..	...	...	...	...	.....	
Redfern	...	...	...	...	..	.	...	...	...	...	..	...	...	...	...	...	5,127	..	5,127	
Waterloo	...	...	...	...	...	...	...	..	...	...	...	...	..	..	...	...	986	...	986	
Waverley	...	...	...	...	...	..	...	...	...	...	..	...	...	...	...	...	4,565	...	4,565	
Woollahra	...	...	...	...	..	...	...	...	...	...	...	...	...	...	..	100	13,875	271	14,246	
1892 Totals	...	...	...	...	...	...	...	.	...	...	...	724	...	...	1,678	3,974	107,885	4,532	= 118,793 lin. ft.	Pipe sewers, or 22·50 miles.
1891 do	...	...	...	...	...	...	...	...	...	...	..	2,776	688	309	449	7,345	101,157	954	= 113,678 „	„ „ 21·53 „
1890 do	...	...	...	...	...	...	...	...	...	1,220	660	1,227	302	1,024	1,559	2,359	39,890	961	= 49,202 „	= Concrete sewers, 1,880 ft. = ·36 „ Pipe „ 47,322 ft. = 8·97 „

Storm-water Drains.

1892 Totals	38	528	...	429	..	478	841	310	400	...	...	1,162	41	515	1,168	577	...	1,300	7,787 lin. ft.	3,024 ft. concrete sewers = ·57 mile. 4,763 ft. pipe „ = ·90 „
1891 do	...	...	...	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.....	Nil.
1890 do	...	...	298	696	822	...	...	924	...	..	...	782	...	47	260	239	...	...	4,068 lin. ft. =	2,740 ft. concrete sewers = ·52 mile. 1,328 ft. pipe „ = ·25 „

ENGINEER FOR SEWERAGE REPORT—*continued.*

APPENDIX C.

Government Laboratory, Sydney, 16 January, 1893.

RESULTS OF ANALYSIS OF POTABLE AND POLLUTED WATERS, EFFLUENTS FROM SEWAGE FARM, BOTANY.

		Results expressed in	
		Grains per Gallon.	Parts per Million.
Appearance in the standard Two-foot tube	Clear, peaty	.....	.....
Chlorine as Chlorides	1	9·2	.....
	2	8·0	
Phosphates from Animal Impurity	1	present	.....
	2		
Nitrogen as Nitrates and Nitrites	1	present	.....
	2		
Total Solid Residue, dried at 220°	1	31·64	.....
	2	30·24	
Free Ammonia		.....	1 ·35
			2 ·50
Albuminoid Ammonia		.....	1 ·30
			2 ·50
Oxygen absorbed in 15 min.		.....	1 8·50
			2 11·00
Oxygen absorbed in 3 hours		.....	1 14·00
			2 20·00

General Observations on the Character of the above Effluents.—Both are quite free from objectionable odour, and show evidence of efficient filtration and purification generally. They may be allowed to flow away without fear of causing a nuisance.

W. M. DOHERTY,
Pro Government Analyst.

APPENDIX D.

RETURN showing the extent and efficiency of the sewer ventilation shafts in the following districts during 1890-91 and 92.

District.	Area in Acres.	No of Shafts.	Kind of Shaft.		Length of Pipes in lineal feet.									Sewers.		Cubic Contents in Feet. Full capacity.	Average work of Shaft per Hour.		Times Changed per Hour.		Times Changed per Hour of 75% Cubic Contents.		Average No. of Times Changed per hour.	
			Induct.	Exhaust.	6"	9"	12"	15"	16"	18"	20"	21"	24"	Size.	Length.		Induct.	Exhaust.	Induct.	Exhaust.	Induct.	Exhaust.	Full capacity	75 per cent. capacity
Surry Hills	94	144	46	98	...	27,089	1,927	...	152	312	...	610	...	3ft. x 2ft.	882	20,159	3,818	2,412	8·71	11·72	11·62	15·63	10·21	13·62
Redfern	336	233	55	178	150	63,663	7,025	...	1,905	...	...	1,221	...	4ft. 6in. x 3ft. 4ft. x 3ft.	1,350 370	56,857	3,727	1,983	3·60	6·20	4·80	8·27	4·90	6·53
Lacrozia Creek .	77	84	21	63	163	7,437	8,906	...	710	283	470	295	230	3·77ft. x 2.916ft. 3·25ft. x 2·521ft.	878 358	24,174	3,014	1,933	2·61	5·03	3·49	6·71	3·82	5·10
Waterloo	89	60	15	45	..	20,368	1,210	...	1,305	980	...	1,020	...	3ft. x 2ft. 3ft. 3in. x 2ft. 2in.	300 1,360	24,639	4,365	2,567	2·65	4·68	3·54	6·25	3·66	4·89
Alexandria	20	20	7	13	...	3,570	1,240	...	...	...	...	...	...	.....	.....	2,551	832	829	2·28	4·22	3·04	5·63	3·25	4·33
Paddington	250	123	37	86	.	59,261	3,735	...	...	...	..	810	644	3·529ft. x 2·521ft. 3·77ft. x 2·916ft. 3ft. 6in. x 2ft.	360 440 420	41,579	4,087	2,304	3·64	4·76	4·85	6·35	4·20	5·60
Woollahra	77	36	14	22	...	17,560	.....	..	...	..	...	...	...	....	.....	7,757	2,637	1,867	4·76	5·30	6·84	7·06	5·03	6·70
Strawberry Hills	250	150	46	104	..	.....	15,859	...	2,458	2,240	...	...	...	3ft. 3ft. 6in. 4ft. 6in. 6ft.	878 1,340 826 1,500	91,847	2,535	2,086	1·27	2·29	1·68	3·05	1·78	2·36
Blackfriars and Pyrmont ...	346	148	54	94	1,420	41,622	10,748	255	7,470	1,680	...	150	60	3ft. x 2ft. 6in. 3ft. x 2ft. 3ft. 6in. 4ft. 6in. 4ft. x 2ft. 8in. 5ft. x 4ft. 6ft. 7ft.	497 1,940 570 5,750 2,620 80 1,280 660	186,730	2,565	1,998	·74	1·00	·92	1·34	·87	1·13
Darlington	60	56	10	46	...	5,546	3,970	...	...	470	...	...	...	....	.....	6,389	.....	.....	...	...	...	...	...	...
North Sydney ...	40	20	7	13	...	6,715	1,815	1,435	...	561	...	...	...	..... .	.....	7,143	.....	.....	..	...	...	...	...	...
City of Sydney*	30	39	6	33	..	2,540	1,640	..	...	926	...	...	800	3ft. 3in. x 2ft. 2in. 4ft. x 2ft. 8in. 7ft. x 4ft. 8in. 4ft. 6in. x 3ft. 3ft. 6in. x 2ft. 4in.	2,244 500 1,000 200 200	51,059	2,676	2,513	·31	1·62	·41	2·16	·96	1·28
Newtown	2	2	1	1	...	400	.....	...	...	...	...	...	...	....	.....	177	.....	.....	...	...	...	...	...	...
Totals	1,671	1,115	319	796	1,733	256,611	97,105	1,690	14,030	7,452	470	4,106	1,734	.....	28,803									

4,700 lineal feet of stormwater drains ventilated by 9 shafts not included in above table.
11 000 lineal feet of Bondi main outfall sewer ventilated by 3 watersprays not included in above table.

ENGINEER FOR SEWERAGE REPORT—*continued.*

APPENDIX E.

VENTILATION OF SEWERS.

RECORD OF TESTS.

515 Exhaust Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
515	5,631,370	1,105,719	26,537,256	185,760,792	16 min.	13·95

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
One shaft	10,934	2,147	51,528	360,696	2 07	13·95	14·83	0·0214

241 Induct Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
241	3,863,800	758,657	18,207,768	127,454,376	16 min.	13·95

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
One shaft	16,032	3,148	75,552	528,864	3·03	13·95	21·72	0·0459

DISTRICT OF PYRMONT.

36 Exhaust Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
36	389,825	76,532	1,836,768	12,857,376	15 min.	13·10 15·8 12·13 11·12 7

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
19 Sept.	11·940	2,344	56,256	393,729	2·26	12·3	18·37	0·0255
21 ,,	8·712	1,716	41,040	287,280	1·65	8 1	20·37	0·0136
10 Oct.	11·563	2,270	54,480	381,360	2·18	12·1	18 01	0 0237

21 Induct Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
21	202,360	51,514	1,236,336	8,654,352	15 min.	13·8 15·13 12·12 11 7 10

Average Work of One Induct Shaft.

Average Work for Shaft	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot
19 Sept.	12,698	2,491	59,784	418,488	2 40	12·3	19·51	0 0288
21 ,,	12,815	2,516	60,384	422,688	2·42	8·1	29·87	0·0292
10 Oct.	12,050	2,366	56,784	397,488	2·28	12·1	18·84	0·0259

Total Number of Shafts Tested—57.

DISTRICT OF ALEXANDRIA.

14 Exhaust Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
14	69,120	11,608	278,592	1,950,144	8 min	5·04

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
1	4,223	829	19,896	139,272	0·80	5·04	15 87	0·0082

6 Induct Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test	Average Wind in Miles per Hour.
6	25,440	4,995	119,880	839,160	8 min.	5·04

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
1	4,240	832	19,968	139,776	0·80	5·04	15·87	0·0032

Tested on 11th August, 1892.

DISTRICT OF BLACKFRIARS.

51 Exhaust Shafts.

Number of Shafts Tested.	Lineal Feet per hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
51	495,320	97,267	2,334,408	16,340,856	15 min.	10, 9,21 12, 7, 7 10,13,11 11,20,14 10,17

Average Work of One Exhaust Shaft.

Average work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
13 Sept.	7,544	1,481	35,544	248,808	1·42	9·5	14·94	0·0100
16 ,,	12,470	2,447	58,728	411,096	2·36	17 3	13·64	0·0278
19 ,,	10,605	2,082	49,968	349,776	2 00	19·5	19·04	0·0200

25 Induct Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
25	338,670	66,497	1,595,928	11,171,496	15 min.	10, 7,11 12,13,14 10,20 11,17 10,21 9, 7

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
13 Sept.	10,986	2,156	51,744	362,208	2·08	9·5	21·89	0·0216
16 ,,	15,965	3,134	75,216	526,512	3 02	17·3	17·45	0 0456
19 ,,	17,037	3,344	80,256	561,792	3·22	10·5	30·66	0·0518

Engineer for Sewerage Report—*continued.*

Ventilation of Sewers—*continued.*

District of Waterloo.

43 Exhaust Shafts.						
Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
43	562,060	110,360·5	2,648,652	18,540,564	12 min.	13·56

14 Induct Shafts.						
Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
14	311,260	61,116	1,466,784	10,267,488	12 min.	13·56

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
One shaft	13,071	2,567·3	61,615	431,305	2·47	13·56	18·21	0·0305

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
One shaft	22,233	4,365·4	104,770	733,390	4·21	13·56	31·05	0·0886

Total number of shafts tested 57. Test made on 17th and 18th August, 1892.

District of Lacrozia Creek.

50 Exhaust Shafts.						
Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
50	511,120	100,358·4	240,860·16	16,860,211·2	16 min.	12·13

16 Induct Shafts.						
Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour
16	233,430	45,834	1,100,016	7,700,112	16 min.	11·7

Average Work of One Exhaust Shaft.

Average Work for Shaft	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
Nov. 23 24 25.	9,854·33	1,932·8	46,442·33	325006·60	1·36	12·13	15·34	0·0176

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
Nov. 23 25.	15,352·5	3,014·5	72,348	506,436	2·90	11·70	24·67	0·0494

Number of shafts tested—66.

District of Strawberry Hills.

84 Exhaust Shafts.						
Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test	Average Wind in Miles per Hour.
84	883,085	173,393·7	4,161,449	29,130,143	17 min.	15·93

50 Induct Shafts.						
Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test	Average Wind in Miles per Hour.
50	644,220	126,492·3	3,035,827	21,250,790	17 min.	14·73

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
12 Oct. 13 ,, 14 ,, 15 ,, 18 ,, 18 Nov.	10,421·16	2,035·68	48,663·33	342,084·33	1·96	14·73	14·94	0·0204

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
12 Oct. 13 ,, 14 ,, 15 ,, 18 ,, 18 Nov.	12,866·33	2,535·3	60,630·33	424,426·66	2·43	14·73	17·57	0·0357

Total number of shafts tested—134.

District of Surry Hills.

67 Exhaust Shafts.						
Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
67	844,720	165,861	3,980,664	27,864,648	16 min.	13·37

32 Induct Shafts.						
Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
32	649,550	127,539	3,060,936	21,426,552	16 min.	13·37

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
21 Nov. 22 ,, 23 ,, 24 ,,	12,236·75	2,412·50	57,900·25	405,301·75	2·32	13·37	17·35	0·0271

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
21 Nov. 22 ,, 23 ,, 24 ,,	19,444·75	3,817·97	91,631·5	641,420·5	3·67	13·37	28·31	0·0691

Total number of shafts tested—99

Engineer for Sewerage Report—*continued.*

Ventilation of Sewers—*continued.*

District of Paddington.

60 Exhaust Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
60	699,710	157,388	3,297,312	23,081,181	22 min.	17

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
Dec. 8 „ 9	11,734	2,304	55,293	387,072	2·21	17·61	14·24	0·0254

20 Induct Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
20	591,600	116,161	2,787,864	19,515,048	22 min.	17

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
8 Dec. 9 „ 10 „	20,313·60	4,080·66	98,080	686,560	3·04	19	22·99	0·0788

District of Redfern.

73 Exhaust Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per hour.
73	757,480	148,731	3,569,544	24,986,808	13 min.	11·56

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
29 Nov. 1 Dec. 2 „ 5 „	10,097·25	1,982·75	47,586	333,102	1·90	11·56	17·80	0·0186

29 Induct Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per hour.
28	489,750	96,162	2,307,888	16,155,216	13 min.	11·56

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
29 Nov. 1 Dec. 2 „ 5 „	18,981·5	3,727·5	89,460	626,220	3·59	11·56	32·37	0·0719

Total Number of shafts tested—101.

One shaft also tested connected to chimney stack.

District of Woollahra.

18 Exhaust Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
18	172,320	33,385	812,040	5,684,280	20 min.	18

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
12 Dec.	9,507	1,867	44,804	313,656	1·80	18·0	10·0	0·0102

10 Induct Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
10	184,320	26,374	632,976	4,430,832	20 min.	18

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
12 Dec.	13,432	2,637	63,288	443,016	2·54	18·00	14·11	0·0322

Total number of shafts tested—28.

City of Sydney.

19 Exhaust Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
19	256,550	50,374	1,208,976	8,462,832	28 min.	19·11

Average Work of One Exhaust Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
13 Dec. 14 „	12,708	2,515·5	60,324	422,268	2·42	15·78	16·05	0·0305

10 Induct Shafts.

Number of Shafts Tested.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Average Time of each Test.	Average Wind in Miles per Hour.
10	133,200	35,971	863,304	6,043,128	28 min.	19·11

Average Work of One Induct Shaft.

Average Work for Shaft.	Lineal Feet per Hour.	Cubic Feet per Hour.	Cubic Feet per Day.	Cubic Feet per Week.	Miles per Hour.	Average Wind Velocity	Percentage to Wind.	lbs. pressure per sq. foot.
13 Dec. 14 „	18,033	2,670·5	64,230	449,652	2·57	15·78	15·73	0·0393

Total number tested—20.

[Page 71, see Table inserted.]

TABLE

shewing quantity of Water Supply; Purification, Ventilation, and methods of disposal of Sewage in various British, and American Cities and Towns.

Name of Town.	Country	Population	Area drained	Sewerage Rate	Quantity of Sewage disposed of: Water Supply	Quantity of Sewage disposed of: Rainfall	System adopted	Disposal of Sewage	Area of Sewage Farm	Purification	Ventilation	Remarks.
			Acres		Gallons							
Belfast	Ireland	270,000	6805	No special Rate	10000000	2,831400 1/4" p di	Combined (with Overflows)	Into Sea	None	None	Surface & Shafts	
Birmingham	England	619,693	47,275	No data	(16000000)		No data	Farm	1227 ac	Lime precip.n	,,	
Carlisle	,,	39176	2028	No special Rate.	(2,500000 dry weather flow		Combined	Into Sea	None	None	Surface Mill Chimneys &c	
Chelsea	,,			No Data			(No data	sent)	,,	No data	Surface & occ Shafts	
Chester	,,	25,000	1000	No special Rate	1000000	1/4" p diem	Combined	Tidal River	,,	Lime	,,	
Dublin	Ireland	255,000	3808	3d in £	13,320000	20,970,000	,,	River Liffey	,,	None	Surface	
Glasgow	Scotland	667531	11,861	No special Rate	48,000,000	32" p an.	,,	River Clyde	,,	Precip & Filtr.n	,,	
Liverpool	England	518000	6329	4½d in £	12,432,000	31·65" p an	,,	River Mersey	,,	None	,, (few Shafts)	
Londonderry	Ireland			No special Rate			,,	River Foyle	,,	,,	,, (,,)	
Manchester	England	505,000		,,	(15,000,000)		,,	Precipitation	,,	Precip.n	,,	
Newcastle on Tyne	,,	192,205	1600	,,	8500000	3,500,000	,,	Tidal River	,,	None	,,	
Oxford	,,	50,000	2000	1/1 in £	(1,400000 daily av inc Rain)		Partially separate	Farm	368	,,	,, (Some Shafts)	
Portsmouth	,,	163,000	4000	No special Rate	From 5500,000 to 12,000,000 Sew + Rain		Combined	Pumped in Sea at Outfall	None	,,	,, (,,)	
Baltimore Ma	America	501,000	20,826	,,	45000,000	42" p an	,,	To Sea by Punts	,,	,,	Trapped only	
Boston Mass	,,	450000	40,000	5 2/2 to 3/4 p front f.t	40000000	1/4" p diem	,,	Into Sea	,,	,,	Surface	
Buffalo N.Y.	,,	290,000	12,640	Ass.d to cover cost	58,000,000	·5 cft p ac p.n to inc Rain	,,	Niagara River	,,	,,	,,	
Cincinatti O	,,	300,000	7680	8/4 p front foot	(6,193,152,000 p di to inc Rain)		,,	Ohio River	,,	,,	,,	
Detroit Mich	,,	300,000	16640	Spec for Const.n	No Data		,,	River	,,	,,	,,	
Indianapolis Ind.	,,	106,000	9610	No data	7950,000	3" p hour	,,	White River	,,	,,	,,	
Jersey City NJ	,,	181,000	900	No special Rate	No Data		,,	River	,,	,,	,,	
Nashville Tenn.	,,	85000	1000	,,	8,500,000	2½" p hour	,,	Cumberland River	,,	,,	,, (and Shafts)	
Newark N.J.	,,	200,000		£2 1 8 for conn &c	No data	3" p hour	,,	River & Bay Solids Manure	,,	Disinfect & Flush	Traps only	
Philadelphia Pen.	,,	1,110,000	38400	No data	155,000,000	44½" p an.	Com, Sep. & Par Sep.	Rivers	,,	None	Surface (few Shafts)	
Providence R.I.	,,	138,000	5000	,,	No Data.		Combined	River & Harbor	,,	,,	,,	
Montreal	Canada	211,302	55,000	6/3 p front foot.	,,		,,	River St Lawrence	,,	,,	,,	

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PHOTO-LITHOGRAPHED AT THE GOVT PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

Description of the Metropolitan Sewerage System.

The Metropolitan Sewerage system, under the control of the Board of Water Supply and Sewerage, comprises the old and new systems, the former having been initiated by the old City Commissioners in 1853, and was carried out by their successors, the present City Council, which was incorporated in 1857. The City Council had control of the water and sewerage works, within the city, until the year 1888, when the waterworks were transferred to the Board. The transfer of the existing sewerage works followed in 1889.

The old system comprised four main outfalls, with subsidiary sewers along the principal streets, which in turn received the reticulation sewers of the minor thoroughfares. The four main outfalls discharged the sewage of the city into the various parts of the harbour at Blackwattle Bay, Darling Harbour, Sydney Cove, and Woolloomooloo Bay respectively. This system was designed on the principles of what is termed the "combined system." The pollution of the freshness of the harbour, by the discharge of the sewage of the city and consequent danger to public health, led to the appointment of a Commission to inquire into the best means of diverting the sewage from the harbour and otherwise disposing of same. The new intercepting system was the outcome of the labours of the Commission. The main works were carried out by the Government, and on completion were transferred, with all other existing works, to the control of the Board by Act of Parliament. The system, which is on the lines of the "partially separate system," intercepts all sewage, which heretofore was discharged into the harbour, at a level of 40 feet above high-water mark. This is termed the gravitation zone; the sewage from the low level area, *i.e.*, between high-water-mark and 40 feet contour will eventually be pumped into the gravitation sewers, and discharged into the ocean or into the sewage farm.

The system consists of two main outfalls, named the northern and southern respectively, the former discharging into the Pacific Ocean, at a point named "Ben Buckler," at Bondi, and the latter discharging into a sewage farm at "Webb's Grant," on the shores of Botany Bay. These works are of considerable magnitude and have not been constructed without considerable difficulty and outlay.

Northern Outfall.

The northern system commences at "Ben Buckler," where a large chamber was constructed in the sandstone rock—from this chamber two channels bifurcate so as to ensure a free discharge during the prevalence of either northerly, easterly, or southerly gales. From the chamber a shaft extends to the surface for ventilation and escape of air when the sea breaks into the discharge channels. The dimensions of main outfall at chamber is 8 ft. x 7 ft. 6in., and decreases by decrements to 6 ft. 10 in. x 5 ft 10 in. at Oxford and Liverpool Streets junction. At this point is a large chamber into which three different branches discharge, viz:—the northern branch which passes under Hyde Park to Castlereagh-street, where it bifurcates, one sub-main intercepting the sewage from main outfall at Macquarie Point, and the other intercepting the sewers discharging at Queen's Wharf. 2nd. The western branch, which extends along Liverpool-street, to and along Kent-street to Miller's Point, intercepting the sewage which discharged into Darling Harbour. 3rd. The south-western branch, which passes under Belmore gardens, Benevolent Asylum, and along George-street West to Carlton-street, where it bifurcates into two submains, one passing through Darlington, University grounds, to Camperdown, Newtown, and Petersham, intercepting old city sewers and draining new areas; the other sub-main passing along George-street West by a long syphon, on account of a depression, connected with this syphon is a scour chamber and valves for periodic cleansing. This branch extends to the Glebe and boroughs of Balmain and Leichhardt. The whole of the sewage above the 40-foot contour line, which formerly flowed into Blackwattle Bay, is intercepted by this branch and discharged into the ocean.

The work was carried through varying formations—in some instances the stratum was indurated sandstone, in others shale, clay, and water charged drift sand. Concrete enters largely into the construction of the works, the lining of rock tunnels being principally bluestone-concrete rendered with cement mortar. Wherever the outfall sewer crossed natural creeks or water-courses offlet and scour valves were provided. An overflow sewer discharging into Rushcutter's Bay is connected with the main outfall to take surplus water during heavy rain-storms; this sewer was carried across low-lying swampy land on arches and circular piers—the latter were constructed on the same principle as carried out in India.

Southern Outfall.

The southern main outfall commences at the inlet chamber, which is constructed on the north bank of Cook's River, near its junction with Botany Bay. The sewer is 5 ft. 6 in. in diameter, constructed of concrete, with brick lining rendered with Portland cement. In places, the sewer is above the level of the adjoining land; and, in others, it passes through low sand-hills and swampy ground. Where natural water-courses are passed over, concrete culverts and overflow chambers and valves are provided. The outfall sewer extends to Botany Road, where the size is decreased, for a short distance, to 4 ft. 6 in x 3 ft. 6 in.

Hawksley Section: From Botany Road the sewer extends along Bourke-street, through the boroughs of Waterloo, Redfern, and the City of Sydney to Nobbs-street, where the sub-mains from different districts join. This outfall drains the southern watershed of the city and boroughs of Redfern, Waterloo, Alexandria, Macdonaldtown, and Newtown.

Inlet House.

The sewage passes from the main outfall into the straining chambers of inlet house; the chambers are in duplicate and controlled by inlet valves, so that when one series is in use the other is being cleaned out. The sewage is strained by means of three circular screens; the mesh varies from 3 inches to 1 inch. The screens are worked by one central shaft, with gearing fixed on the platform at one end, and intercept all extraneous matter before the sewage passes into the syphon well. From the syphon well the sewage passes under the bed of Cook's River by a cast-iron syphon 3 ft. 9 in. in diameter laid in a trench and surrounded with concrete. The syphon is connected with a well in outlet house on south side of river, from which the sewage flows along a main carrier, and is distributed over the irrigation beds and settling tanks by valves. The valves are of simple construction, and the distribution of the sewage is easily controlled by the farm manager.

Sewage Farm.

The Sewage Farm is situated on a neck of land called Webb's Grant, the formation of which is raw drift sand, originally covered with low dense scrub. For agricultural purposes, to be worked at a profit, the soil is useless, but as a filter for crude sewage—this being the state in which the sewage is distributed over it—it cannot be surpassed. The farm is laid out on one side in irrigation beds, at different levels, so as to enable the manager to command the whole area. On this area the sludge, which is dredged from the inlet house, is conveyed in trucks by a small locomotive to the various beds, and is used as manure. On the other or southern side the ground is laid out in a series of filtering tanks, the number admitting of the sewage being dealt with intermittingly; at times, when circumstances admit, these tanks are cultivated, which assists in keeping the ground clean, and improves the soil as a filter. Cattle and pigs are reared and fattened on the surplus products of the farm. The styes are built in concrete, and kept clean by daily washing. Cattle and horses are also taken for agistment. The daily discharge on to the farm is 1,837,820 gallons; this is disposed of over 35 acres of land.

Western Suburbs.

The sewerage system for this district is now being carried out by the Government Sewers Department under a special vote as regards the main ducts. The outfall works are nearly completed, but much more remains to be done before the Board can commence operations with regard to reticulation works. The system will also discharge on to a portion of the Sewage Farm area upon the western side, further resumptions of land having been made for this purpose.

The following are the rates and charges for water and sewerage:—

WATER RATES.

1. The following rates and charges are those which the owners and occupiers of houses, tenements, and lands shall pay in respect of water supplied by the Board, that is to say:—

For Water supplied for domestic purposes otherwise than by Measure.

(I.) On every house, tenement, or land of twenty pounds assessed annual value and under, ten shillings per annum.

(II.) On every house, tenement, or land above the assessed annual value of twenty pounds, a rate of sixpence for each pound sterling on the amount of the valuation up to three hundred pounds inclusive; fivepence for each pound on the amount of the valuation in excess of three hundred pounds up to seven hundred pounds; fourpence for each pound on the amount of the valuation in excess of seven hundred pounds up to one thousand pounds; threepence for each pound on the amount of the valuation in excess of one thousand pounds up to four thousand pounds; and twopence for each pound on the amount of the valuation in excess of four thousand pounds.

(III.) Vacant lands of the assessed value of sixty pounds and over shall be subject to a rate of twopence for each pound sterling on the amount of the valuation.

(IV.) The like rates as those above mentioned shall be charged on all lands, tenements, and hereditaments not included in any valuation by the Municipal Council of the City of Sydney or Redfern, or of any Borough or Municipal District, and on all lands for the time being valued by the said Municipal Council of the City of Sydney or Redfern, or by such Borough or Municipal District, at a sum less than the true value thereof.

Supply by Measure.

(V.) The charge for water supplied by measure shall be one shilling per 1,000 gallons for all water consumed up to twenty million gallons per annum, and ninepence per 1,000 gallons for all water consumed in excess of twenty million gallons per annum.

Her Majesty's Navy will be supplied free of charge.

For

For water for other than domestic purposes otherwise than by measure.

(IX.) The charge for water supplied to gas-engines shall be five shillings per annum for each engine of two-horse power and under, and for every additional horse power beyond two-horse power an additional charge of two shillings and sixpence per annum for each horse power.

(X.) The charge for water supplied to steam boilers shall be one pound per annum for each steam boiler up to three-horse power. And for every additional horse power beyond three-horse power an additional charge of five shillings per annum for each horse power.

(XI.) The charge for water supplied for organ motors and such like mechanism, shall be two pounds per annum for each motor up to one half-horse power, and for every additional one half-horse power beyond one half-horse power an additional charge of twenty shillings per annum for each one half-horse power.

(*a*) The charge for water supplied for actuating ventilators or refrigerators shall be by special fee, according to the following scale, namely :—

Class A.—Passing 60 gals. per hour at 65 lb. pressure—
1 nozzle, £6 per annum.
2 „ £4 10s. per annum each.
3 „ £3 10s. per annum each.
4 „ and upwards, £3 per annum each.

Class B.—Passing 40 gals. per hour at 65 lb. pressure—
1 nozzle, £3 15s. per annum.
2 „ £3 „ each.
3 „ £2 10s. „ „
4 „ and upwards, £2 per annum each.

Supply for twelve hours only in each day.

Provided, however, that the supply of water under this By-law shall be for twelve hours only in each day, and no person having such supply shall continue to use the same for more than twelve hours in any one day.

(*b*) The charge for water supplied for dentists lathes motors shall be one pound per annum for each motor. No person shall use water in connection with any motor unless the nozzle supplying such motor has been first approved of by the Board. The waste-pipe from each motor shall be so fixed that the waste water can be measured at any time.

Water for trade purposes, &c.

(XII.) The charge for water supplied for purposes of the undermentioned or other trades shall be at such rates upon such terms and subject to such conditions as may be agreed upon by the Board and the person requiring to be supplied, provided, however, that for any year or part thereof, the minimum charge for water supplied for the undermentioned trades shall be that in each hereunder case set opposite the trade, viz. :—

Photography, and any like process	5s. per annum.
Tripe cleaning	5s. „
Tyring purposes...	5s. „
Laundries	5s. „
Dyers	10s. „
Condiment making	5s. „
Bottle washing	5s. „
Small goods (sweets)	5s. „
Waterfalls and fountains	5s. „
Shop fronts, by hose	5s. „

Washing Vehicles.

(XIII.) The Board may supply water for the washing of vehicles with a hose, without meter, at the rate of 5s. per annum for each vehicle.

In all cases where special fees are charged, the Board reserve to themselves the right of insisting upon a meter being fixed at any time, notwithstanding the fact that the special fee may have been paid. All special fees are in addition to the assessed annual rate of the premises on which such fees are charged, and are payable in advance. All premises on which water is used for other than domestic purposes, and upon which special fees are paid, shall be open for inspection by the Inspectors of the Board at any reasonable hour.

2. Assessed rates shall be paid half-yearly in advance, whether a meter is used or not. In the case when a meter is used, the meter account will be rendered only when it is in excess of the assessment. Cheques and post office orders will be received in payment of rates ; but if the cheque tendered by any person as payment for rates due is dishonored, the Board may cut off his services, and proceed for the recovery of the amount by warrant for distress or otherwise. Cheques and post office orders must be crossed in favour of the Board.

3. The minimum charge for water, whether supplied through meter or otherwise, for domestic purposes and for purposes other than domestic, is the assessed annual rate. If the water is supplied by meter, and the meter account exceeds the assessment (calculated at the rate of one shilling per 1,000 gallons), then such excess shall be charged in addition to the assessment.

4. One meter may be allowed to supply several tenements when such tenements are occupied by one person or firm as a place of business or abode, and the meter account will be credited with the assessments of all such tenements. One service only will be allowed under these conditions, upon which the meter will be fixed, and all the water for such tenements must pass through such meter. Where peculiar circumstances entail a departure from the above, and two services are absolutely necessary, then there shall be a meter on each service pipe.

Building Charges, &c.

5. The charge for water supplied for building and plastering purposes, for buildings to be used either wholly or partly as dwelling-houses, shall be at the rate of one half-penny per cubic yard on the cubical contents of each buildings. The Board will supply water for all other buildings either by meter or at the rate above mentioned per cubic yard on the cubical contents of each building as the Board shall determine: Provided that before any water shall be used through meter for building purposes such meter shall be submitted to the Board in each case for examination, and must pass the sensitive test; and the minimum charge in each case for water so supplied through meter shall be ten shillings.

(I.) The charge for water supplied for plastering rooms only shall be two shillings and sixpence for each room, and for the building of wash-houses, water-closets, coppers and chimneys only, two shillings and sixpence each.

(II.) The charge for water supplied for the making and mixing of concrete for foundations of wooden blocks, stone cubes, or other form of permanent roadway or pavement, shall be at the rate of twenty-one shillings per 1,000 square yards by superficial measurement of road surface, and for all other concrete, brickwork, or masonry, at the rate of three half-pence per cubic yard, as measured on the work.

6. Any person who maintains horses or cows may be supplied with water, without meter, from the domestic service for the sum of five shillings per annum for each animal, in addition to the assessed annual rate of the premises on which such animal is maintained or supplied with water.

7. All lands or premises actually supplied with water by the Board, on which any one or more head of horses or cattle shall be kept or maintained, shall be liable to an extra rate or charge (beyond and in addition to the assessed annual rate of the premises) of five shillings per head for each head of horses or cattle kept or maintained on such lands or premises. And where such lands or premises are not actually supplied with water by the Board they shall be liable to an extra rate or charge (beyond and in addition to the assessed annual rate of the premises) of two shilling and sixpence per head for each head of horses or cattle kept or maintained on such lands or premises.

8. The Board may supply water for gardens (and for such purpose may permit a hose and stand-pipe to be used) without meter, at the rate of ten shillings per annum for every 750 square feet superficial area, or part thereof, in addition to the assessed annual rate of the premises to which such garden belongs or is attached.

SEWERAGE RATES.

The following rates and charges are those which the owners and occupiers of houses, tenements, and lands shall pay in respect of sewerage, that is to say:—

(I.) On every house, tenement, or land of seventeen pounds assessed annual value and under, ten shillings per annum.

(II.) On every house, tenement, or land above the asseessed annual value of seventeen pounds, a rate of sevenpence for each pound sterling on the amount of the valuation.

(III.) Vacant lands of the assessed annual value of forty pounds and over shall be subject to a rate of threepence for each pound sterling on the amount of the valuation.

FOR COUNTRY DISTRICTS IN COUNTY OF CUMBERLAND.

For water supplied for domestic purposes otherwise than by measure:—

(I.) On every house, tenement, or land of £10 assessed houses, &c., annual value and under, 10s. per annum.

(II.) On every house, tenement, or land above the assessed annual value of £10, a rate of 1s. for each pound sterling on the amount of the valuation.

(III.) Vacant lands of the assessed value of £30 and over shall be subject to a rate of 4d. for each pound sterling on the amount of the valuation.

(IV.) The like rates as those above mentioned shall be charged on all lands, tenements, and hereditaments not included in any valuation by any Borough or Municipal District, and on all lands for the time being valued by any such Borough or Municipal District at a sum less than the true value thereof.

For water supplied by measure:—

(V.) The charge for water supplied from stand-pipes shall be one shilling per 1,000 gallons.

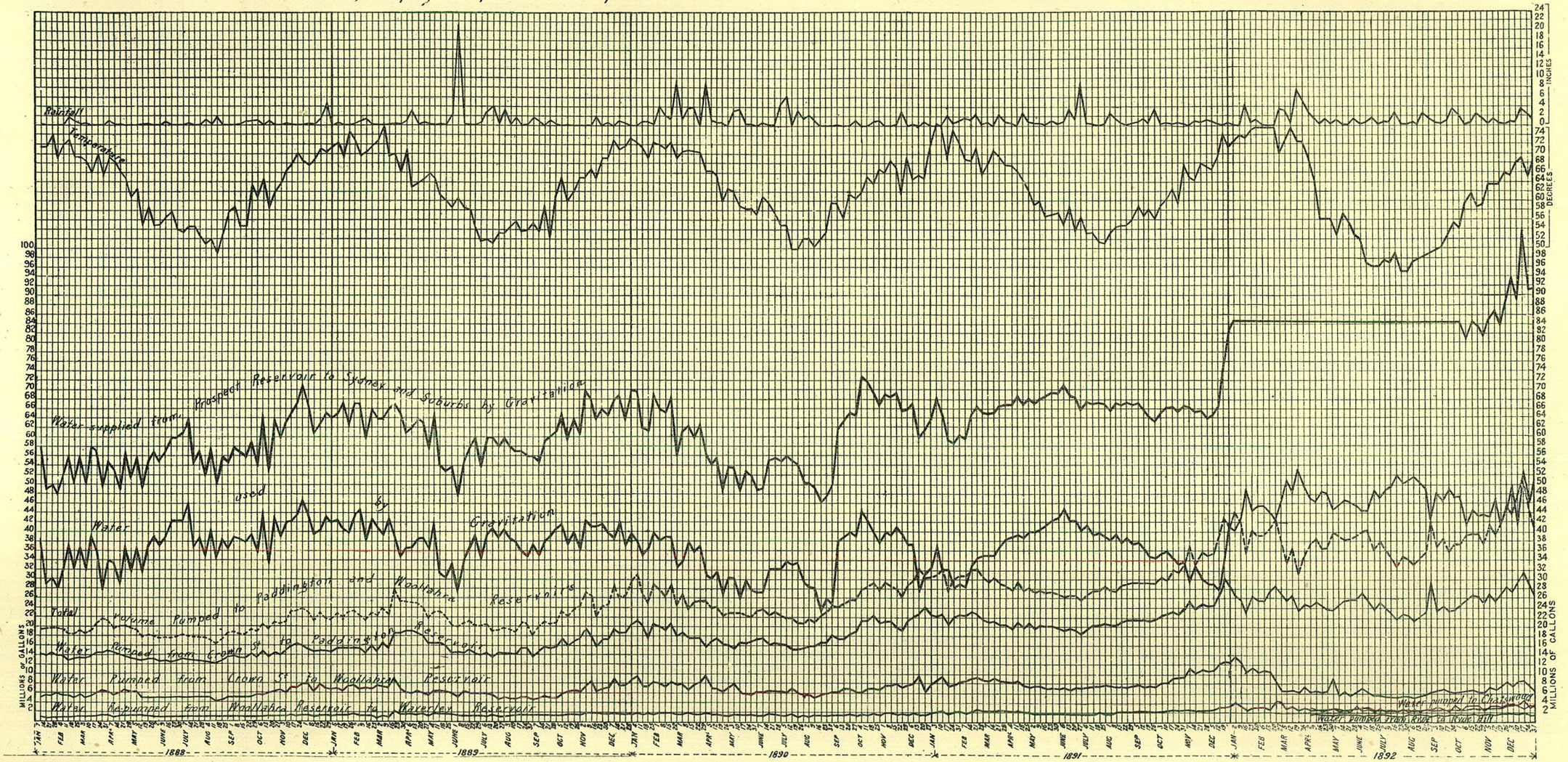
(VI.) The charge for water supplied from the mains by measure shall be one shilling per 1,000 gallons.

[Plans, &c.]

Sydney: Charles Potter, Government Printer.—1893.

BOARD OF WATER SUPPLY AND SEWERAGE.
SYDNEY.

Table showing the Volume of Water supplied weekly from Prospect Reservoir by Gravitation to Sydney & Suburbs during the years 1888-1892 inclusively, the distribution of this water by Gravitation & by Pumping, the Mean Shade Temperature and the Rainfall for each week.

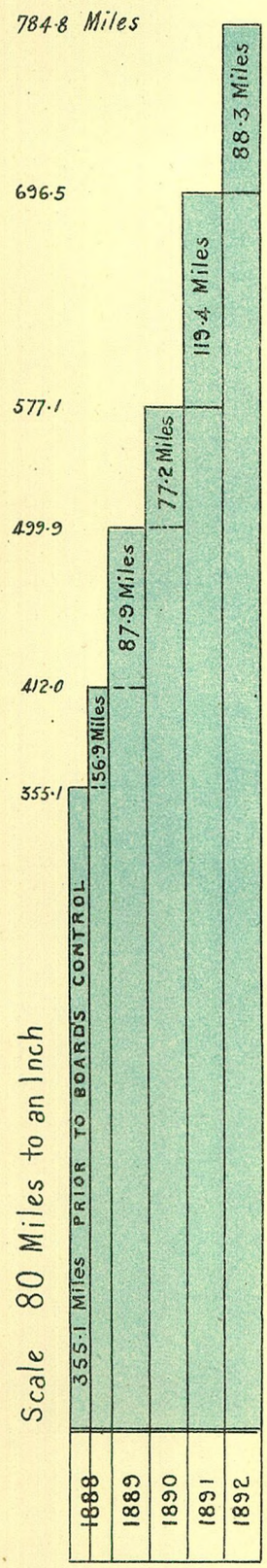


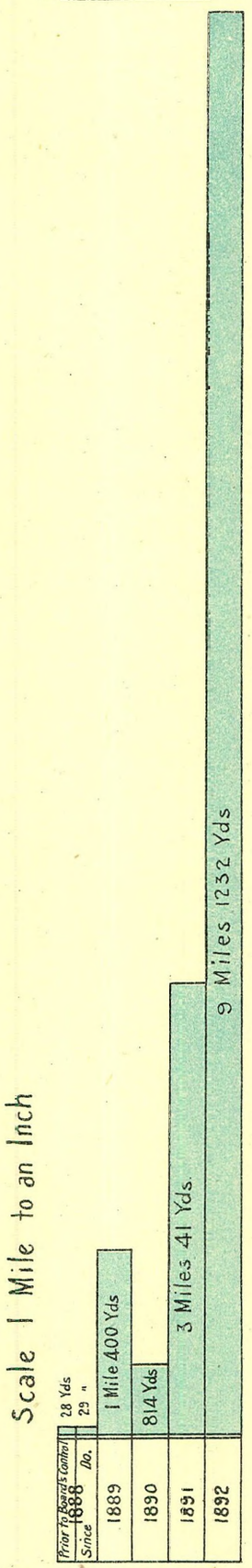
(S/9 668)

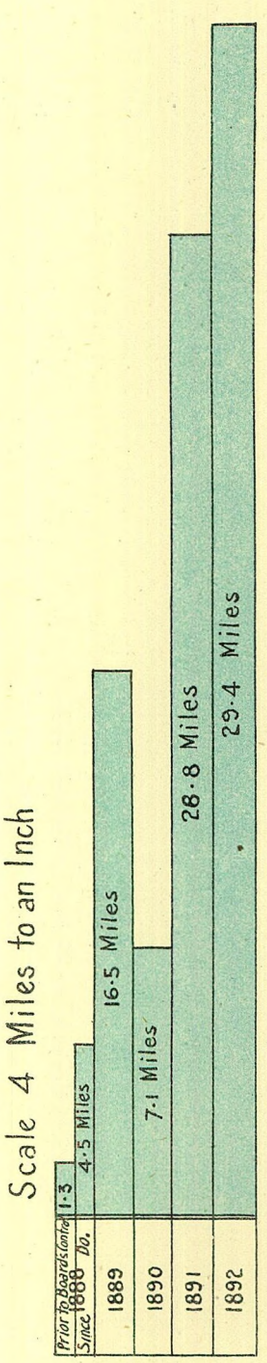
PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

DIAGRAMS

Shewing the Total Mileage of Trunk, Pumping & Reticulation Mains laid to the end of each Year also of Mains Removed & Cleaned during each Year from 1888 to 1892







G.G.M.C.
(Sig 668).

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SYDNEY, NEW SOUTH WALES.

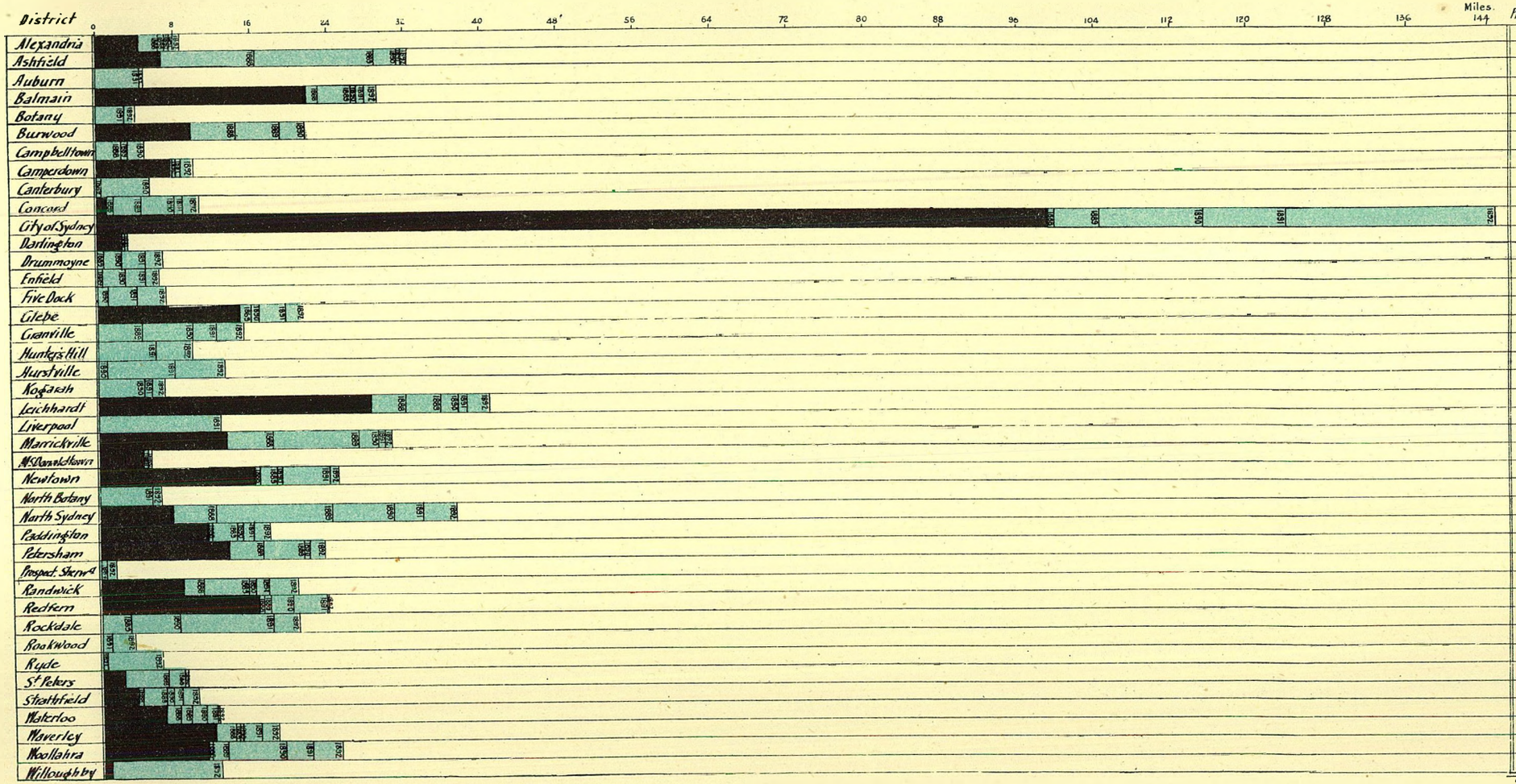
WATER MAIN RETICULATION

DIAGRAM

Shewing Mileage of Water Main Reticulation of the City of Sydney & Suburbs

Mains laid Prior to the Control of the Board shewn in Black

Do. Since Do. Do. Do. Blue



Prior to	Since	Totals
4·5	4·1	8·6
7·0	25·8	32·8
	4·9	4·9
22·1	7·2	29·3
	3·9	3·9
10·0	12·2	22·2
	5·1	5·1
7·8	2·2	10·0
	5·5	5·5
1·0	9·5	10·5
99·5	45·3	144·8
2·6	·6	3·2
	6·7	6·7
	6·3	6·3
	6·9	6·9
15·0	6·6	21·6
	15·1	15·1
	9·5	9·5
	13·2	13·2
	6·7	6·7
28·8	12·2	41·0
	12·8	12·8
13·6	17·2	30·8
4·5	·8	5·3
16·6	8·9	25·5
	6·7	6·7
7·8	29·4	37·2
11·6	5·8	17·4
13·8	9·5	23·3
	1·15	1·15
8·8	11·7	20·5
16·8	7·1	23·9
	20·6	20·6
	3·2	3·2
	5·9	5·9
2·25	6·8	9·05
3·8	5·9	9·7
6·8	5·4	12·2
12·0	6·4	18·4
11·25	13·6	24·85
	11·5	11·5
327·9	399·9	727·8

G.G.M.C. 1893
(Sig 668)

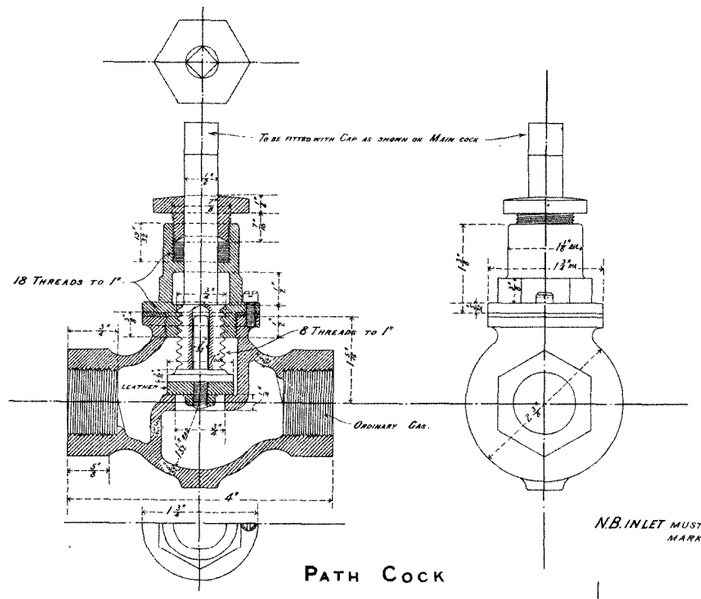
NB. The above does not include Trunk or Pumping Mains or Repairs etc.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

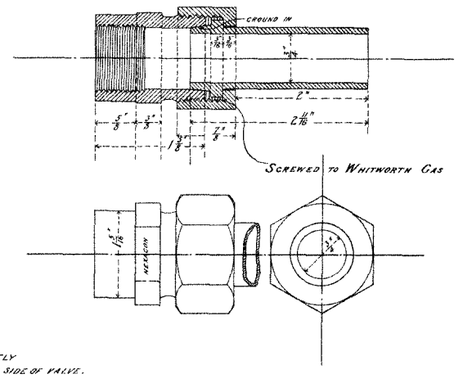
M . B . W . S & S .

APPROVED WATER CONNECTIONS.

PATH, MAIN, BIB & BATH COCKS &c

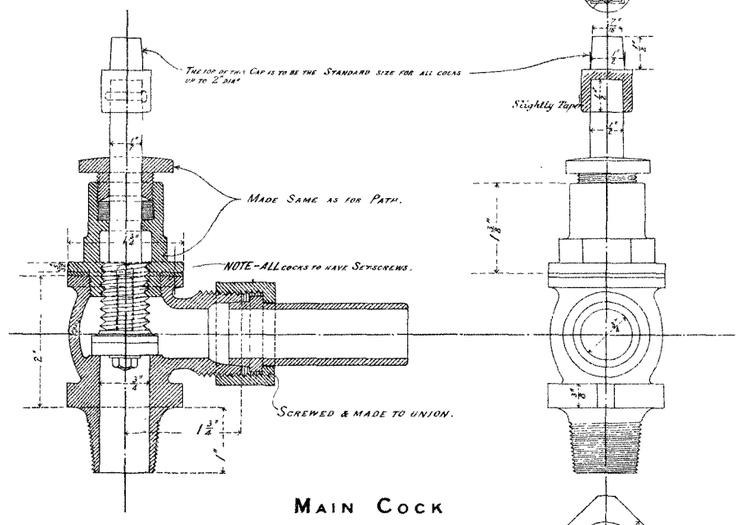


PATH COCK

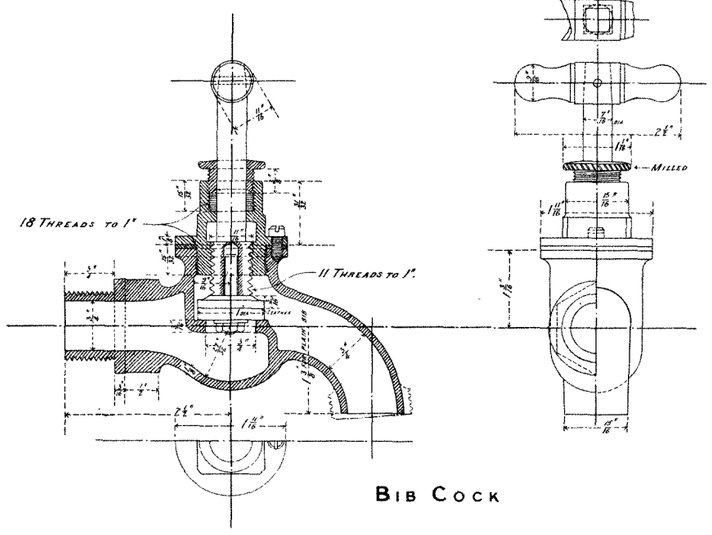


N.B. INLET MUST BE DISTINCTLY MARKED ON INLET SIDE OF VALVE.

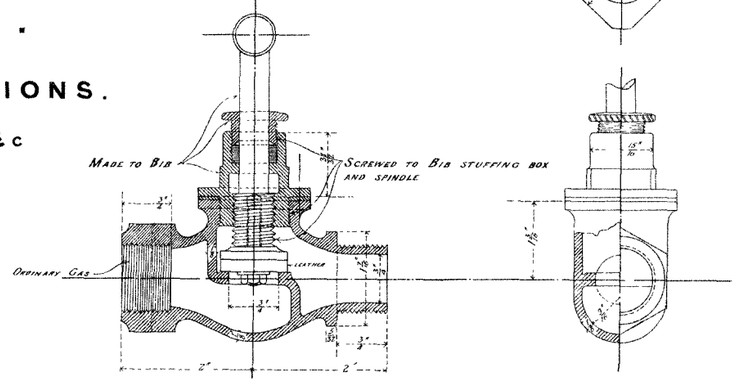
UNION



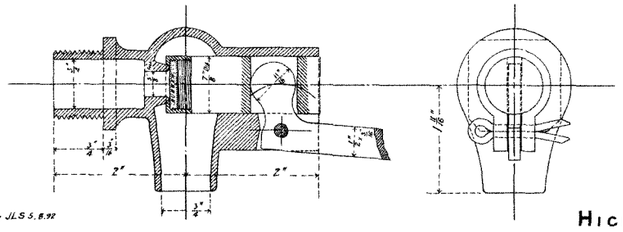
MAIN COCK



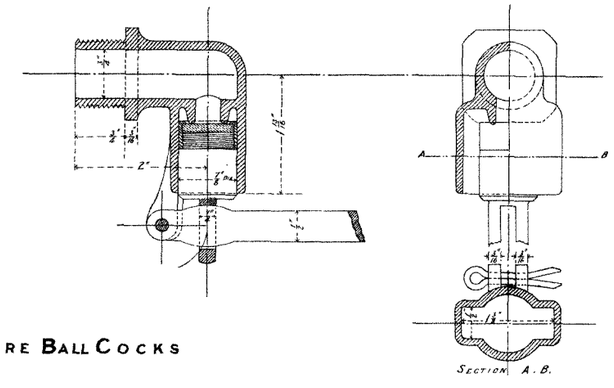
BIB COCK



BATH COCK

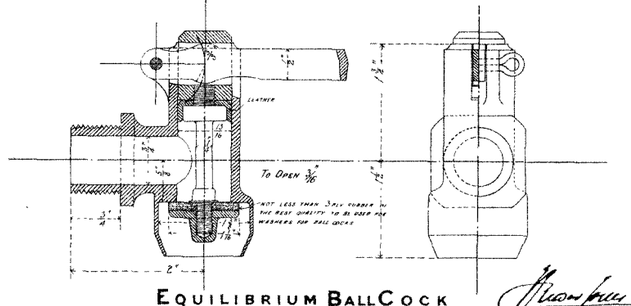


EHW 4.8.92
Checked by JLSS. 8.92



SECTION A.B.

HIGH PRESSURE BALL COCKS



EQUILIBRIUM BALL COCK

Sig 668

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE SYDNEY, NEW SOUTH WALES.

Board of Water Supply & Sewerage. Sydney. N.S.W.

PLAN SHOWING THE LINE OF CONDUIT FROM THE CATCHMENT AREA TO THE CITY AND THE VARIOUS RESERVOIRS

SERVICE RESERVOIRS

No	Name of Reservoir	Reduced Level of surface of Top Water over H.W.M.	Depth	Capacity in Gallons	Diameter of inlet pipe	Diameter of outlet pipe
1	Crown Street	141·00	15'6"	3,250,000	42"	2-20" / 1-24"
2	Paddington	214·00	16'6"	2,000,000	36"	1-36" / 1-24"
3	Woollahra	282.00	18'0"	1,000,000	20"	20"
4	Waverley	360·00	20'0"	1,087,000	18"	15"
5	Petersham	166.00	27'0"	2,157,000	48"	42" / 18" / 18"
6	Ryde Hill	234·00	22'0"	1,000,000	24"	18"
7	Chatswood No 1	370.00	32'6"	1,500,000	24"	20"
8	do No 2	370.00	32'6"	1,500,000	24"	

Scale. 2 ½ 1 ½ 0 1 2 3 4 Miles

— Prospect Reservoir —

Catchment Area above embankment 2400 acres
Area of Surface of Water when full 1261 acres
Total Contents (185 Contour) 10,812,313,000 gallons
" " (170 ") 4,067,970,000 "
Total Quantity available for supply to Canal 6,744,343,000 gallons

— Potts Hill Balance Reservoir —

Dimensions at Top Water Level.
Top Water Level 175·00 ft Length 1196 ft Width 894 ft
Area 24½ acres. Available depth 15 ft 6 in
Total Capacity 108,185,401 gallons
Available Capacity 96,110,315 do
Capacity of works above Prospect 150 mill^n gallons daily
Quantity of Water which Conduits will deliver (average since 1868) 95 mill^n gallons daily.

— Water Levels —

The heights marked on the Line of Conduit denote the level of Water Surface when running full and are above High Water, Sydney Harbour.

— Tunnels —

	Length		Miles
Nepean	23507	=	4.45
Cataract	" 9724	=	1.85
Devine's No 1	" 600	=	·11
" No 2	" 2680	=	·51
Sugarloaf	" 3900	=	·74
Mt Anna	" 2250	=	·43
do (extension)	" 605	=	·12
Badgelly's	" 3780	=	·72
Mollesmain	" 700	=	·13
Box	" 400	=	·08
Cecil Hills	" 10610	=	2·00
Devil's Back	" 950	=	·18
Calmsley	" 1230	=	·23
Trafalgar	" 650	=	·12
	61586 feet		11·66

PENNANT HILLS · BEECROFT · CARLINGFORD · EASTWOOD · RYDE · LANE COVE RIVER · RAILWAY · NORTHERN · MIDDLE HARBOR · MANLY · WILLOUGHBY · 370 ft RESERVOIR · 234·00 W.L. · 24" Pipes · Pipe Gallery · NORTH SYDNEY · HUNTERS HILL · PARRAMATTA RIVER · PORT JACKSON · BLACKTOWN · GREAT WESTERN RAILWAY · PARRAMATTA · GRANVILLE JUNCTION · 4 ft Pipes · PROSPECT 195 ft Top Water Level · STORAGE RESERVOIR · 175·5 · 30" Main · Aqueduct · Canal · Sherwood Heights · Pipe Head Basin · Trafalgar Tunnel · Weston's Tunnel · SMITHFIELD · GUILDFORD · ROOKWOOD · 6ft Pipe Line · Screening Chamber · 24" Pipes · HOMEBUSH · BURWOOD · ASHFIELD · 4 ft Pipe Line · 36" Pipes · NEWTOWN · PETERSHAM · RESERVOIR 166 ft · TANK 223·50 · EVELEIGH · ST PETERS · HANDWICK · FAIRFIELD · Calmsley Tunnel · Devil's Back Tunnel · Cecil Hills Tunnel 266.55 ft · BALANCE RESERVOIR 175 ft · POTTS HILL · COOK'S RIVER · MARRICKVILLE · NORTH BOTANY · TEMPE · ARNCLIFFE · BOTANY · ROCKDALE · KOGARAH · CARLTON · PUMP · HURSTVILLE · TANK 270.00 · BOTANY BAY · COMO · GEORGES RIVER · RESERVOIR · 9" PIPES · 6" PIPES · LIVERPOOL · 278.76 ft · 25 Box Tunnel 353·96 ft · Mollesmain Tunnel · Badgelly Tunnel · GREAT SOUTHERN RAILWAY · George's River · CAMPBELLTOWN · Mt Anna Tunnel 373·42 ft · Nepean River · ILLAWARRA RAILWAY · PORT HACKING · NATIONAL PARK · OCEAN · PACIFIC · COAL CLIFF · BULLI · MENANGLE · 391·46 · Sugarloaf Tunnel · Engineer's Cottage · Woodhouse Ck · Nepean Ck · Devine's Tunnel No 2 · Devine's Tunnel No 1 · Smith's Ck · DOUGLAS PARK · Stevens Ck · 416·81 ft · Cataract Tunnel · 426·0 · Cataract River · Nepean Tunnel · 439·54 · PHEASANT'S NEST PASS · Nepean River · Cordeaux River

Area of Watershed Cataract River 70 square miles.

Combined Area of Watershed of Nepean and Cordeaux Rivers. 284 square miles

LENGTH OF DIFFERENT CLASSES OF CONDUIT	
TUNNELS	11 5/8 miles
CANALS	33¼ "
ACROSS PROSPECT RESERVOIR 30" PIPE	1¾ "
WROT IRON FLUMES 8FT. 7FT 6IN	½ "
PIPES 6FT	4⅞ "
CAST IRON PIPES 4 FT	7½ "
" " " 3FT 6IN	3¾ "
TOTAL	63¼ miles

The area supplied with water previous to Board's Control – MAY 1888 ..... shown thus
Extension of area by Board to end of 1891 " "
Added during 1892 ..... " "

EHW.
(Sig 668).

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

SEWERAGE RETICULATION

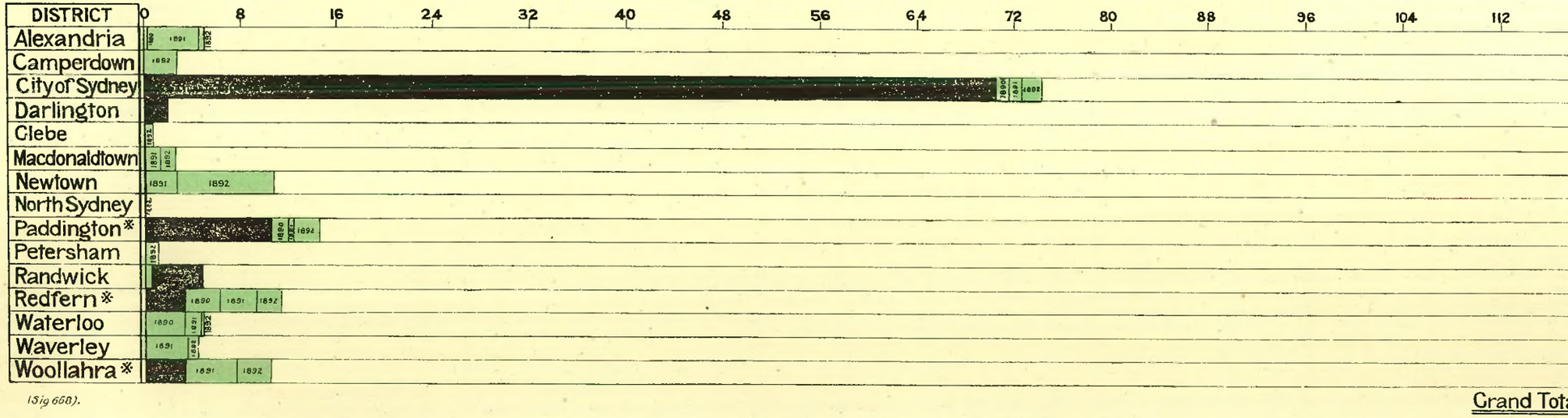
DIAGRAM

Shewing Mileage of Subsidiary Sewers in the City of Sydney and Suburbs

Sewers laid Prior to the Control of the Board shewn in Black
do Since do do do Green

SCALE OF MILES

0 1 2 3 4 5 6 7 8 12 16 20 24 28 32 36 40



DISTRICT	Prior to	Since	Totals
Alexandria		4·98	4·98
Camperdown		2·70	2·70
City of Sydney	70·27	3·70	73·97
Darlington	1·90		1·90
Glebe		·67	·67
Macdonaldtown		2·36	2·36
Newtown		10·47	10·47
North Sydney		·13	·13
Paddington*	10·39	4·09	14·48
Petersham		·90	·90
Randwick	4·45	·23	4·68
Redfern*	3·20	6·79	9·99
Waterloo		4·82	4·82
Waverley		4·28	4·28
Woollahra*	3·31	6·88	10·19
Grand Totals	93·52	53·00	146·52

(Sig 668).

* The whole of the sewers in these Boroughs prior to 1890 were carried out by Government in accordance with the Act

GGS. 12-1-93

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

Board of Water Supply & Sewerage.

PLAN OF CITY OF SYDNEY AND SUBURBS

Shewing Extent of Main Sewers and Reticulation as Completed and under Consideration &c:

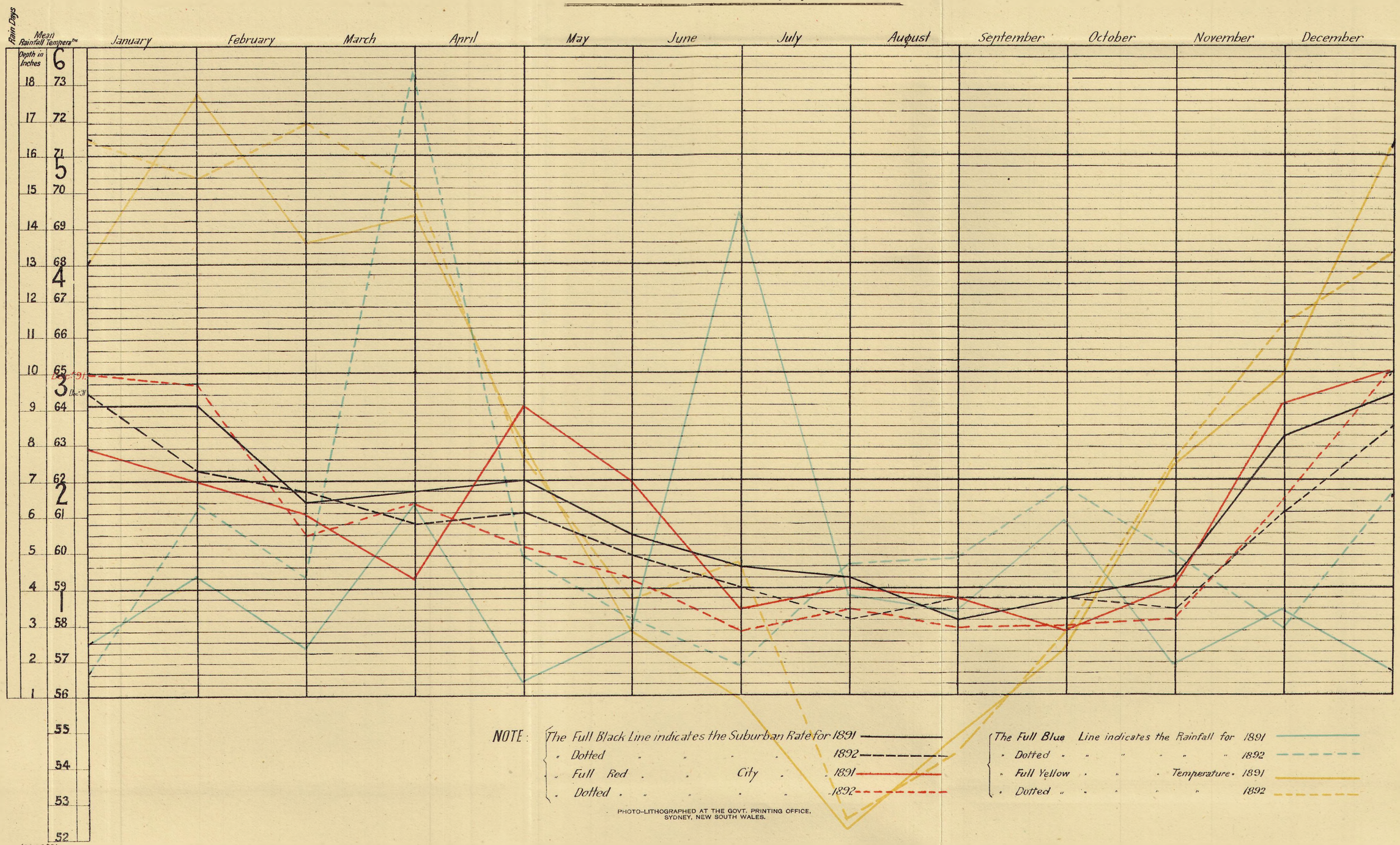
31st December 1892.

HUNTERS HILL
LANE COVE RIVER
LANE COVE
BALLS HEAD BAY
MANNS POINT
WRIGHTS Pt
PULPIT POINT
LONG NOSE Pt
COCKATOO ISLAND
SPECTACLE ISLD
SNAILS BAY
BALLAST POINT
SCHNAPPER ISLD
WHITE HORSE Pt
GOAT ISLAND
SIMMONS Pt
PEACOCK Pt
WATERVIEW BAY
BERRYS BAY
BLUES Pt
MILSONS Pt
KIRRIBILLI POINT
KURRARA
ROBERTSONS POINT
GEORGES HEAD
TAYLORS BAY
CROWDER HEAD
BRADLEYS HEAD
FORT DENISON
MILLERS POINT
BOWES POINT
MACQUARIE FORT
Mrs MACQUARIES CHAIR
GARDEN ISLAND
SHARK ISLAND
CLARK ISLAND
POTTS POINT
DARLING POINT
POINT PIPER
GREEN POINT
THE GAP
BOTTLE AND GLASS POINT
SHARK POINT
OUTER SOUTH HEAD
BERMT Pt
BIRCHGROVE
IRON COVE
ROZELLE BAY
ROZELLE
ROZELLE Pt
BALMAIN
WHITE BAY
GLEBE ISLAND
Callan Park
Lunatic Asylum
Leichhardt Park
JOHNSTONES BAY
DARLING HARBOUR
SURVEY COVE
FARM COVE
Mrs MACQUARIES CHAIR
GARDEN ISLAND
CLARK ISLAND
POTTS POINT
DARLING POINT
POINT PIPER
ROSE BAY
DOUBLE BAY
WATSONS BAY
PARSLEY BAY
VAUCLUSE BAY
BECKETTS BAY
NIELSENS BAY
SHARK POINT
BERMT Pt
SHIRLEY BAY
GIBSONS BAY
CHOWDER BAY
SOUTH BONDI
BONDI BAY
BEN BUCKLER
LEICHHARDT
CAMPERDOWN
NEWTOWN
PADDINGTON
WOOLLAHRA
PETERSHAM
ENMORE
ERSKINEVILLE
ALEXANDRIA
WATERLOO
RANDWICK
MARRICKVILLE
ST PETERS
NORTH BOTANY
BOTANY
ARNCLIFFE
BOTANY BAY
SOUTH PACIFIC OCEAN
Moore Park
Sydney Cricket Ground
National and Agricultural Society's Show Ground
Centennial Park
Waverley Cemetery
Randwick Race Course
Bishopscourt
Randwick Park
Randwick Cem.
Sydney Harbour
Sydney Harbour
Sydney Harbour

Adult and Infantile

Zymotic Death rate of the Metropolis

Per 10000 of the population



(Sig 668).

NOTE: The Full Black Line indicates the Suburban Rate for 1891 ——
" Dotted " " " " 1892 - - - -
" Full Red " " City " 1891 ——
" Dotted " " " " 1892 - - - -

The Full Blue Line indicates the Rainfall for 1891 ——
" Dotted " " " " " 1892 - - - -
" Full Yellow " " " Temperature 1891 ——
" Dotted " " " " " 1892 - - - -

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

DIAGRAM

SHOWING MEANS OF EXTERNAL TEMPERATURE, TEMPERATURE IN SEWERS 10 & 40FT. DEEP & HUMIDITY FOR THE YEARS 1889, 1890, 1891, & 1892

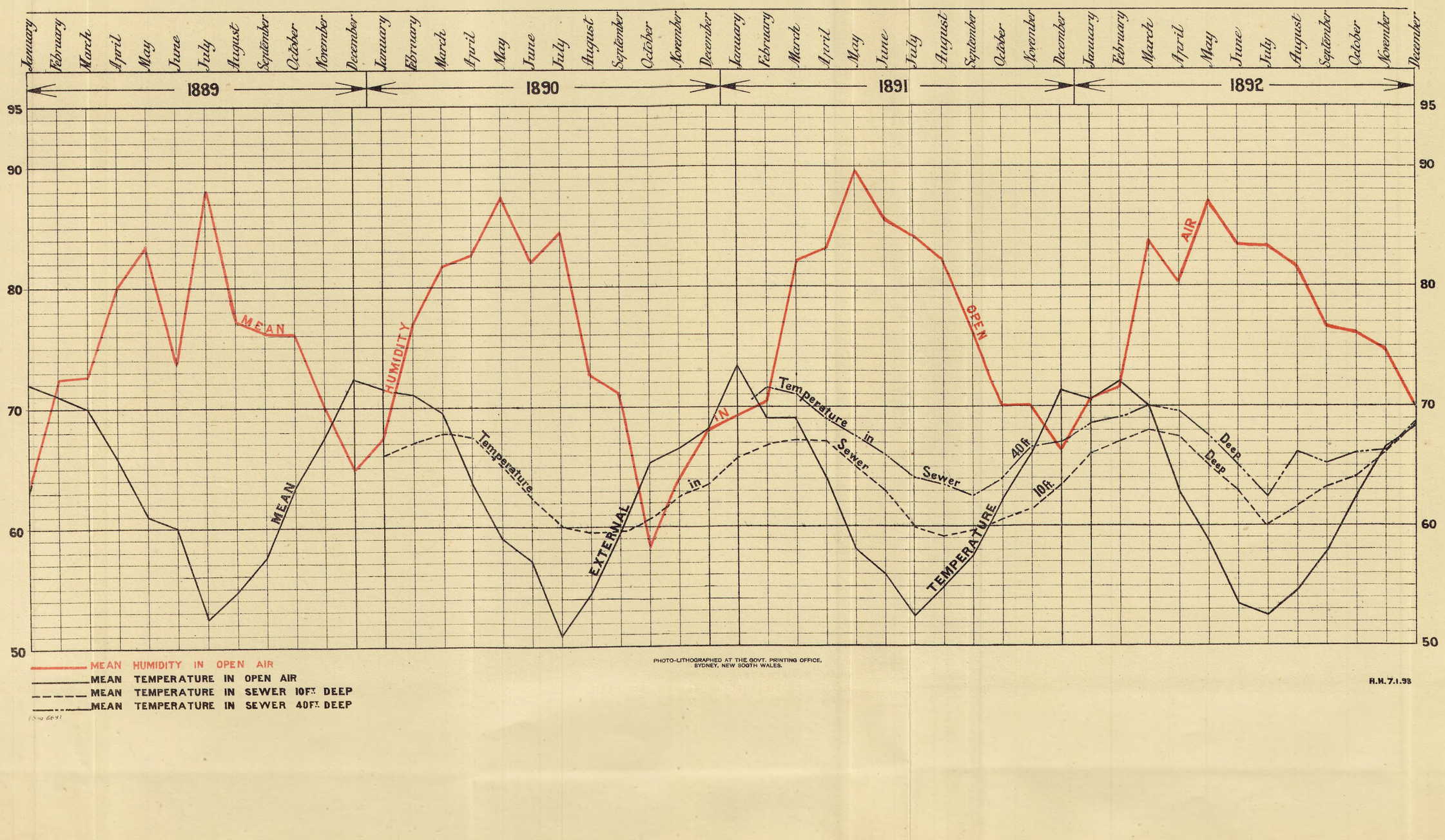
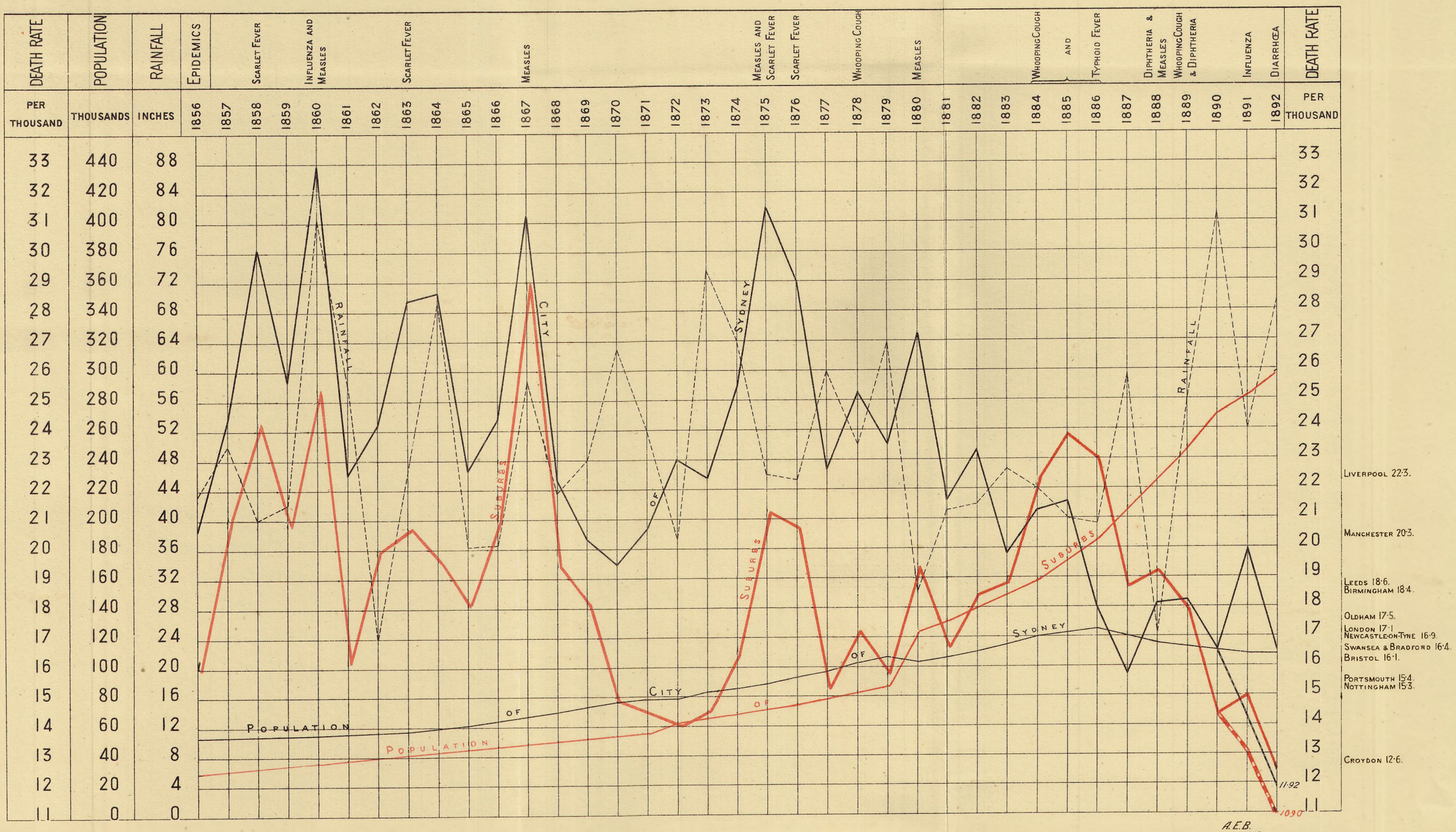


PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

R.H. 7.1.93

(Sno 664)

Diagram Showing Death Rate of City of Sydney and Suburbs.



DEATH RATE IN CITY OF SYDNEY

DEATH RATE IN SUBURBS

POPULATION OF CITY OF SYDNEY

POPULATION OF SUBURBS

RAINFALL AT SYDNEY OBSERVATORY

DEATH RATE IN CITY OF SYDNEY AND SUBURBS, EXCLUSIVE OF HOSPITALS, ASYLUMS & GAOLS.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

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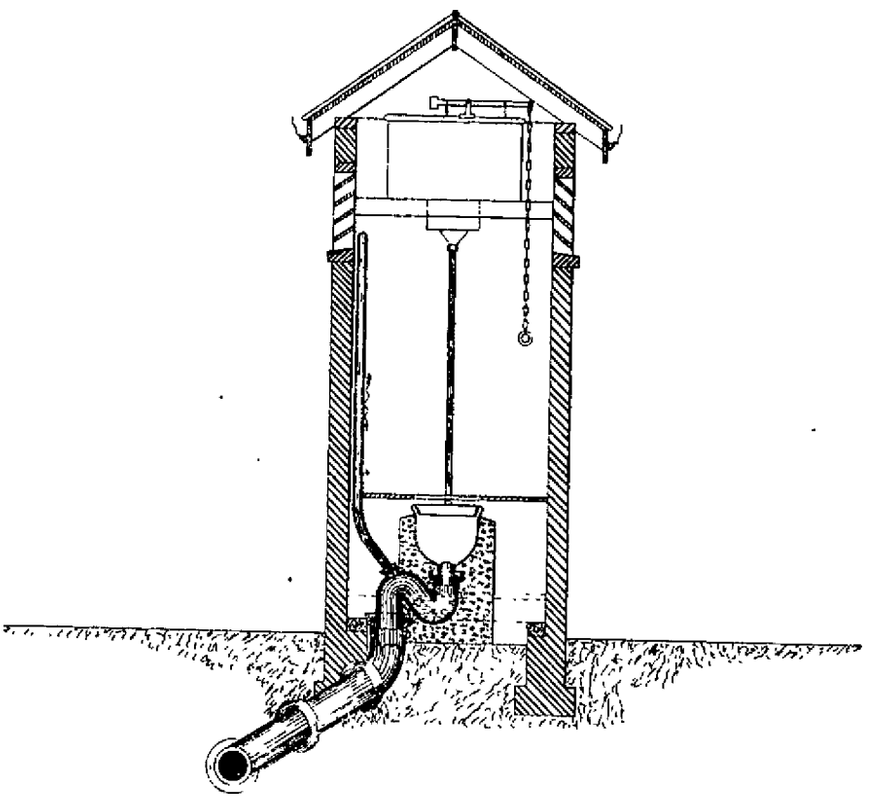
SYDNEY SEWERAGE

M. B. W. S & S.

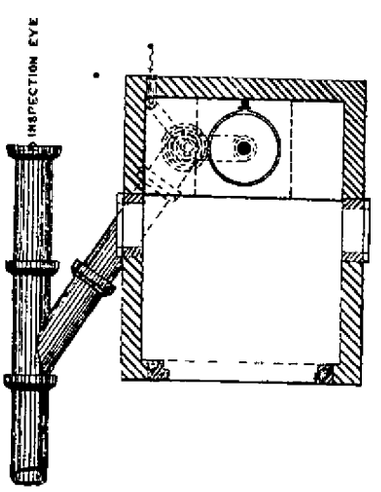
APPROVED WATER CLOSET CONNECTION

INCHES SCALE FEET

DIAGRAM 1



SECTION



(Sig 668)

PLAN

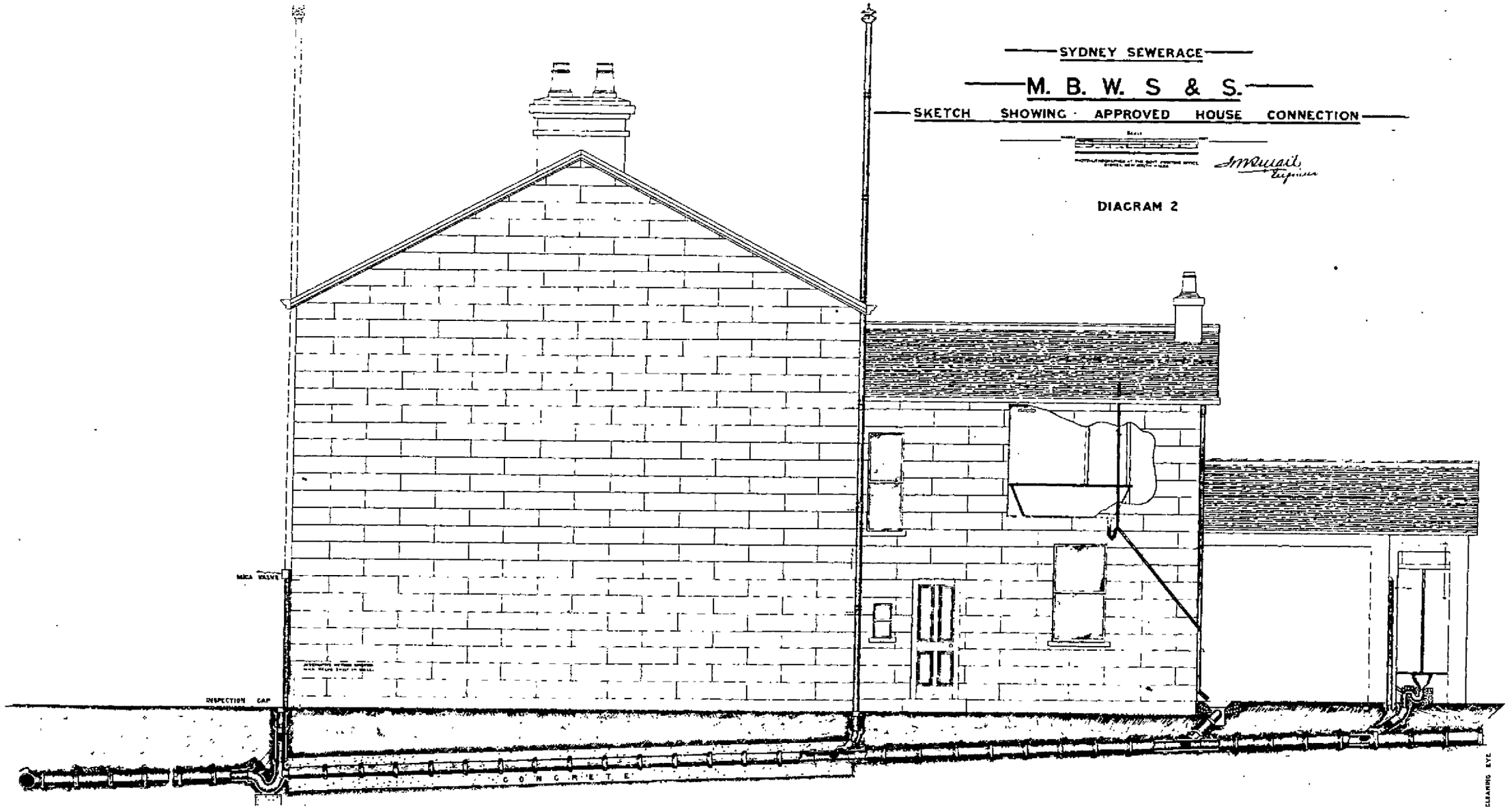
PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

SYDNEY SEWERAGE

M. B. W. S & S.

SKETCH SHOWING APPROVED HOUSE CONNECTION

DIAGRAM 2



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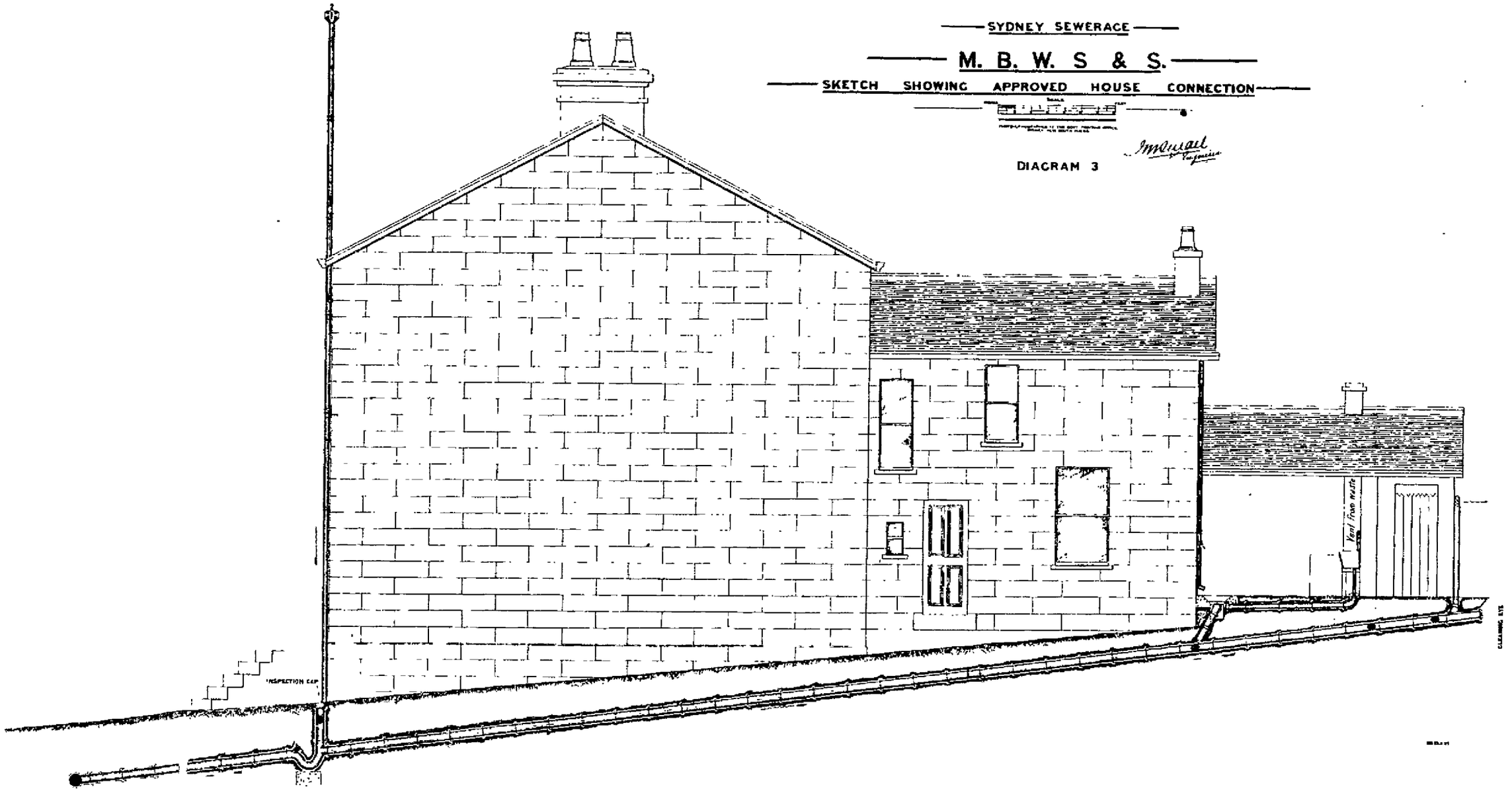
SYDNEY SEWERAGE

M. B. W. S & S.

SKETCH SHOWING APPROVED HOUSE CONNECTION

DIAGRAM 3



(668-)

— SYDNEY SEWERAGE —

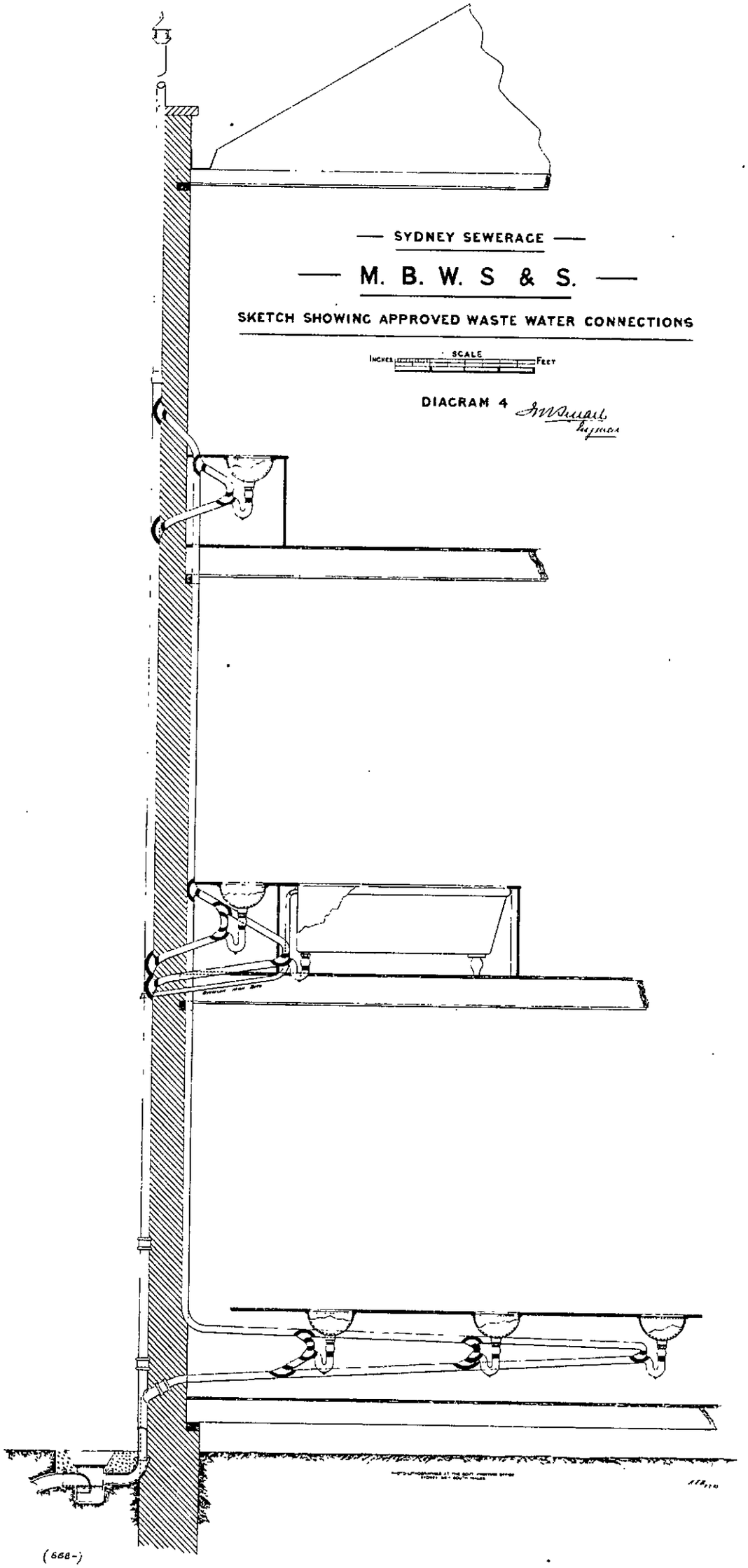
— M. B. W. S & S. —

SKETCH SHOWING APPROVED WASTE WATER CONNECTIONS

SCALE

INCHES ——— FEET

DIAGRAM 4



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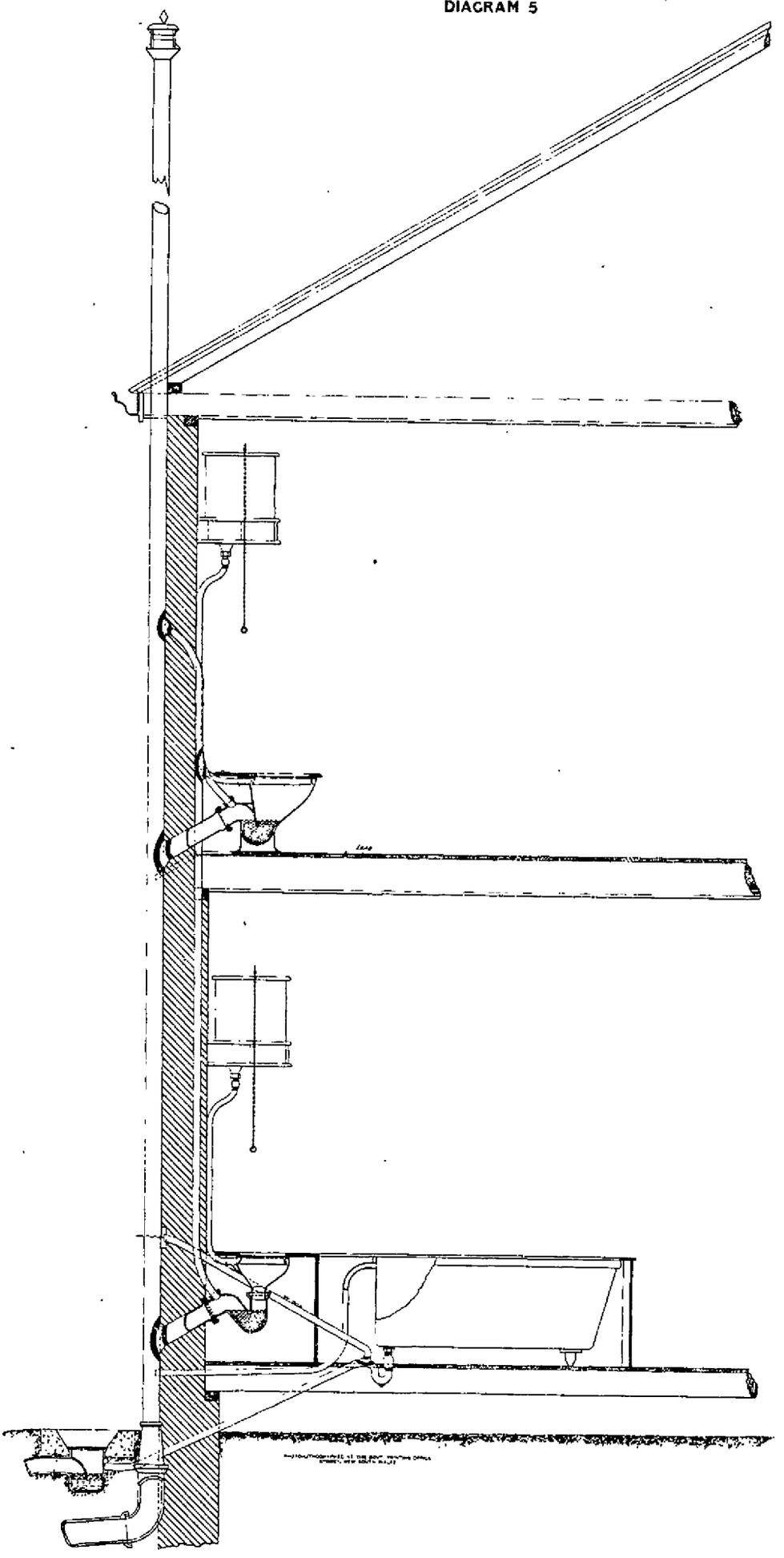
SYDNEY SEWERAGE

M. B. W. S. & S.

APPROVED SKETCH SHOWING SOIL PIPE CONNECTIONS

SCALE

DIAGRAM 5



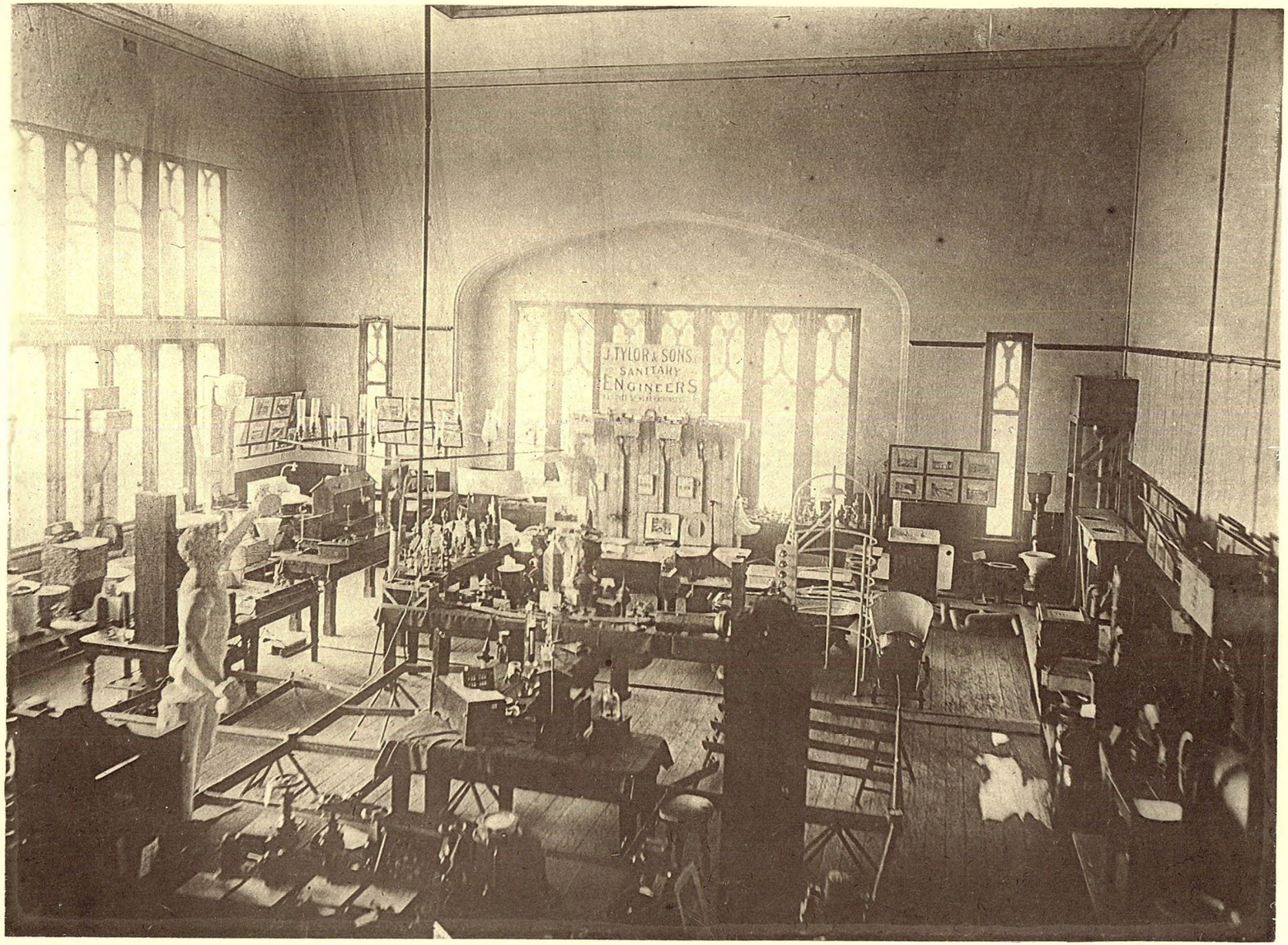
(668)

Sanitary Exhibition, Medical School, University, September, 1892.

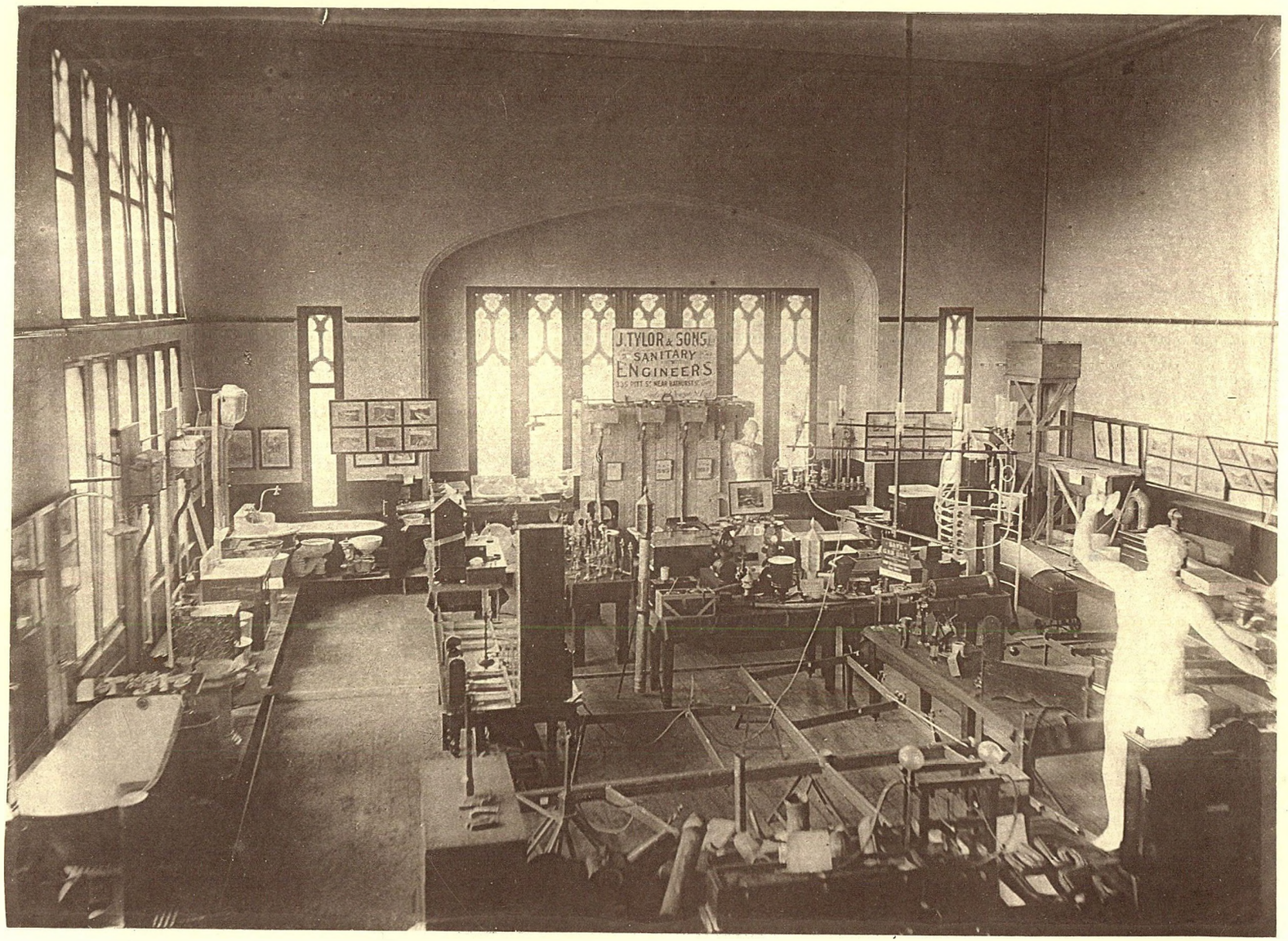


View showing defective and obsolete fittings, also Ventilating Cowls.

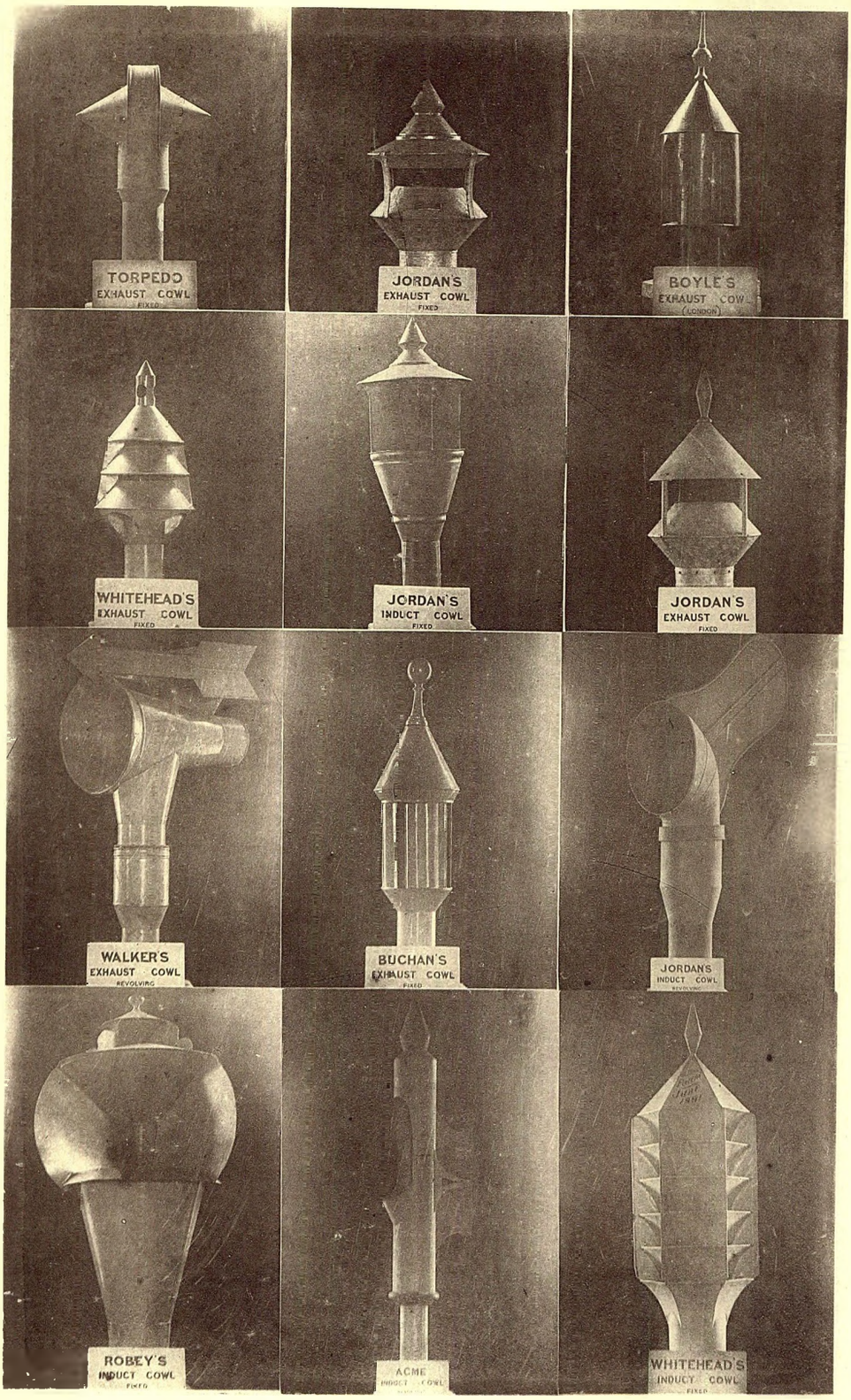
Sanitary Exhibition, Medical School, University, September, 1892.



View 1—Looking South.



View 2—Looking South



Sample of Cowls used in connection with Metropolitan Sewerage Works.
Approved by the Board.

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE AND PLANS

RELATING TO THE

PROPOSED RESERVOIR AT CENTENNIAL PARK,

FOR

SYDNEY WATER SUPPLY.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1892.

[3s.] 44—A

MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable William Henry Suttor, Vice-Chairman.
The Honorable James Hoskins.
The Honorable Frederick Thomas Humphery.
The Honorable Andrew Garran, LL.D.
The Honorable John Davies, C.M.G.

LEGISLATIVE ASSEMBLY.

Jacob Garrard, Esquire, Chairman.
Thomas Thomson Ewing, Esquire.
William Chandos Wall, Esquire.
William McCourt, Esquire.
John Cash Neild, Esquire.
Edward William O'Sullivan, Esquire.
Charles Collins, Esquire.
Henry Dawson, Esquire.

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Minutes of Evidence taken by the Committee.
Plans.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

RESERVOIR AT CENTENNIAL PARK, FOR SYDNEY WATER SUPPLY.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing a Reservoir at the Centennial Park in connection with the Sydney Water Supply," have, after due inquiry, resolved that it is expedient the Reservoir should be constructed of the capacity and elevation proposed, but recommend that the site should be more to the eastward, near the Ocean-street entrance to the park; and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Description of the proposed Reservoir.

1. The proposed Reservoir, rhomboidal in form, would occupy an area of 3 acres 3 roods 11 perches near the centre of the crescent-shaped piece of ground within the railing of the park, lying along the frontage of the Old South Head Road, between Queen-street and Ocean-street, Woollahra, completely filling the space assigned to it. The structure would be partly sunk in the solid rock, and the portion above the surface built of brick-work in cement of sufficient thickness to resist the pressure of the water. If the local rock be fairly free from fissures the floor of the reservoir would be a rock-floor, and, if not, of concrete. The roof would be of arched concrete, supported on piers of brick in cement, the edges of the arches to be supported on a series of brick arches at right angles to the roof arches. The top of the roof would be covered with turf so as to form a promenade, which could be used as tennis lawns by either the residents of the houses erected on the park, should portions of the park be sold for that purpose, or by the general public, as might afterwards be decided. By an intersecting wall the Reservoir would be divided into two compartments, so that at intervals one might be cleaned while the other maintained the water supply. The total capacity of the Reservoir is stated as 17½ million gallons, and the level of the highest water in it when full would be 345 feet above high-water mark, or 31 feet above the level of the top water-level of the Paddington Reservoir. The structure would be finished generally in a neat manner, with an open parapet round the top edge of the retaining wall, and every care the Committee are assured would be taken that it was no disfigurement to the district.

Estimated cost.

2. The estimated cost of the work is £83,000, and the engineer, who is the author of the design, states his conviction that this estimate would not be exceeded. He has priced everything connected with the work "very high," and has "made provision for things which will probably not be called for." Probably, therefore, he says, there will be a surplus.

Necessity for the Reservoir.

3. The Reservoir, it is explained, is intended as a substitute for the Paddington Reservoir, which is found to be at an elevation too low to give an effectual supply for the area now fed by it (about four square miles of the most important and densely populated parts of the city and suburbs), or to supply modern lofty buildings, or give an effective jet in serious outbreaks of fire, and, therefore, too small to meet the

the growing requirements of the zone commanded by it. This Reservoir contains space for only 2,250,000 gallons, of which quantity only from 800,000 to 1,000,000 gallons are available for giving a fair supply to the zone requiring it; and as the consumption sometimes reaches 500,000 gallons per hour, the fluctuation in the Reservoir is such as to cause frequent starting of the pumps, besides giving undue variability of pressure. The Paddington Reservoir supplies the heights of Darlinghurst and Surry Hills; but as portions of those localities are nearly as elevated as the Reservoir, the supply to houses of two and three storeys is precarious during parts of the day, and baths cannot be supplied at 7 a.m. Lofty buildings, it is pointed out, are now being erected in the city in great numbers, and it is a growing practice to establish lavatories and other sanitary offices at the tops of the premises. The present arrangements for supplying water will not reach all of these.

The evidence regarding the proposed Reservoir.

4. The evidence given by the witnesses examined by the Committee proves the necessity for a high-level Reservoir for the purposes stated. The want of a capacious Reservoir at a high level (100 feet above Crown-street) was felt as far back as 1883, and the site of the Reservoir referred to the Committee was then selected and marked on the ground by the City Council in anticipation of a scheme for giving a more liberal distribution of high-level water to the central portions of the city. In 1888, by the Centennial Park Act, this site was resumed for the erection upon it of a State-house. Subsequently, a Board, consisting of Mr. Charles Moore, Director of the Botanic Gardens, Mr. Robert R. P. Hickson, Commissioner and Engineer-in-Chief for Roads and Bridges, and Mr. W. L. Vernon, Government Architect, was appointed to consider the subdivision of this part of the park frontage, and they produced a plan upon which the site for the Reservoir was recommended as shown in the reference to the Committee. The proposed Reservoir is not so large or of the same shape as originally intended. The original design was for a circular Reservoir to hold 20,000,000 gallons. A Reservoir of circular form, and of the same capacity as that proposed, would cost less for construction, but would not fit in satisfactorily with a suggested subdivision of the land intended for sale: the rhomboidal structure permits of a better arrangement of residential allotments in its vicinity, and involves less interference with the general plan of the park. The new Reservoir will allow of the present Paddington Reservoir being dispensed with, and will deal with half of the whole quantity of water which comes into the city. Its capacity will be sufficient, it is considered, for the next twenty years, and though the cost of constructing it will necessarily increase the liabilities of the Board of Water Supply and Sewerage, the increase will not be such as to lead to the water rate being raised from this cause only. The working expenses in connection with the new Reservoir will also not be increased. The present pumping appliances are ample, and the work generally in the management of the Reservoir will be carried on with so much more economy that it is expected £900 per annum of the present expenditure will be saved.

The site of the Reservoir and the proposed State-house.

5. The site of the proposed Reservoir is the site of the proposed State-house, for which provision is made in the Centennial Park Act. Learning this, the Committee endeavoured to ascertain the course the Government intended to take with regard to the State-house. The Under Secretary for Public Works, speaking for the Minister at the head of the Works Department, said this matter would have to be arranged, and that it could easily be overcome by a special clause in the Reservoir Construction Bill, repealing the portion of the Centennial Park Act relating to the State-house. But, subsequently, he informed the Committee that on referring the point to the Minister, he was instructed to say that the matter was entirely one of policy, to be settled by the Government alone.

A suggested new site for the Reservoir.

6. A serious objection to the Reservoir being constructed on the site proposed is the probable interference it will cause with the general beauty of the park. The upper part of the Reservoir would be about 17 feet above the ground-level, and the site is the most conspicuous and the finest in the whole park area. Two visits of inspection were made to it by the Committee, and the great value of the position for purely park purposes was very clearly apparent. One of the witnesses examined by the Committee, Mr. F. A. Franklin, advised a change of site and shape for the Reservoir. Having visited the park for the purpose of ascertaining whether another

equally

equally or more suitable site could be secured, he found that a Reservoir of the same capacity and height, and level with the ground, could be erected on a site fifteen chains further east, and near the Ocean-street entrance to the park, where it would not be unsightly or interfere with the general appearance of the park. Erected there the Reservoir would be pear-shaped, the surface dressing about the ordinary ground-level, and the cost of construction, according to Mr. Franklin, somewhat less. Mr. C. W. Darley, Engineer-in-Chief for Harbours and Rivers, and President of the Metropolitan Board of Water Supply and Sewerage, at the request of the Committee examined this suggested new site, and found that it had been recommended to the Government as a site for a Reservoir some eighteen months before by the Board of Water Supply and Sewerage, but objected to, and the site as referred to the Committee was afterwards allotted to the Board. The suggested site he regarded as suitable for the Reservoir, but the cost of a pear-shaped structure there would be £90,000, as compared with £83,000, the estimated cost of the Reservoir of rhomboidal form. The larger cost of the pear-shaped Reservoir would be due to the more extensive excavation necessary, but against this there might be credited the improvement which could be made on portions of the park in the vicinity of the Reservoir by using the excavated material for levelling purposes. The pear-shaped Reservoir on the eastern site would be practically level with the park, whilst the rhomboidal Reservoir, or one of circular shape, would show a height of from 10 to 17 feet above the ground. He preferred the proposed centrally-situated site and the rhomboidal Reservoir, though, all things being equal, he considered a Reservoir of circular form the best; but at the same time he admitted that the suggested eastern site was very suitable, and the only strong objection to it the extra cost of constructing a Reservoir upon it. But for the extra cost, he said, he would have taken the pear-shaped site in preference to the other if it had been offered. The adoption of that site would reduce the eyesore which the Reservoir might prove to be to a minimum, interfere less with any plan for residences in that part of the park, and leave the centrally-situated site free for any public building or other public structure of a suitable kind which it might be desirable to erect there in the future. With this evidence, given by Mr. Darley, the Engineer for Water Supply, Mr. John Trevor Jones, generally agreed.

7. The Committee are of opinion that the site near the Ocean-street entrance to the park should be used for the construction of the proposed Reservoir. An equally good elevation can be obtained there for a Reservoir of the same capacity as that proposed; and though the Reservoir there will involve some additional expense it will not disfigure the park, and will leave the other site free. The evidence obtained in their inquiry was considered by the Committee on 13th July, and their decision was expressed in the following resolution:— Decision of the Committee.

Mr. Neild moved,—"That, in the opinion of this Committee, it is expedient that a Reservoir of the capacity proposed (as referred to the Committee by the Legislative Assembly) should be erected of a design and in a position that will interfere as little as possible with the integrity of the Centennial Park."

Mr. Davies seconded the motion *pro forma*.

Dr. Garran moved,—"That the motion be amended by omitting all the words after the word 'capacity,' and inserting in their place the words 'and elevation proposed, as referred to the Committee by the Legislative Assembly, should be constructed, but they recommend that the site chosen should be more to the eastward, near the Ocean-street entrance to the park.'"

The amendment was seconded by Mr. O'Sullivan, and passed, and the resolution as amended was then adopted.

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 4th August, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

RESERVOIR AT CENTENNIAL PARK, FOR SYDNEY WATER SUPPLY.

WEDNESDAY, 15 JUNE, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. JAMES HOSKINS.	JOHN CASH NEILD, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.

The Committee proceeded to consider the proposed Reservoir at Centennial Park, for Sydney Water Supply.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

1. *Chairman.*] Do you desire to submit a statement to the Committee with regard to this work? The statement I have to make will consist of the statements submitted to me by the President and Engineer of the Water and Sewerage Board. Mr. Darley, the President, says:— J. Barling, Esq. 15 June, 1892.

The President of the Water Supply and Sewerage Board to The Under Secretary for Public Works.

Department of Public Works, Harbours and Rivers Branch, Sydney, 13 June, 1892.

Minute Paper—Large Reservoir, Centennial Park.

As far back as 1883 the City Council, then in charge of the waterworks, set apart a site on the Woollahra Heights of the then Lachlan Reserve for a large city storage reservoir, which it was even then known must eventually be constructed for the proper supply of the city.

When the Centennial Park Act was passed, in 1888, this site was thereby resumed and proposed as a site for the State House. Subsequently, however, a Board, consisting of Messrs. Moore, Hickson, and Vernon, was appointed to reconsider the subdivision of the park frontage, with the view of setting apart as much land as possible for sale, and still reserving a site for the reservoir. The accompanying plan shows the subdivision as recommended by the Board.

Although the space now available is not so large or convenient as that originally proposed, it is still very suitable. The original design was for a circular reservoir to hold 20,000,000 gallons,—the present site may be termed rhomboidal in shape and will only hold 17½ million gallons, still this will probably be sufficient; the only objection that might be taken is that it will be somewhat more costly to construct.

The whole reservoir will be roofed in and covered with soil and sods, and may, therefore, be used as a tennis court or promenade for the residents on the park lands.

The building will be finished in a neat manner, with an open parapet round the top edge of the retaining wall, and every care will be taken that it is no disfigurement to the district.

C. W. DARLEY.

This particular minute went before the Cabinet. The question has been considered on several occasions, but this is the final decision. The following is the minute endorsed on it by the Cabinet: "Plan attached approved; to be referred to Public Works Committee." Mr. Jones, the Engineer of the Board, has supplied me with the following particulars:—

The Need for a Capacious Reservoir at the Centennial Park.

THE want of a capacious reservoir at a high level (100 feet above Crown-street) was felt in 1883, and the site under consideration was then selected and marked on the ground by the City Council, in anticipation of a scheme for giving a more liberal distribution of high-level water to the central portions of the city.

When the Board of Water Supply and Sewerage was formed this want presented itself, and was intensified by the fact that the Board gave the high-level supply to the portions of the city bounded by Macquarie, Clarence, Liverpool, and Bridge Streets.

The water is received in the Crown-street Reservoir by gravitation, at a level of 141 feet above high-water mark; a moiety of it is now pumped to the Paddington Reservoir, at an elevation of 214 feet. This reservoir contains space for only 2,250,000 gallons, and only 800,000 to 1,000,000 gallons of this is available for giving a fair supply to the zone supplied by it, as when the surface falls to 208 feet the pressure becomes ineffectual on elevated localities.

As the consumption sometimes reaches 500,000 gallons per hour, the fluctuation in this small reservoir is such as to cause frequent stoppings and startings of the pumps, beside giving undue variability of pressure.

The Paddington Reservoir is, therefore, too small for economical pumping, and, therefore, much too small for tiding over any accidental interruption of pumping, or other casualty.

The

J. Barling, Esq.

15 June, 1892.

The Paddington Reservoir supplies the heights of Darlinghurst and Surry Hills, parts of which are nearly as elevated as the Paddington Reservoir, therefore the supply to houses of two and three storeys gets precarious during parts of the day, such that baths cannot be supplied at 7 a.m.

Lofty buildings are being erected in great numbers, and it is a growing practice to establish lavatories and other sanitary offices at the tops of the premises, and the present water will not reach all of these. The Australia Hotel can only fill tanks on the fifth storey, and this hotel is not on an elevated site.

Many other circumstances go to prove that the Paddington Reservoir is too low, especially to give an effective stream for the extinction of fire.

A large reservoir at a level of 245 feet will give scope for the Board's powerful pumps to keep continuously at work, thereby effecting an economy of fuel and labour.

Summary.

1. The Paddington Reservoir is too low.
2. It is too small for present circumstances, therefore out of all proportion to the needs of the future.
3. Pumping can be done cheaper in fuel and labour.

The following is the official description of the work :—

Proposed Capacious Service Reservoir at Centennial Park.

THIS work is designed to occupy an area of 3 acres 3 roods 11 perches, near the centre of the crescent-shaped piece of ground lying along the frontage of the Old South Head Road, between Queen-street and Ocean-street, Woollahra.

The structure will be of brick-work in cement, with a rock-floor if the local rock is fairly free from fissures, or a concrete floor if not.

It will have an arched concrete roof, supported on piers of brick in cement, the edges of the arches to be supported on a series of brick arches at right angles to the roof arches.

The roof will be covered with turf, and form a promenade, or be used as tennis lawns for the residents of the park lands tenements.

It will be filled by pumping from Crown-street pumping station, through the existing 36-inch cast-iron pipe which now fills the Paddington Reservoir, extended from its present extremity at the Paddington Reservoir as a 30-inch pipe, along Gordon-street, and along Park Road and Old South Head Road to the inlet tower.

Its contents will be distributed by a 36-inch main, laid from the outlet tower in the Centennial Park, laid along Park Road, so as to discharge into an existing 36-inch main, which now distributes the water from the Paddington Reservoir.

The reservoir is intended as a substitute for the present Paddington Reservoir, which is found to be at too low an elevation to give an effectual supply for the area now fed by it (about 4 square miles of the most important and densely populated parts of the city and suburbs), and also found too small to meet the growing requirements of the zone commanded by it, as well as too low to supply modern lofty buildings, and for giving an effective jet in case of a conflagration.

The reservoir will be partly sunk in the solid rock, and partly reared above the surface by means of brickwork walls of adequate thickness to resist the pressure of the water.

The level of the highest water when the reservoir is full will be 345 feet above high-water mark, or 31 feet above the level of the top water level of the Paddington Reservoir.

The space to be occupied is, roughly, rhomboidal, and the reservoir will completely fill the space assigned to it.

The cost is estimated at £83,000.

While affording an effective supply to its zone it will also enable the Board to effect a saving of about £900 per annum in fuel and wages.

The reservoir will be divided into two compartments by an intersecting wall, whereby one compartment can be cleaned at intervals, while the other will keep up the supply.

The total capacity will be 17½ million gallons, the present reservoir holds only 2¼ million gallons.

J. TREVOR JONES.

2. Have plans been prepared, and is the work to be carried out, by the Water and Sewerage Board, or will it be carried out by the Harbours and Rivers Department? The opinion of the Minister is that it should be carried out by the Minister. He will be made the constructing authority in the Bill.

3. Were not the Water and Sewerage offices erected and carried out by the Board? In that case the Minister was made the constructing authority, but the Minister adopted the plans of the Board, and authorised them to carry out the work.

4. In this case the work will be in the hands of Mr. Darley, as Engineer-in-Chief for Harbours and Rivers? In all probability that will be the case. Mr. Jones will be his officer, as he is President of the Board.

5. *Mr. O'Sullivan.*] I presume that the Department is aware that, by an Act of Parliament, it was decided to build the State House on this site? Of course that will have to be arranged. That can easily be overcome by a special clause in the construction Bill.

6. Would it not be necessary to repeal the present Act? It can be repealed to that extent in the construction Act.

7. *Mr. Hoskins.*] Is not there a reservoir for Woollahra at a higher level than the proposed reservoir? Yes, it is 40 feet higher. It is of small capacity. It would be a most costly waste of pumping power to send this large supply of water which would be contained in the new reservoir up to the height of Woollahra Reservoir, because it would be pumping water up to a much higher elevation than was necessary.

8. Will a great deal of the water proposed to be stored in this reservoir be utilised for the city? Yes.

9. *Mr. Davies.*] Is the cost of the proposed reservoir, £83,000, exclusive of the value of the land taken? Yes.

10. Is it proposed to credit the Centennial Park with the value of the land proposed to be taken for this purpose? That question has never been considered. I should think not.

11. You will remember that £200,000 was taken into account as the cost of making the park, and it was proposed that that should be recouped by the sale of land there? Yes.

12. If a portion of this land is to be taken for water supply purposes, should not the Government be credited with the value of the land? I am not able to answer that question; it will have to be decided between the Secretary for Public Works and the Treasury. If the Committee wish me to do so, I will submit the question to the Minister and get a decision.

13. If a break occurred in the reservoir would it be likely to injure buildings which might subsequently be built? I imagine that it will be built so strongly that there will be no possibility of a break.

14. Will the exterior portion of the reservoir be unsightly? From the statement submitted by the officers, I think the structure will be very sightly.

15. *Mr. Neild.*] Are we to understand that it is the policy of the Secretary for Public Works to make provision for the erection of the State House elsewhere, or is it intended to do away with the State House? That I am unable to answer.

16. If this reservoir is to be erected on the site of the State House, what becomes of the State House? I will make a note of your question, and submit it to the Minister.

17. I take it that this reservoir is proposed not so much for extra pressure as for extra storage? For both.

18. But will 30 feet make very much difference? It has been carefully calculated, and the extra elevation might make all the difference in the case of high houses. It is explained, in the documents submitted, that only five storeys of the Australia Hotel can be supplied with water. J. Barling, Esq. 15 June, 1892.

19. Is it anticipated that this large item of expenditure will produce a corresponding increase in the rates now charged for the supply of water? I do not know that it can be put directly in that way. I think it might be put better in this way:—If I have a certain business which it is necessary to enlarge, although I may have to incur a larger expense for capital and interest, it will be recouped to me by the increased business I should gain. To enable the Board to carry on its business it is found necessary to incur this extra expense, but the better supply will encourage the erection of buildings which will undoubtedly bring in additional revenue. As bearing on the general question, I may state that Mr. Jones informs me that about the end of the year nearly the whole of the reticulation pipes for the city and suburbs will have been laid, and it must be evident that every additional house served will entail no additional expense to the Board, but will bring in additional revenue.

20. Are you not aware that the bulk of the area which it is proposed to serve by means of this reservoir is already built upon? Undoubtedly; but houses are being built, and loftier houses, for instance, the Australia Hotel and others.

21. Then I understand that this reservoir is principally required to supply hypothetical structures of the Australia Hotel character? No; that is only one building, but there are others to which the reply will apply in a less extended sense.

22. If the area to be supplied by this reservoir is chiefly built upon, and the existing reservoir is rather a matter of inconvenience to the Department than a matter of difficulty, this reservoir is evidently to be looked upon from one of two standpoints, either for the purpose of supplying lofty buildings not yet erected, or the few now erected, or else it is a luxury to save the Department from trouble? No; I would also point out that there is not sufficient storage in the Paddington Reservoir, as the demand is increasing very much. There is not sufficient margin for contingencies.

23. Has the existing Paddington Reservoir ever failed to supply the wants of the localities connected with it? Of course I am not intimate with the question, I am only speaking from the information supplied to me.

24. Have you ever noticed any complaints in the press on the subject? I cannot call any to mind at present, but I have an idea that there have been such complaints.

25. Have they come before you departmentally? They would not come before me, they would come before the Water and Sewerage Board.

26. *Mr. Davies.*] What is the area of the land that will be taken for this reservoir? 3 acres 3 roods 11 perches.

27. Has any valuation been made of that area? No.

28. *Chairman.*] Was the Centennial Park originally under the jurisdiction of the Municipal Council? Yes.

29. As far back as 1883, was this particular piece of land set apart for a reservoir? Yes.

30. Has it since been handed over to the State, and has any portion of the land now proposed to be taken for this purpose been set apart for sale? I think not.

31. Is this really the site of what is known as the State House? Yes.

32. *Mr. Davies.*] Was the whole of the watershed known as the Centennial Park resumed under the Sydney Corporation Act? I think so.

33. Was the sum of £750,000 then owing by the Sydney Corporation to the Government, and did the Government wipe out the whole of that debt, and take over this watershed? I think so.

34. *Mr. Neild.*] Will this reservoir be perfectly flat on its surface? I suppose the reservoir itself will not be, but the turf will be left level.

35. Will the top of the reservoir be open to the public as freely as is the rest of the park, or will the surface be under the control of the Water and Sewerage Board, and, therefore, be only accessible by their permission? If there is a point made of that, I think it could be made perfectly clear in the construction Bill. It would be very desirable to have the point settled. I will take a note of all these points, so as to place them before the Minister.

John Trevor Jones, Esq., Engineer for Water Supply, Metropolitan Board of Water Supply and Sewerage, sworn, and examined:—

36. *Chairman.*] Have the plans of the proposal now before us been prepared by yourself, and your officers? Yes. J. T. Jones, Esq. 15 June, 1892.

37. We have been informed that the necessity for this work arises from the fact that the Paddington Reservoir, at 214 feet level, is too small and too low to properly serve the zone with which it is connected? Yes.

38. Will the proposed reservoir have an elevation of 245 feet? Yes, top water level.

39. Is it intended to serve the upper portion of the present Paddington zone from this reservoir, and the lower portion from the existing reservoir? No; it is intended, as far as I can judge at present, to dispense with the Paddington Reservoir altogether.

40. Will it not be a waste of power to pump the whole of the water for that particular zone another 35 feet when, perhaps, two-thirds of it could be served from the Paddington Reservoir? The two zones would be so close together that to make a division between them by placing valves would not be worth the trouble, and there would be a danger of the water running from one set of pipes to the other.

41. Will not this proposal very much increase the cost of pumping? No. It will hardly increase it at all, for the reason that the pumps were originally designed to raise the water to this level; that is, to give their best efficiency at this level.

42. How is it proposed to save £900 per annum by this work? It will remove from the pay-sheet one engineer at £200 a year, and one cleaner and one stoker at £150 per annum each. The saving in coal will, I think, amount to £400 per annum.

43. Have you to keep pumping continuously, because the reservoir at Paddington is so limited in capacity? Yes.

44. With this reservoir will you be able to do all the work in eight hours? In sixteen hours; the pumping power is quite sufficient for that.

J. T. Jones, Esq. 15 June, 1892.

45. What proportion of the water supply of the city will come to this particular reservoir? About one-third, or, more exactly, half of the whole of the water which comes into the city will come to this and other elevated reservoirs.
46. How much of the city and suburbs is supplied by gravitation from Crown-street and Petersham? The whole of the rest of them, with the exception of two small patches covered by the Woollahra and Waverley Reservoirs.
47. What is the capacity of the Woollahra Reservoir? One million gallons. The capacity of the Waverley Reservoir is one million and a quarter gallons.
48-9. Will this reservoir practically supply half of the whole quantity of water used, while the Petersham and Crown-street gravitation reservoirs will supply the remainder? Yes.
50. Therefore half of the city is supplied by gravitation? Half of the city and nearly the whole of the suburbs.
51. What is the height of the Crown-street Reservoir? One hundred and forty-one feet above high-water.
52. Is the Australia Hotel served by that? The Australia Hotel can only be served by gravitation on the ground floor, or, perhaps, one storey higher. It is served to the height of five storeys by the Paddington water. We must always allow for friction in the supply of water to high buildings. The water would rise to the upper storey of that building from Paddington, but the loss of pressure through friction and supplying other parts prevents the water from rising to the upper storey.
53. In view of the growth of the city, and the large area which this scheme has to operate upon, do you think that 17,500,000 gallons capacity will be sufficient in the near future? It would supply (except in the case of an abnormal increase) our wants for the next twenty years. It would be an effectual supply for the zone commanded by it for that time at least.
54. Is the coloured portion of the plan before us the area commanded by the present supply? Yes; I should be able to extend that area if I had this new reservoir. There are other places very close upon being supplied by the Paddington Reservoir, but it is not quite high enough. With this new reservoir I could take up those areas.
55. Are those areas now being supplied from Woollahra? Yes.
56. What would be the height of the top of this reservoir above the level of the park? Where the land is lowest it would be 20 feet above the surface. The side facing South Head Road would be about 10 feet. With a parapet it would be 14 feet high at that point. The length along the road frontage would be 6½ chains. This reservoir was proposed because there was an impression that this land was to be sold for building purposes.
57. At present are there some tramway sheds almost opposite this site? Yes.
58. Has there been any great complaint on the part of passers by, or by residents on the opposite side of the street, that those sheds interfere with the view? I have not heard any complaint.
59. Do you think this reservoir could be made quite as ornamental as the tram sheds? It would be rather a nice object.
60. Has anything been decided as to what is to be done with the Paddington Reservoir? Various things have been suggested; wine cellars have been suggested.
61. What is it used for at present on the surface? Pipes are stored on the sides of the reservoir.
62. Could not the Water and Sewerage Board sell the frontages and so recoup themselves? There is nothing to prevent that being done.
63. What was the cost of the Woollahra Reservoir? £12,000.
64. Is this a very suitable time to get work of this kind done at a cheap rate? I think it is exceptionally suitable, as far as the cost of material and labour is concerned.
65. Do you think that the estimate of £83,000 will be sufficient to cover everything? I have priced everything very high, and I have made provision for things which will probably not be called for, so that probably there will be a surplus.
66. Does the peculiar shape of this reservoir increase its cost much? Yes; a square or a round reservoir would be considerably cheaper. A circular reservoir could be built for about £10,000 less.
67. Would a circular reservoir work in with the general features of the park? We were limited by a Board which sat to decide the matter. I think that Board consisted of Mr. Hickson, Mr. Moore, and Mr. Darley.
68. Will this extra cost of £83,000 mean an addition to the burdens of water consumers? Yes.
69. Will it increase the rates? It will increase the rates to the extent of £3,300, but in £120.000 that is not a very serious sum.
70. Will it involve the imposition of an extra rate? No; we do not intend to raise the rates at all on this account. It would not make a difference of ¼d. in the £. We could not raise it by so small a sum as that, although there is some talk about having to raise the revenue of the Board. We want to pay 4 per cent. on the whole loan, and we have lately been saddled with an amount incurred by the Government for us.
71. In the scheme originally put forward for the supply of Sydney with water, was this expenditure of £83,000 contemplated? No; Mr. Moriarty highly approved of it, and the City Council would have built the reservoir, but Mr. Moriarty was of opinion that it would have to be roofed. My proposal to the City Council was to have an open round reservoir, and the City Council voted the money for it. Mr. Moriarty's objection, however, over-rode my proposal, because the roofing cost nearly as much again.
72. You have now decided to roof the reservoir? Yes; because buildings would probably be built close around it. At that time it was an open park, without even a tramway close to it.
73. *Mr. Humphery.*] Did you place before the Board to which you have referred an estimate of the cost of a circular reservoir, as compared with the reservoir of the shape now proposed? No.
74. Was it pointed out to the Board that a circular reservoir would cost £10,000 less than this reservoir, while it would have an additional capacity of 2,500,000 gallons? No. What I intended to say was, that a circular reservoir, having a capacity of 17,500,000 gallons, would cost £10,000 less than the reservoir now proposed. In saying £10,000 less, I cannot pledge myself to the exact amount.
75. Was that represented to the Board who decided the question? No, they did not have that under consideration at all.
76. If the question had been placed before the Board, do you not think they would have considered the advisableness of having a circular reservoir? Those gentlemen would be fully acquainted with the difference in the cost without being informed of it. They would know that a circular wall would have a greater capacity than a square or rhomboidal wall.

77.

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77. What was the objection to the circular reservoir? It would occupy too much of the area of land proposed to be sold.
78. What superficial area would have been occupied by a circular reservoir, holding 20,000,000 gallons? A little over 4 acres.
79. Will this proposed reservoir occupy less than 4 acres? Very nearly 4 acres.
80. With a lesser capacity? Yes.
81. How many gallons a day do you require for the zone which will be served by the proposed reservoir? In twenty-four hours, in summer, about 6,000,000 gallons for the zones supplied with pumped water.
82. I am speaking of the zone supplied wholly from the reservoir which you now propose to abandon? About 4,500,000 gallons per day in summer.
83. Then the proposed reservoir will contain at least four days' supply? Yes, not providing for an increase of consumption. I anticipate that the consumption will increase year by year, even over the same area. The people of Sydney are very economical with water, in comparison with any other city I know. Melbourne uses nearly three times as much as we do.
84. At the present time, keeping your pumps going continuously, you have to supply from a reservoir which holds 2,250,000 gallons, 4,500,000 gallons per day? Yes.
85. *Mr. Davies.*] What is the capacity of your new pumps at Crown-street? No. 1 pumps 500,000 gallons per hour, and No. 2 pumps 300,000 gallons per hour.
86. Are they constantly at work now? No; at this time of the year there is a spell of seven to eight hours in various stages of the day.
87. In those two pumps, have you ample power to pump up to the new reservoir? Yes; and ample pipes to carry it up.
88. Are the pipes already laid? The pipes are laid up to within a mile of the new reservoir. They are 36-inch cast iron pipes to Paddington. The distribution pipe is of cast iron, but the pipe to Woollahra is wrought iron.
89. What was the cost of the Paddington Reservoir? I think about £20,000.
90. What is the area of the land there? About 2 acres.
91. Do you propose to abandon it? That is my own impression, but the Board has not spoken on the question.
92. Will you retain the Woollahra Reservoir? Yes, for the zone it serves, and we will probably duplicate that.
93. What is the daily consumption of water in the city and suburbs? At this time of the year between 9,000,000 and 10,000,000 gallons per day. In summer it is about 12,000,000 gallons, and it will exceed that next summer.
94. What do you receive daily into the reservoir at Crown-street? We take the water also into the Petersham Reservoir, and that supplies the western suburbs. I suppose we receive 8,000,000 gallons per day into the Crown-street Reservoir. That is where the bulk of the consumption takes place.
95. What capacity is there for storing the supply of water at Crown-street and the other reservoirs? Crown-street contains 3,250,000 gallons; Paddington, 2,250,000; Woollahra, 1,000,000; and Waverley, 1,500,000.
96. Excluding Ryde and St. Leonards, that is a little over 8,000,000 gallons? Yes; in summer rather more.
97. The daily consumption within twenty-four hours is something about the same, as far as the city and suburbs are concerned? Yes; in winter time rather less.
98. That is exclusive of the Petersham Reservoir? Yes; I think 10,000,000 gallons come in from Prospect in winter.
99. How do you propose to construct this reservoir? We propose to excavate in the rock, and to line the walls with brickwork, and to build above that from 10 to 20 feet in different parts, in brick in cement.
100. What will be the depth? 20 feet.
101. Below the present surface? No; ranging from 10 to 15 feet above the surface, and 10 to 15 feet below.
102. Have you made any borings? No; we assume that it is rock.
103. Is this a new project? No.
104. Was it not proposed years ago in the Municipal Council, when I was a member? Yes. At that time I found the Paddington Reservoir was too low and too small. The proposal to make this reservoir was approved of by the Municipal Council.
105. What was the object of making the reservoir in this shape? We were limited to it by the ground assigned to us by the Board.
106. Is there not a large area there not used for any purpose? Yes. The circular reservoir was designed to have 5 feet lower elevation, and the wall was only 20 feet above the surface on the lower land.
107. Will not this structure be very awkward? Yes; the division wall in this reservoir will have an average height of 10 feet, and it will be 4 feet in width.
108. *Chairman.*] When the reservoir is being cleaned, will the water in one of the divisions be available for use? Yes.
109. Is there much sediment deposited in the reservoirs? Not very much now. In the Botany water there used to be a foot of sediment every three months. The water now used will not deposit 6 inches of mud in a year. The water from the Nepean is very slightly clayey, and it can be noticed after rainy weather. That is caused by the water passing through an open canal, and not owing to any impurity at the source. I have had no experience yet of this water depositing 3 inches of sediment in a year.
110. Is it generally understood that the purity of the Sydney water supply is higher than that of any other supply in the world? Yes. There are some sources of water supply, such as snowy mountains, which give perfectly pure water. Our water is rated No. 2; that is next to perfectly pure water.
111. *Mr. Neild.*] Do you say that this reservoir will be rather an addition to the picturesqueness of the district? It is not proposed to be highly ornamental, but it is intended to be very neat. There will be an ornamental parapet and stairs.
112. You have stated that the elevation on the Waverley Road will be about 10 feet;—is that above the present ground level of the park or the road? Of the park.
113. Will that height of 10 feet include the parapet? No; the parapet, which encloses the roof space is 4 feet high, and there will be an additional 3 feet for an ornamental parapet.
114. Then the total obstruction of the view from existing houses on the opposite side of the street will amount to 17 feet? Yes, probably.

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115. Have not the tramway-sheds been so constructed that they do not obstruct the view from any of the existing houses? The houses may be lofty enough to allow a view over the sheds, if there are some houses opposite those sheds.
116. Is the proposal for this reservoir partially due to the supply system being largely a pumping system? Yes. Perhaps I ought to add that hereafter another reservoir will be required, to receive the gravitation water. That water will come from Potts' Hill. The reservoir we have now is only capable of holding 3¼ million gallons, and that might not tide us over any interruption of the supply, but we are just about to receive a second main, which will secure us against any accident for many years, so that the second reservoir I am speaking of is a thing of the future. That reservoir will be to store the gravitation water, in case the consumption should lower it too rapidly.
117. Where is the site of that proposed reservoir? We have marked a site in Moore Park.
118. Thence you will have to pump the water to any one of these two reservoirs? No; we will pump it from the present place. Crown-street will be a perpetual pumping-station. The new reservoir will be about the same level as the Crown-street one.
119. You say that you intend to duplicate the Woollahra Reservoir before long;—would it not be possible to work that in with the present proposal? No, I do not think it would be feasible. As Mr. Barling has already pointed out, it would be a useless expense to pump this water to the height of the Woollahra Reservoir.
120. Against the increased cost of pumping, might we not place the increased cost of the reservoir? I do not think so. We must always retain the Woollahra Reservoir at its present level. There is no space there where we could build this proposed reservoir.
121. If the supply to the city was a high-pressure system, would a multiplicity of these reservoirs be necessary? Not if we had a store which would command all these places.
122. This is one of the results of having a low-pressure rather than a high-pressure scheme? Yes.
123. One of the results of a low-pressure scheme for the city is an increasing cost for reservoir purposes, as well as an increasing cost for pumping? It is one of the disadvantages, but at the same time it would be always advisable to have storage reservoirs in a large city like this, lest the pipe connecting it with the stores should break.
124. Supposing this reservoir and the reservoir in Moore Park were built, and the Woollahra Reservoir were enlarged, how long do you think these reservoirs would cope with the demand? I think this reservoir will not need any addition for at least twenty years. Woollahra will want its supplement in three years or so. The Waverley Reservoir is sufficient for its work for many years to come.
125. Would it not reduce the cost of this reservoir materially if it were constructed in an oval form? It would reduce it in a certain proportion.
126. What was the object of making a reservoir with so many acute angles? I think it was with a view to subdividing the land.
127. Are you aware that the plan put in by the Under Secretary shows that the land in the vicinity is not intended for sale? Yes; it was only a recent proposal to sell this land, and we asked for a piece of it for this reservoir.
128. Is it not the case that public works are constructed in such a way as to seldom leave a surplus? This is a very plain piece of work. We can calculate the amount of excavation in the rock, and I have allowed a liberal price for it. Then the brickwork is a certain quantity, and the foundations are certain.
129. Do you not think that making a liberal estimate for the cost has a tendency to cause extravagance? I mean to take care that it will not do so in this case.
130. Would it be cheaper to sink this reservoir a little lower in the rock than to build it to an equal height above ground? I think it would be a little cheaper to put it 5 feet deeper, and I have that under consideration. I take it the Committee, or the Government, will not tie us down to a foot or two, if it is found to be cheaper to go deeper into the ground.
131. The question of elevation is not of much moment? Not for 3 or 4 feet.
132. Would a reduction of 5 feet in the height reduce the obstruction to the view? Yes.
133. Would it interfere with the utility of the project? Not materially.
134. Is this the best site for this reservoir in the vicinity of the city? I am quite certain it is. I have had the opinions of Mr. Darley, and of all the highest talent we have, to help me in the matter. We made all the efforts we could to get a better site, but we have all come back to the same site. So pronounced was their opinion that they urged it, although they knew there was some objection to our getting this site.
135. Is this as high as the Red Hill site? Yes; that site is very irregular in contour. I have a reservoir designed for that particular place, but it would be only 11 feet higher than the Paddington Reservoir. We would have been obliged to be content with the Red Hill site, if we did not get the land now asked for.
136. Was it an after-thought to go to this site? No; this was the first idea; the other was only an after-thought. The then Government told us we could not get this piece of land.
137. Would the strata at Red Hill be suitable? No; it alternates with clay and rock.
138. Would this site be as expensive in making the pumping connections? It is about the same in that respect, but it is a little nearer. The pipe for delivering the water to the reservoir is to be taken from the Paddington Reservoir to the junction of Park Road, and along the side of that road to the reservoir. The pipe for distributing the water from the reservoir is to be taken down the first drive in the park, and through a portion of the park, then along Park Road until it meets the 36-inch pipe at Oatley Road.
139. Is the cost of the pipes to deliver to and distribute from the reservoir included in your estimate? Yes; that is what makes the estimate so large. £17,000 is the cost of two lines of pipes.
140. Then £66,000 is the net cost of the reservoir? Yes.
141. Then if the reservoir were constructed in the circular form, its cost would be reduced from £66,000 to £56,000? I think so.
142. Would the building of this reservoir interfere with the planting of trees in its vicinity? I do not think so.
143. *Mr. O'Sullivan.*] I understand that at one time the Government had the intention of selling the semi-circular piece of land shown on the plan as the site for this reservoir? I do not know whether it was an official proposal or not, but some talk arose in that way, and our Board thought they might as well have their share.

144. Now that we know the land forms part of the park, would it not be well for the Board to recast the scheme so as to have a circular reservoir? I should be happy to do that. J. T. Jones, Esq. 15 June, 1892.
145. In view of a possible saving of £10,000, would it not be worth while to reconsider this proposal with a view to constructing a circular reservoir? It might be so.
146. Would it be any cheaper to construct this square reservoir? It would be exactly in proportion to the length of the wall.
147. Would it be as cheap to construct a square as a round reservoir? No; a round one is the cheapest one of all.
148. Will the abandonment of the Paddington Reservoir involve the abandonment of existing pipes? No; those pipes were laid with a view to having a reservoir in this vicinity.
149. Is there anything in the argument as to obstructing the view of the people in the vicinity? It will afford pedestrians who go on top of the reservoir a very grand view.
150. Can it be utilised as a place where the people can enjoy the beauty of the park? Yes; it is designed as a promenade, and I believe it is the intention of the Board to give up this space for public recreation.
151. *Mr. Neild.*] Is the delivery pipe to be from the lower level of the reservoir? Yes.
152. What would be the difference between the lower and the higher level? The fall of the floor would be only sufficient for the water to run clear into the pipe.
153. By delivering from the south side you do not lose any of the advantages of the elevation? No; the reason for taking water out of one side of the reservoir and delivering it into the other is to give circulation to the water, instead of allowing it to stagnate in the corners. It will give it a revolving motion.
154–5. Is that an advantage? Yes; it keeps it aerated.
156. Would that motion be much greater in a circular reservoir than in such an one as is now proposed? The circular reservoir would be divided into two parts, each part a semi-circle.

THURSDAY, 16 *JUNE*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. JAMES HOSKINS.	JOHN CASH NEILD, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.

The Committee further considered the proposed Reservoir at Centennial Park, for Sydney Water Supply.

Cecil West Darley, Esq, Engineer-in-Chief for Harbours and Rivers, and President of the Metropolitan Board of Water Supply and Sewerage, sworn, and examined:—

157. *Chairman.*] We have been informed that the necessity for this reservoir is owing to the small capacity of the present Paddington Reservoir, and its inability to effectively supply the large zone which it serves? Yes. It is not large enough to properly supply the zone required. C. W. Darley, Esq. 16 June, 1892.
158. Is there only 31 feet difference in the height of the new and the old reservoirs? That just makes the difference, because at the Paddington Reservoir we can only work with the top of 5 feet of water.
159. We have also been informed that it will be possible to command some portions of the ground by means of this work, which is now supplied by the Woollahra Reservoir? Yes; it will save pumping to Woollahra. We can enlarge the upper levels of the zone, and save some of the pumping to Woollahra.
160. What do the Board propose to do with the existing reservoir? The site can be sold.
161. If the Paddington Reservoir is capable of supplying a large portion of its present zone effectively, where is the necessity of pumping the whole of the water to the new reservoir? It prevents the necessity of having another reticulation system, which would be very costly.
162. Would that more than counterbalance the increased cost of pumping? Yes.
163. The reservoir has been described to us as standing above the surface some 10 feet opposite the roadway, and 20 feet on the southern side, with a parapet on top of that, and a tower, which would make the height in front 17 or 20 feet;—is that so? The tower is simply the entrance to the reservoir, and it can be kept low. The parapet wall will simply give it a finish.
164. Do you not think that would be very unsightly in front of the park? I do not think so. The parapet wall will be neatly constructed. The top can be finished off and grassed.
165. We are informed that it was originally intended to have a circular or square reservoir, but that you have adopted the present peculiar shape owing to the subdivision of the park land? A circular reservoir was the original intention, and it would be cheaper.
166. Is it estimated, roughly, that the difference in the cost between two reservoirs having a similar capacity would be about £10,000? I think a circular reservoir would cost about £6,000 less.
167. Do you think that the land which would be saved by this peculiar-shaped reservoirwould if sold, bring £6,000 or £7,000? That is more for a land valuer to decide. There are very fine building sites there, which ought to sell very well.
168. Would a circular reservoir take up very much more land? It would break up the front block, by taking away half its depth. If there was a road around the reservoir there would be no frontage to the park.
169. Are you aware that this particular portion of the park was not included in the land set aside for sale? It was reserved for the State House originally; but the present Government have under consideration a proposal to sell that land.
170. They do not intend to erect the State House, but, on the other hand, to use a portion of the land for a reservoir, and to sell the rest? That is my impression; but I know nothing officially.
171. We have been informed that a Departmental Board, consisting of yourself, Mr. Hickson, and Mr. Moore, dealt with this question? No; the Board consisted of Mr. Moore, Mr. Hickson, and Mr. Vernon.

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172. Did they report on the area to be allowed for the reservoir? They reported on the subdivision of that part of the park, and, with a view to setting aside a suitable site for a reservoir, utilising the remainder of the land to the best advantage.
173. Supposing you were not trammelled in any way as to the shape of the land at your disposal, would you build a circular reservoir? Yes.
174. Would such a reservoir stand higher above the surface than the one now proposed? No; it would be about the same height. The wall would be a little higher on the south end, on account of the lower ground.
175. Is one of your reasons for carrying the reservoir above the surface the fact that you would get an additional head? Yes; it is cheaper, really, to have the reservoir approximately half in and half out of the ground.
176. Have you ever known a reservoir to be built of that peculiar shape? Reservoirs are of almost every conceivable shape, and there is no engineering objection to making the reservoir that shape.
177. If you had land at your command, would you give preference to a circular reservoir, and could it be constructed at less cost than the reservoir now proposed? Yes.
178. Is there an immediate necessity for this reservoir? I consider there is. The great difficulty in keeping Paddington Reservoir filled up requires the pumps to be running intermittently throughout the whole twenty-four hours. The capacity of that reservoir is only one and a quarter million gallons.
179. Will this work necessitate an increase of the water rate? Not necessarily. Of course, there will be some saving through carrying out this work. It may be possible that, owing to this and other works coming in at the same time, that it will be necessary next year to raise the rate to what may be termed a fair average rate. At present Sydney has the lowest rate of any city of which I can find a record.
180. Do you think this reservoir will be sufficient for your purposes for a large number of years? Quite sufficient for fully twenty or thirty years.
181. You will not require any increase in your reservoir? Practically, for all time that reservoir could be made large enough for any city. We might have to put in larger pumps in the course of time.
182. Would that not be going back to the continuous pumping to which you now object? No. Assuming that the consumption was so large that it would occasion continuous intermittent pumping, it would be better then to change the engines, and not the reservoir.
183. Is the zone served by this reservoir now built upon or inhabited to its fullest extent? It is capable of being enlarged. Every day there are applications for an extension of the Paddington pressure.
184. Do you think that by means of this reservoir you will be at least twenty years ahead of the present demand? Quite that.
185. If there is any extension of the demand it is not so likely to be in this zone but further out in the western suburbs? There is likely to be an enlargement of this zone. The citizens are calling out for Paddington water, on account of the more lofty buildings that are going up. Every day we are obliged to extend our Paddington system and encroach on the Crown-street system. The Crown-street system does not give sufficient pressure.
186. When you imported new pumps for the Crown-street Reservoir, did you have in mind the erection of a larger reservoir at this particular spot? Yes; they were designed to give off their highest economy for pumping to this site.
187. Have they come up to your expectations so far? Yes; quite.
188. Is it contemplated in the near future to increase the capacity of the Woollahra or Waverley Reservoirs? No.
189. Have they only a very limited zone? Yes.
190. Are those zones likely to be increased? I do not think they will need increasing for a long time.
191. Do you look upon this particular reservoir as the centre of your water distribution? It will really be the main centre, and the reservoir to depend upon in case of a large fire, as it would command the whole of the city. We would be able to have connections if there was a large fire at the wharfs, or at any place commanded by Crown-street. By opening sluices we could turn this pressure on to any portion of the Crown-street service.
192. Can you state whether Mr. Moriarty had in his mind's eye the providing of a reservoir at the place now proposed when he originated the present scheme? I know he always saw the necessity for a large reservoir in the city.
193. In stating the cost of that scheme, did he provide £83,000 for this reservoir? He did not include the cost of any reservoirs. He only estimated for a trunk scheme. It was not within his province to estimate the cost of such works as these.
194. This is really a distribution work, and his duty was to bring the main trunk supply system to the city? Yes.
195. Leaving the distribution to the present or some other Board? Yes.
196. Are your other reservoirs built on the same plan as it is proposed to build this one—that is, with arches and so on, supported with brick piers? Yes; the Waverley Reservoir, which was constructed by the Department, is the same except that it is circular. Petersham Reservoir is the same.
197. Is there deterioration to any serious extent in those reservoirs? No; it is practically a permanent class of work.
198. We are informed that it is proposed to construct a division wall through this reservoir, to enable you to clean it out without entirely dissipating your supply? Yes; that is a desirable thing to do.
199. Is there much sediment in this water? Not very much; but there is always a certain amount of sediment which cannot be avoided. It is desirable, for the sake of sweetening the reservoir, to clean it out and ventilate it occasionally.
200. Is it not very desirable in large bodies of water like this to keep them in motion, so that the water may not deteriorate in quality? No; it does not deteriorate, it will always be in circulation. It is admitted at one side of the reservoir and drained off from the other side, so that there is a current through the reservoir the whole time.
201. Would it not improve the water to mix the air with it? That is slightly done in pumping, but there is no means of properly doing so unless you pass the water over a weir; but this is not necessary for all water.
202. You do not think this reservoir would be an eyesore in the park, but you think you can make it a rather pleasing object? I do not think it will be an eyesore at all. It will be the ordinary height of a boundary wall.

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203. Supposing that it is not likely that the State will realise £6,000 or £10,000 by the sale of the land, do you think it would be cheaper and better to construct a circular reservoir? I think it would be better. It occurred to me that, owing to the advantage to be gained by cutting up this property in the way shown, it would be worth the extra cost of the reservoir.
204. Do you think it is a matter for land valuers to decide as to what is likely to be realised by the land which is saved? Yes.
205. If the amount likely to be realised is less than the difference between the cost of this reservoir and the circular one, would you advocate the building of a circular reservoir? Yes.
206. Would the reservoir be of larger capacity if you had had your way? It was originally suggested that its capacity should be 20,000,000 gallons, but I think that 17,500,000 gallons is quite enough.
207. *Mr. Davies*] In the construction of public works in connection with water and sewerage, where land has to be taken, is not its cost included as part of the undertaking? That is done by the Government valuator.
208. But does not the value of the land taken enter into the cost of construction, as in the case of the construction of offices for the Board. Of course, but the Board consider they have some claim on this land, because it all originally belonged to the water supply, and it was taken from the water supply without compensation.
209. Was not the whole of this land brought under an Act of Parliament? Yes; but it was taken from the Water Supply Department without compensation.
210. But there was compensation, because there was a debt owing by the Corporation to the Government of £750,000, and this land was taken as a consideration for that debt? The debts of the Corporation were taken over by the Water and Sewerage Board; the Board got no equivalent in any way for that land.
211. Did they not get the mains and all the property? The whole debt is charged to the Board, and we are paying interest on it.
212. What is the liability of the Board at the present time? About £3,750,000.
213. Is that for all the works constructed under Mr. Moriarty? No, for all the works; those constructed by the Council as well. The whole of the debts are charged to the Board.
214. What rates do you strike? There is a sliding scale: 6d. in the £ is charged on properties up to the value of £300; 5d. in the £ up to £700; 4d. in the £ from £700 up to £1,000; and properties over £1,000 3d. in the £.
215. Have those rates given a return of something like 4½ per cent. for last year on the capital expended? Yes, nearly so.
216. Is that likely to increase on the same basis? No; because there are certain charges not yet transferred to the Board, but they will be transferred very soon. For instance, there is the duplicate pipe line, and the Potts' Hill Reservoir, which will be transferred this year, and there is the North Shore water supply.
217. What is the probable amount of the several works which will be so transferred? The duplicate pipe line amounts to £165,000, the Potts' Hill Reservoir, £120,000, the North Shore water supply, £150,000. That makes a total of £435,000, which will be added to the Board's existing capital.
218. That does not include this proposed work, which will practically amount to another £100,000, including the value of the land? I do not think the Board should be charged with the value of the land, because it will still be devoted to park purposes. We only occupy the ground underneath, the top can be used for a promenade, and it may be very well set apart for the occupants of the park lands. It might be set apart for the people who purchase the park lands. It will be a recreation ground as much as any other portion of the park.
219. Do you think it will assist in improving for sale the value of the sites alongside it? It will certainly not detract in any way from it.
220. Do you not think it will depreciate the value very much? Not in the least, I do not see how it can possibly do so. It would be far better for the properties to have their back yards running up to this green spot on the top of the reservoir rather than have to look into the back yards of other houses. If you have a terrace of houses fronting the South Head Road, and then have houses all round facing the park, the back yards will join each other. Whereas, with this reservoir, the outlook will be to this green sward. If I were the owner of a house fronting the park I should consider myself very fortunate if the reservoir were built as proposed, so as to permanently prevent other buildings from being put up looking into my back yard.
221. What extent of land will this reservoir occupy? About 3¾ acres.
222. If your contention is correct that you have a claim on this land, would it not be in the interests of the ratepayers that you should erect a round reservoir, instead of a rhomboidal one, so saving £8,000 or £10,000? It is a matter for a land valuer to decide what would be the value of the land which would be spoilt.
223. Would it, in your opinion, spoil those sites for sale if a round reservoir were built? It would certainly prevent the sale of one-half of the land facing the Park Road. You would have to keep a road around the reservoir, and then there would be no land left to sell.
224. Do you consider the Water and Sewerage Board have a right to this land, by reason of its having been originally part of the water-shed? I do not say we have a right, but we have a claim. When the land was in the hands of the Corporation, a site was set apart for five or six years previous to the passing of the Centennial Park Act. I think a resolution was passed in 1882 or 1883, reserving this site for a reservoir, and they went so far as to put down drill-shafts to test the ground all over.
225. If your contention is correct, would it not be wise for your Department to secure sufficient land to be able to construct a round reservoir? I may explain that we were thankful to get what we could. When we applied, about two years ago, for a site there Sir Henry Parkes was then in power, and he wanted to reserve the land for a State House, and he would not give us a site there at all. He offered us another site in the park, which was neither large enough nor high enough. We thought the necessity for this reservoir was so serious that we were in favour of recommending the resumption of house property on the other side of South Head Road as a site for the reservoir; but that was not found suitable. We looked all round Waverley, for half a mile on the other side of the Woollahra Reservoir. We had a site surveyed, but the cost was prohibitory, and we were forced to try again to get this site, or to abandon the proposal, and continue the present costly and inadequate system. We saw that, sooner or later, something would have to be done.

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226. Is there likely to be an additional half-million charged against the capital cost of your water works for the city and suburbs? Yes.
227. Will that in all probability necessitate a recasting of the rates now imposed, so as to make good the interest? For a time, at any rate, I think it will be necessary to reconsider the rates. There is a steady yearly increment of revenue, but we must not let the interest accumulate. It would be better to raise the rate now to meet each year's claims, and then in a few years time, when the yearly income gets up to that amount, we can lower the rate again.
228. What amount would be sufficient to meet this amount of half a million? Another 1d. in the £.
229. *Mr. Neild.*] If it is necessary to levy 6d. in the £ on an outlay of £3,750,000, why should 1d. in the £ be sufficient for an additional outlay of £500,000? The working expenses will not increase in proportion. On the contrary, our working expenses will be reduced. The whole of our working expenses, at present, have to be paid before we pay interest.
230. It is proposed shortly to duplicate the size of the Woollahra Reservoir? No; there is no necessity at all for it at present.
231. If the Committee have had evidence to that effect there must be some mistake? It may be mixed up with this proposal. There is no necessity for enlarging the Woollahra Reservoir. The Woollahra Reservoir will hold an ample supply when we get this reservoir, because it will decrease the zone which Woollahra at present supplies.
232. Since when has it been determined to submit this portion of the park to public sale? I cannot say that it has been determined to do so, but it has recently been proposed.
233. Are you not aware that the land in the immediate vicinity of the reservoir site was not intended for sale under that Act, and since when has it been intended to sell that land? I cannot answer that question, I presume it is a matter for the Government to decide. It is not even for me to say now that it is intended to sell the land. That land is now cut up, and I assume that the Government would not assent to its being cut up except with a view to selling it. The intentions of the Government have not in any way been communicated to me. I cannot answer the question.
234. Would the members of the Board to whom this matter of the site was referred be best able to give information on that subject? No doubt. I presume they only got instructions to mark it off. As to selling it, I do not know anything.
235. Is the road shown on the plan lying parallel with the Waverley Road actually a road within the improved portion of the park itself? I think that a road is now existing.
236. Would there be any material decrease in the cost if an oval reservoir were constructed instead of the present one? I do not think there would be very much difference. I do not know that the difference of cost between a round and a rhomboidal reservoir would be very serious. We have not got full designs of a round one. I am inclined to doubt whether the difference in cost would be so much as I stated. No doubt a round reservoir would be cheaper, but I do not know that the difference would be a serious amount.
237. Supposing that these blocks of land which you assume will be offered for sale were built upon, could the drainage be connected with the main drainage system of the city and suburbs? It could be easily connected.
238. Could the land to the south of the reservoir, which would be at a considerable dip, be connected? Yes.
239. Would it necessitate the construction of a fresh sewer? It would necessitate the construction of a branch leading to one of the sewers on Moore Park Road.
240. *Mr. Humphery.*] How much higher will the floor of the proposed reservoir be above the floor of the existing Paddington Reservoir? About 30 feet.

John Trevor Jones, Esq., Engineer for Water Supply, Metropolitan Board of Water Supply and Sewerage, sworn, and further examined:—

J. T. Jones, Esq. 16 June, 1892.

241. *Chairman.*] Do you now put in a plan showing the elevation of the proposed reservoir? It is a portion of it, merely to show the parapet and inlet tower.
242. *Mr. Neild.*] I was under the impression that you gave evidence yesterday as to a proposed increase in the size of the Woollahra Reservoir? Yes, I said so; but the President has explained my meaning better than I did myself. He said this would be a matter of a few years hence—two or three years hence. There is no immediate intention of doing so.

TUESDAY, 21 JUNE, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
Thomas Thomson Ewing, Esq.	Charles Collins, Esq.

Henry Dawson, Esq.

The Committee further considered the proposed Reservior at Centennial Park, for Sydney Water Supply.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, and President of the Metropolitan Board of Water Supply and Sewerage, sworn, and further examined:—

C. W. Darley, Esq. 21 June, 1892.

243. *Chairman.*] Since the Committee, with yourself, inspected the site of the proposed reservoir at the Centennial Park, have you ascertained approximately the difference in cost between a circular reservoir and a rhomboidal reservoir? I have not had an opportunity of doing so.
244. There were one or two questions that the Committee put to you then which you said you would inquire into? I was desirous of explaining where some saving may be anticipated in the cost of pumping, so that the interest on the cost of the reservoir will not be a fresh burden on the city. At the present time, owing to the smallness of the reservoir, intermittent pumping is necessary throughout the whole of the

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the day. The pumps run four or five hours at a time, then they have to stop, and they start again, and in about five hours the reservoir is filled, so that there are three watches of engineers and firemen employed to cover the whole of the twenty-four hours, for seven days in the week. I have had the cost of pumping carefully taken out, and I find that the cost of fuel, oil, and wages for 1891 came to £3 7s. 5d. per 1,000,000 gallons raised 100 feet high. That cost, when it was first put before me, seemed very expensive, compared with what it should be, although it is a reduction on the amount for the previous year; but on looking into the matter, I saw clearly that it was really caused by having to keep the fires going for twenty-four hours, and keeping the men standing by for four hours now and then doing nothing. The cost of similar work in England ranges from about 14s. to £1 12s per million gallons. I must mention, however, that it represents continuous pumping, for many waterworks in London and many parts of England, are supplied over what are called stand pipes. The engines must run twenty-four hours to maintain an equal pressure on the main. Here we get over that difficulty by having service reservoirs. In London only one or two waterworks have reservoirs. There the work costs less, because there is no stoppage, and one fire is running the whole time. I anticipate that we should save at least one-third—that is to say, what it costs £3 7s. 5d. to do will be done for £2 5s. I should be disappointed if it is not less than that. I fully anticipate that £2,000 a year will be saved. At present we have not time to attend to minor repairs. If we had fourteen hours off, as we should have with the new reservoir, minor repairs could be attended to in the watch.

215. How will you get fourteen hours off with the new reservoir? The present pumps will send all the water that is wanted in from eight to ten hours up to the reservoir, so that it will leave about fourteen hours off. We have three watches now; but with the new reservoir we should require only one watch and some cleaners.

246. What is the total estimated saving in pumping and running expenses? £2,000 a year.

247. That would go to meet the interest on this expenditure, and do away with the necessity for increasing the water rates? £83,000, the estimated cost of the reservoir, at 4 per cent. (so as to pay off the principal in 100 years) comes to £3,320 a year. The site of the Paddington Reservoir has been valued at £14,000.

248. What are you going to do with the pipes stored there? We have another depôt. This site is too valuable to keep as a pipe depôt. It was valued a short time ago, I think by Richardson and Wrench, at £14,000, which, at 5 per cent., comes to £700, and if we add that amount to the saving in pumping, viz., £2,000, it leaves only £600 a year.

249. For that small addition it would not be worth while increasing the rates? We should not require any additional rates—we should not feel that much.

250. You said the other day that this reservoir, and similar works, may necessitate an increase in the present water rates? Of course, there are new works which are not yet charged to the Board—the duplicate pipe-line (the North Shore water supply has only just been charged to the Board) and the new reservoir at Potts' Hill. A vote was taken for the completion of the works at Prospect. It may be necessary, though we hope not, to put on another 1d.

251. This particular work will not necessitate any increase in the burdens of the people except as regards the sum of £600? No.

252. As regards the shape of the reservoir, have you given any further attention to the suggestion that it should be of a circular form? I have thought it over in my mind, but have not prepared any estimate for a circular reservoir. If it could be moved a little further into the park, away from the road, I see no reason why it should not be an open reservoir, and thus bring about a large saving. If a belt of trees were planted between the reservoir and the road, it would keep off any dust. It would be rather a feature in the park, to have a large sheet of water. In New York the waterworks form quite a feature in the Central Park, and it is a favourite promenade.

253. Only in this case, they would have to ascend to a height of 10 or 20 feet to see the sheet of water? We have been obliged to adhere to the roads, but if land were no object, we should adopt slopes and wide terraces all round, something like the Woollahra Reservoir, without the roof.

254. Suppose we were not restricted to having roads all round, you would build the reservoir without any cover? I would suggest that.

255. How much would that decrease the cost of a reservoir of the same capacity—by a third? Fully a third, for the roof is a very costly portion of the structure.

256. You do not think there would be any danger of the water being contaminated by dust or other outside influences? I do not think so. You could very quickly get a belt of trees planted between the reservoir and the road. It would be some feet above the street level, and then there is the width of the tramway reserve between the boundary and the public road.

257. Would you lose anything by evaporation? It would be so very small that it would not be felt. A quarter of an inch would be the most that we should lose during a very hot day, and that would be a heavy evaporation.

258. You have nothing to do with the proposed sub-division? No.

259. *Mr. Hoskins.*] You say that the sale of the site of the Paddington Reservoir will recoup a portion of the cost of this work. Do you not think that the Municipal Council of Sydney will put in a claim to that land? No, because it has been transferred to the Board by Act of Parliament.

260. What is the water rate for Sydney? Sixpence in the pound up to £300, and a sliding scale down to 3d. on properties over £1,000 in value.

261. How does the rate compare with the rate in Melbourne and large towns in other portions of the world? I am not prepared with a table of rates in other towns, but it is very much lower than the rate of any town we can find a record of.

262. What is the charge for water if consumed by meter? One shilling per 1,000 gallons. On the 1st. January last, it was reduced from 1s. 6d. to 1s. We always felt that the meter rate, as originally fixed, was too high, and the assessment rate was too low.

263. How does the meter rate here compare with the water rate in Melbourne and other places? It is the same as in Melbourne, although in Melbourne they give a rebate to very large consumers. At Adelaide they charge according to the levels. I think they have three charges there: for water supplied by gravitation the charge is 1s., in the next zone it is 1s. 3d., and in the outer zone it is 1s. 6d. It is a very common practice in Europe to raise the price according to the pressure.

264. *Chairman.*] Do you make any difference as between pumping and serving the water by gravitation? No.

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265. Do you not think it is a fair and equitable principle to charge according to the cost of pumping up to the various levels? Undoubtedly it would be a fair thing to do, but in Sydney it would be very complicated on account of the undulations. Owing to the conformation of the city, there are some streets where we have three pressures and in which some houses would be charged one rate, some houses another rate, and some houses another rate. I have thought the matter over, but it would be surrounded by very great difficulties.
266. *Mr. Humphery.*] Are we to understand that with a circular reservoir there would be a saving in construction of about £22,000? I should think about £22,000.
267. If the site of the existing reservoir realises, as you estimate, the sum of £14,000, that will make £36,000? Yes, about £36,000.
268. And if we deduct that amount from the estimated cost of this work it will leave £47,000, which, at 4 per cent., will come to £1,880 a year? Yes.
269. You think you would save that sum by dispensing with two shifts of men and the continuous firing of the boilers? Yes.
270. So that really there would be no additional charge on the funds of the Board? No.
271. In that case you recommend an open reservoir? I would recommend that.
272. *Mr. Neild.*] Apart from the pipe-lines, the proposed reservoir is to cost about £66,000? Yes.
273. And by having an open reservoir you would save about one-third of that sum? A third of the cost of the reservoir.
274. There would also be a saving if the reservoir were of a circular form? It would be more economical.
275. Are we to understand that a single street is now supplied from three different reservoirs? No; the mains pass through a street on their way to other districts. A great many streets are supplied with two pressures. For instance, this building is supplied from Paddington, but the next door house is supplied from Crown-street.
276. I suppose the higher reservoir would practically dominate the pressure in the one locality? No; because it depends upon which main a building is fed from. Macquarie-street is supplied from Crown-street, but some of the tall buildings are supplied from Paddington. Throughout this city we have two mains and two pressures in many of the streets.
277. Would the construction of this reservoir tend to limit the laying of two mains? To some extent. Of course, through the city it is already done.
278. You stated that the water rate has been too high by meter and too low by assessment—I suppose a great quantity of the water is used in closets? A proportion; the baths, as a rule, take more. No house, perhaps, in the city uses the assessment quantity of water.
279. Did you see the proposed elevation of this reservoir, as submitted by Mr. Trevor Jones the other day? I saw a suggestion that he made.
280. Did you see the plan? Yes; it was laid upon the table.
281. Is there any likelihood of anything so deplorably ugly as that being erected there? It is only a sketch which he prepared to submit, but it would be a sightly building if it were constructed. It has never been submitted to the Board, it is simply a proposal of his own.
282. If an open circular reservoir were built you could do away with about 7 feet of the top hamper? It would be much lower, because we would raise the walls very little above the water-level.
283. In that case it would not interfere so much with the view of the adjacent houses? No; from the top of the water to the top of the parapet, as shown here, it is 9 feet 6 inches, so that it would be only necessary to keep 18 inches or 2 feet over the top of the water. The difference in the height would be quite 7 feet.
284. Would not the saving of £22,000 more than equal the difference in the value of the land that would be occupied—the additional land occupied by a circular reservoir would not amount to £22,000? I should think not.
285. As it would take some little time to grow a belt of trees, what would become of the water in the interval? Fairly large trees could be transplanted there. I do not think much harm could be done even without the trees.
286. The prevailing winds being from the south and south-east, would it not bring dust there? No; it would come off the park.
287. *Mr. Ewing.*] From an engineering stand-point, a circular reservoir would be better than a rhomboidal one? It would be somewhat cheaper.
288. You regard the rhomboidal as a better shape from an engineering stand-point? No, but better to suit the available land.
289. Is it proposed because you were hampered in regard to the use of this land? We were hampered by the proposed subdivision of the land.
290. It was for no other reason that it was proposed? No.
291. *Mr. Davies.*] What would be the greatest depth you would go below the surface of the rock that is now visible before you started to build your walls? The drawings have not yet passed through my hands—I have not had an opportunity of going through the details. I do not exactly know the depth at the highest point.
292. I wish to ascertain the pressure of the water against the solid rock, as compared with the pressure against the structure which will be raised above the surface of the soil? I could not give you that exactly. Of course, the whole thing must be in accordance with the pressure.
293. But there would be an immense pressure in the case of a reservoir which has a surface area of 3½ acres? The pressure is not due to the area, but to the height.
294. This reservoir will be 20 feet high if the plan is carried out? Yes.
295. I understand that you favour an open reservoir? I would be disposed to recommend an open reservoir.
296. Do not the light and heat improve the water? They do not hurt it at all, as it is in constant circulation.
297. It is not likely to suffer from dust or to be injured by high winds? I do not think it would be hurt to any extent at all.
298. *Mr. O'Sullivan.*] The Department regard this reservoir as being absolutely essential to supply the highest levels in Sydney? Not the highest levels in Sydney, but the highest levels in the city.
299. You are not able to supply some of the highest buildings in Sydney? No.
300. Therefore you ask for the construction of this reservoir with that object in view? There are a great many buildings almost deprived of pressure if the water falls 5 feet in the Paddington Reservoir; we are obliged to work on the top 5 feet, the bottom water is no use. It would be impossible under existing circumstances to put out a fire on the top storey of some high building.

C. W. Darley, Esq. 21 June, 1892.

301. *Mr. Hoskins.*] Does not the Australia Hotel get its water from the Hydraulic Power Company? They work their lift with water which they get from the Hydraulic Power Company.
302. I read in an account of the fire at the Theatre Royal that the Australia Hotel had a higher pressure of water on their top storey? They have a pressure from the city main. Of course, there is a main in front of the hotel from the Hydraulic Company, but it would be rather expensive to put out a fire with water costing about 8s. per 1,000 gallons.
303. *Mr. O'Sullivan.*] You suggest, as a saving, that the reservoir should be constructed with no roof;—are you aware that the South Head Road is about the dustiest road in Sydney? It is somewhat dusty, but it is some distance away from the reservoir, as the tramway reserve lies between the park railings and the road.
304. You think that with that distance, and the protection of a belt of trees between the reservoir and the tramway reserve, there would be no great danger of having the water made impure? I think so.
305. I suppose every precaution will be taken against allowing young larrikins to throw dead animals and refuse into the reservoir, or swimming their dogs in the water? They cannot do that.
306. It is done in the Lachlan dams? It is done because that water is out of the control of the Board.
307. All that could be guarded against by the erection of a wall? An iron palisading could be put round the reservoir.
308. *Chairman.*] Supposing it was an open circular reservoir, how high would the wall on the side near the road be above the road level? Only 4 or 5 feet high.
309. The park level is a little below the road level, is it not? About 3 feet, I should think.
310. *Mr. Dawson.*] Did I understand you to say that you would recommend that the reservoir be left an open one? I have not recommended that, but I think it would be well worth consideration.
311. Is it suggested only on the grounds of economy? I say that on the grounds of economy it might be left open.
312. *Mr. Neild.*] The water is supplied from the Prospect Reservoir in an open conduit? All the way down to Prospect, and 5 miles below that.
313. Is it not a fact that several open roadways cross the open conduit? Yes.
314. And that that is not deemed a matter of sufficient importance to interfere with the purity of the water? No.
315. I suppose there is every opportunity for road dust to get into the water in the open conduit? Yes; it would be very hard to trace any impurity from that source.
316. Has the water, as supplied to the citizens, been compared, as regards its purity, with the water as it leaves the source of supply? It is tested every month.
317. Its flowing through an open conduit does not contaminate it to any appreciable extent? No; a little whiff of dust coming across the water would be perfectly inappreciable in such a large body as flows down the conduit.
318. *Chairman.*] The water would go straight from this reservoir to the consumer? It would.
319. The water which comes down the conduit and other open channels passes through screens? Small screens take away any heavy impurities—leaves and other things.
320. So that the difference between the two waters, to which Mr. Neild has referred, is that one water, after it has passed through possibly contaminating conduits, is screened or filtered, whilst any contamination in the reservoir would not be arrested, but would have to go right to the consumer? Yes. Of course, the effect of the dust would not be removed by the screening. The screen would not remove any ammonia which got into the water.
321. *Mr. Humphery.*] You mean screening, and not filtering? Yes; the screen is 780 meshes to the inch.
322. *Chairman.*] Almost as good as the Lachlan swamp sand for screening purposes? Yes; it does remove all the spawn and leaves.
323. *Mr. Humphery.*] It would not remove any impurity in solution? No.

Charles Moore, Esq., F.L.S., Director of the Botanic Gardens, sworn, and examined:—

C. Moore, Esq., F.L.S. 21 June, 1892.

324. *Chairman.*] You are the Director of the Botanic Gardens? Yes.
325. And you have had a great deal to do with the laying out of the Centennial Park? I have had all to do with it.
326. On the site which is coloured red on the plan it is proposed to construct a reservoir to hold 17,500,000 gallons, with a wall 20 feet high on the south side and 10 feet high on the north side, and we understand that the shape of the site is owing to a recommendation which a Board, consisting of yourself, Mr. Hickson, and Mr. Vernon, made to the Government? Partly so. It was proposed to put a reservoir there, and Mr. Dibbs appointed us to make a general report on the park.
327. The Colonial Secretary appointed a Board of three gentlemen to report on general improvements and works in the park, embracing this particular portion? Yes.
328. Will you kindly read that portion of the Board's report which bears on the proposal before this Committee? The report reads as follows:—

We have also taken into most careful consideration the best mode of dealing with that portion of the park lying on its northern boundary, and between Paddington and Ocean-street entrance gates, and are of opinion, considering the impracticability of converting this into a portion of the park proper, owing to its extremely rocky nature and poverty of soil, even should a large expenditure be attempted, that the land is only suitable for building purposes; we therefore suggest for consideration the advisability of treating this piece of land as one of the building sites for sale and lease, as may be decided upon, and detaching it from the park, and that the public roadway, with necessary back roads, be constructed on its southern boundary, and the park be re-enclosed with railings, &c., utilising those railings erected along the Old South Head Road, and making good the deficiency in new. We estimate the cost as follows:—

Construction of roadway	£3,700
Old and new fencing	£2,100
Total cost	£5,800

If this suggestion be approved, the land thus set apart might be laid out for building sites, with the exception of a central back block of 3½ acres, more or less, which should, in accordance with the approval of the Secretary for Works, be handed over to the Water Supply and Sewerage Board for reservoir purposes. This arrangement would give 1,856 feet of most valuable frontage overlooking the park, which we estimate is worth not less than £20 per foot frontage..... £37,120
and 820 feet of building frontage to roads in rear at £10 ..... £8,200.
Total value £45,320

It will, therefore, be seen that this alteration of original scheme will, if carried out, show a net asset of about £39,520.

329.

C. Moore, Esq., F.L.S. 21 June, 1892.

329. The particular site to which you refer in the report was known as the site of the proposed State House? It was, and I had instructions not to do anything with regard to that ground except to clear away the scrub.
330. This report having been made to the Government, and the Department of Public Works having proposed to construct a reservoir in accordance with the proposed subdivision, it would lead one to infer that the State House proposal has been abandoned? That I have understood.
331. And your proposal to grant 3½ acres as a site for a reservoir, and to sell the balance, has been adopted in its place? That is the report. I may state that the original idea was to give the Red Hill as a site for the reservoir, that is the ground nearer to Sydney. That would not affect any ground in the park at all. It is part of the resumed ground, but is not included in the area of the park.
332. We are informed that as far back as 1882 or 1884, this particular site was set aside by the Municipal Council for a reservoir—did you know anything of that? No.
333. I suppose this particular shape is designed to enable you to utilise the balance of the land as selling frontages? Quite so.
334. We have it in evidence that the cost of this rhomboidal-shaped reservoir would be very much greater than the cost of a circular reservoir, which having the same capacity would come further down into your park, that would spoil your selling sites? Yes, it would interfere with them very much. It is almost a pity to destroy such a splendid building site as that is, perhaps the finest site in Australia.
335. What effect would the construction of a reservoir 20 feet high on the southern wall, and 10 feet high on the northern wall, have upon the selling frontages to the park, would it improve their value? If the ground were sloped away by means of soil, and turfed, it would not have such a bad appearance. A bare wall would look very bad indeed, but I presume they would not put up a bare wall.
336. But if the allotments fronted the road further south, and ran back to the reservoir, there would be no objection in sloping it off? No. I say that in the event of that being done it would take away the unsightly appearance, and would not affect the building sites at all, but if the reservoir were made a circular shape, and came near the road, it would seriously affect them.
337. What depth did you allow for the allotments between the road and the reservoir? 165 feet, I think.
338. If we are told that a circular reservoir would result in a saving of at least £10,000, do not you think it would be worth while to sacrifice some of the land for that purpose? It is a mere matter of detail. It would not be, I think, so ornamental as if it were made in a different form. If it were made of an oblong form it would not be difficult to ornament the ground round about it. I am aware that the Committee are acquainted with the ground, and know that it is nearly all solid rock. My original intention was to take the sand-hill near Ocean-street, and spread the whole of that sand over the surface of the rock in order to grow grass, but I was not allowed to do anything with this land, although, I believe, the late Premier gave up all idea—in fact, he told me as much—of the State House.
339. You are familiar with the Act of Parliament which appropriated this land to the people as a park? Yes.
340. Is the area set apart for selling defined in any way? I do not think it is. My instruction was to enclose a certain portion of ground, without any definite area being fixed. I formed and ballasted that semi-circular road, but I was authorised to proceed no further with it; it is quite passable.
341. The State House proposal being out of the way, you thought that it was a very good time to appropriate the site of the State House for selling purposes, less the portion for the reservoir? Quite so; because I could not think of any purpose it could be devoted to except building, because it is solid rock.
342. That would take away a considerable area of the park? It will take away a considerable part of the ground enclosed by the semi-circular road.
343. How much will there be in the area which you propose to absorb from the State House? I am not in a position to say. It was at one time thought that it would be a capital site for new Houses of Parliament.
344. *Mr. O'Sullivan.*] All the land inside the semi-circular road is inside the park? Yes.
345. Will the stone wall and iron railing between that and the road have to be removed? Certainly. It would not only have to be removed, but I presume that nothing could be done without a fresh Act of Parliament, for that ground is included in the area of the park.
346. You would have two splendid gates, one at Ocean-street, and one at Queen-street? Of course, matters could be so arranged that the entrance gates would still remain. The Board talked of that, but I saw my way to make a boundary by which these roads could be used. My colleagues wanted the semi-circular road reduced, but I pointed out how very awkward it would be to have no entrance to that part of the park, and that if they interfered with the road it would be necessary to carry the road further out.
347. What would it cost to convert the stone patch inside the semi-circular road, and the fence, into a proper portion of the park? I have not gone into a calculation.
348. With all the material at your command in the shape of sand-hills the cost would not be very high? No.
349. Does it not seem a great pity that that splendid site should be taken away from the people when it could be converted into a portion of the park and be set aside as a recreation ground for ever? I think, it is a very great pity. It is such a splendid site that I would regret to see it taken away.
350. If it is taken away and sold in building lots it will pass into the hands of a dozen families? That is quite possible.
351. Although it commands the finest views of all the park and the surrounding country the people would be deprived of it? No doubt.
352. Do you think that we should sanction a proceeding of that kind, although we do gain £39,000 by so doing? I am not in a position to answer that question.
353. Are we to understand that this report represents the opinions of the Board, or the policy of the Government? It is not the policy of the Government, but merely the opinions of the Board.
354. Did you understand that the Government intended to sell this portion of the park? Never. The idea never once escaped Sir Henry Parkes' lips in his frequent conversations with me on the subject.
355. Who called the Board into existence? The Colonial Secretary.
356. With what object? To ascertain the probable cost of finishing the park.
357. And it occurred to a majority of the Board that it would be desirable to cut off a portion of what seemed to them a useless piece of land for the purpose of selling it in building lots? Quite so. Of course,

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course, Mr. Hickson was anxious to have that site for a reservoir, and as it was not to be utilised for building we decided to recommend that the whole of the ground facing the semi-circular road should be sold in building lots, and that the back part covering an area of 3½ acres, should be given up for the purpose of a reservoir.
358. If the land is sold in building lots, and buildings are erected generally over the land, there will be houses between the reservoir and the semi-circular road? Yes.
359. So that even if we could cover over the reservoir and ornament it it would become one of the attractions of the park? Well, scarcely.
360. Supposing we retained the land as a portion of the park, and the reservoir is completed as proposed with ornamental roof and walls, could it not be made at a little extra expense one of the most striking features of the park? The only thing which could be done would be to do what I did with the sloping land—to smash up the rock, and fill up the hollow places and then cover them over with the sand, and sow grass. It is not fit for planting.
361. Are you aware that that very portion is a favourite playing ground with the children who live in the vicinity? It is. It might be made a charming place.
362. Some time ago, at the request of myself and others, Sir Henry Parkes took down some rails in order that the children might go in there and play? Yes.
363. Are they not establishing their right to the land, and bearing in mind that it is already a portion of the park, do you think we ought to take it away from them after it has been dedicated to them for ever? That is a question I am not prepared to answer. My instruction was to prepare a place so that the public could be admitted. In fact, I was going to put a gate there.
364. Sir Henry Parkes objected to a gate, because it might create a right of way? Yes.
365. May I ask if your individual opinion is in favour of the land being offered in building sites? No; it is not my individual opinion. I would be sorry to see such a splendid site done away with, except for some public building. It is an unequalled site.
366. *Mr. Davies.*] What is the value of the 3½ acres proposed to be taken for the reservoir? We valued the frontages to the road at about £20 per foot.
367. Would it be worth £10,000? I think it would.
368. Should not the value of the land be credited to the Centennial Park Fund? I should be very glad if it were.
369. But should it not be according to the Act? The land is decidedly part and parcel of the park.
370. Was it not the intention of the Legislature that this money should go to recoup the Treasury for an expenditure of some £200,000? Outside the park; it was never contemplated to sell any land inside the park.
371. But as this land is to be sold, should not the proceeds be credited to the same fund? I cannot answer that question, because it was never contemplated to sell an inch inside the park.
372. Who prepared the plan for the sale of this land, which the Board used? The Surveyor-General.
373. By whom was he instructed? I do not know.
374. You see the coloured plan showing the subdivision? This was done by Mr. Hickson.
375. How does it come that that plan was prepared, showing the reservoir and the subdivision for sale? I think it was partly done by Mr. Hickson, to show the site of the reservoir.
376. But it shows the subdivision also? That was done, no doubt, after we had sent in our report.
377. *Mr. Ewing.*] Is the southern road made? It is formed and ballasted, but not macadamised. To give the width they require there, this road would either have to be taken away, or put out further.
378. *Mr. Davies.*] You see that the sites are marked on the plan evidently for sale? Yes.
379. You stated that it would be necessary to pull down the present wall and rails if this land is sold? Yes.
380. Is it not a fact that Richmond Terrace is in the Domain? No; Richmond Terrace was resumed, but the original boundary of the Domain was the stone wall which bounds the old hospital and the Parliamentary Buildings.
381. Has not Richmond Terrace fronted the Domain for thirty years? I opposed it. A dwarf wall ran along the front of Richmond Terrace, and the first opening in that wall was made by a former Colonial Architect who built the house adjoining the Parliamentary Buildings. The Domain was in his charge until I arrived in the Colony, and he took upon himself to make an opening in the dwarf wall; and having made that opening, Mr. G. A. Lloyd, and others who owned property there, got permission to make other openings in the wall.
382. As far back as my memory can carry me, the main entrance was from the Domain? It was an innovation from the beginning.
383. Has any inconvenience arisen to the public by reason of these buildings fronting the Domain? It gives a privilege to certain persons which the public do not possess.
384. But if building sites are sold in the Centennial Park, the buyers will pay for the privilege, and there will be no occasion to remove the wall? I do not think it would answer to have buildings inside the park.
385. Would not the land fetch 50 per cent. more if it faces that beautiful park and road? It would bring more, no doubt; but the Act would have to be amended.
386. There would be no inconvenience to the public if these houses fronted your road? It deprives the public of that ground.
387. You have no strong objection to houses fronting the semi-circular road? If buildings are to be erected at all, of course I could have no objection. The only objection I have is that I do not like to see any portion of the ground taken away from the public.
388. *Mr. Dawson.*] Is it a fact that this very site is used as a sheep-camp for butchers' sheep? No; I have camped the sheep all over the ground, and I think they have done a good deal of good.
389. *Mr. Neild.*] The plan shows a piece of land for sale on each side of the reservoir, what frontage would the allotments in these two blocks have? I think it is embodied in this report.
390. They would only have a frontage to a back lane? There are streets marked there.
391. Are these streets a chain wide? I think so.
392. Two blocks would only have a frontage to a half a chain road? The back allotments.
393. I think you are aware of the existence of an Act which would prohibit the erection of a building under such circumstances? I believe that is so.

394.

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394. The lands to which I refer would either have to face a half a chain road or the tram track? They would have to face the tram track.
395. Surely allotments which front a tramway track would not have a very large value? We calculated that the land would bring £10 a foot there.
396. Then you would take down and put back the iron rails and dwarf wall, you would not propose to remove the tramway? No; that was never contemplated.
397. The tramway would be more objectionable as affecting the value of the ground than a handsome dwarf wall and iron railing? Yes.
398. It is proposed to utilise the top of this reservoir as a tennis ground, from the very nature of it would not the outlook from this elevated spot be into the yards of the surrounding houses? No doubt it would.
399. The reservoir would be detached from the park, inasmuch as it would be surrounded by houses? Yes.
400. You would favour the retention of the locality as a portion of the park, utilising the sand-hill to the southward to produce a sward there? That is all I proposed to do.
401. If treated in that manner this rocky plateau would be a very great advantage to the public? It would be, decidedly.
402. The erection of the reservoir, if carried out in a suitable manner, would not materially interfere with the occupancy of the plateau? No.
403. If none of the land were to be sold in building lots, you would be indifferent as to the shape of the reservoir? Quite so. I pointed out that if it were made of a circular shape it would go very much further down towards the semi-circular road.
404. You adopted this angular form for no other reason than to save as much ground as possible for allotment purposes? Exactly so.
405. *Mr. Humphery.*] A suggestion has been made that the reservoir should be an open one and a neat iron pallisading placed around it, and it has been thought that it would be an ornamental feature of the park, what is your opinion? I think it would.
406. You think it would be preferable to the proposed reservoir? I think it would, but I am afraid that the water would not be so well preserved. It would receive a great deal of dust from the Paddington Road.
407. Otherwise you would favour an open reservoir? I would, decidedly.
408. *Mr. Ewing.*] The area required for a circular reservoir is no larger than the area required for a rhomboidal one? Yes.
409. You adopted a rhomboidal shape because it fits in better than a circular one for subsequent designs? Decidedly.
410. Do you not think you could have run the circular one in just as well? No. I think it would render a larger area of land useless.
411. For landscape gardening you can make just as good use of these corners as for anything else? Yes.

Frederick Augustus Franklin, Esq., M.I.C.E., sworn, and examined:—

F. A. Franklin, Esq., M.I.C.E. 21 June, 1892.

412. *Chairman.*] You are a civil engineer? Yes.
413. We understand that you had something to do with the laying out of the Centennial Park originally? I first projected the park in rough design and submitted the proposal to the Government in 1886, with a sketch plan and general report on its capabilities. In that report I dealt with the park generally with regard to its area, without actual survey, showing the portions that might be sold in order to return some of the cost of constructing the park to the Government, and on that plan I showed roughly the portions which might be so sold without interfering with the park on the general design.
414. Does the blue plan on the table carry out your ideas of the reservations for sale? Those divisions to the westward and eastward are as first proposed. The portion coloured red on the northern part is the most valuable part of the park.
415. Is that included in your selling portion? No. In my estimate that is the most valuable portion of the park for all the requirements of this great city.
416. And is not included in your proposed selling sites? No. Nor am I aware that it was ever suggested.
417. With the exception of that northern portion the parts marked as for sale correspond with your original suggestion? Very nearly. There is a small extension towards the south and west.
418. Had you anything to do with the setting aside of the northern portion for the purpose of a State House? Certainly not for a State House. I submitted it to the Government as a site having three times the capacity of the site which was occupied by the late Garden Palace.
419. What would you have proposed to do with that particular site? I did not propose to build, but I showed that a building three times the size of the Garden Palace could be built for any future requirements on that site, at the same time pointing out that it was the most central and elevated portion in all Sydney; that for any purpose of an international character, such as an Exhibition, there was no better or more central site or one more easily accessible than that site, which is getting better every day. The suggestion was very much approved of by the Government, but was not taken up. It was submitted by a special minute to the next Government, which entered on the question and carried it out as it exists at the present day.
420. To which Government did you submit your proposal? To the Dibbs Government, and it was passed on by a special minute to the Parkes Government. The proposal was submitted to Parliament by Sir Henry Parkes in 1887, and on approval by Parliament, the district surveyor was instructed to define those portions of the land which I now see on this general subdivision. I believe the work was carried out by Mr. Stephen Perdriau. The original design has been very closely adhered to, with the exception that the road and the drive have been made in a semi-circular form, whereas in the original design the tops of the dams were used and the lower part of the park. The upper part is very nearly the same as in the original suggestion. The approaches are exactly the same. I wish to claim that there has been very little departure from the original crude suggestion, and as I submitted that design as a simple citizen, and not as an engineer at all, I feel very highly honoured that it has been adopted. I do think it would be a national calamity to disturb that most valuable site.

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421. Coming back to the particular portion which is under our consideration, you reserved that land for building sites in the future? I reserved it for building in the future. I suggested that if we were to build a memorial of our Centennial period it should be devoted to the display of our minerals.
422. It was to be occupied by a national building? Yes.
423. And if they did not utilise it in that way it would be a splendid portion of the park? Most certainly.
424. We have to consider a proposal to construct a reservoir on that particular portion, so as to leave a comparatively large area for selling, if necessary. Do you think the land should be sold to the general public? I cannot see that it should be used for that purpose. I should think that if it is necessary to build a reservoir there extra excavation might bring it to the ground surface, and not impair its value as a building site.
425. As an engineer, you know that that means loss of head power? Yes; but we have adjacent a reservoir which should command the upper zones.
426. But it has a limited capacity? I am not prepared to argue that point at all.
427. This reservoir is of a rather unusual shape in your engineering experience? A reservoir may take any shape.
428. But the most cheaply constructed are either square or round? I think that a circular reservoir is very good.
429. Where there is plenty of room and nothing else to be considered, a circular reservoir would, in your opinion, be the best? I understand that on that plateau it is nearly all rock, so that nearly any shape might be adopted.
430. The more corners the more expensive it would be? I daresay.
431. Do you think that a reservoir built at an elevation of 10 feet on the side next the South Head Road, and 20 feet on the lower side, would decrease the value of the building sites or disfigure the park to any great extent? No; it could be made very ornamental in appearance and finish.
432. You have had considerable experience in connection with water supplies for cities and towns? Not a great deal.
433. You have given some attention to reservoirs, I suppose? Yes.
434. Do you think that an open reservoir at this place would be attended with any great danger to the purity of the water? I do not think it would be advisable, as it is a very dusty road.
435. You think that where there is the least possible chance of the water being contaminated the water should be covered? Yes.
436. If covered it could be utilised for a lawn tennis court and other purposes? You would have to go to an extra amount of work, but you can make it anything you like once you have enclosed the water. This is a most magnificent site, which by chance has fallen into the hands of the Crown, and is now dedicated to the public.
437. Do you think any great injury would be done to the public interest if the land in front and by the sides of the reservoir were sold? I have not had time to inquire into that matter. It depends entirely upon its construction. It seems to me that the frontages to the park would be exceedingly valuable.
438. *Mr. Wall.*] Do you know the minimum strength of our water-pipes in the city? No.
439. Do you know whether they will sustain the pressure from this reservoir? I suppose they have calculated the strength of the pipes. I do not know the dimensions of the pipes they are using.
440. *Mr. Ewing.*] Is it a wise thing to put a reservoir in this park or not? I do not think there would be any objection if you did not interfere with the building site.
441. You have said you do not think it matters very much what shape the reservoir is with such a foundation? I do not think so with such a foundation.
442. Do you think this land should be sold? I do not think so.
443. You think it ought to be kept as part of the park? I think it is dedicated to the public and should be reserved for ever.
444. Would the sale of this land be detrimental to the park? I do not think it was ever contemplated to sell a portion of the land.
445. You think that no matter what we do in regard to this reservoir we should not sell the land? No.
446. Do you know any other place where they could put a reservoir? I know no better place than this. I do not think there would be sufficient area or elevation at the back of the rifle-butts.
447. You cannot suggest a better area or as good a site? No, it is an excellent site for the purpose.
448. *Mr. O'Sullivan.*] Would you advise the construction of a reservoir at the other end of the land, in order to set free the remainder for some great national building in the future? I do not think there could be the same objection at all if it did not take the very centre of this site. If a reservoir could be constructed on the north-eastern side I do not think the objection could stand.
449. *Mr. Neild.*] The piece of land which lies between the semi-circular road in the park and the South Head Road, is the only elevated portion of the park? Yes.
450. The rest of the park is low lying, with the exception of slopes too steep for anything? It falls away in terraces.
451. As an engineer, can you tell the Committee whether there would be any material difference between the cost of pumping water to that site, and the cost of pumping water a little further on to the site of the Woollahra Reservoir? The difference in the cost of reticulation.
452. Would the difference in the cost of pumping be serious? Of course, if they have to pump the water 40 feet higher it would require a different calculation altogether.
453. The Woollahra site being higher, it would be more the cost of elevation than the cost of level in the pumping? Yes.
454. I think you said the Government of the day, in 1886, did not favourably consider the carrying out of a park here? They did favourably consider the matter, and, had time permitted, would have placed it before Parliament.
455. I think the Governor of the day, Lord Carrington, was greatly interested in the construction of a park here? He was.
456. From the time when the project was first started until very recently it was never proposed for one moment to alienate this particular plateau? Never to my knowledge.
457. If the top of the reservoir is used as a lawn tennis ground it will overlook the back yards in the subdivision? Yes.

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458. That would reduce the selling value of the land? I do not know whether it would. Some people may object to the prospect, but it seems to me to be a great objection to the construction of a reservoir at that elevation.

459. *Mr. Ewing.*] Can you offer any opinion as to whether as good a site for a reservoir can be obtained in the area to which Mr. O'Sullivan referred, without taking the centre? I cannot, because testing by boring is absolutely necessary.

WEDNESDAY, 6 JULY, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM McCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee further considered the proposed Reservoir at Centennial Park, for Sydney Water Supply.

Thomas Magney, Esq., J.P., Mayor of Woollahra, sworn, and examined:—

T. Magney, Esq., J.P. 6 July, 1892.

460. *Chairman.*] You are Mayor of Woollahra? I am.

461. How long have you been a member of the Municipal Council of Woollahra? About four years.

462. Is this your first year as Mayor? No, I have been Mayor three years in succession.

463. Is the Centennial Park within your municipality? No.

464. It borders on your southern boundary? Yes. Our boundary is the middle of the Old South Head Road.

465. Who maintains the other portion—the Government? The road is under a Trust, of which I am a member.

466. Are you familiar with the project which is before this Committee? Yes.

467. You know it is proposed to construct a reservoir on a portion of the site which was reserved for a State House? Yes.

468. And that the structure will be 10 feet above the level of the ground, with a parapet 17 feet high? Yes.

469. You are aware that the reason assigned for constructing this reservoir is that the Paddington Reservoir is too small to serve the zone with which it is connected? I believe so.

470. And that this reservoir, being at a higher elevation and of a larger size, will enable that zone to be more effectually controlled? More effectually than by the Paddington Reservoir, but it would be more effectually controlled still if the Waverley Reservoir were enlarged—it would give a better pressure.

471. You are not an engineer? No.

472. The Waverley Reservoir is considerably higher than the Woollahra Reservoir, but the increased height would entail considerable expense in the cost of pumping? That is one aspect. There is a disadvantage in not getting a good head of water to extinguish fires.

473. Will the construction of a reservoir on this particular site disfigure the Centennial Park or prejudice the rights, if any, which any of your ratepayers conceive they have? Will it be an open or a covered reservoir?

474. The project is to cover the reservoir and to have an ornamental parapet all round, and to use the top as a lawn tennis court, or as an out-look? I do not think it would be prejudicial in any way.

475. Do you desire to make a statement to the Committee as to your views? Not so far as the reservoir is concerned, but I am led to believe that it is proposed to cut up the adjacent ground into building sites and sell them. If I am correctly informed, certainly the people of Woollahra will protest, first, because this is one of the most beautiful spots in the park, and, secondly, because the Old South Head Road is the main avenue to the eastern suburbs. It would certainly not be an estimable thing to find people overlooking back premises on their way to the park. Furthermore, the people who face the park have been led to believe for many years that no buildings would be erected, and that it would be always used as a park, hence they have a prejudice against the sale of allotments immediately adjacent to the park.

476. The question before the Committee is the construction of a reservoir at the Centennial Park. Our attention was challenged by the peculiar shape of the reservoir, and it came out in evidence that it is so shaped because it may be necessary or desirable to utilise the remainder of the land for building sites? I do not think the people of Woollahra will have any objection to the construction of a covered reservoir.

477. From your knowledge of the locality do you think it would be less objectionable, if objectionable at all, if it were removed further north, or east or west? I do not think so.

478. If it should be proposed to sell the land, you desire to enter your protest against that proposal as a representative of the ratepayers of Woollahra? Yes.

479. But why should it be your duty to protest any more than any other ratepayer of New South Wales, as it is a national property? I presume the Municipal Council of Woollahra has a right to conserve the interest of its ratepayers, and this is one of their interests.

480. *Mr. O'Sullivan.*] In view of the possibility of that site being required some day for an exhibition building or some other public building, would it not be advisable to have the reservoir on the east end of the portion which is marked out? Yes, I think it would be preferable to put it at the back of the Woollahra Reservoir.

481. You are aware that the people of Woollahra have been in the habit of using this piece of land as a playground for their children, and that the Government conceded an opening in the fence to enable the children to play there? Yes.

482. It has come to be regarded as a national recreation ground? Yes.

483. *Mr. Davies.*] How were the residents of Woollahra who face this reservoir led to believe that no buildings would be erected on that land, or the land adjacent on either side? I cannot say that they were officially led to believe that, but they have been under that impression for many years.

T. Magney, Esq., J.P. 6 July, 1892.

484. There is no warrant for that belief? There is no official warrant.
485. Is there any ground at all? It has been taken as an accepted truth for many years. I believe that the Municipal Council of Woollahra, prior to my going into the Council, passed several resolutions to the effect that the authorities be approached with the view to have that land proclaimed as a park.
486. Are you aware that if the original proposal had been carried out, that portion would have been covered pretty well with buildings? I do not think so. I think Lord Carrington said "I dedicate this park to the people of New South Wales for ever."
487. As sites for a State House and for large buildings? A State House was intended, but not a series of buildings. It was not intended to cut up and build on the land.
488. It is not a question of selling, but whether it would not be covered with a number of buildings just as objectionable as houses? I do not think they would be as objectionable
489. What is the objection on the part of the people facing the park—that it obstructs their view? Yes.
490. A block of public buildings would do the same? Not to such a degree. They object not only because it would obstruct their view, but because it would not be very nice to look into people's back yards and see all the outhouses.
491. They have to do that at Woollahra at present? Yes, but we do not want to intensify the evil.
492. All the properties facing the park overlook back premises at the present time? As a rule.
493. There is no new feature about that? I admit there is no new feature, but overlooking a park is different from overlooking people's back dwellings.
494. It will give an additional value to properties on the other side? I do not believe it would be in the public interest to sell the land at all. I do not think we should sell a foot of this land.
495. You think that the whole should be dedicated to the public? Yes.
496. That is the whole of the objection that you have? Yes.
497. No objection to the reservoir? Not if it is covered.
498. On what ground would you object to an open reservoir? Because it would take up a large portion of the park which is required for public use. If it were a covered reservoir the ground could be laid out tastefully.
499. If it were a covered reservoir it would not be open to the public generally, but only open by permit? At the present time the top of the Woollahra Reservoir is open to the public, so is the reservoir at Waverley
500. If the top of this reservoir were used as a tennis court everybody could not occupy it at the one time, but it would have to be occupied by permit? Yes.
501. *Mr. Neild.*] You stated that, before your accession to office, the Borough Council approached the Government on several occasions with reference to securing the ground on which this reservoir is to be constructed for the purpose of a park for the inhabitants, can you state how far any of those applications went? I cannot.
502. You have not looked up the records of the Council? No
503. You would have no objection to the construction of a reservoir of this capacity in the locality, provided that it did not interfere with the integrity of this portion of the park? Not the slightest objection.
504. You would not object to the construction of a reservoir either east or west of the proposed site? No.
505. To the east is the existing Woollahra Reservoir? Yes.
506. It has been built up above the natural level of the ground? Yes, considerably.
507. So that it would be possible, in the immediate vicinity of the Woollahra Reservoir, to obtain a site for a reservoir of the capacity of the one proposed without going into the same elevation? I think so.
508. The level of the ground would give almost exactly the same elevation as the site proposed—to the eastward of the Woollahra Reservoir? I think so.
509. There is a large area of land that would answer the purpose? Yes, admirably.
510. That would leave this very fine plateau site intact? Yes.
511. You are in a position to say that your Council, and your ratepayers, would strongly object to any course being adopted that would tend to destroy this portion of the Centennial Park as a place for public recreation? I am.

Charles Augustus Vivian, Esq., Council Clerk of the Borough of Woollahra, sworn, and examined:—

C. A. Vivian, Esq. 6 July, 1892.

512. *Chairman.*] You are Council Clerk of the Borough of Woollahra? Yes.
513. How long have you held the position? Nine years.
514. You are familiar with the history of the Borough Council and its work in connection with the Government Department as well as the ordinary ratepayers? I think so.
515. Do you understand the proposal before the Committee? I do.
516. Are you aware of the reasons why it is proposed to construct a reservoir of the capacity of 17,000,000 gallons in the Centennial Park? Only from hearsay.
517. It is asserted that the zone which the Paddington Reservoir serves is the largest in the water distribution system, that the reservoir is inadequate to serve that zone properly, and that it is necessary to construct a reservoir at a higher altitude, perhaps some 30 odd feet, and of larger capacity? I understand you.
518. You know the exact position which is proposed as the site of this reservoir? I do.
519. It is proposed to build a reservoir at a height of 10 feet above the level of the park, on the road frontage, with a parapet 17 feet high, and to use the top of the reservoir as a tennis court. Do you think that the erection of a reservoir of that description in the Centennial Park would be objected to for any good reason by the residents in the locality? No. I do not, except on one ground, that if it were made a private enclosure, or if the public were restricted from the use of it, they would object, and rightly so, I think.
520. If a piece is taken out of the park for the construction of a reservoir, and the top of the reservoir is open to the general public, there would be no objection? No.
521. If any exclusive rights were given either to the persons who may build on the part set apart for sale or anyone else they might object? I think so.
522. They would recognise that the construction of the reservoir is a public matter, and if they could utilise the top there would be no objection? I think not.

C. A. Vivian, Esq. 6 July, 1892.

523. Do you think it would be less objectionable if it were removed to near the Ocean-street gate? Yes, I think there would then be no objection to it on the part of the ratepayers.
524. Even if it necessitated the same height above ground as here? Certainly. The public are jealous of their rights. They conceive that that portion was dedicated to them as a public recreation ground, and the construction of the reservoir, or any other such intention on the part of the Government, would at once arouse the suspicion that their rights were to be invaded. They have that feeling.
525. You are aware that some portion outside the park walls has been laid out for future sale? Yes.
526. Do you think the erection of this reservoir would in any way deteriorate the value of the land to be sold hereafter? No, if nothing in the way of buildings is added to it.
527. As far as the reservoir is concerned, you do not think it would? No.
528. Do you think that if buildings surrounded that reservoir it would deteriorate the value of the other building sites? I do.
529. Why? I think that if you erect a terrace of houses, or a pile of brick and mortar between your house and an admirable view, it must necessarily depreciate the value of that house. At present we have an uninterrupted view of the whole of the park.
530. You are speaking as regards the property on the Woollahra side, but I am speaking of the influence of the reservoir or buildings on the sites to be sold in connection with the park? I am speaking of the effect on the property on the Woollahra side.
531. I want your opinion as to whether the erection of the reservoir as proposed, or even if it is flanked by houses, would have any deteriorating effect on the land to be sold in connection with the park? I cannot conceive that it would.
532. But it would have a bad effect on the houses on the northern side of the South Head Road which have an uninterrupted view? Yes.
533. But in view of the fact that these people in your municipality have no exclusive rights over this view, what have they to complain about? They share in the belief that this park was dedicated to them as a portion of the public for ever, and very naturally they look upon it as an invasion of their privileges.
534. Especially is that view entertained by those immediately opposite the park? Certainly, because their property would be more or less affected.
535. *Mr. Neild.*] Do the records of the Woollahra Council show that many applications have been made to the Government in times past for the establishment of a recreation ground on the spot under discussion? Yes.
536. Does your knowledge as Council Clerk enable you to state that the Government some years ago caused this locality to be surveyed for the purpose of a park? I am not aware whether the Government surveyed it, but I know that negotiations were entered into between the Council and the Government with the view to obtain an area of that land, and a distinct promise was given fourteen years ago by Mr. Secretary Hoskins to a deputation from the Council that the matter should be considered with a view to securing that which the deputation asked.
537. I think the Honorable Member, Mr. Humphery, was a member of the Council at that time? He was one of the deputation.
538. I think another member of this Committee was a member of the Council and a member of the deputation? You were on the deputation.
539. You are acquainted with the land in the park in the vicinity of the Woollahra Reservoir? I am.
540. Is there in your opinion an area sufficient for the proposed reservoir to the south or east of the Woollahra Reservoir? I am not an engineer, but as a layman I should certainly say that there is ample room on the east of the reservoir to extend the old one or even to build another.
541. The level of this land would be very similar to the level of the proposed site? It would be an advantage in this respect, that it would be from 8 feet to 10 feet higher. In view of the possibility that the Cooper Estate and the higher parts of Woollahra will be subdivided and sold, I think it should be borne in mind that those sites will require a much higher supply of water, and the higher you get your reservoir the greater the advantage you receive.
542. Have you heard of complaints from the residents in the higher parts of Woollahra as to the inefficiency of the present water pressure? Not recently, but some years since complaints were frequent.
543. Are you aware that some of the houses in the higher portions have had to be connected with the Waverley Reservoir, because the height of the Woollahra Reservoir was insufficient? I have heard so.
544. If the inhabitants generally were aware that it was proposed in any way to interfere with the integrity of this important plateau, do you believe that there would be important demonstrations on the part of the public against it? I think they would protest as strongly as possible, assuming that there was anything beyond a mere level covering.
545. But it would be preferable in your opinion, and in the opinions of those with whom you converse, that the reservoir should be constructed in such a manner as not to take the very eye out of this important plateau? Certainly.
546. So as to leave that plateau free for any large public purpose to which it might be devoted hereafter? Yes.
547. But there would be the very strongest opposition to any alienation for the purpose of private occupation of any portion of the plateau? Very strong objection indeed.
548. The strongest objection that the people could raise in a constitutional manner? I am quite sure of that.
549. *Mr. Davies.*] You stated that some fourteen years ago you and others formed a deputation to the Government and applied for this site as a recreation ground for Woollahra? A letter was sent from the Borough Council to the Secretary for Public Works, some correspondence passed between the Council and the Government, and the City Council lodged an objection.
550. Are you not aware that it was the property of the City Council? At that time it was.
551. Was it not rather an extraordinary thing to apply for a part of their watershed for the purpose of a recreation ground? No; inasmuch as we asked the Government to resume the land. The Government said, "We shall see if the City Council have any objection, and provided they have no objection, we will talk to you about the matter."
552. Are you aware that the Government at that time had no power to resume that land? I could not say. The request was for the resumption of 10 acres from the frontage.

553.

553. The Government had no control over the watershed, and it was entirely the property of the City Council? That is a matter which I have not entered into. C. A. Vivian, Esq. 6 July, 1892.

554. *Chairman.*] Has the question of constructing this reservoir in the Centennial Park come before the Council officially—has any motion been tabled or any decision been arrived at? Not at all; there has been no discussion whatever.

555. The public pretty generally know of the proposal? I think so.

556. *Mr. Neild.*] Do the public generally know that the reservoir is designed of a shape to provide for the future subdivision and sale of this portion of the Centennial Park? I think not.

557. But if the public did know, you think they would take action? They would have a suspicion that there was something in the background, and I think you would have a strong protest, and posterity would not thank you for doing anything to it.

THURSDAY, 7 JULY, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM McCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee further considered the proposed Reservoir at Centennial Park, for Sydney Water Supply.

Frederic Harrison Quaife, Esq., M.D., sworn, and examined:—

558. *Chairman.*] You have been a resident of Sydney for some years? For many years. F. H. Quaife, Esq., M.D. 7 July, 1892.

559. Are you acquainted with the proposal we have under consideration? I know the proposal to make a reservoir on a particular piece of ground. I know the ground well.

560. Do you desire to give evidence as to the desirability or otherwise of constructing a reservoir there, or is it against constructing a reservoir in the locality? I have no objection to a reservoir suitably constructed, but my evidence is to protest against the alienation of the rest of the ground round the reservoir from its present purpose, that is as a part of the park.

561. That question is not really before the Committee, except that incidentally it has cropped up in connection with the position of the reservoir and its shape? That is what I understand.

562. You think that the Water and Sewerage Board are the best judges as to what they want in the shape of reservoirs, I presume? Certainly. I have nothing to say about that except that I think it is for the country to consider the question of the expense—the question of covering the reservoir or leaving it open. In either case, not only as a resident in that neighbourhood, but speaking for the park generally, and the people, I would say, I see no objection to a reservoir. In either case it must be made ornamental and serve the purpose of being part of the park. I would protest against a reservoir or anything else being put there which would be an eyesore, or would interfere with the use of that part of the park by the people of the country.

563. The proposal before the Committee is to construct a reservoir on the site coloured pink on the plan; it will be a covered reservoir, the roof of which will be 10 feet above the level of the park and which will be surrounded by a parapet, and the surface of the roof can be used for lawn tennis or something of that kind. As a medical man, do you think it would be better to have that body of water which goes into human consumption covered or uncovered? There is a little doubt about that question. Speaking simply of the water itself, I should say that usually reservoirs should be uncovered, but this reservoir is so close to a main road, on which there is a large quantity of traffic and a very large quantity of dust, that I have some doubt as to whether it would be wise to leave it uncovered. I do not know of a reservoir near a city or town which is uncovered. I do think that there might be objections from dust.

564. If it is not covered of course the surface could not be used? No; it could be made an ornamental water.

565. But people would hardly mount 10 feet to look at a sheet of ornamental water? No; but I understand the surface would be considerably lower if it were not covered.

566. Very little lower? I think that approaches might be made by which people could very easily have suitable access to the top without injuring it, even if it were 10 feet above the level, but I would say that the lower the top could be made the better for the neighbourhood.

567. You have no objection to the building of a reservoir, but you would strongly object, as a resident of the locality, to the land on either side being cut up and sold? Certainly. I have thought of a park being made there for many years. I took some steps some years ago, in connection with a meeting at Woollahra, to urge the final dedication of that ground for the purpose of a public park after it should be done with as a water supply. Anyone who goes there will see that the most of that land is valley—there are inclines ending in hills at the top all round it. There are two special ridges which run out in Waverley which nearly meet between Waverley and Randwick. I used many a time to think what a magnificent opportunity there was for landscape gardening about these hills, to set them apart for the people, and enable them to have a magnificent view of the park when it should be made. Unfortunately, when the park was designed, the whole of these hills, except the one you are considering, were cut out from the people and are to be sold. The people have no access to any high site on that park, with the exception of, perhaps, the top of the present reservoir at Woollahra, which is only a recent concession, and a little bit of ground very near it. With that exception there is no high land in the park, except along the edges of the fence. There is not a piece of flat land anywhere which is high that has been reserved for the people in that place.

568. Except in this particular part? Yes. We all know why it was reserved. I say it will be a cruel thing to deprive the people of the only practically flat, and at the same time high land, from which they

get

F. H. Quaife, Esq., M.D. 7 July, 1892.

get the benefit of a very good view. From the Red Hill, above the old rifle range, there is the finest view of the whole of that park. You see not only the park itself, but also the surroundings—Moore Park, Randwick Racecourse, Botany, Kensington, and the City. It is a piece shot out by nature, and made into a hump In my opinion that land should be into the park. If I were in the Government, I would prevent the land from being sold and put it into the park. I would erect a magnificent monument or tower on which the people could go. I mention it to show how very carefully the people have been excluded from the heights of the park. Anyone who chooses to drive around the roads outside the iron fence can get the view, and even then he is below the level of many of these pieces of land. The whole of the advantage of these pieces of land is to be given to the persons who buy the allotments round the reservoir.

569. It is because you thought there was a possibility, judging by the evidence of some of the witnesses, that this, the only high part of the park, would be taken away from the people that you came to give evidence? I have come of my own motion, because I have considered this question for years

570. It has been suggested that instead of placing the reservoir on this particular site, it should be taken further east, near the Ocean-street gate, and it has been said that a reservior of a similar capacity, but without coming above the surface level, could be built there. Do you think it would be desirable to take it there? Certainly it would be very much better, and I think better approaches could be made for ornamental purposes.

571. *Mr. Davies.*] Are you aware how much money has been spent by the Government on this park? I have no accurate idea.

572. It is over £300,000. You are aware that in dedicating the park it was a condition that the proceeds of the sale of the land should go to recoup the Treasurer for the outlay? Of the parts proposed to be sold.

573. Are you aware that the property belonged to the City Council before it became the property of the Government—before it was dedicated? No; I thought that was disputed.

574. Certainly not; it is part of the watershed? I know that.

575. It was entirely in the hands of the City Council, and was part of their property when you and others thirteen years ago applied for a portion of the land. You remember that there was a deputation, and I think you were one of them? No.

576. An application was made for that particular part to be dedicated for the purpose of a recreation ground for Woollahra? I remember the action, I had nothing to do with it. It was before my connection with the Council.

577. Your primary objection is that the land adjoining the reservoir should not be sold? Yes.

578. *Dr. Garran.*] The interest of the public is, I suppose, the dominant consideration in all these matters? Certainly it is.

579. The public interest is in the park? Yes.

580. And the public interest is in the water supply? Very much more than in selling the land.

581. It is interested also in the water supply? Certainly.

582. It is just a question as to which is of most utility to the public in this particular case—a good water supply or a good open space in the park? The water supply does not interfere with it.

583. The question whether there should be a reservoir there or not is simply a question of public interest? Certainly; I quite agree with the construction of the reservoir.

584. We have to look at the question as a whole. The interest of the citizens is dominant in the whole matter? Certainly.

585. Which do you think is most to the interest of the public? I quite agree that it should be taken for a reservoir.

586. If you refuse to sell a certain amount of land along the reservoir you simply take away so much from the revenue of the park? I do not think it is worth consideration.

587. Supposing you refuse to sell these little allotments round the reservoir, you diminish the income of the park by that amount? I think that is putting the thing in rather an odd fashion, because the question of selling that land never came up at all. It is part of the park declared by the Government for the recreation of the people of New South Wales for ever.

588. We are told that this land is for sale in allotments? We are told so now; but it is not so provided in the Centennial Celebration Act.

589. One of the reasons which are given for having the reservoir of this shape is that we are not to interefere with the sale of certain allotments? That may be; but nevertheless I believe that that land was not specified in the Act. It was reserved for a park and for the erection of a State House. That plan has been departed from; but as far as I know there was no provision in the Act to sell a bit of land.

590. Does not the Act provide for making a certain portion a park and selling a certain portion? Not of that portion.

591. You mean to say distinctly that that portion is not a portion for building on? Certainly not.

592. But a portion for a park? I may put it this way: Suppose the State House had been erected, would they have thought of selling a bit of land alongside of it to put houses there? Not they. Why should they do so now?

593. This reservoir will not interefere with the park any more than the State House would have done? No. When the Government contemplated making a park there, and got an estimate of what the land around would fetch to justify them in spending the money, they never took one atom of consultation as to any money they were going to get out of that particular piece of land. It was set apart for the people of the country in the shape of a State House, and in the shape of land about the State House for its proper adornment.

594. You are perfectly clear in your own mind that the land immediately round the reservoir was never contemplated to be sold in allotments? I believe certainly not.

595. *Mr. Neild.*] You are a very old resident and a property owner in the locality? Yes.

596. As an alderman of the borough and as a medical practitioner, you have come in contact with a large number of people? Yes.

597. And you have a knowledge of the views and wishes of the people of the district? Yes.

598. Are you in a position to say that any interference with the integrity of the Centennial Park would or would not meet with strong opposition from the public? I am sure it would meet with very strong opposition.

599. You are equally well aware that the portions of the land set apart for sale by the Act of Parliament establishing the park were outside the present dwarf wall and iron railings? The whole of them are outside, I believe.

600.

F. H. Quaife, Esq., M.D. 7 July, 1892.

600. And therefore, the portion upon which this reservoir is to be built is an integral portion of the park? Certainly it is. I believe if any part is an integral portion of the park, that part is.
601. Is any other portion of the park, except these 24 acres, of an elevated character? No, except the portion I mentioned. The only elevated portions are those immediately inside the fence. There is not an inch of higher land anywhere else; it is all steep slopes. In Glasgow, I may mention, they have a magnificent park called Queen's Park, on the south side of the river. The land is very flat all round; and jutting out into this park is a long ridge which terminates by a bold descent. That hill was specially reserved, beautifully planted, grassed, and decorated, and is provided with seats for the use of the people. From the hill, where I have stood many a time, you get a most magnificent view, not only of the park, but of the whole surroundings. I should regard it as a matter of sacrilege to take this piece of the Centennial Park, from which the public could get a view, for any such purpose as building.
602. Is there any other portion, except the narrow steep strips to which you refer, from which a view of the park is obtainable? No.
603. Is it your opinion that this particular plateau is the pick of the Centennial Park? As it stands it is far and away the pick of the whole park.
604. You do not enter an objection against the construction of a reservoir, if it is constructed in such a manner as not to interfere with the use of the park by the people? Certainly not.
605. You are giving evidence, not only in the interests of the persons in the immediate vicinity, but in the interests of the public as a whole? I look upon it very much as a matter for the whole public.
606. Would the occupation, or the adverse occupation of this portion, injure the park for the whole of the community? Most certainly it would, for ever.
607. I do not know whether you are acquainted with the fact that evidence has been given by a certain high officer of the Government, favouring the construction of an open reservoir at this spot? I do not know. I know some such evidence has been given; but I do not know much about the difference.
608. Do you think the absence of a covering would cause the water to be seriously contaminated? I said before that there was a doubt about that, owing to the proximity of the main road; but if the main road were ever wood-blocked it would take away a lot of the difficulty. On the whole I am inclined to say that the covering is a question of expense rather than a question of health. The water would be so frequently changed that the dust would not stay there very long, so that it could not be damaged to a very serious extent.
609. Do you think that the prevailing winds would carry the dust from the road into an open reservoir? Some of the north-easters might; but I think that could be guarded against in many ways. I cannot answer the question absolutely. It is a matter for serious consideration; but as far as any objection to the reservoir is concerned, either covered or open, I do not see a bit if it is made properly ornamental.
610. You understand that the proposal is to construct a reservoir at a total height of 17 feet from the present surface level; an uncovered reservoir would be over 10 feet high, while a covered reservoir would give a total height on the north side of 17 feet? I should say that an uncovered one would be the better of the two.
611. Would a reservoir 17 feet high seriously interfere with the privilege which the people of Woollahra enjoy in the matter of view? I think it would on some parts of the road.
612. Do you think that an uncovered reservoir would be preferable, and that the contamination of the water by the dust would be very fairly set off by the large reduction in the cost of construction? Besides which I think that by planting the eastern side with trees you might stop a lot of that. It practically looks north-east. It would do away with a lot of damage which might come from the road. Very little wind ever blows right across the road.
613. The alienation for the purpose of private dwellings in the vicinity of the reservoir would necessarily exclude the rest of the place from the park? It seems so; and I think it would surround it in a very unhealthy manner. I think it is very undesirable, if a reservoir is built there, that it should be surrounded by dwellings. If it is an uncovered one the air should have as free access as possible to the water.
614. Are there any other sites in the immediate vicinity at about the same level which would interfere less with the park than the proposed site? I think it would be much better to put the reservoir nearer the eastern end of the land—near Ocean-street.
615. It would be a smaller interference with the plateau? Very much smaller interference with the plateau, and very much smaller interference with the privileges of the people along the road.
616. I understand that the sum and substance of your evidence is, that you do not think that the reservoir, if open, would have an injurious effect on the water? On the whole I do not think it could have if these precautions were taken. If it were moved up towards the end of the land there would be far less road for the wind to blow across. There would be only a little bit of road across which the north-east winds would blow. It would be much more protected, if open, from dust than it would down at the proposed site.
617. You favour the construction of a reservoir more to the eastward? Yes, if it can be done, there is a lot of natural level there. There is a sandhill which could be reduced.
618. The construction of a reservoir more to the eastward would leave free the main portion of the plateau for the erection hereafter, if desirable, of any State edifice? Certainly.
619. And it would leave it open to be ornamented for the people in various ways? Yes.
620. *Mr. Suttor.*] Are you quite sure that that plateau was originally included in the park? Oh, yes. I am absolutely sure it was originally in the plan. All this land was set apart for a State House.
621. *Mr. O'Sullivan.*] Do you know why an opening was made in the rails opposite the foot of Moncur-street? I do not, I suppose it was made by someone surreptitiously. I know that they applied to have an opening made and that it was refused.
622. You are not aware that a petition was sent in from the people of Woollahra asking that an opening might be made so that their children might have access to the park? I did not know the reason, but I am aware that a petition was sent in.
623. You do know that the children of the neighbourhood play about on that ground? Certainly.
624. In fact, it is a favourite recreation ground with the children? Yes.
625. I think you said that all this land was inside of a dwarf wall with iron railings? Yes.
626. Therefore it is a portion of the Centennial Park? If I remember rightly, that was the very first portion of the iron fence that was put up.

Frederick

Frederick Augustus Franklin, Esq., M.I.C.E., sworn, and further examined :—

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627. *Chairman.*] The Committee understand that since you were last examined you have visited the site of this reservoir, and have come to the conclusion that a reservoir of the same capacity can be erected on a site further east without any loss of head, and level with the ground? Yes.

628. Will you point out on the plan the site which you think can be utilised for a reservoir, having the conditions I have named? This diagram, which I place on your map, represents the same area as the area of the reservoir which is proposed by the Water and Sewerage Board. It is formed by two circles, the smaller one running into the angle at the Ocean-street entrance, with 1½ chain radius, and from that point for a distance of 310 feet; a radius of 2½ chains produces the other circle, and the area of the two at those distances gives 3½ acres.

629. Has this site a considerable elevation over the proposed site? Yes; it is situated about 15 chains from the site proposed, and at an elevation of 18 feet above it.

630. So that if a reservoir of that capacity were built at that particular point, and maintained the same headway, it would be built below the surface of the park? The surface dressing for the reservoir would be about the ordinary ground-level.

631. Would it cost very much more to erect a reservoir of that particular shape there than the one we have under consideration? No; it would cost less. It admits of the construction of a reservoir on the very best principle of curved walls, and the saving in the length of the outer retaining wall in the proposed reservoir would be a difference of 78 lineal feet, avoiding the angles of the first figure.

632. Supposing this particular plateau were subdivided, would not the shape of your reservoir spoil a good deal of the land for selling purposes? No; it has very little depth—only the depth of the diameter of the reservoir—it would not be of very great value except on one frontage, which is the least valuable portion of the site.

633. And if it is not built on in any way your reservoir, being out of sight, would not interfere with the view at that particular point? On the contrary, a reservoir placed in that position and treated ornamentally, would be a good feature in the park.

634. Do you propose to have an open one or not? Decidedly not.

635. Where is the necessity for treating it ornamentally if it is below the surface of the ground? I consider that all structures in public parks should be pleasing to the eye, and a thing like that, which would present the appearance of a mound, could be treated in a very nice manner.

636. *Mr. Hoskins.*] How much to the east of the original site is the site which you mention? Fifteen chains. The elevation I have obtained quickly from the gradients of the tram.

637. *Chairman.*] Is it 15 chains from the eastern side of the proposed reservoir to the western side of your reservoir? It is 15 chains from the proposed reservoir, taking in from centre to centre. I may say that I had a doubt about that elevated ground until my recent visit. I discovered that a quarry is being worked in the very centre of that site, so that we have the foundation that is necessary.

638. *Mr. Davies.*] Your diagram provides for a reservoir of the same capacity as the one proposed? Exactly the same, presuming that they have adopted a depth for the area. That area will give the depth they may have estimated with the same quantity of water, the same head, and the same pumping power.

639. Would it be possible in that particular locality to increase the capacity of the reservoir to (say) 25,000,000 gallons? The capacity could be increased very rapidly by extending the larger radii at west end. It could be extended for a considerable distance without damaging the site.

640. Would you be able to increase the capacity by going out towards the park? You could; the easiest way would be to go in the direction of the city.

641. Would it not be possible to go nearer the road? Yes. That point allows of about 70 feet for extension. An increased radius of 10 or 12 feet on that diagram would give a very much larger capacity.

642. Looking to the requirements of the future, would it not be wise to provide for a larger storage capacity than 17,000,000 gallons? I look upon this proposal as a provision for a very great future. It is a reservoir of very large capacity, and it seems to me that it will deal with the future of Sydney for a very long time indeed.

643. For fifty years? Quite that. The increased pumping power, with that storage capacity, would be ample for many years to come.

644. Would it be more difficult to cover that shaped reservoir than an octagonal one? Estimating by concentric arches, it is easier to cover than an irregular shaped one.

645. I understand you to say that the elevation is better? It is only 3 feet, I believe, above the ground to the height you require.

646. On solid rock? As far as I can see it is all rock formation, as disclosed by a working quarry.

647. *Dr. Garran.*] Do I understand that your proposal is to have a pear-shaped reservoir, or two separate ones, each circular? No; exactly in that shape.

648. Will it not be desirable to have a division? It is just possible that it may be; it is quite practicable.

649. Would it be simpler to make two circular ones? I do not think it would. The division wall would increase the cost.

650. You have not allowed for a division wall? No.

651. Is anything allowed for a division wall in the proposed reservoir? I have not seen the details of that proposal.

652. Would there be any need of an expensive retaining wall on the south side to make it safe? No.

653. You have no rock on the south side? It is very near the surface.

654. Enough rock to support it? I estimate the rock which I saw exposed to be pretty near the general level of the place. There is a very high sand-hill above. If I were to take the level of the sand-hill I should say that the difference of level between the proposed site and the level of the sand-drift would be more like 30 feet.

655. You would not want any buttresses on the south side to keep up the wall? I think it is likely that some portion of the wall might be above ground.

656. The south side is the weaker side? Yes. I would try to impress the Committee with the difference, that as you have increased height by natural formation, there would be very little retaining wall on the south side; there might be some excavation on the inner side.

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657. Do you think the pumps would be equal to lifting the water to that height? You have provided the power for this level.
658. Looking to the future of Sydney, which is bound to grow very rapidly in thirty or forty years, do you not think we had better make a larger reservoir on that site when we can make it conveniently? I think this provision is exceedingly large. There must be a great deal of rest in your pumping power when once this reservoir is charged, and if you have continuous working with such a storage capacity, I think you may consider that for many years you are well provided.
659. You do not think that any increase of storage is desirable? No.
660. Sydney being a cramped site, we are bound to have buildings in the future five and six storeys high? That may be possible, but with the pumping power which is provided, if it is in continuous working, you have storage capacity for a very large population.
661. You think it is quite large enough? I think that if they can rely on the pumping power it will do for a very long time. In building the reservoir which is proposed, you will meet with public obstruction if you shut out the view, whereas with my proposal that cannot possibly be, because a long line of sheds have entirely obscured this site for some time.
662. As long as sheds are there, there can be no ground of complaint? Whatever complaints there may have been they are past and settled.
663. No ornamental railing on your reservoir would come to the height of the roof of the shed? No; it will improve that corner.
664. Practically, yours will be countersunk? It will be sunk and trimmed off. It must be a natural improvement to the park.
665. *Mr. McCourt.*] About how much less will your proposal cost? I do not think there will be much difference. We save 78 feet of retaining wall, and we have to add 15 chains of pipes.
666. There would not be much difference? No.
667. *Mr. Wall.*] Was the portion on which it is proposed to erect the reservoir at any time a part of the park? Always; the Act provides for 1 square mile, and that square mile has been measured within the very boundaries already defined by a very expensive railing.
668. I understood that this particular portion was taken out for the purpose of erecting a State House? It was not, indeed; it was always regarded as a portion of the park. This portion is certainly the most valuable part for future interests, and I know it is included in the area provided by the Act.
669. But it was intended to build a State House on this portion? A proposition was made for a State House; but in the recommendation for the park it was pointed out that Crown land at that elevation, as it is fast becoming the centre of population, must in the future be very valuable indeed. I may mention that at the establishment of our International Exhibition a very great difficulty was experienced in regard to a site, and the site which was chosen was at the extreme end of the city, and we were obliged to make means of communication to the place. As this ground is situated, and as it is practically Crown land, it will eventually, and, I think, in the near future, be in the centre of a fringe of population. For that reason I place very large value on this site.
670. It never, then, was a part of the Centennial Park? It was suggested in the first proposal to be a site for some memorial buildings of a museum character. I do not know how the change took place in regard to the State House.
671. *Mr. Neild.*] You speak of this locality becoming the centre of a large population? I am certain of it.
672. You are acquainted with the settlement which is going on in the south-west of the park—in the new suburb of Kensington? Yes.
673. The buildings in that locality are spreading out to meet buildings going to the west side of Randwick? Yes.
674. So that the union of buildings from Kensington to Randwick would establish a complete circle? With the exception of the racecourse, and a portion of Moore Park, it would be a complete circle of population.
675. The population to the north and south is already dense? Yes; there is a possibility of its increasing, but not much.
676. The general effect of your investigation into this matter is, that the portion of plateau land inside the railings is an integral portion of the park provided for in the Act? Of that I am certain.
677. And it was dedicated to the public for ever? I am certain of that. The Committee can confirm my opinion by getting the original surveys and calling the surveyor, Mr. Perdriau, who could give very clear evidence indeed that the boundaries defined the area provided for in the Act—1 square mile.
678. The construction of a reservoir as you propose would leave intact for the use of the public, and for the erection of public buildings hereafter, the best and most prominent portion of this plateau? More than that, it would give a very magnificent water supply by gravitation at a considerable level and with pressure. It will also be repeating what we have found to be a thing of very great advantage. The Crystal Palace, facing a park, has on the northern end a reservoir situated exactly the same as the one I now propose. It was a part of the first design of the Crystal Palace. I was there during its construction, I know how it was constructed, and I saw the advantage of it some years after it was constructed.
679. Supposing your reservoir were constructed, would it be possible to raise the walls hereafter if it were desired to get a higher head of water? That is possible.
680. That could be done with less interference with the park than could be done if the proposed structure were erected? Oh, yes. I do not think an elevation, even though it were necessary to raise the walls of this reservoir above the ground in the situation, would be objectionable. They would have to be carried to a height of at least 14 or 15 feet above the present ground level to offer more obstruction than at present exists.
681. Viewing the matter from the standpoint of an engineer, and from the standpoint of the public interest, you maintain that the site which you have selected, and the reservoir which you have designed, would be more advantageous than the one which is submitted to the Committee? Yes; inasmuch as there will be much less surface work.
682. No additional cost and less interference with the park? I think the formation is about the same in the two proposals, so that the cost would be about the same in preparing the site.
683. As regards the general public interest in the park, your site would be more to the public interest than a site in the very centre of the plateau? Most decidedly. I think the public interest in the future will be in having uninterrupted access to the entire area dedicated to the public.

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684. Is any other portion of the park on this particular plateau of an elevated character? All along that face is elevated, but there is not sufficient area in any other part to get what you require for this reservoir.
685. Nearly the whole of the park is low-lying? All except that indicated by the line of road.
686. The worst of the elevated area in the old water reserve has been cut out for the purpose of a subdivision, so that the portion which has been retained for a park, with the exception of this plateau, is the portion of the old water reserve least valuable for the purpose of human occupation? Yes.
687-8. Therefore, the loss of these 24 acres to the park would be a very serious loss indeed? Yes.
689. Do you consider any other portion of the park as valuable for the purpose of a public park, having regard to outlook and elevation? This has the very first feature which would induce me to think that it was a suitable place for a park.
690. If this plateau were built, would not the park, especially from the South Head Road, be absolutely shut in? No doubt, I think such buildings as you might get there in conjunction with a reservoir would be of rather an inferior character, and if buildings of an inferior character were erected on that spot I have no doubt that the whole of the residential areas which have been reserved, and which, I believe, are valued at £200,000, would be greatly reduced in value. They would undoubtedly overlook both the western and eastern flank of the park, and destroy the privacy of those mansions which, I suppose, will be established on the land on the other side of the park. I think it would be very objectionable to overlook such buildings as those.
691. *Mr. Ewing.*] With regard to the shape of the reservoir, do you consider that your design is controlled by the South Head Road and the road running to the south? Yes.
692. Your design is simply two circles and the circumferences are joined by tangents? Yes.
693. There is no reason why, by altering the radius of the larger circle, you could not exactly fit the reservoir into your area? No reason whatever. I say it may be shortened considerably and widened.
694. You have no objection to an alteration of the kind? You can increase the radii of either of these, and shorten the whole structure.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, and President of the Metropolitan Board of Water Supply and Sewerage, sworn, and further examined:—

C. Darley, Esq. 7 July, 1892.

695. *Chairman.*] Since you were last examined it has been suggested that the reservoir might be erected further east, and of a different shape. We have been informed that the same height could be obtained, and yet keep the top of the reservoir virtually level with the surface of the park. Do you think it would be desirable to do that? It was contemplated some time ago. I think there is a sketch in the office of the Water and Sewerage Board for a reservoir on that very spot. It was prepared for, and submitted to, Sir Henry Parkes some eighteen months ago. It was found not to be an economical situation in which to construct a reservoir.
696. Why? For one thing it would be all excavation, which would increase the cost very much. Since I heard the evidence of Mr. Franklin, I have roughly estimated the extra excavation; it would come to about £12,000 to £13,000.
697. Would not the excavation do away to some extent with the superstructure on the proposed site? It would not balance it by any means.
698. I suppose, as a matter of fact, you were tied up to a particular site in the park for your reservoir by the recommendation of a Board as to probable subdivision? Yes.
699. Supposing you had a free use of any portion of that area between the South Head Road and the roads running round to the south, would you place your reservoir at the spot indicated by Mr. Franklin' diagram? I would not like to say off hand, I would like to investigate it a little closely. I see no serious objection to it. Undoubtedly it would be more costly.
700. It has been stated here that the principal objection on the part of some people is that your proposed reservoir will be 17 feet above the surface of the park, even at its lowest point, and that if you can have a reservoir further east, which would be virtually level with the park, it would remove that objection—your contention is that it would increase the cost to do that? It would increase the cost. I think that is a mere objection of sentiment, because if any building is put there it will shut out the view much more effectually than would a reservoir.
701. Putting the question of buildings on one side, you are going on the assumption that your reservoir would be no obstruction because of the probability of buildings being erected all round it? Yes.
702. But if it is decided that no buildings are to be put on that particular portion of the park, you, I suppose, would think it desirable to keep your reservoir out of sight—underground? Yes. By making a circular reservoir further in the park; it could be easily sloped up and grassed over. It would not be at all unsightly.
703. The proposal to take a site further east has been sprung upon you rather suddenly, and you would like to have a little time to think the matter over before giving a definite opinion? I should like to investigate it and see the levels. There is nothing new in the proposal because we had prepared a sketch showing the reservoir on that very site, and almost of that very shape.
704. *Mr. Hoskins.*] Have you brought with you an estimate of the difference in cost between a rhomboidal reservoir and a circular one? No.
705. I understood that you intend to obtain the information for the Committee? No. It is not in my hands, I am not the engineer of the scheme. I am not in possession of a single plan or level.
706. Who can give the information? Mr. Jones, the Board's Engineer. I will instruct Mr. Jones to get the whole thing worked out as you desire.
707. *Mr. Nield.*] If the site were excavated and the rock were solid, would not that obviate the necessity for some portion of the brickwork;—would not the rock support brick walls of a less substantial character than would be required if there were no supporting rock? It would save some portion of the wall, no doubt.

WEDNESDAY,

WEDNESDAY, 13 *JULY*, 1892.

Present:

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Reservoir at Centennial Park, for Sydney Water Supply.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, and President of the Metropolitan Board of Water Supply and Sewerage, sworn, and further examined:—

C. W. Darley, Esq. 13 July, 1892.

708. *Chairman.*] You promised to furnish the Committee with some statement in reference to the suggestion offered by Mr. Franklin that the site of the reservoir could be shifted further east, keeping it level with the ground nearer the South Head Road? I have had levels taken and estimates prepared. I have a plan which was prepared some time ago for submission to Sir Henry Parkes, in which the reservoir was shown. It was submitted, but the site was at that time objected to. The Board were then tied to a rhomboidal one, so that it was not as if we had any choice in the matter.

709. As a matter of fact, then, the proposal was to place the reservoir where Mr. Franklin has suggested? A proposition was made and submitted.

710. And it was only when this particular portion which you have under consideration was allotted to the Board that you decided to erect one there? We had no choice in the matter.

711. Do you wish to refer to the plan you have with you? I have had a drawing prepared sufficiently close to take out an estimate for a circular reservoir as well as the pear-shaped reservoir, as proposed—adjoining the site of the rhomboidal reservoir. My estimate for the rhomboidal reservoir is the same as that submitted by Mr. Jones—£83,000. The circular one can be brought down to £76,000, and the pear-shaped one goes to about £90,000.

712. In each case it is a covered reservoir, as originally suggested? Yes.

713. With the same capacity in each case? Yes, 17,500,000 gallons. The reason the pear-shaped one is so costly is because of the excavation. The excavation of the circular reservoir is only 25,000 cubic yards, for the rhomboidal one, 41,000 cubic yards, and for the pear-shaped one, 110,000 cubic yards.

714. Is not the extra excavation in the pear-shaped reservoir principally sand? I have estimated for 94,000 yards of rock, and 16,000 yards of sand.

715. Then, by a comparison of these figures, excavations are considerably dearer than building up above the surface? Yes. I may mention that brickwork is also a large item, because the wall on the lower corner facing the park will require to be 25 feet high. The excavation runs out in that low corner.

716. That is to say, there is more fall in the ground there? Yes.

717. I suppose in each case the excavation would have to be bricked in? I have allowed for cutting off a certain amount of top rock, which is frequently unsound, and lining the rock with 2 feet thick of facing.

718. Would there be a greater wall to look at in connection with the pear-shaped reservoir than in connection with the others? Only about the same.

719. In connection with the pear-shaped reservoir, on the site suggested the reservoir would be practically level with the park? Yes; along the northern side.

720. Whilst the circular and the rhomboidal ones will be from 10 to 17 feet in height? Yes; above the road.

721. With the information you have at your command, would you entail the extra expense of £7,000 for the pear-shaped instead of the rhomboidal reservoir? I could not recommend it. If the rhomboidal one is made I do not think it will be any greater eyesore than a boundary wall.

722. I suppose you have taken into consideration the fact that you would not require to have any parapet ground on the pear-shaped one, as you would on the rhomboidal one? I think the estimate included a parapet.

723. But you would not require it if it were level with the ground? No; but you must have a boundary wall.

724. Then, after giving the matter further consideration, you still adhere to the plan which was first submitted to us, which would mean the carrying out of that wall, or would you, if land were of no consequence, favour a circular one? I would favour a circular one if it were an open question.

725. Supposing you erected a circular reservoir on the site of the rhomboidal one, how much further south would your southern wall be than that of the rhomboidal one, in order to give the same capacity? Two chains.

726. Do you keep the northern boundary further inside the park than the rhomboidal one? We keep it a little further in, so as to have a slope instead of a wall facing the road.

727. I am now speaking of the northern end of the circular reservoir? I propose to bring it further into the park.

728. How much further? About 40 feet, so as to have a grass slope rising up to it.

729. Is that for appearance sake only? Yes; it would create uniformity.

730. Are we to understand that you would rather have a circular reservoir there than a rhomboidal one, or the pear-shaped one on a different site? Yes.

731. You would still cover it if it were a circular one? Yes.

732. *Mr. Humphery.*] Could the material removed from the pear-shaped reservoir be placed on the site shown on the plan for the rhomboidal one with the view to levelling that land with the street? Yes; it could be used for levelling up the adjoining ground.

733. Would it cost any more to do that? No; the price I have put down for it would cover reasonable haulage. The contractor would have to take it away and dispose of it in a satisfactory manner.

734. Would it not be a desirable improvement to the park in the event of that site being selected to place the sand on a site near the Queen-street entrance, with a view of levelling up? I think some improvement might be effected by levelling up.

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735. How can we ascertain what the value of that work would be? The price I have put down per cubic yard for the excavation would be sufficient to enable the contractor to remove it to any part of the neighbourhood where it is required.
736. Assuming that it is considered desirable to level up, what would be the value of removing the sand from the site of the pear-shaped reservoir? It will not increase the cost of the reservoir.
737. For park improvements it might be deemed desirable to level up a portion of the park. Can you give an estimate of what that improvement would be, assuming you were not excavating for a reservoir? I could not.
738. Supposing it were deemed desirable as an improvement to the park to level up that portion where you first proposed to place the reservoir, what would be the cost of that improvement with the material taken from the pear-shaped site? It would not cost anything.
739. No; because that would be included in the value of the excavation; but I am speaking of a park improvement, leaving out of consideration the construction of the reservoir. If you wish to make that improvement what would be the cost? I am not prepared to state.
740. Could the whole of the sand removed from the pear-shaped site be placed on that particular site? A great deal of it could be disposed of there.
741. Then the cost of excavation would be about the value of the work necessary for the purpose of levelling up that portion if it were deemed necessary as an improvement of the park? The levelling up would not add anything to the cost of the reservoir.
742. Assuming that it became necessary as an improvement to the park to level up this portion near Queen-street, what would be the cost of levelling it up by removing the sand from the site of the pear-shaped reservoir? I did not make any estimate for park improvements.
743. About what would be the cost of excavating for the pear-shaped reservoir? I put down the rock at 5s. a yard, and the sand at 1s. The total would be about £24,300.
744. Then those figures would represent about the amount? To some extent. A portion of that would be required for backing up the walls.
745. *Mr. Davies.*] The saving in the construction of a circular over a rhomboidal reservoir would be about £7,000? Yes.
746. And you favour a circular reservoir? Yes.
747. And you are still strongly of opinion that the best site after all is the site upon which you have already fixed, and which is now submitted to us as the site for the reservoir? In point of economy it is the best site.
748. And if you are not cramped by the proposed subdivision for the sale of the land, you would favour coming a little more towards the main road and building the circular reservoir? Towards the park road—into the park, away from the South Head Road.
749. You and your Department conceive that the best position for the reservoir is the site you have already chosen? In my opinion, it is the best site.
750. A circular reservoir would be much stronger and more durable than a rhomboidal one? I do not say so, but it would be cheaper.
751. Sharp angles are always dangerous points in brickwork? We could take reasonable precaution.
752. You propose to construct grass embankments round the reservoir? Yes.
753. Do you propose to put any palisading on the top? Not on the circular reservoir.
754. The whole of it is to be covered? Yes; very much like the Waverley Reservoir—a grass mound sloping up, with a flat top.
755. *Dr. Garran.*] Which is the more expensive—excavating in rock or building up a side wall? In this case the excavation is most expensive.
756. Supposing you did not excavate so deeply and built above the surface for 6 feet—would that diminish the expense of the pear-shaped reservoir? I think it would, but it would increase the lift for pumping.
757. Would the pumps be equal to that? Yes; but it would be a permanent expense.
758. Would you cement the rock where it is excavated? No; I would face it with brick-work 2 feet thick.
759. Have you any idea of the relative value of the land which would be made unsaleable by carrying out the two plans, respectively? No. If the land is not going to be sold for building sites, but is to be left a part of the park, I think the circular one would do less injury to the park. I think it would be an improvement to have a nice flat surface instead of the present rough rocky surface.
760. Supposing, in order to raise money for improving the park, it becomes necessary to sell, which of the two sites is most valuable? I daresay the central would be the most valuable.
761. Where the rhomboidal reservoir is to be? Yes. I have not, however, gone into the question of land values.
762. *Mr. Wall.*] The capacity of each of the reservoirs would be the same? Yes.
763. And the circular reservoir would take up the least area of ground? The water area would be equal, but on account of the slopes I propose to put round the circular one, it would take up a little more room.
764. I am speaking of the actual water space; the circular reservoir would contain more water? No; exactly the same, the depth is equal and the area is equal.
765. *Mr. Neild.*] Is the rhomboidal reservoir to be fixed pretty close up the northern boundary of the park? It runs along the northern boundary.
766. The plan shows it to be a distance of 40 feet away? Yes.
767. The rhomboidal reservoir is to be placed up to the northern boundary of the park, whilst the pear-shaped one is to be placed 40 feet from it? Yes.
768. I think the circular reservoir was to be placed a little distance from the boundary of the park? Yes.
769. What is the reason for placing the one reservoir practically level with the park boundary and placing the other 40 feet back? I do not know that there is any particular reason; it could be moved up to the front.
770. If the pear-shaped one were moved nearer to the frontage that would reduce the cost of the southern wall? There would be an increased cost of excavation.
771. A decrease in brickwork, but an increase in excavation? A very small decrease in brickwork.

C. W. Darley, Esq. 13 July, 1892.

772. In the plan for the pear-shaped reservoir an embankment is provided for? Yes.
773. That would cost something, I suppose? It is one of the cheapest ways of getting rid of the excavations.
774. There was nothing of that sort provided for in the case of the rhomboidal reservoir? Because we were tied to a limited space. We were tied within four streets.
775. With reference to the difference of £7,000 in the cost of the two—I think you have admitted that you have included in the estimate of the pear-shaped reservoir the cost of a parapet? There is a parapet wall shown all round.
776. But if this reservoir were very nearly level with the ground there would be no need for the expense of a parapet? The parapet might be omitted.
777. I suppose the absence of the cost of a parapet round 3 acres of ground would bring the estimates very close together? No; it might take off, perhaps, £1,000.
778. Surely it would cost more than that? I have not got a separate estimate of the parapet.
779. *Mr. O'Sullivan.*] If it be proposed to carry out the pear-shaped reservoir would you approve of it being placed on the site marked on the map on the eastern side? I would; there is no objection whatever to the site excepting that it would be more costly.
780. *Mr. Humphery.*] Will there be an increased length of pipe necessary if the Ocean-street site is selected? There will be a rising main and the service main.
781. Have you taken that into consideration in estimating the cost? Yes; the two mains together would cost £2,600.
782. Will it increase the cost, if the pear-shaped reservoir is agreed to, of sending water up to that reservoir, as against the site on which you propose to have a reservoir? No; because the level is the same.
783. *Mr. Wall.*] My desire in the question I asked a short time ago was to ascertain whether the circular was not the most compact form in which you could construct a tank of this capacity? Yes, it takes the shortest wall.
784. That being the case, the lining of the circular reservoir would cost very much less than any of the others? Yes.
785. The excavation would be the same, but it would be lesser expense in the construction of the lining wall? Yes.
786. *Chairman.*] I understand that, but for the extra cost of some £6,000, you would have taken the pear-shaped site in preference to the other if it had been offered? Yes.
787. For the reason that whatever eyesore there might be will be kept out of sight so far as the northern boundary is concerned? It will reduce the eyesore to a minimum.
788. *Mr. Neild.*] And leave far more intact the valuable plateau in the park? If it is to be used as a building site it will be less interfered with.
789. Or even if it is used for park purposes? In that case the circular one would be somewhat of an improvement.
790. But supposing at any future time it is intended to erect any public structure in the park, the site of the proposed rhomboidal or circular reservoir would be the particular site upon which any public structure would be placed? Yes, in all probability.

John Trevor Jones, Esq., Engineer, Metropolitan Board of Water Supply and Sewerage, sworn, and further examined:—

J. T. Jones, Esq. 13 July, 1892.

791. *Chairman.*] You have heard the evidence given by Mr. Darley;—have you any details in addition with which to furnish the Committee? No; I think the questions put have elicited from him all the information necessary.
792. The cost of the sites being equal, you would have preferred the pear-shaped site to the rhomboidal one? I think I would. I proposed it once when our Board was first formed, but we were denied the land.
793. When did you first submit the proposal to have a pear-shaped reservoir at the Ocean-street entrance of the park to the Board? I do not think the Board considered it. The late President asked me if there was any site which would be suitable supposing we were refused the central one. The President, myself, and the Secretary, waited on Sir Henry Parkes, and he said that the crescent-shaped ground was to be reserved for a public purpose, and that none of that would be granted, but that they would grant a piece on the Red Hill. That was surveyed, but we could only get 11 feet of elevation over Paddington there, and we wanted 30 feet.
794. When asked by your then President as to a probable site for a reservoir you submitted this plan, upon which you submitted three separate sites? Yes.
795. You know the sand-hill—the site proposed for the pear-shaped reservoir? Yes.
796. You know also that the plateau which has been referred to is several feet below the level of the street? Yes.
797. Would there be sufficient sand in that hill to level up the whole of that plateau? I doubt it. There would be enough with our excavation, but we want some of our excavation to back up the wall.
798. Looking upon the matter as one of removal of material from one part to another, would there be sufficient in that hill to level up the plateau? I do not think so.
799. I suppose the estimate which has been given, viz., £83,000 for the rhomboidal; £76,000 for the circular; and £90,000 for the pear-shaped reservoir, is really your estimate? Not in regard to the circular one. Mr. Darley got his draftsman to prepare an estimate. I have no doubt as to its correctness.
800. Is it possible, on further examination, that the estimate of £90,000 might be reduced? That estimate is on a very liberal scale, and I would expect it to be reduced rather than increased.
801. Does that remark hold good in reference to the rhomboidal one? To all of them. They are all liberally provided for. Mr. Darley did not consider that the circular one was taken out exactly, and in his estimate he made allowances for contingencies.
802. Sloping banks are provided for both in the pear-shaped and the circular reservoirs? Yes.
803. I suppose there will be no necessity for a parapet to either of these? No; the parapet was intended as an ornamental enclosure for the recreation ground on the roof.

J. T. Jones, Esq. 13 July, 1892.

804. If you had straight walls in connection with the rhomboidal one you would, of necessity, require to have some protection on the top? Yes; a rail would answer the purpose.
805. *Mr. Davies.*] The cost of the embankment or packing up of the walls round the reservoir would be quite as much as a palisading or rails? We will have to dispose of the material somehow, and it will not cost much more to pack it behind the reservoir. We would have to cart it to the rifle-butts unless it could be used for raising the land elsewhere.
806. Would it not be available for improving the land adjacent to the site? Yes.
807. The making of slopes and embankments would cost a considerable sum? Yes; there is an item for preparing and sodding.
808. But that would not be necessary in a rhomboidal-shaped reservoir? No.
809. In that instance you provide a parapet and some ornamental palisading? Yes.
810. That is dispensed with in the other reservoir? In the pear-shaped one there is provision for a parapet on the top, so that you may say that if the parapet is done away with the cost will be £2,000 or £3,000 less.
811. There is no provision made in regard to the circular one? No.
812. Then why is it provided for in the pear-shaped one? It is because of want of time to consult with one another. The parapet was intended as an ornament.
813. What is the amount of money you have set apart for the pear-shaped one? I was mistaken in saying that there is a provision for a parapet in the pear-shaped one; there is not. I ordered it to be put in but it has not been shown in the schedule, though it is, I think, included in the brickwork.
814. What, in your judgment, would the cost be? Between £2,000 and £3,000.
815. Which would have to be added to the cost of the pear-shaped one? Yes.
816. That would make it between £9,000 and £10,000 more than the circular one? Yes.
817. *Dr. Garran.*] Have you any idea of the relative value of the land occupied by the pear-shaped and rhomboidal reservoirs? I should think that if it were sold for residential purposes there would not be any difference. The land on the pear-shaped site is more elevated than that on the plateau. I suppose, all other things being equal, people would prefer the more elevated land. I think the elevation of one portion would balance the superior position of the other.
818. The bank with which you propose to surround the circular and rhomboidal reservoirs would be a support and protection to the walls? Yes.
819. Will that help you to diminish the cost of the brickwork? Theoretically it will, but I find that Mr. Darley is opposed to reducing the thickness of the brickwork. He prefers the utmost safety.
820. You are thoroughly familiar with both of the sites? Yes.
821. Do you think, as a citizen, that the site of the rhomboidal reservoir ought to be reserved for some possible future contingency in the shape of a building? I think it ought to be if there is any intention whatever of building a handsome national structure. I may mention that it is not the only grand site. The Red Hill at the end of the rifle-butts is a noble site. That would be visible from town, whereas the plateau on which it is proposed to put the circular reservoir is not.
822. How much lower is the rifle-butts site than the rhomboidal site? Fifteen feet.
823. The rhomboidal site is one from which you can see Port Jackson and Botany Bay? Yes.
824. You cannot see them from the rifle-range site? No.
825. It is an exceptional site on a magnificent position? Yes.
826. It commands both harbours? Yes, if the building be lofty enough.
827. It is the only position on that ridge which does? I think the Red Hill position would. If the top were taken away the view would be unobstructed all the way to Botany Heads.
828. But still it is worth something to preserve that site to the city? I should think so.
829. It is just a question how much it is worth? Yes.
830. If that were the only available site for the reservoir, you, as an engineer, would say that everything else must give way? Yes. I fancy a building could, perhaps, be combined with the reservoir. It would not be the first time grand buildings have been built over reservoirs.
831. You admit it is a choice site, and, so far as the material interests of the citizens are concerned, they could be as well served by the other? Yes.
832. It is just a question of £7,000? Yes.
833. You have heard what Mr. Darley said about raising the walls of the pear-shaped reservoir and decreasing the excavation? Yes. My idea would be to rather lower them. Two hundred and forty-one feet was my idea of the top water-level. I am willing to go down to that if necessary, but, having the pumps designed for 245 feet instead of 241, I thought it would be better to utilise them to their greatest possible extent. If the Committee or the Government should think proper we could reduce the level 4 feet.
834. Then, if we have the pear-shaped reservoir proposed by Mr. Franklin, it will still be 245 feet? Yes, or 241 feet if desired.
835. Anything over that would strain the engines? Yes; 245 is their utmost limit.
836. As the engines get old will they be able to do that work? Yes; they are designed to do it. They will be able to do it for the next twenty years.
837. And when they cannot do it, it will be time to replace them? Yes.
838. Were they bought out of borrowed money? They were bought by the Board out of loan money.
839. Have you any arrangement for replacing that loan if they only last twenty years? Our arrangements include provision for renewal of pipes and replacement of all perishable accessories.
840. If you are going to replace in twenty years, you will have to write that loan off somehow? Yes; there is a provision made for replacement according to the probable lasting duration of the article.
841. *Mr. O'Sullivan.*] This pear-shaped reservoir, if constructed on the site proposed at the eastern end of the plateau, will be only 200 yards from the present Woollahra Reservoir? Hardly that.
842. What is there to prevent you enlarging the Woollahra Reservoir to such an extent as to dispense with the proposed one? That is 40 feet higher up and feeds a different zone of levels altogether. The top level in that is 282 feet, and our engines are not designed for pumping to that level with economy. Every foot we add unnecessarily to the pumping is a loss on every 1,000 gallons raised. There is no space on that site to build a reservoir. The declivity is too great.
843. But there is a good deal of space on the other side of the reservoir? Not enough at that level.
844. And it is absolutely necessary, in order to perfect your system, that this reservoir should be constructed? It is the best expedient we can think of. I proposed it in 1883, and every engineer who has come to it has pronounced the circular site to be the best one.

845.

845. *Mr. Humphery.*] What will be the depth of the excavations in the pear-shaped reservoir? Twenty-one feet in places—varying from that to nothing. The wall will be 25 feet high in one part. J. T. Jones, Esq.
846. You mean that the wall to the height of 25 feet will be exposed in one part in the pear-shaped reservoir? Yes. 13 July, 1892.
847. And in the circular reservoir? In that and the rhomboidal reservoirs it will be only 20 feet.
848. Do you think that objectionable? No; 20 feet is about the limit. I would not care to go above that. Twenty-five feet is easily provided for, but it runs into expense.
849. How much greater expense would it run into than would be incurred by the exposure of 20 feet? It would be a matter of 200 cubic yards of brickwork at £2 a yard, or £400.
850. *Chairman.*] You have taken into consideration, in estimating the cost of the pear-shaped reservoir, the additional length of the distributing mains? Yes; the additional cost is £2,860 for both distributing and rising mains.
851. Would it make any difference in the cost of the pear-shaped reservoir if the northern site were taken right up to the park boundary instead of being 40 feet away? I think it would cheapen it somewhat. There would be a little more cutting of rock, but there would be less walling. I think the one would about balance the other.
852. And if it is to be level with the park on the northern boundary there is no reason why it should not go right up to the northern boundary? No.
853. You have not to provide for rising mains on the northern site? No; it was put at a distance from the fence in order to keep it as far as possible from the dust of the road.
854. But if it is covered in the dust will not interfere with it? It was not intended to be covered at first.
855. How would you provide ventilation in the pear-shaped reservoir—with towers? Yes; they would stand above the surface, and might be made ornamental.
856. *Mr. Neild.*] You mention that the red hill site would be a good one for a public building;—you seem to give it a preference over the centre of the plateau? I think it would be quite as good as that.
857. It is several feet lower? Yes.
858. Is not that site proposed to be surrounded with the buildings which would be erected on the subdivision of the lands to be sold in connection with the park? Yes.
859. So that it would not stand distinct and bold as it would upon the plateau? No.
860. It would be surrounded by back yards? If you sold the land about it, of course it would be less isolated.
861. Then, in order to get a suitable provision on the Red Hill, you would have to abstain from selling the adjacent land? I think so.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and further examined.—

862. *Chairman.*] When you were recently examined before the Committee several questions were put by several members, of which you took a note, and you said you would obtain the information required? Yes. This is the note I took, which I reported to the Minister:— J. Barling, Esq. 13 July, 1892.

Department of Public Works, Sydney, 16 June, 1892.

Minute Paper—Centennial Park Reserve.

I have the honor to report that during my examination yesterday, before the Public Works Committee, on the above subject, I was questioned on the following points, each of which involved questions of policy, and on which, as I was not instructed, I promised to refer to the Hon. the Minister for decision.

1. As the reservoir is intended to be placed on the site of the proposed State House, is it the intention of the Government to provide a site elsewhere for the building, or is it the intention to abandon the project altogether?

2. Is it the intention to credit the Centennial Park Fund with the value of the land to be occupied by the reservoir?

3. Is it the intention of the Government to give access to the public to the top of the proposed reservoir, which it was pointed out would occupy a space of nearly four acres, and which it was explained would be made flat, and turfed, so that it could be used for tennis, &c.?

As promised, I referred the matter to the Minister, and he desired me to say that, whilst desirous of giving the Committee all possible information on any subject which came before them, he wished me to suggest that these were questions involving policy which would be settled by the Government alone. I am, however, instructed to say this: With regard to the first question, this is a matter entirely of policy. With regard to the second matter, he instructed me to read extracts from the report of the Engineer-in-Chief for Harbours and Rivers, which I am not to give, however, as a Ministerial decision, but simply as a matter of opinion. This extract reads as follows:—

This land was marked off and set apart as a reservoir site by the City Council on or about the year 1883—it being then a part of the Lachlan Water Reserve, upon which very large sums of money, probably some £200,000, had been spent in forming reservoirs and other works for the improvement of the Lachlan Water Supply to the city, the whole of which expenditure has been debited to the Board, and upon which the citizens have to pay the interest, although the Board reaps no benefit whatever from the expenditure—the whole of the said works having been reserved under the Centennial Park Act, and no equivalent reduction in the principal allowed to the Board

With regard to the third question, namely—is it the intention of the Government to give access to the public to the top of the proposed reservoir?—the Minister directed me to read an extract from the report of Mr. Darley on the subject. Mr. Darley says:—

When the reservoir is constructed the whole of the top surface will be restored, sodded over, and left available as a portion of the park, and will thus form a desirable promenade or site for tennis and other games, the space underneath only being required.

This, I am directed to say, the Minister fully concurs with.

863. The question was whether the general public would have access to it or whether it would be reserved for an exclusive set. That is not answered? I can only answer in the manner in which the Minister has directed me. He said I might read this to the Committee, and say that he fully concurred with Mr. Darley's remarks.

864. *Mr. Davies.*] I asked a question with reference to the proposed subdivision of the site of the State House? I have given no answer to that. The Minister desires me to suggest that this is entirely a matter of State policy.

865. Then there was a question as to whether the Government intend to sell this land, as proposed, in subdivisions? I do not know that that question was put to the Minister.

866. I asked the question? Then I must have overlooked it.

867.

J. Barling, Esq.

13 July, 1892.

867. You are aware that a plan has been prepared at the instance of the present Government showing a subdivision of the land adjoining the site of this proposed reservoir? I do not know that I can say that the subdivision has been approved of by the Government. I think it was merely a proposal.

868. *Mr. Hoskins.*] That is really not an official plan? It is an official plan so far as it goes. The object of it was to show the site of the proposed reservoir.

869. *Mr. Davies.*] And to show that it would not interfere by its construction with the sites adjoining, for sale? Quite so; but I do not think it can be said that that plan is put before the Committee to show how the Government propose to deal with the other portion of the land.

870. The only inference is that it was intended to sell the balance of the land? I am not allowed to draw any inference from what I have said, but the Committee can draw their own inferences from what I have said.

871. *Dr. Garran.*] In connection with the subdivision, was there any official estimate of the value of the allotments? I think not. I have no doubt some idea was obtained as to the value of the whole piece.

872. Supposing the reservoir to be made and levelled over, do I understand the jurisdiction of the tennis ground would be in the Water Board or the Government or the Park Trustees? I do not know that the question has been put exactly in that way to the Minister.

873. *Chairman.*] Who has jurisdiction over the Woollahra Reservoir? The Water and Sewerage Board.

874. *Dr. Garran.*] Supposing people want to play tennis, to whom are they to make application? I will take care to have the question put to the Minister.

[Two plans.]

Sydney: Charles Potter, Government Printer.—1892.

PLAN I.

PROPOSED HIGH LEVEL RESERVOIR

CENTENNIAL PARK

SCALE OF CHAINS 4 3 2 1 0 5 10 15 20

SHOWING PROPOSED AND ALTERNATIVE SITES

Sig 44

PRINTED AT THE GOVT. PRINTING OFFICES SYDNEY, NEW SOUTH WALES

PLAN II. (Alluded to in the evidence as the Blue Plan.)

CENTENNIAL PARK

SCALE OF CHAINS

4 2 0 4 8 24 32

SHOWING PROPOSED SUBDIVISION. AND SITES FOR RESERVOIR.

Park Boundary shown in Red Line

PADDINGTON

VICTORIA BARRACKS

OATLEY ST

PARK ROAD

RECENT ST

CORDON ST

QUEEN ST

WAVERLEY ROAD

MONCUR ST

WALLACE ST

OCEAN ST

WOOLLAHRA RESERVOIR

Site of Proposed Reservoir

Alternative Site

Lagoon

Loop line

Randwick

PASTORAL AND AGRICULTURAL SOCIETY'S SHOW GROUNDS

THE ZOO

CLEVELAND ST

To be subdivided

ROAD

JAMES ST

RUTHVEN ST

HILL ROAD

SPRING ST

EBLEY ST

LAWSON ST

MACKENZIE ST

BRISBANE ST

BIRRELL ST

FITZGERALD ST

BOURKE ST

DERBY ST

To be sold

To be subdivided

Pound

R.C.Ch

VICTORIA ST

HENRY ST

EDMUND ST

JOHN ST

VICKERY ST

BOUNDARY ST

ORANGE ST

EARL ST

AVOCA ST

MARKET ST

STEPHEN ST

WENTWORTH ST

KING STREET

TRAMWAY YARDS

RANDWICK RACECOURSE

Entrance to Course

BUNNERONG ROAD

Coogee Tramway

Moore Park

Queens Park

Centennial Park

RANDWICK

To "Waverley"

(Sig 44.)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

1892.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(NOTIFICATION OF RESUMPTION OF LAND, PARISH OF PETERSHAM, COUNTY OF CUMBERLAND, FOR THE LAYING OF A SECOND PIPE, IN CONNECTION WITH THE SYDNEY WATER SUPPLY.)

Presented to Parliament, pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1888."

NEW SOUTH WALES, to wit. (L.S.) JERSEY, *Governor.*

Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

WHEREAS by an Act of the Parliament of the said Colony, 53 Victoria No 18, intituled the "Sydney Water Supply (Partial Duplication) Act of 1889," it is enacted that the public work more particularly described in the Schedule thereto should be carried out by the Secretary for Public Works or the Member of the Executive Council for the time being charged with the duties of the said Minister, and such Minister or Member should, for the purposes of that Act and the "Public Works Act of 1888," be deemed and taken to be the Constructing Authority authorised to enter into contracts, and to exercise all powers, do all acts and things, and be responsible in respect of all obligations and liabilities which could be done or incurred by a Constructing Authority under or pursuant to that Act or the said Public Works Act, so far as might be necessary for the carrying out of the work thereby sanctioned; and whereas the land described in the Schedule hereto is required for the purpose of erecting thereon the public work authorised to be carried out under the said Act 53 Victoria No. 18, that is to say, the laying of a Second Pipe in connection with the Sydney Water Supply, between Pott's Hill, in the parish of Liberty Plains, and Crown-street, in the City of Sydney: Now, therefore, I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, with the advice of the Executive Council, in pursuance of the provisions of the "Public Works Act of 1888," do hereby direct that the land described in the Schedule hereto, which in my opinion is required for the said authorised work, shall be acquired and taken under the "Lands for Public Purposes Acquisition Act" as adopted by the "Public Works Act of 1888"; and I do declare by this notification, to be published in the Government Gazette and in one or more newspapers published or circulated in the Police District wherein the said land is situated, that the said land described in the said Schedule hereto, so far as the same is Crown Land, has been appropriated, and so far as the same is private property has been resumed, for the public purpose hereinbefore expressed, that is to say, for the purpose of laying a second pipe in connection with the Sydney Water Supply, to the intent that upon the publication of this notification in the Gazette, the land described in the said Schedule hereto shall forthwith be vested in the said Minister as the Constructing Authority on behalf of Her Majesty for the purpose, of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the intent that the legal estate therein, together with all powers incident thereto or conferred by that Act, shall be vested in such authority as a Trustee; and I declare that the following is the Schedule of land hereinbefore referred to:—

SCHEDULE.

All that piece or parcel of land situate at Enmore, parish of Petersham, county of Cumberland, and Colony of New South Wales, being part of 30 acres granted to John Wells, and contained in Certificate of Title, vol. 738, folio 181: Commencing at the intersection of the northern side of Llewellin-street with the eastern side of Black-street; and bounded thence on the north by other part of the said grant bearing south 74 degrees 21 minutes east 665 feet 4 inches to the south-western side of the Edgeware Road; thence on the north-east by part of that side of that road bearing south 31 degrees 23 minutes east 95 feet 8¾ inches: thence on the south by other part of the aforesaid grant bearing north 74 degrees 21 minutes west 736 feet 2 inches to the eastern boundary of Black-street; and thence on the west by part of that boundary of that street bearing north 15 degrees 36 minutes east 66 feet, to the point of commencement,—be the said several dimensions a little more or less, containing 1 acre 9¾ perches or thereabouts, and said to be in the possession and occupation of Henry Bayes Cotton and Christopher Bennett.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this seventh day of November, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,
WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLAN,

RELATING TO THE

PROPOSED WATER SUPPLY

FOR

WOLLONGONG AND THE SURROUNDING DISTRICTS.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

[2s. 6d.] 63—a 1892.

MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable William Henry Suttor, Vice-Chairman.
The Honorable James Hoskins.
The Honorable Frederick Thomas Humphery.
The Honorable Andrew Garran, LL.D.
The Honorable John Davies, C.M.G.

LEGISLATIVE ASSEMBLY.

Jacob Garrard, Esquire, Chairman.
Thomas Thomson Ewing, Esquire.
William Chandos Wall, Esquire.
William McCourt, Esquire.
John Cash Neild, Esquire.
Edward William O'Sullivan, Esquire.
Charles Collins, Esquire.
Henry Dawson, Esquire.

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PLAN.

Sketch Plan showing proposed Water Supply for Wollongong, Bulli, &c.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

WATER SUPPLY FOR WOLLONGONG AND THE SURROUNDING DISTRICTS.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing works of water supply for Wollongong and the surrounding districts," have, after due inquiry, resolved that it is not expedient the works as proposed should be constructed, as the people of the surrounding districts do not at present desire such water supply, and the Committee consider a modification of the scheme, at a cost not exceeding £30,000, is sufficient for Wollongong alone; and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Description of the proposed works.

1. The proposed works would consist of a storage reservoir, with a capacity of sixty million gallons, formed by a concrete dam across the head of the Cataract River at a point below the junction of the Cataract and Angel's Creek on the top of the coastal range in the neighbourhood of Korimul or Broker's Peak, and a system of pipes and service reservoirs, by means of which a constant and adequate water supply would be provided for Wollongong, Bulli, Woonona, Bellambi, Corrimal, Tara Meadow, and Balgownie. The scheme is one of gravitation. From the storage reservoir the water would flow through 9-inch cast-iron, or, as may afterwards be decided, wrought-iron pipes laid in a tunnel 4,340 feet long cut through a portion of the range, and having its outlet on the eastern face of the range near Mount Pleasant, in the vicinity of which would be a balance tank to break the pressure. From the balance tank about 2½ miles of 7-inch wrought-iron pipes would convey the water to an open service reservoir at Mount Ousley, holding half a million gallons, and from this reservoir the town of Wollongong would be supplied, the water flowing towards the town through about 2½ miles of 10-inch cast-iron pipes, and about 11 miles of 6-inch, 4-inch, and 3-inch reticulation pipes. The wants of Bulli and the other localities, comprised in the term "surrounding districts," would be met by a service reservoir, holding half a million gallons, on the high ground at the back of Bulli, to which the water would be conveyed by means of about 5¾ miles of 6-inch wrought-iron pipes, and in connection with which the necessary reticulation would be provided. One inch of rainfall upon the catchment area of the storage reservoir would, it is stated, fill the reservoir, and that would be equal to one year's supply for the whole of the places it is proposed the scheme shall serve.

Estimated cost.

2. The estimated total cost of the works as proposed is £66,000, which includes £2,000 for the resumption of the land that would be occupied by the dam necessary to form the storage reservoir. The proportion of the total cost which represents the service for Wollongong is £43,672, and it is made up as follows:—Impounding dam or storage reservoir, £12,290; tunnel, £5,064; pipe in tunnel, £950; balance tank, £300; piping from balance tank to service reservoir, £4,300;

service

service reservoir, £5,000; piping from service reservoir to Wollongong, £3,700; reticulation pipes at Wollongong, £5,750; pipes to Keira village, £546; resumption of land, £2,000; and engineering contingencies, £3,772. The cost of the portion of the scheme for Bulli and the other places mentioned in connection with it is set down at £23,000.

Administration of the scheme.

3. It is part of the proposal that the scheme shall be administered by a Board similar to the Hunter River District Water Supply and Sewerage Board, consisting of three members, the chairman of which shall represent the Government. The Country Towns Water and Sewerage Act deals with water supply for municipalities only, and as in the present scheme there are included some localities not yet incorporated a special Act would be necessary. In this Act power would be given the Board to strike such a water-rate as to compel the payment of the interest on the expenditure up to the full limit of 5 per cent.

Reasons of the Department for proposing the Works.

4. The necessity for an adequate supply of pure water to the town of Wollongong appears from the evidence to have been before the Department of Public Works for many years, and to have been urged on behalf of the people of the district by letter, and by deputations, with increasing earnestness from the time the agitation commenced until now. In a letter to the Under Secretary for Public Works dated 13 February, 1892, the Mayor of Wollongong states that thirty years ago when Wollongong was a small town the need of a supply of pure water was felt, and now the establishment of a water supply is an absolute necessity. At the present time, excepting the water caught from the roofs during periods of rainfall the only water supply Wollongong is possessed of is what is contained in a small lagoon at the end of the town near the harbour, into which drainage is said to flow freely. Several schemes for providing what is required have been put forward, and two, besides that proposed by the Government, have been mentioned to the Committee. These are more expensive than the Government proposal, and on that and other grounds are not considered by the Department to be desirable. In formulating the Government scheme it was at first contemplated to supply water to Wollongong only; but recognising the fact that outside the municipal boundary of Wollongong there is a population, the wants of which the works intended for Wollongong could be made to meet, the Minister thought it wise to have the works designed so as to supply the whole of the district, and in this way Bulli, Woonona, Bellambi, Corrimal, Tara Meadow, and Balgownie were included in the scheme. They were included without any reference being first made to them for their approval or disapproval. The members for the electorate appear to have had the scheme laid before them, and to have acquiesced in it, but the residents were not in any way consulted.

Form of the Committee's inquiry.

5. The Committee in their inquiry not only examined witnesses but visited Bulli and Wollongong and carefully inquired into the scheme by going over the ground where it is proposed the various works to be carried out should be located. A day was spent in Bulli for the purpose of comparing the locality with the plans furnished to the Committee, and in learning the opinions of the residents with regard to their inclusion in the scheme. Another day was employed in ascending the range near Wollongong to the site of the proposed storage reservoir; in examining the ground and the water-courses there, to see if any modification of the proposal could with advantage be carried out; in following the course of the proposed tunnel and the line of pipes from the site of the balance tank at the tunnel outlet towards Wollongong; and in visiting the site of the service reservoir for Wollongong. A third day was spent in taking evidence at Wollongong. By these means and the examination in Sydney of the officers of the Department of Public Works responsible for the scheme, the Committee not only made themselves thoroughly acquainted with the details of the proposed works and with local opinion on the subject, but found that it was quite possible to meet requirements for the present and for some time to come by a considerable modification of the scheme and consequent reduction of cost.

The scheme as it relates to Bulli and the other settlements outside Wollongong.

6. The evidence given before the Committee at Bulli indicated that the people there and in some of the other localites included in the term "surrounding districts," not only had not been consulted as to whether they desired the proposed water supply, but did not require it, and did not wish to have it. Bulli enjoys a good rainfall, and is supplied with water from tanks and wells, and though some of these cannot

be

be free from the risk of contamination from drainage, there has been no movement on the part of the residents for a better means of supply. The only place about Bulli said to have suffered at any time from a scarcity of water was the immediate vicinity of the Bulli colliery. There the want of water for household purposes has been felt, but without special arrangements the proposed scheme would not remedy this, as the locality is higher than it is intended the scheme shall operate. Bulli is not incorporated, but it possesses a Progress Committee, and at the request of the Committee the chairman of the Progress Committee called a public meeting to consider the proposed water supply for the district. The meeting, as will be seen from an appendix to this Report, was one of the inhabitants of Bulli and Woonona, and it resolved unanimously,—"That we, the inhabitants of Bulli and Woonona, deem the present time to be inopportune for such a scheme of water supply as that at present proposed." According to the evidence given by the Mayor of North Illawarra the residents of that municipality would readily avail themselves of the proposed water supply and pay for it, but the matter had not been properly before the Borough Council, and no expression of opinion regarding it had been made by the Council or the ratepayers.

The scheme as it relates to Wollongong.

7. The people of Wollongong as represented by the Municipal Council are favourable to that part of the scheme which relates to Wollongong, and desire no amendment of it. The town is regarded as a place with "a big future in store for it," and the proposed water-works are considered to be none too large nor expensive. But the evidence shows that works of a less elaborate and expensive character would supply all the water that is at present wanted or that may be required by Wollongong for some time, and that the tax upon the residents to meet the cost of works for water supply is more likely to produce the necessary sum if the scheme be modified than if it be carried out as proposed. There is a good average rainfall on the catchment area of the proposed storage reservoir, and a reservoir or dam impounding three or four months' supply of water would be sufficient to preserve Wollongong from any danger of a water famine. It was suggested by the Committee to the Mayor of Wollongong that instead of constructing the large and expensive dam to form the proposed storage reservoir, a smaller dam across the Cataract River, below its junction with the Corrimal and Rocky Creeks, capable of impounding about 15,000,000 gallons, a seven months' supply, should be made. This, it was pointed out, would materially reduce the proposed expenditure, and, in addition to furnishing a more than ample supply of water, would not prevent the larger dam from being built if it should be found necessary in the future. The Mayor admitted the usefulness of the smaller dam, but preferred the extended scheme.

The modified scheme.

8. The modified scheme which appeared to the Committee to be under the circumstances desirable, was referred to the Engineer-in-Chief for Harbours and Rivers. He found, by means of a survey, that half-way between the junctions of Corrimal Creek and Angel's Creek with the Cataract River a dam might be constructed, but, keeping the water-level so as to work into the original scheme in the future, with a capacity of only 8,000,000 gallons, and as he considered that too small for Wollongong he would not recommend it. This dam would cost, he said, about £4,053 as against £12,290, the cost of the dam in the original scheme. The only direction in which he saw a prospect of lessening the proposed expenditure was reducing the size of the service reservoir for Wollongong, and saving by that means £2,000, or introducing a pressure-regulating valve and thereby saving £5,000. He was asked to supply the Committee with an estimate of the cost of a dam to impound 16,000,000 to 20,000,000 gallons, and he gave it as £5,614 10s. 6d., informing the Committee at the same time that it was quite possible a dam of this size would be large enough for some time to come. Mr. J. P. Josephson, the Engineer of the Department of Harbours and Rivers who has carried out the whole of the surveys connected with the proposed works, and from whose figures the calculations relating to capacity and cost have been made, is of opinion that a dam in the position indicated by the Committee, capable of impounding 20,000,000 gallons, 17,000,000 of which would be available for Wollongong, could be constructed for £3,000. He states also that if the sandstone, through which the proposed tunnel is to be driven, should be found fairly satisfactory the piping intended to be laid in it can be saved, and he considers that the service

reservoir

reservoir for Wollongong might be half the proposed size. It would then be quite large enough, and would cost £2,500 less than the one in the original scheme. Mr. Josephson has no doubt that the smaller dam will serve Wollongong with its present rate of population increase for many years to come. Taking Mr. Darley's estimate of the cost of the smaller dam, £5,614, and the saving which he considers it possible to make in the service reservoir, £2,000, the estimated total cost of the whole scheme for Wollongong is £34,996 as compared with £43,672. The Committee are of opinion from the evidence before them, and from their examination of the localities where it is proposed the works shall be carried out that the estimate may be further reduced to £30,000; and also that it is not necessary at present to incur expenditure requisite to provide a water supply for Bulli and the other localities mentioned in the reference to the Committee.

The proposed Administrative Board.

9. As to the proposed mode of administration of the scheme, the Committee submit that it is not desirable that a Board similar to the Hunter River Water Supply and Sewerage Board should be appointed in this case, as the cost of administration would be excessive and would become a heavy burden on the ratepayers.

Resolution of the Committee.

10. In accordance with this opinion, the Committee, on 17 August, passed unanimously the following resolution, which was moved by Mr. Ewing, and seconded by Mr. McCourt :—

> That in the opinion of this Committee it is not expedient to carry out the whole of the works for the supply of water for Wollongong and the surrounding districts as referred to the Committee by the Legislative Assembly, as the people of the surrounding districts do not at present desire such water supply; the Committee therefore recommend a modification of the scheme (at a cost not exceeding £30,000), which would be sufficient for Wollongong alone."

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 24 August, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

WATER SUPPLY FOR WOLLONGONG AND THE SURROUNDING DISTRICTS.

THURSDAY, 14 *JULY*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM McCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee proceeded to consider the proposed Water Supply for Wollongong and the Surrounding Districts.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 14 July, 1892.

1. *Chairman.*] You are Under Secretary for Public Works? Yes.

2. Have you a statement to put before the Committee with reference to the work under consideration? Yes. The question of the provision of a pure water supply for the town of Wollongong has been before the Department for a great many years, and has been urged by the people of the district with increasing earnestness from the time the agitation was first started until the present date. To give the Committee an idea of the views of the inhabitants on this important matter, I select from a number of letters received a communication from the Mayor, dated 13 February, 1892, which I will read:—

Sir, Town Hall, Wollongong, 13 February, 1892.

I have the honor to acknowledge your letter *re* the establishment of a water supply for the town of Wollongong, wherein it is stated that the subject has been referred to the Public Works Committee.

My Council join with me in respectfully and earnestly asking that no unnecessary delay be made in carrying into effect this long-delayed movement.

Thirty years ago, when Wollongong was a small town, the need of a pure supply of water was then felt. Now, when the town has become one of the most important in New South Wales, the establishment of a water supply becomes an absolute necessity.

My Council would deem it an especial favour if you take this important subject into your early consideration, with a view to the calling for tenders to start such a really necessary and highly desirable undertaking.

I have, &c.,
J. A. BEATSON.
Mayor.

The Under Secretary for Works, Sydney.

As I said before, there are a large number of letters on the subject, and many deputations have waited upon different Ministers, but I think the letter I have read will be sufficient for my purpose. Several schemes have been proposed for the accomplishment of the desired end, but I need only, perhaps, refer to two (exclusive of the Government proposal) which, no doubt, in the course of your investigation, will come prominently before you. The first is what is known as the Mount Pleasant scheme, and was brought under the attention of the Department by Mr. Lahiff, the manager of the Mount Pleasant mine. This scheme contemplates the construction of a dam at the junction of Cataract River and Rocky Creek, at a height of 955 feet above sea-level. It is then proposed to conduct the water down a shaft which would have to be sunk to the level of the Company's workings; thence conducting the water through the workings to a service reservoir, which is proposed to be constructed under the scheme of the Department. From that point onwards the scheme is identical with the Government proposal. An accurate estimate has not been made of this scheme; but, for reasons which Mr. Darley will explain to you, it is not considered desirable to adopt the proposal. Mr. Darley says it will cost at least £6,000 more than the Government scheme. The second scheme is that known as the Mount Keira scheme, proposed by Mr. H. O. MacCabe. This contemplates the construction of a dam at the junction of the Cordeaux River and the Goondarin Creek, at which place there will be a pumping-station to pump the water to a proposed shaft to be sunk into the Mount Keira Mine workings, thence, taking advantage of these workings, to conduct the water to a proposed reservoir at Garden Hill. A rough estimate has been made of the cost

of

J. Barling, Esq.
14 July, 1892.

of this scheme, which is £100,875. This includes the capital cost of pumping, which equals the sum of £23,125, but Mr. Darley, who follows me, will go more fully into the details of the scheme. The objection to this scheme is at once apparent, viz., that of cost. I now come to the Government scheme, the one before the Committee, the official description of which is as follows:—

Department of Public Works, Harbours and Rivers Branch, Sydney, 29th March, 1892.

The Engineer-in-Chief for Harbours and Rivers to The Under Secretary for Public Works.

Minute Paper.—Proposed Water Supply for the Borough of Wollongong, &c.

THE proposed works consist of a storage reservoir, to contain sixty million gallons, formed by a concrete dam across the head of the Cataract River. The water is thence brought by gravitation through 9-inch cast-iron pipes, laid in a tunnel 65¾ chains—(say) 6ft. x 3ft. 6 in.—in length, to a balance tank on the east side of the coastal range; thence by 7-inch wrought-iron pipes, about 2½ miles in length, to a service reservoir holding half a million gallons, from which the town of Wollongong is supplied by 10-inch cast-iron pipes, about 2½ miles in length, and about 11 miles of 6-inch, 4-inch, and 3-inch reticulation pipes.

Six-inch wrought-iron pipes, about 5¼ miles in length, will be laid to a service reservoir at Bulli, holding half a million gallons, and connected with the necessary reticulation for the supply of the villages of Bulli, Wonona, Bellambi, Corrimal, Tara Meadow, and Balgownie. The estimated cost, inclusive of land, is £66,000.

C. W. DARLEY, 29/3/92.

The financial aspect of the scheme is embodied in the following minute of the Engineer-in-Chief for Harbours and Rivers. I may mention that at first it was simply contemplated to supply Wollongong with water, but the Minister saw that there was a population outside the municipal boundary which the supply was capable of supplying. The population outside is as large, I think, as that inside the municipal boundary. The Minister, therefore, thought it desirable to cover the whole of the district.

3. *Dr. Garran.*] Does the £66,000 cover the whole of the district? Yes. This is also a minute which has been prepared by Mr. Darley, showing the financial aspects of the scheme:—

Department of Public Works, Harbours and Rivers Branch, Sydney, 27 June, 1892.

The Engineer-in-Chief for Harbours and Rivers to The Under Secretary for Public Works.

Minute Paper.—Proposed Water Supply for Wollongong, Bulli, &c. Financial Statement.

ESTIMATED cost of works, exclusive of land—£64,000; ditto, inclusive of land—£66,000.

Estimated Annual Expenditure.

Interest on cost, £66,000 at 3½ per cent.	£2,310
Sinking fund „ at ½ „	330
Working expenses, say	260
Total	£2,900

Population of Wollongong, 1891—3,041.

Annual value of property within the proposed reticulated area is given by the Mayor at £33,109, which is equal to £10 8*s* per head of population.

The estimated population of Bulli, Wonona, &c.—3,500, at (say) £7 per head gives an annual value of water ratable property of £24,500.

Total estimated value of water ratable property, £57,609.

Estimated Annual Receipts.

5 per cent. water rate on £57,600	£2,880	0	0
10,000 gallons per day for railway, at 1*s*. per 1,000 gallons	182	10	0
Estimated receipts from sale of water by meter to Harbour Trust, shipping, collieries, factories, gardens, and stables	300	10	0
Total	£3,363	0	0

C. W. DARLEY.

The important question now comes, as to the administration of this scheme. As the Committee will see, it provides for the supply of water not only to an incorporated area, viz, Wollongong, but to districts carrying a large population outside municipal boundaries. The Country Towns Water Supply and Sewerage Act only contemplates dealing with single municipalities, each with its own water supply. To get over this difficulty it is the intention of the Minister to introduce a Bill on the lines of the Hunter District Water Supply and Sewerage Act, which will vest these works in the hands of a Commission or Board of Trustees. It is proposed that this Board shall consist of three members, two to be elected by the Municipality of Wollongong and other towns included in the scheme, as they become incorporated, and one to be appointed by the Government, who will be *ex officio* Chairman of this body. The Board will administer the scheme under similar powers to those conferred on the Hunter District Water and Sewerage Board. I will now hand in the papers I have with regard to Mr. MacCabe's scheme.

4. *Chairman.*] You have quoted the figures of the Mayor as to the valuation. Does he definitely state on what basis it is made? I have not his letter by me, but I will put it in. We asked him to give an estimate of what would be the receipts, and that is his reply. It will be 1*s*. in the £.

5. What are we paying in Sydney? Sixpence in the £, and 1*s*. per 1,000 gallons.

6. Is the Department in possession of any resolution on the part of the Council giving assent to the scheme, and expressing their willingness and ability to pay a 5 per cent. rate? A resolution was passed by the Council some time ago, but that was not in connection with this scheme. I do not think a definite resolution has been passed in connection with this particular scheme, with all the particulars I have given, because they could not have known the cost.

7. Then when they come to find the cost, they may wish to cry off the bargain? I do not think there is the slightest chance of their doing that, and, as I have pointed out, the supply will be administered, not by the Municipality, but by a Board.

8. But where will the State be? The State will be represented, of course, by the Chairman.

9. One against two? At the same time we should take good care that the Act will be so drawn, as is the Hunter River Act, that a rate must be struck to compel the payment of the interest up to the full limit of 5 per cent., which is the maximum provided.

10. Of course there will be provision in the Act, in the case of the local representatives over-riding the Chairman to the detriment of the State, for the State to interfere? Undoubtedly.

11. The money, of course, will be raised by loan? Yes.

12. Upon what will the interest be based? Three and a-half per cent.

13. Are you getting money at 3½ per cent. now? I cannot say; but that is the determination of the Government.

14.

J. Barling, Esq.

14 July, 1892.

14. If this particular loan is going to cost 4 or 4½ per cent., you will necessarily have to increase the burden on the people? The Government would have to consider that.
15. Do you not think that the local people who have asked for this work should be thoroughly informed as to what the actual annual cost to them will be? They will be told that they will be charged 3½ per cent.
16. If the Government, for the purpose of constructing the work, have to pay 4½ per cent., they will lose 1 per cent.? That is a matter of Government policy. We give £1 for £1 in municipalities, so that it is not a novel principle, and if anything extra has to be paid it will not be very large.
17. Has the Department had any suggestions from Bulli or further north than Wollongong, with reference to any scheme of their own? I do not know of any.
18. Has there been any request on the part of the towns to the north of Wollongong to be included in the Government scheme? I do not think we have an absolute requisition from them to that effect. I may say, however, that I have seen the Members for the district, Mr. A. Campbell and Mr. Nicholson, and I think I am correct in saying that they approve of it.
19. You have told us that this scheme was primarily got up for Wollongong, but that the Minister saw that it could be applied to the towns further north, and that the cost of that has been included in the estimate? Yes.
20. But you have no Departmental knowledge as to any agitation on the part of the people to be supplied or not? I do not know of any.
21. *Dr. Garran.*] Since this plan has been worked out in the shape in which you have put it before us, has the cost been put before the Town Council? I am not quite certain; but I do not think it has.
22. Then we have more knowledge on the subject than they have? Yes.
23. Are we considering a scheme to which the Council has given its adhesion, or has the consent of the people yet to be obtained? The Council has undoubtedly given its adhesion to our carrying out a scheme, and at an estimate which we gave them, but the estimate has since been increased by this addition to the scheme, and I do not know that it has been departmentally put before them in that way.
24. Does it not often happen that people clamour for a water supply and then complain when the actual scheme is carried out? I have known of such cases. The schemes to which you refer are no doubt those which were carried out in the earlier days of the history of the Colony, and there is no doubt that the amounts have been largely exceeded; but it was due to a very large extent to the demands which were made for extra works—reticulation and so on.
25. Have the Wollongong people any idea that the rate will be at least 1s. in the £? I think so, although I do not know at this moment that I could give you direct evidence of the fact.
26. Your Department has not communicated to the Mayor of Wollongong that the rate will have to be 1s. in the £? We have not in so many words.
27. Before he comes up to give evidence ought he not to know of it? If I mistake not, the Mayor, in the estimate which he himself has given, included the 1s. in the £.
28. Do you know whether we have ever negotiated a loan at 3½ per cent.? I cannot say.
29. Supposing we never do borrow at 3½ per cent. net, and we lend the municipalities at 3½, there will be a margin of loss which the general revenue will have to bear? Undoubtedly.
30. But as you have already stated that would not be large? No. I am not speaking now for the Minister, but on my own responsibility.
31. This assumption that we borrow at 3½ per cent. and lend at 3½ per cent. is purely an assumption? I think you will be able to judge of that as well as I.
32. *Mr. Wall.*] For how long will the sinking fund in connection with this loan extend? About sixty years. The real amount will be £4·008 per cent., which pays it off in sixty years.
33. Is not 5 per cent. the maximum amount you are allowed to charge under the Water and Sewerage Act? Yes.
34. So that you are placing this at the maximum charge which you are able to impose? Yes.
35. *Mr. Neild.*] Is it customary for your Department to communicate with the local bodies in connection with proposed public works which are to come before the Committee? Undoubtedly. It has been the case when we carry out a water supply.
36. Was the proposed sewerage work at Parramatta submitted to the local Council? It was submitted; but I do not think it was submitted in that case as in this. I do not think they had the final figures.
37. Would it not be possible to supply the full details of works to local councils before they come before the Committee? Yes. The figures in this instance have been revised several times, and I think the final figures were only arrived at a short time ago.
38. *Mr. Dawson.*] Have you made inquiries with reference to the question of compensation for the resumption of land? We have arrived at an estimate; but it would not be in the public interest to state it.
39. *Mr. Ewing.*] This work is to be under a special Act? Yes.
40. And every householder or owner will be assessed under the Act, whether he wants the water or not? Yes.
41. *Mr. Humphery.*] Have you communicated with Bulli, Wonona, Corrimal, and other places which will be supplied? I have communicated with the Members, and I think they are in favour of it; but I should not like by any answer of mine to endeavour to pledge them to it.
42. There will be a proportionate reduction in the event of the water service being extended beyond Wollongong? Yes.
43. I understood you to say that the value of ratable property in Wollongong is £33,000, and the probable annual value of property outside of Wollongong to be served by the supply is £24,000? Yes.
44. And that would be the proportion as to revenue, at a very rough estimate? Yes.
45. *Mr. Hoskins.*] Assuming that the Committee recommend, and Parliament sanctions the scheme, the Department would not seriously think of supplying the districts mentioned outside of Wollongong with water unless the people, by means of public meetings or in some other way, showed themselves disposed to accept the scheme? I do not know that the question, in the way in which you have put it, has been definitely placed before the Minister, but I do not think it is the policy of the Minister to force anything on anybody.
46. You have not ascertained whether the people outside of Wollongong are in favour of being supplied with water or not, and perhaps when the scheme is undertaken they will say that it was forced upon them? It is rather a difficult thing to communicate with people when they are not incorporated.

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47. Do you think, then, that the Minister would be justified in ordering the construction of expensive waterworks without the people undertaking in some way to make themselves liable for the payment of the rates? In order to supply the towns adjacent to Wollongong we have not to increase the cost of the main works. Very little more will have to be done than to run a pipe to them.
48. Perhaps the people of Bulli have a natural supply of their own? The Committee will visit the district, and will be able to elicit the opinions of the people.
49. Are you not of opinion, if the scheme receives the recommendation of the Committee, that the Bill to give effect to it should embody a provision that the people in the villages outside of Wollongong proposed to be supplied with water, should be compelled, if they use it, to pay the rates? Undoubtedly such a provision will be made in the Bill.
50. How many towns in the Colony have availed themselves of the privilege of being supplied with water under the Country Towns Water Supply Act? Goulburn, Wagga Wagga, Bathurst, Albury, Hay, Deniliquin, Wilcannia, Bourke, Balranald, Cargo, Jerilderie, Lismore, Orange, Wentworth, Manly, Richmond, Cootamundra, and Forbes. Then there is the Hunter River.
51. Are these places, through the medium of rates, paying to the Treasurer yearly a sufficient sum of money to cover the interest on the cost of the works from which they have benefited? No. I think I explained to the Committee before, in dealing with another matter, that we are now capitalising the interest which they owe, and putting it on to the original cost of the works, and then bringing them under the sixty years basis, which will probably enable them to pay. We capitalise the amount which they owe for interest up to last February, and add that to the original cost of the works, and then call upon them to pay interest under the sixty years' scheme from that date upon that capitalised amount.
52. I gather from what you say that a number of these places which have been supplied with water under the provisions of the Act are defaulters? I should not like to put it in that strong way. There have been before the Government for a great many years past, representations that they could not pay under the twenty-eight years' system, and there have been proposals again and again for some modification. Whilst these negotiations have been going on in many cases we have not fixed the actual cost, pending the settlement of the question. The question now, to a large extent, is settled, and we shall, I hope, be able to get back everything owing to us by the municipalties.
53. Is it a fact that a number of these places, because they find it inconvenient to be taxed sufficient to pay the interest on the money expended in supplying them with water, which they were all anxious to obtain, have ceased collecting any rates at all, and do not intend to do so? That, I think, is quite wrong. They have collected the rates, I believe, and I think in many cases there are funds accumulated.
54. Who have got the funds? The Corporations.
55. What authorities are custodians of these funds? The Corporations; the Act prescribes that they must pay a certain proportion, that is, 6 per cent., and they have not been able to do it.
56. Have they done what they could? Deniliquin paid the first year's 6 per cent., and I believe they have not paid since. Hay has paid. From Goulburn, Wagga Wagga, Bathurst, and Albury, for the first year of their existence, we got the rates direct. With regard to the Hunter River, rates have in many cases been paid direct. Newcastle we have charged 1s. 6d per 1,000 gallons. There is a considerable debt owing by Newcastle.
57. The first year's rates enforced were collected by the Government? Yes
58. Since then most of the Corporations have neglected the power? They have levied rates and have got the money.
59. They have collected the money and have kept it? Yes; holding it in reserve until we have made final arrangements as to these longer terms.
60. Has Bathurst paid anything at all? Nothing, with this exception—that for the first year we got the rates direct. But that was before we handed the works over.
61. In point of fact, so long as the Government enforced the payment the rates were paid, but directly the matter was left to the municipalties they were not paid? I do not think we have the power to enforce the payment under present circumstances. We enter into an agreement with each householder to take the water at a certain rate.
62. Do you not think it would be better in the interests of the reputation of the Colony, and of the towns themselves, if the supply of water in the country towns and elsewhere were placed under the management of a Board, independent of a municipality? We propose that with regard to the Wollongong district. We have carried it out with regard to the Hunter River district. You asked whether it should be extended to other towns. That is a question of policy which I cannot answer.
63. However, the policy of these towns has been to collect the money and keep it, and not to pay it into the Treasury? I suppose they have an idea that eventually they will have to pay.
64. *Mr. Neild.*] If it is proposed in this instance to have a sixty years' repayment, why did the large work at Newcastle require a 100 years' repayment? When I say sixty years I have no doubt that powers will be taken under the Act to give a limit of 100 years. With regard to the Hunter River, some parts of the work will last for all time, but other parts, such as pipes, will wear out in a short time; therefore, it is quite right to take varying times.
65. There is a wide margin between 28 and 100 years? Yes; but take the Sydney waterworks, there are the tunnels and the Prospect Reservoir; and many parts of the work which will last for all time.
66. But a tunnel is one of the costly features of the work under consideration? Yes.
67. That is likely to be permanent? Undoubtedly, but that can easily be arranged. If you look at the Hunter River Act you will see that there are ample provisions for that to be taken into account.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, and President of the Metropolitan Board of Water Supply and Sewerage, sworn, and examined:—

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68. *Chairman.*] You are Engineer-in-Chief for Harbours and Rivers, and President of the Metropolitan Water and Sewerage Board? Yes.
69. The plan with reference to the supply of Wollongong and district with water has originated in your office? Yes.
70. Has the Department had under consideration other schemes? Four schemes have been placed before the Department, and just inquired into—Mount Keira, Mount Pleasant, and another small scheme known as the Hell Hole scheme.
71. The portions coloured pink on the plan will drain into the catchment reservoir? Yes. 72.

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72. That is part of the Metropolitan area? Yes.
73. And to that extent you will be taking away from the Metropolitan supply? Yes.
74. If you go on taking away 2,246 acres now and 2,246 acres by-and-bye to supply other towns, what will be left for the Metropolitan supply? I do not know of any other towns, and this small portion would not be felt. After all we do not propose to take all the water which falls in this area, but to get enough to divert to Wollongong.
75. The surplus which would still pass down would be available for the Metropolitan supply? Yes.
76. As President of the Water and Sewerage Board, you have no fear of the Metropolitan supply being diminished? No.
77. I suppose there is no fear of this area being diminished? I think not.
78. Is it all Crown land? No; private land.
79. Does the amount for resumption—£2,000—include the resumption of all that land? It would not resume the whole of the catchment area, but the area occupied by the reservoir only.
80. Is there any other large portion of the Metropolitan area on private land? A good deal of it. There is a good deal of private land along the Robertson side.
81. And is not every year bringing the possibility of contamination to that water-shed nearer? So far there is no one living on it. It is simply taken up by mining speculators.
82. As a matter of fact, does not Kangaloon drain into the water-shed? No.
83. Was there not a short time ago a prosecution of the inhabitants of the Kangaloon district for draining? A man passed over the ridge and constructed a milk factory on the water-shed, and he has been removed to the other side.
84. But is not the question of the contamination of this water-shed becoming more apparent by the growth of population and settlement? It is a matter which must be watched. The distance of this is so many miles from the intake that any contamination would not reach it. It would be oxidised and purified. I think the chief value of this country lies in the coal underlying it.
85. The surface of the soil is of a very poor description? Along the edge of the creek there is some brush land, but the moment you get away from it there are barren rocks and sand.
86. At all events you do not think there is much prospect of the area set apart for Wollongong and districts being contaminated in the future? I do not think so.
87. And you only propose to resume a sufficient amount to form the reservoir? To keep the reservoir itself from contamination.
88. What is the height of your catchment reservoir? Nine hundred and sixty-nine feet above sea-level.
89. And the scheme consists of a tunnel from that to the eastern side of the ridge? Yes; 4,340 feet long.
90. That is not for the purpose of conveying water, but for the purpose of holding pipes which convey the water? Yes.
91. What is the size of the tunnel? 6 ft. x 8 ft. 6 in., so as to allow room to work in.
92. I suppose a smaller size would not allow of room to get into it in case of accidents? Two pipes would be laid if necessary.
93. What is the cost of the tunnel? 30s. a cubic yard—total cost, £5,060.
94. Is that not a large item in the £66,000? Yes. In going into details we might make it a little smaller, but as you make it smaller you have to pay a proportionately higher price per yard.
95. Then there is a balance tank on the eastern side of the ridge? Yes, to break the pressure.
96. Are cast-iron pipes to be laid all the way from the reservoir, or wrought-iron pipes? I did propose using a cast-iron pipe with a special joint, known as the acme joint, in the tunnel; but I think, if the work is carried out, I will use a wrought-iron pipe in the tunnel as well, with a special joint. There is a difficulty in running hot molten lead joints in a tunnel.
97. What is the cost as against cast-iron pipes? I think it would come quite as cheap, because it is a lighter pipe to handle.
98. Is the life of a wrought-iron pipe as long as that of a cast-iron pipe? They are well dipped in asphalt.
99. Cast-iron pipes are more liable to fracture? Yes, owing to any shock.
100. What is the reason of these sharp angles in the pipe-line coming down from the balance tank? Simply following the public roads.
101. So as to save resuming land? Yes.
102. Will you have to resume land for this service reservoir, at the 212-foot level? Yes; a few acres.
103. Will your reservoir there be excavated or built up? It will be an open reservoir with concrete sides.
104. Why is it necessary for so small a place as Wollongong and adjacent districts to have a reservoir of 500,000 gallons capacity, in view of the fact that you are not dependent on pumps? It enables us to use a smaller pipe. From the reservoir to Wollongong we will have to use a 10-inch pipe. The great draught of water takes place in three or four hours, and by having the water stored we can economise by reducing the size of the long pipe to 7 inches. If I did away with that reservoir we might have to carry a 12-inch pipe right through.
105. You have no subsidiary reservoir in Wollongong itself? No.
106. What is the estimated cost of the works to supply the northern villages—that is, starting from the village of Balgownie? The junction with the 6-inch pipe leading to Bulli, branches off to the 7-inch pipe, the cost of the pipes, the service reservoir at Bulli, and the reticulation at Bulli, I put down at £23,000.
107. Can you give us the cost of the main from the service main reservoir at Bulli, the cost of the reservoir at Bulli, and the cost of the reticulation for Bulli and the towns between? The 6-inch pipe to Bulli has a length of five and nearly seven-tenths miles, cost £9,123. The reservoir I put down at £5,000, which might perhaps be economised, because I put it down the same size as at Wollongong.
108. Is it necessary to have a reservoir of that capacity for Bulli? It is to act as a balance tank for the whole of that district with a 6-inch pipe, which will have to be running all the time to keep up the necessary supply. Of course, the population might increase. We might economise there perhaps, and put in a smaller reservoir. We might save £1,000 thereby. The reticulation for Bulli, Wonona, Bellambi, and Corrimal I put down at £6,400.
109. Supposing a large settlement grows up at Wonona or Bellambi, would not the drawing of the supply direct from your main pipes very much interfere with the supply to Bulli. In that case I presume you would supply reservoirs? No; a pipe leading to the reservoirs would balance both ways. 110.

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110. You provide in your estimate of £66,000 for the reticulation service of Wollongong? Yes.
111. What amount have you put down for the reticulation of Wollongong? £5,700.
112. What experience have you had with wrought-iron pipes in connection with the Metropolitan water supply? We have 7 miles laid in connection with the North Shore Supply—from Ryde to Chatswood.
113. Then you have not had much experience? Not in length of time, but there has been a long experience in other countries. Some years ago we laid some large wrought-iron mains in connection with the Sydney water supply from the pipe-head basin at Guildford to Pott's Hill; but these pipes we are laying on a more modern principle, and being smaller we can dip them in asphalt. Pipes have been laid in that way for over twenty years in America, and have been found to be perfectly sound.
114. Do you find any trouble owing to contraction and expansion? No; because they are joined with lead in the same way as a cast-iron pipe.
115. A faucet joint? Yes.
116. I thought your wrought-iron pipes had all flanged joints? No; there are one or two special cases across bridges where flanged joints are used.
117. So far as your experience has gone, the wrought-iron pipes are no more trouble to maintain than cast-iron? No more.
118. Supposing the project of supplying the villages north of Wollongong were left out of the question, would you be able to reduce to any appreciable extent the cost of the Wollongong supply? Only to the extent of the £23,000. I would not recommend any reduction in the size of the head works.
119. You would make no reduction in the capacity of the dam in your storage reservoir? No.
120. The tunnel would be the same? Yes.
121. The same sized pipes would be brought down to the service reservoir at Wollongong? Yes.
122. So that really it would only be the cutting off of the Bulli connection? That is all the reduction I could recommend. What you could save by reducing a 7-in. pipe to 6-in. would not be worth consideration, and if hereafter Bulli were to be supplied it could not be done with the smaller pipe.
123. Could you supply villages which are existing, or may exist, south of Wollongong? It is a matter for consideration as to whether it will pay to run a pipe there.
124. It is a question as to whether you should take your mains there or obtain your storage supplies nearer hand? Having mains at Wollongong, it will be a question as to whether it will pay to run them on.
125. *Dr. Garran.*] I suppose all practicable schemes for supplying Wollongong with water have been fully considered and exhausted? Yes; the matter has been thrashed out for some years.
126. The available sources are all easily accessible to surveyors? Yes.
127. And the idea of utilising these coal mines, I suppose, was simply to get the descent of the water easily and cheaply? The first proposition is made by Mr. MacCabe, who is the manager at the Mount Keira colliery, and I think that he really made the first proposition in the interests of his owners.
128. The fall for the water would be largely made by dropping it down their shaft? We would put a pipe down their shaft and carry it through. There is a similar length of tunnel to drive in connection with that scheme.
129. You would have the same amount of piping? The scheme would cost nearly double the one proposed.
130. I suppose there is no method of letting the water fall over the edge of the cliff in the shape of a waterfall? You would have to get it to the top of the cliff first, and the loss of water would be so great that it would not be worth while. It would also be costly work.
131. Will the friction of the water on the pipes be very great? There will be no loss in one sense from that.
132. But will the wear and tear of the pipes be affected? The loss would not be great.
133. The pipes will always be practically full? Yes; running under pressure.
134. But they will be open at the outlet end? We shall have to regulate that by a valve. The pipes may carry more than we want for some time to come, and it will have to be throttled, and only the amount required daily allowed to pass through.
135. When they are closed the pipes will practically be full? Yes.
136. And you will let out what you want? Yes; that will be done by an automatic valve.
137. You have got all the local reservoirs you require for the purposes of Wollongong? The service reservoir shown on the plan will be quite sufficient for Wollongong.
138. How many days' supply will it hold? At 20 gallons per head per day, it will hold an eight days' supply.
139. And you would have ample time to mend any broken pipes? Yes.
140. What is the elevation of this service reservoir above the township? Two hundred and twelve feet.
141. And that will give a good pressure? Of course, the town is undulating, and in some parts it will be 90 feet over.
142. What sort of reservoir will this be? An open reservoir, concreted, and fenced in.
143. What about the balance tank? It will be dug out of shale to about 10 feet deep.
144. How much will that hold? It is not to hold any quantity of water, but to break the pressure.
145. That will not be an expensive work? Only a few hundred pounds. It is simply a place to work an automatic valve.
146. There is a branch pipe to Keira Village? Yes.
147. Did you take that out of the estimate when you reduced the estimate by £23,000? No.
148. What is the estimate for that branch pipe? It is nearly 1¼ mile long, and comes to £546 18s.
149. How many people are there to be served by it? I do not know the population of Keira. It is fairly thickly populated, and I think it would be a remunerative branch.
150. It would be no burden on the Wollongong scheme? No.
151. Do you think the district would pay the interest on the £23,000? It is not incorporated, and we have no assessment there.
152. Have you had any estimate made of the number of people to be served? Yes; the population has been estimated at 3,500.
153. And under the Act, if you make that branch, you will charge everybody within reasonable reach of the main? Every person within 150 feet of any main which may be laid must pay.
154. You do not know whether the district has been canvassed to see whether they approve of that? No.

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155. You heard Mr. Barling say that when the Government collected its rates it did so by means of agreements with separate householders? All we did was to sell water. People put on a meter and we read it.
156. Was the bargain with the householders in the form of a written contract? Yes; that they did not connect with the main unless they undertook to pay the Government.
157. You had a separate written agreement with every householder you served? Yes; the Government had no power to make any man take water.
158. Was it a document which you could sue upon? Yes.
159. Do you bring the pipe within their boundary and let them do the rest? No; we only laid it in the street, and they must make the connection.
160. Supposing the man furthest off wants the water, and the intermediate residents do not care for it, the man who wants it will have to lay a pipe the whole length? You cannot call upon any man to lay a pipe if the main laid by the Board is not within 150 feet of his property. In that case he could not be taxed or rated.
161. But I am speaking of the service pipe—supposing the house was 150 feet away, and the intermediate residents would not have anything to do with the service, would he have to be put to the whole of the expense to get the water? I do not know where you could get the case of a man being 150 feet away and other properties between. The property must face the street.
162. But there will be side streets? In that case there will be branch pipes laid up the street.
163. You take a pipe up the street to a point nearest the house of the man who wants the water? If it would pay to run a branch; if not he would have to make his own connection.
164. If it will not pay you to lay a pipe, and you make him pay for the water whether he wants it or not, it is hard lines? Over 150 feet he will have to make his own connection.
165. Then this idea of supplying the district north of Wollongong is a bit of a speculation? To some extent it is.
166. It was introduced under pressure, I understand, from the Members for the district? It was not in the original scheme.
167. Did the pressure come from the people themselves or from someone else? Through their representatives. The collieries are badly off for water about Bellambi and Bulli. All the streams which are coming down on the eastern fall are nearly all salt or brackish.
168. I suppose it would be the duty of the Board, when constituted, to take care that they did not lay a pipe where the people did not want the water? Not so much where they did not want it as where it would not pay.
169. The proposal is only a kind of proposal conditional on the people being willing to pay? There may not be a great many who are willing. You cannot get them all to agree.
170. But you have no direct proof, apparently, from anybody excepting through the Parliamentary representatives? We must assume that we have all the influential people of the district. A good many people of influence have spoken to me on the subject, and they are anxious to get the water.
171. Of course, it would be relatively more expensive to supply a scattered population than to supply Wollongong? Yes.
172. The quality of the water would be the same as that supplied to Sydney? Yes.
173. It is a sandstone catchment? Yes.
174. There is no particular source of pollution at present? No.
175. It will be necessary to resume a little ground? All the area to be occupied by the reservoir, and a certain amount around it.
176. There is no farm upon it? No.
177. Is the dam to be built of stone? Concrete.
178. Will it have a stone base? A rock bottom. We have had shafts sunk to test the rock.
179. Is the by-wash satisfactory? The water will go over the top of the dam itself.
180. Will it be similar to the dams on the Cataract River? Similar.
181. Are they working satisfactorily? Very. There is no percolation.
182. No breaking or chipping away? No.
183. An imitation of the style in which they are carried out will, it is reasonable to suppose, be a good work? Yes.
184. But it will be a small work compared with these? It will be a larger work in some respects.
185. What width will it be across? Five hundred and seventy feet long.
186. What will be the depth of the water just inside the dam? The maximum depth will be 21 feet, gradually shoaling up.
187. How much, altogether, will you store? Sixty million gallons.
188. How many days' supply is that for the district you are going to deal with? The maximum daily consumption would not exceed 140,000 gallons a day.
189. There is a superabundant quantity? Yes.
190. *Mr. McCourt.*] With regard to the estimated expenditure, Mr. Barling has referred to an item of £200 for maintenance. What does that include? The man in charge of the pipe-line, and two men attending to the valves of the reservoir.
191. Would not a man be required at the source? One man will take care of the source and the reservoir. He could spend part of his time along the line.
192. Would not the Commissioners be paid? Something would have to be allowed for the Board. There is no allowance made for the payment of a Board in the estimate, but the margin is more than sufficient to pay for a Board.
193. How much do you suppose these Commissioners would be paid? From £400 to £500 a year.
194. Would that have to be added to the estimated cost which has been given? Yes.
195. What margin of profit would that leave? It would bring it up to about the balance of the estimated receipts. The receipts, if anything, are given very low.
196. Do you think 3½ per cent. is a fair amount for the Government to calculate the money at? That is a matter of policy. If you ask my opinion, I do not think it is unreasonable. I think we might fairly count on the receipts being more than the amount set down. For instance, 10,000 gallons a day are put down to the Railway at 1s. a 1,000. That is under the mark: The Railway will be glad to pay 1s. 6d., and they will take more than 10,000 gallons. There is no meter rate put down.

197.

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197. Are all the people in the area where the pipe turns off to Bulli, between the sea and the coast range, to be charged? Where there is any reticulation.
198. Then where are the 3,500 people situated that are to be served? Of course, there is a portion of the area where there are very few people, or they may be too scattered to have the supply laid to them.
199. Then where are the 3,500 people situated? At Bulli, Wonona, and Bellambi. Some are scattered along the road where the pipe goes.
200. Then at what distance would they be charged from the pipe? You cannot charge any person more than 150 feet from the pipe, except where the reticulation is made. The estimate includes laying so many miles of reticulation pipes. £6,800 is put down for reticulation pipes. Of course, the whole would not be laid at once. The Board would have to decide as to where it would pay to run a main.
201. Have the people of Bulli asked for the scheme? I am not aware that the people directly have asked for it—only through a Member.
202. The cost of the Bulli portion is £23,000? Yes.
203. Is that all they would have to pay upon? It will have to be dealt with as a whole and worked as a whole.
204. Have you considered Mr. Lahiff's scheme? Yes.
205. What is the cost of his scheme? It would be £5,000 or £6,000 more than the present scheme. Taking a pipe through coal workings is open to serious objections, and I could not recommend it. There might be an explosion in the mine which would smash the pipe. Under his scheme it would be necessary to sink a shaft 632 feet to get down to the coal workings.
206. His scheme is not practicable? It is, but it is a very unwise one.
207. You say the alternative scheme through Keira and Mount Pleasant is, from an engineering point of view, unwise? Yes.
208. You do not think any competent engineer would approve of it? I do not think so.
209. What is the cost of the pipe from the end of the tunnel to the reservoir? About £4,300.
210. And from the reservoir to Wollongong? £3,700.
211. Dr. Garran asked you what would be the cost of a service to Keira Village, and you said £546. I suggest that that may be an error. The distance appears to be about 100 chains. The reason I think it is an error is that it is about a quarter of the length to Bulli, which you give as £9,000? It is only a 4-inch pipe as against a 6-inch.
212. Is the sum of £546 correct, then? It is 2,112 yards long; £546 will lay it.
213. What is the fall of the tunnel? One hundred feet.
214. Will it make severance if you put a pipe through a paddock;—could not you make an arrangement with the owner? I see no reason for it at all. The Legislature has given no power to take easements.
215. From an engineering point of view, it would be better to avoid that right angle, and it would be shorter? Yes; the practice at home and in South Australia is to lay a pipe through the country. Hitherto we have had to pay severance and compensations, and claims of all kinds have been built up.
216. *Mr. Humphery.*] Assuming the cost of Lahiff's scheme and MacCabe's scheme to be not greater than the one under consideration,—does either of those schemes possess any advantage over the one before us? None whatever; on the contrary, a disadvantage.
217. Besides their very much greater cost? Yes; and they are liable to serious and prolonged interruptions.
218. *Mr. Hoskins.*] Did I understand you to say that the portion of the scheme for supplying Bulli, Bellambi, &c., would cost £23,000? Yes.
219. That is for providing the main service pipes, but no branch pipes to the houses? All the reticulation. Of course, the little branch pipes to the houses do not cost much, and every householder has to pay for them.
220. Are you thoroughly familiar with the locality of Wonona, Bulli, and Para Meadow? I have driven through.
221. Do you consider that the whole of the houses and miners' homesteads there are worth £23,000? I think they must be. The mines and everything else are to be rated.
222. I leave out the mines? I may mention that the ratable value of that district is only taken at £24,500, which is £7 a head. I cannot help thinking that there must be £7 worth of property to each person there. At Wollongong it is £10 8s. per head.
223. Seeing that there is no evidence that the residents of the villages have asked for the supply, do you not think it would be advisable to carry out the Wollongong scheme first, and to wait and see whether the residents of the villages are anxious for a supply, and are prepared to take upon themselves the pecuniary responsibilities attaching to it? The Board, and no one else would dream of carrying out the whole scheme out of hand; they would only lay those portions which would pay.
224. The population is concentrated at Wollongong. If a portion of the scheme for supplying water to residents of Wollongong were carried out, and a rate was enforced, it might probably pay working expenses and the interest on the sinking fund; but as the other part of the scheme is doubtful, would it not be better to let it stand over till Wollongong had first been supplied? It might be wise. I would not recommend carrying out the whole of the work or any portion of it until it has been found likely to pay. There is a considerable amount of concentrated population at Bulli.
225. Are the residents of Wollongong greatly inconvenienced through the want of water? I am told they are at times.
226. *Mr. McCourt.*] In addition to the cost of the Board, would not a number of clerks have to be paid for collecting the money? A very small staff.
227. That would add £200, or £300 more to the cost? I think you might add £500 or £600 a year more. On the other hand, you might fairly add the same amount to the revenue, because it is cut ridiculously low. The revenue is taken at £2,880, and we know from experience in Sydney and other towns that the special rates for meters, gardens, stock, &c., come to quite one-third; one-third of that amount would be £900, and only £300 is put down for water rates.
228. *Mr. Ewing.*] The total cost is £66,000, and if we take off the northern supply for Bulli, Keira, &c., we are justified in believing it will be £42,000 or £43,000. Yes.

WEDNESDAY,

WEDNESDAY, 20 *JULY*, 1892.

[*The Committee met at the Court-house, Bulli, at* 2 *p.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Water Supply for Wollongong and the Surrounding Districts.

Mr. Henry Strange Fry, J.P., storekeeper, Bulli, sworn, and examined:—

Mr. H. S. Fry, J.P. 20 July, 1892.

229. *Chairman.*] You are in business in Bulli? Yes.
230. How long have you been a resident of Bulli? Thirty-five years.
231. The town is not incorporated? No.
232. Has there been much increase in population since you first came to the district? About nineteen-twentieths.
233. Is the population stationary or still increasing? Still increasing
234. Is that so far as Bulli alone is concerned, or places adjoining? Bulli only.
235. Where is the largest population between here and Wollongong? At Wonona.
236. And the next place? Bulli. Then comes Corrimal, Bellambi, Mount Pleasant, and Keira.
237. I suppose you are interested in all matters affecting this portion of the district? Yes.
238. Do you know if the people of Bulli and the adjoining villages have agitated at any time for a water supply system? I think not.
239. Do you know anything of the proposal now before the Committee? I had a plan sent to me by the Members for the district. That is all I know about it. I never heard before that Bulli was to be included with Wollongong.
240. Then, in connection with any agitation for the supply of water to Wollongong, Bulli has not been considered until recently? No.
241. How are the people of Bulli supplied with water now? By tanks and wells.
242. As the place becomes more densely populated, I suppose there will be danger in drawing supplies from wells? Yes. Of course, it may be polluted by cesspits.
243. Do you know of any case in which sickness has arisen from such a cause? No.
244. Has there been any dearth of water? The only place at which I know of any dearth of water was at the Bulli pits.
245. That was merely for working purposes? No; for household purposes.
246. And that is high above the hill? Yes; above the water scheme.
247. You have a good rainfall, as a rule? Yes. More, I think, than in any part of the Colony.
248. Do you think the people of Bulli, and the villages between Bulli and Wollongong, require this scheme to be carried out? It has never been before them. If the Committee could wait a week we would get the opinion of the whole of the inhabitants by means of a public meeting.
249. Supposing the organisers of, or persons who took a prominent part in, that public meeting had a very creditable supply of water, would they not be unlikely to advocate going to any expense for a further supply? I think it would be sufficient to place the case before the public and let them state their opinion.
250. Bulli society has not yet been contaminated by intercourse with the outside world? They are all human, and in a manner selfish; but, as Chairman of the Progress Committee, I may state that I think they are men enough to listen to any case which may be plainly put before them.
251. There is a Progress Committee here? Yes.
252. How long has it been in existence? For many years.
253. How often do you hold meetings? Sometimes every fortnight, and sometimes not for six months.
254. Has not the project of connecting Bulli with the water scheme been known for some time? Not to me until about eight or nine days ago. The Progress Committee met last night.
255. Had they the matter under consideration? Yes.
256. Was any action taken? The Progress Committee decided that those gentlemen who attended to give evidence could only give their private opinion, and could not pledge the public.
257. Were arrangements made for holding a public meeting? No; but we are ready to call a public meeting at any day.
258. Your opinion is that Bulli does not require a water supply scheme? It has not asked for it. Personally, I am well supplied.
259. You have told us there has been no dearth of water except in connection with a mine which would not be served by this scheme. Do you think the district requires the scheme? It will as it grows more dense.
260. But at present? I cannot speak for the district. We have been so long dependent upon our own exertions that nine people out of ten have plenty of water. I have 1,800 gallons, besides a well with a constant spring in it.
261. The majority of the people have amply supplied themselves with facilities for conserving the water, and you do not think they care about being charged for a scheme of this kind? I do not think so.
262. Are you so familiar with every detail of the scheme that you would be able to put before a public meeting the whole of the facts of the case? I think so.
263. You would not require any outside help—say from an officer of the Department—to explain it? I think not. Although the people at the pit say that forty houses are above the reservoir, a separate pipe, with the immense pressure there would be from the top of the mountain at Keira, would send it up to them.
264. How far are these people from the reservoir on the hill, immediately at the back of the hotel? A quarter of a mile, as the crow flies.
265. And they have, at times, suffered in consequence of drought? Yes; they have to go to the Elbow Creek.

Mr. H. S. Fry, J.P. 20 July, 1892.

266. What do they have to pay for the water from there? Nothing; they simply fetch it.
267. Supposing it were decided by the people of Bulli that this scheme should be extended to them, do you know sufficient of its details generally to give an opinion as to whether it is the best which could be devised? I think water could be brought to us more cheaply on our own account, provided we were incorporated.
268. Where from? From over the mountain—from the Cataract, or the Loddon, by gravitation.
269. This will be a gravitation scheme? Yes; but I mean without it coming all the way from Wollongong.
270. Could you get a supply from a shorter distance than from Wollongong? It might be a little shorter, and I think it would be less costly.
271. Would you not have to have a dam of your own on the catchment area. Would it not be better for you to share in the expense of the main works with Wollongong, than to have an independent supply of your own? I have no desire either way; but I am certain the water could be obtained equally as well for Bulli alone, without interference with the Wollongong scheme.
272. You do not know whether an independent scheme would, or would not, be cheaper or dearer than sharing in the Wollongong scheme? That cannot be told without a survey.
273. But you think the scheme under consideration for supplying Wollongong could be made available for Bulli and the intervening towns? Decidedly.
274. You know of no catchment area on this side of the range which could be utilised, thus preventing tunnelling through to the Cataract? I think plenty of water could be caught under the mountain.
275. Would there not be a danger of pollution? Not the least.
276. When you speak of under the mountain, you mean on the eastern side of the range? Yes; three-fourths of the way up.
277. Is there any natural basin where the water could be caught? There are facilities for making a small dam.
278. Then whilst you think the scheme proposed would be suitable for Wollongong, and that Bulli could be supplied by it, you, at present, doubt whether the people require it in this portion of the district. You would rather let the question remain open until the people have considered it in public meeting? The people of Bulli are very whimsical. I would not speak for them on any account.
279. You spoke just now of an alternative scheme if you were incorporated;—has there been any proposal to incorporate the district? It has been tried four times, and has failed through our being outvoted by those who do not wish to pay 5s. a year. If the people have to pay whether they use the water or not, I know what the result will be.
280. There is no intention, as far as I know, of forcing a supply on the people of Bulli; but it is thought that an efficient supply will be of great value to them? It would.
281. *Mr. Ewing.*] I suppose you have been told about the cost of the undertaking? Yes.
282. And, although you may wish to have water, you do not wish to pay too much for it? That is so.
283. The main to be brought here will cost, roughly speaking, about £9,000, the reservoir about £4,000, and the reticulation for Corrimal, Bulli, and, Wonona, about £6,000. We will approximate it at a cost of £20,000. At 5 per cent., that would be £1,000 a year for water. Do you think the people will willingly pay £1,000 a year for water? I do not think they will.
284. What is the population between here and Mount Ousley which would be accessible to the water? A little over 2,000
285. But there are a number on the mountain side? Yes, above the scheme.
286. What proportion are there above the scheme? About one-sixth.
287. How many live within 10 chains of the main road? About nine-tenths.
288. You think about 1,500 people would benefit from the scheme? Yes.
289. And you think that they would not agree to pay £1,000 a year and working expenses? I cannot answer for any one beyond Bulli and Wonona; but I am pretty sure they would prefer to get the water, if they could, without paying for it.

Mr. Frederick William Wilson, newspaper proprietor, Bulli, sworn, and examined:—

Mr. F. W. Wilson. 20 July, 1892.

290. *Chairman.*] You are the proprietor of the *Bulli Times*? Yes.
291. How long have you been a resident of the district? For six years continuously, and for an ordinary lifetime within six, seven, or eight years.
292. Your professional duties bring you in contact with people in all parts of the district? Yes.
293. You have heard the last witness state that it is only recently that it was heard that Bulli might be included in the Wollongong water supply scheme? Yes.
294. You concur in that statement? Yes.
295. Are you familiar with the scheme before the Committee? Yes.
296. Do you know whether the people between Wollongong and Bulli have suffered seriously in consequence of a dearth of water? I do not know of any serious consequences. I know that on more than one occasion there has, in times of drought, been something approaching a water famine.
297. Where did the people get their water from? From local private supplies. Of course, everyone was not short of water.
298. Had they to pay for it, or was it given by those who had a plentiful supply? As far as I know it was given. They did not all run out of supplies together.
299. Do you think the people of the Bulli district would be prepared to bear the cost of extending the scheme to their district? Speaking from my general knowledge of the people, I should say decidedly not. I would not like to answer for them.
300. Do you think they are content with their present supplies? My opinion is that they are.
301. Is it true that the water supply of the people of Bulli is largely drawn from wells and underground springs? Yes, underground springs and roof catchments.
302. Do you know of any ill effect arising from the use of well water? I could not express an opinion There have been small epidemics of fever, and so on.
303. You have never heard the water blamed for these epidemics? Not the water directly—I have heard the drainage blamed for it.
304. The drainage contaminating the water? Yes.

305. Then you do not think the people would care to pay for the cost of the scheme being extended to them? I really do not think they would. It is altogether a question of cost. To my mind the people would be glad to have a water supply, but when it came to a question of paying for it, I am afraid they would kick. Mr. F. W. Wilson. 20 July, 1892.

306. Do you think the scheme—as a scheme—is the best which could be adopted for the supply of Wollongong and district? I think the scheme, as applying to Wollongong, is the best which could be adopted, and in the event of its being extended to Wollongong the best way would be to supply the district, as a branch, from there. It is, perhaps, possible to obtain a local supply from some other source.

307. But you do not know of any particular place from which a local supply could be obtained at a cheaper rate? I know of a place, but I could not give an opinion on the question of cost.

308. Is that on the eastern side of the mountain? No; on the mountain itself.

309. That would mean bringing the water over the hill? But there would be a natural gravitation all the way.

310. How can that be;—is not the highest point on the range on the eastern side, whilst the catchment area would be on the west? There is a spot called Muddy Creek, which has a good supply of water. I think natural gravitation could be obtained from there to the township.

311. Does the water from Muddy Creek go eastward? No.

312. If it goes westward, must there not of necessity be some higher ground intervening? Yes; but I think a small cutting will answer the purpose.

313. That means you would have the catchment area and reservoir to yourselves, instead of sharing with Wollongong; it is just a question of cost between the works for your own catchment area and the pipe-line connecting with the Wollongong scheme? Yes; my own opinion is that the branch from Wollongong would be the best service if it were required.

314. The town not being incorporated, would a public meeting be the best means by which to arrive at the views of the people on the question? It is the only way.

315. Do you think the people would take sufficient interest in the question to roll up in force, and quietly and intelligently listen to the remarks of the speakers, and give their votes? They have always taken sufficient interest in the question of incorporation to defeat it, and this matter being one which touches their pockets, they are likely to take an interest in it also.

316. *Mr. Wall.*] What proportion of population does the area embraced by this scheme represent? I should say that the population of Bulli and Wonona is 2,000.

317. Have you any knowledge of the number of houses in Bulli and Wonona? About 700. That is from information not my own—it was recently given by a correspondent for the paper in discussing the question of incorporation.

318. What will be the average rents of those houses? Five shillings and six pence or 6s. a week.

319. That would be £210 on the total residents; the cost of the Bulli portion of the scheme is £23,000, which, as Mr. Ewing has pointed out, would mean a contribution from the residents of about £1,000 a year. If the number of houses is as you state, the 5 per cent. on those buildings would not pay the interest on the cost of constructing the water supply. Do you think they would be able to make any special provision so as to be able to meet it? I do not think so.

Clifton Sturt, Esq., Government Medical Officer, Bulli, sworn, and examined:—

320. *Chairman.*] You are a medical practitioner? Yes; Government Medical Officer for the district. C. Sturt, Esq.

321. How long have you been residing here? A little over three years.

322. We have been informed that the water supply for Bulli is drawn from roof catchments, conserved in tanks, and in some cases from wells or springs;—do you know of any sickness which has taken place in consequence of the pollution of those supplies? Merely ordinary cases of diarrhœa, which I have put down to contamination of the wells. The population of Wonona and Bulli is crowded into a small area. As a rule, the wells from which they draw the greater part of their water supply are places in close proximity to cesspits, and although there may not be pollution to any great extent at the present time, there is no knowing how soon it may reach an alarming extent. 20 July, 1892.

323. Cesspits are used for dealing with the night-soil? Yes. There is no pan system that I know of, except in the case of three or four houses.

324. In fairly densely populated places the use of cesspits and water conserved in wells is a great danger to health? It is. Although the health may be good under such conditions for some period of time, there is no knowing when an epidemic, having been given a start, may rapidly spread through the whole population.

325. You think, then, that a pure uncontaminated supply of water to the people is of the first importance from a health point of view? Certainly.

326. And the supplies at present are not all that might be desired? Very far from it.

327. And although if this scheme were carried out considerable cost might be entailed on the people, yet that cost might be cheap? Very cheap indeed, compared with the loss of life and health.

328. Would you, as a resident of Bulli, be prepared to use the water and pay for it if it were brought here? I should only be too delighted to do so.

329. How is your house served at the present? From the roof, and I have to depend at times when there is very little rain upon a well which is sunk close by the house.

330. Which may be subject to contamination from the source you have already referred to? Possibly.

331. Therefore, you would gladly pay for water up to 1s. 6d. per 1,000 gallons? Certainly.

332. And think it cheap? Very cheap indeed.

333. You believe that if the people had a proper idea of the value of pure water they would gladly welcome it? Certainly. I may state that I have known cases of typhoid fever occurring in the district which I have been able to trace to the want of a water supply—not so much in connection with wells or storage tanks, but through drinking water from creeks after heavy rains. The water then is largely impregnated with vegetable organic matter, and I have known several cases which I have proved to my own satisfaction to have been caused by drinking such water. One of these cases was a very peculiar one, and it is rather instructive in speaking of the water supply. At Robinsville there is a creek, which at times communicates with the sea. Now and again a bar of sand rises at the mouth, and it is shut off from the sea. There is

C. Sturt, Esq. 20 July, 1892.

a good deal of decomposing seaweed and vegetable matter in the creek, and whilst it was shut off from the sea on one occasion, a man and his three children went down to bathe in it. They noticed that when they lifted up the water to wash their faces it smelt badly, and they came out. The father was ill for about one day with diarrhœa and headache. Two of the children were ill in the same way, and another had typhoid fever.

334. Then, it is not only the pollution from civilisation, but also from natural causes? Certainly. There have been cases of typhoid fever at Austinmer. These have occurred amongst miners who were dependent for their supply from the creeks, and they occurred, as a rule, after heavy rains. The heavy rain would naturally wash a large proportion of organic matter into the stream. My idea was that they had contracted typhoid through the impurity of the stream.

335. Do you know anything as to the nature of the scheme before us? Only what I have heard generally.

336. It is proposed to appropriate a portion of the present Metropolitan water catchment area, to bring the water by tunnel through the range to a reservoir at Wollongong, and by pipes to Bulli. I suppose you are agreed that it is almost impossible to contaminate the catchment area referred to? Certainly. I think, however, it would be necessary to filter the water before supplying it to the inhabitants. I have noticed the dam which exists on the Bulli Company's property on several occasions, and it has always been very turbid and muddy.

337. But that is on the eastern side of the mountain? Yes.

338. The other is on the western side, and being sandstone country, it is not liable to contamination? I have not heard of any analysis being made of the water.

339. Do you know that the Metropolitan water supply is considered to be equal, if not superior, to any other in the world? I am not conversant with it.

340. At all events, you think that what is fit for Sydney, with its teeming population, would also be fit for Bulli? Certainly.

341. *Mr. Ewing.*] Your objection to the Bulli cesspits and wells being in close proximity would apply to any population in the Colony? Yes; but more particularly so here, because they are crowded together, and the area of land on which the people live is so small.

342. There is nothing in the soil here to cause you to expect a greater possibility of contamination than any other soil? Not that I am aware of.

343. Therefore, what you say in regard to the water supply of Bulli could be said of any other town in the Colony? Yes.

344. You are speaking with regard to general principles? Yes.

345. The question whether Bulli should pay for a water supply or not is another matter altogether? Yes.

346. *Mr. Wall.*] Regarding this as a general principle, or as a scheme which the people have to take upon themselves and have to pay for, do you think the people of the district desire to have the works carried out? I am perfectly certain they would not pay for them.

347. Do you think the adoption of reasonable sanitary measures would prevent the pollution you have referred to in connection with the cesspits? I think so

348. Without spending £23,000 on a water scheme? Certainly; by scavenging, and doing away with the cesspits, the present water supply might be made ample for the requirements of the district.

349. Some evidence has been given with regard to the scarcity of water at times—have any precautionary measures been taken by the people to enable them to have a supply at times of drought? They are purely dependent on the wells and tanks.

350. If some trifling precautionary measures were taken with the eastern catchments, they could furnish themselves with sufficient water? For the present requirements of the place.

351. *Mr. Dawson.*] What is the rainfall here? I could not tell you. It has been very excessive during the three years I have been here, but I have heard of periods of drought as long as nine months.

352. *Chairman.*] Is there anything else you have to state? I have heard of an alternative scheme to this, namely, by bringing the pipes down through the mines. I think that should be condemned at the outset, for the simple reason that the water would be contaminated during transit through pipes.

Mr. Alexander Spence Artis, Bulli, sworn, and examined:—

Mr. A. S. Artis. 20 July, 1892.

353. *Chairman.*] You are a resident of Bulli, and have been for many years? For twenty-nine years.

354. Have you ever heard the people of Bulli complain of the insufficient supply of water? No.

355. Do you think they are fairly well supplied now? Yes, by catchments from the roofs; and wells and springs.

356. You have never heard of cases of sickness arising from the supply being contaminated? No.

357. Do you think the people of Bulli, if they were called together, would give their adherence to this scheme, which means, of course, taxation upon themselves for the supply of water? I do not think so.

358. That is a reason, perhaps, why they have not incorporated themselves? I think it has a good deal to do with it.

359. Putting on one side the Bulli people, do you think, as an old resident, that it would be in the interests of the district to be supplied with water? Decidedly so.

360. At the cost which has been mentioned? Yes.

361. Do you know of any other scheme by which Bulli could be supplied as efficiently and at less cost than the one proposed? I do not know of anything definitely, but I have heard some talk of bringing a water supply from the other side of the mountain.

362. But with no definite statement as to cost? No.

363. It might turn out to be double the cost of the proposal under consideration? I do not myself see how they could carry it out.

364. Which of the places between here and Wollongong has made the most progress in population during the last five years? Wonona.

365. That is really a portion of Bulli? Yes.

366. Has not Bellambi made great progress? Not much; but Corrimal has.

367. You look upon Wonona as the centre of the district north of Wollongong? Yes.

368. What is the reason of that? Because three mines have been opened out there lately.

369. It is a mining centre? Yes; and the miners live in the centre of the mines. If they leave one mi they can go to another without moving their residence.

Mr. A. S. Artis. 20 July, 1892.

370. Do you think this is likely to be more marked in the future than now? Yes.
371. Then there is no reason to suppose the people of Bulli or Wonona will remove in a body to Clifton? If work fails them at Wonona, and they can get it at Clifton they will go there.
372. It would be rather awkward if the people of Bulli and Wonona, having been supplied with water, removed to Clifton? There is no fear of them all removing. Miners might work at the other end of the district, but their wives and families would still be here.
373. Although the district may be subject to fluctuations of population now and then, you do not think there will be anything serious? I do not think so.
374. Are we to understand that, so far as you are concerned, you would be favourable to bearing your proportion of the cost of the scheme, and that it is the best scheme which can be suggested? Yes.
375. *Mr. McCourt.*] Is there any prospect of Bulli and Wonona being incorporated within a reasonable time? I could not say. We have made four attempts, but the mine-owners seem to be able to beat us.
376. How is it possible for the mine-owners to defeat you. Do they own all the property? No; but they would be heavily taxed.
377. But would not the petition for incorporation go by numbers? As soon as we get up a petition the mine-owners get up a contrary petition, and generally obtain forty or fifty more signatures than we do.
378. Therefore, the people are against it? Yes; especially the people who happen to live alongside good roads.
379. Are you aware that in case the scheme is carried out the supply of water will be controlled by Commissioners? I am not aware of that.
380. Can you give us any idea of the value of property extending from Bulli to the boundary of Wollongong? Keeping away from the main road the value of land is about £100 an acre. The land bordering on the main road may average £2 a foot.
381. *Mr. Ewing.*] How far is it to Mount Ousley? About 5 miles.
382. *Mr. Wall.*] We have had evidence to the effect that the average rental of the houses is about 6s. a week? That is a fair estimate.
383. That means that the rates of 5 per cent. would be 15s. a year? Yes.
384. *Chairman.*] Is there anything else you would like to state? I think it would be a great advantage to this portion of the district to have a water supply. We have coal and good clay here for making bricks, and if we had a good supply of water, fresh industries would be created.
385. What kind? Saw-mills, brick-yards, coke, &c.
386. Is not the coke of the coast districts a failure? No; it is sent from Bulli every day.
387. What for? I do not know, but I see it in the trucks.
388. *Mr. Wall.*] You fully recognise that this is not a Government matter, but a co-operative business on the part of the people entering into it? Yes. I think that after the mains have been laid the people will see the advantage to be gained by having the water put on to their houses. They might block the scheme in the meantime, but in a couple of years they will be glad to get the water.

Mr. John Evans, manager of the Bulli Colliery, sworn, and examined:—

Mr. J. Evans. 20 July, 1892.

389. *Chairman.*] What is your occupation? Manager of the Bulli Colliery.
390. How long have you been resident in the district? About seven years.
391. Are you familiar with the scheme under consideration? I have just seen the plans. I have a fair knowledge of its general features.
392. Presuming it is desirable to supply Wollongong and Bulli with water, do you think this is about the best scheme which could be devised? I have not given that matter much consideration, but I should think that, to supply Bulli alone, a supply equally suitable could be got from this side of the town. But applying the scheme generally to the district, I think it is quite applicable.
393. Where do you think as efficient and as cheap a supply could be obtained for Bulli alone? I think a large catchment area could be got on Madden's Plains, on the western side of the range.
394. The water, I suppose, runs westerly? It runs southwards for a time, and ultimately runs westerly. In times of heavy flood you can see the water from Muddy Creek flowing over a great precipice.
395. But would there be sufficient catchment area to that precipice to supply Bulli? Yes.
396. If a dam were put across this particular precipice it would impound sufficient water for Bulli? Yes.
397. How far would it be from Bulli? In a straight line it might be 2½ or 3 miles.
398. If you did that, then, Bulli would have to bear the whole of the cost of the impounding dam on the mountain, as well as whatever tunnelling there might be to bring it through the higher portion of the ground so as to bring it here? Yes.
399. And it is a question whether that would not more than counterbalance the connection with the Wollongong scheme? Yes.
400. Do you think that Bulli requires a water scheme? I do not think so.
401. Do you think the people are supplied sufficiently well without it? I think so. I do not think the Bulli community would be justified at present in going in for it. Neither would the Government be justified in expending a large amount of money in works of that kind in the district.
402. Your Company, I suppose, has always objected to the incorporation of Bulli? I suppose they have.
403. Because they recognise that, if incorporated, they would have to pay taxes like everyone else? Yes.
404. And I presume the fact of their having to pay for water, if it is to be brought here by this scheme, will have some influence with them? No. They have expended a large amount of money in supplying themselves with water. There is no likelihood of the Bulli Colliery ever wanting water. They have constructed a large dam, and have always at least 1,000,000 gallons in stock.
405. How far is that supply from the proposed reservoir? The reservoir would be above the mine. It would be fully 300 feet high.
406. Therefore, even if the scheme is carried out, the mine will not be called upon to contribute? No.
407. But does the Company own any land in the district which would contribute to it? Yes, they have land.
408. And if taxation were imposed, would not the Company be large contributors? I do not know. The land is not tenanted at present.

Mr. J. Evans. 20 July, 1892.

409. But if a more equitable way of dealing with land for municipal purposes were brought into operation, you would contribute very largely? No doubt. I may state that I have not consulted the Company in regard to my evidence, and that I give my evidence personally.
410. As a matter of fact, your Company, being largely interested in land in and about Bulli, would contribute materially to the cost of the scheme if it were carried out, although they might not directly use the water? Yes.
411. You have heard that the water supply of Bulli is obtained from the roofs, and from wells and springs which may or may not be contaminated by cesspits? Yes.
412. You recognise that as a serious danger to health? Yes. I may state it is difficult to find such a district as this in the Colony in which people are so widely scattered.
413. What acreage will Wonona cover? About 200 acres.
414. How many people are upon it? Perhaps 500 or 600.
415. Does that include children? I do not think it would exceed 700 or 800, including children.
416. *Mr. Sutton.*] You suggest an alternative scheme;—have you any idea what will be the cost of it? No. It has struck me that it is possible to have a comparatively cheap scheme.
417. Would your mine derive any benefit from that scheme? None whatever.
418. It is not in a position to be affected by it? No.
419. Would you not intercept the water from it? No. The Company's property does not extend so far as that. The population of this district is of a very shifty nature. We have nothing but a few mines to depend upon, and we cannot continue drawing coal from the hill side unless we know of something which we do not know of at present. I do not see any great prospect for the district.
420. *Chairman.*] You mean, I presume, that sooner or later it will be panned out? Just so. It is well known that at present there is only one payable seam in the district, and what will this place be worth if there is no coal mine. We do not want a water supply for a few farmers.
421. *Mr. Ewing.*] You think, therefore, that an expenditure of £20,000 is unjustifiable from a public and local standpoint? Yes.
422. You have mentioned that there are 1,000,000 gallons of water in the Company's dam. At the rate of 20 gallons per head per day, that would supply 500 people with water for 100 days? I suppose so.
423. Is it good water? Yes.
424. Do you use it for household purposes? No. It is there; some people use it when they want it.
425. What is the height of the dam? Fully 550 feet above sea-level.
426. What was the cost of the dam? I could not tell you, but it was very costly, because they could not make it secure.
427. What do you think you could put up a similar dam for? I daresay it would cost £2,000. I may state that we have not a great number of coal seams in this end of the district, and you may take my word for it that in twenty-five years' time there will be very little coal-mining here, unless we obtain something of which we know nothing at present.

Mr. William Thomas Dickson, hotelkeeper, Bulli, sworn, and examined:—

Mr. W. T. Dickson. 20 July, 1892.

428. *Chairman.*] You are in business as an hotelkeeper in Bulli? Yes.
429. How long have you been a resident here? Three years.
430. How do you obtain your present supply of water? From roofs, conserved in tanks.
431. You have no underground spring? No.
432. Have you ever been put to any inconvenience for want of water? Yes. When we first came here there was a bit of a drought for two months, and we had to sink another tank.
433. Have you been subject to any inconvenience since then? No.
434. Have you ever had to be dependent upon outside people for water? No. We have had inconvenience in pumping water up to supply the different apartments of the hotel.
435. Then you are not in a very bad condition in regard to water, except so far as pumping it to the different apartments of the hotel is concerned? That is so. The drainage, however, is very bad. There is no means of getting it away, except by sinking little holes.
436. There is no inspector of nuisances to prevent you doing that? Yes, the police; they have had us up once.
437. And you have been obliged to carry the drainage upon your own property? Yes, and to let it run into other people's tanks.
438. Then what you think Bulli requires is a proper water supply and a sewerage system? Certainly.
439. Although you have a sufficient supply yourself, you would be prepared to pay the tax proposed, 5 per cent., under the ordinary Municipalities Act, if the scheme were brought into operation? Yes.
440. Do you think the people of Bulli are of the same opinion as yourself? I could not say.

Mr. George Simpson Turnbull, storekeeper, Bulli, sworn, and examined:—

Mr. G. S. Turnbull. 20 July, 1892.

441. *Chairman.*] How long have you resided in Bulli? Twenty-five years.
442. What is your business? General storekeeper, baker, and postmaster.
443. Do you know anything about the scheme we have under consideration? I have looked over the plans.
444. Do you think it is the best scheme which can be devised for supplying Bulli with water? If it is to supply the whole of the district as far as Clifton, I do not think the catchment area is sufficient.
445. You believe there is a great future before the district? Yes.
446. What are they going to do when they are finished with the coal? My opinion is that they have scarcely begun with the coal yet.
447. The only objection you have to the scheme, then, is that you think that the catchment area is not large enough? I have not heard of any complaint of want of water in Bulli during the time I have been here, except in regard to a few cottages at the mine. That was during a dry season. As far as my general knowledge of Bulli goes, they do not require the water suppply.
448. So that, if you are one of the speakers at the projected public meeting, you will be against the Government scheme? I am not aware whether it is a Government scheme or not. I heard nothing of Bulli being coupled with it until a few days ago. Before I could give any idea as to whether the scheme is as good a one as can be devised, I should require to go over the ground myself and form an opinion, as an engineer.

449. Are you an engineer? A mechanical, but not a civil engineer.
450. Have you ever thought of a scheme which would do for Bulli itself? I have. First of all, there is a good supply of water under the mountain which would supply Bulli and the surrounding district for many years. It does not require a catchment. It is a permanent spring, and has never been known to give out. Mr. G. S. Turnbull. 20 July, 1892
451. How many people drew upon it? The whole of the district, from Wollongong to Bulli, in years gone by had to depend upon it.
452. We have been told by Mr. Fry that not many years ago there were not many people here? No; but there were a good many cattle.
453. Can you give an idea of the volume of water from this spring? The lowest has been a sluice head of water running over the gravel.
454. At all events you do not think that Bulli requires any supply beyond what it has at present? I do not think so.
455. Therefore, the Committee can strike off Bulli altogether from their consideration? As far as I am concerned.
456. Were you one of the opponents to the incorporation? I am an opponent to incorporation whilst buildings have to pay for improvements, and vacant blocks have to get clear of rates.

Mr. Henry Strange Fry, J.P., storekeeper, Bulli, sworn, and further examined:—

457. *Chairman.*] I believe you took an active part in the proposal to incorporate the town? Several times. Mr. H. S. Fry, J.P. 20 July, 1892.
458. Can you tell us the date of the last petition or effort? No. It may be two years ago.
459. Can you give us any idea of the number of signatures? About 350; but there is a lack of public spirit here. We could not get anyone to go round, or we should have got more.
460. How many did the opposite side get? They beat us.
461. Badly? No; because they were lazy. They beat us by forty.
462. That would give about 740 people, then? Yes.
463. Were they all adults who signed the petition? As far as we know.
464. What were the bounds of the municipality? The area to be incorporated was to join North Illawarra on its northern boundary, and we went to Flanagan's Creek, which is the natural boundary, three-quarters of a mile north of Robinsville.
465. All your petitioners were adults and persons liable to be rated? I believe so.
466. Have you any suspicion that the signatures on the other side were not as good? Not enough to speak of.
467. I suppose you went through the district very carefully to get all the signatures you could? Not at all. Two men cannot do it.
468. Then two years ago, with a fairly energetic canvas, there were only 740 male adults who signed the petitions in the area you have referred to? Yes.
469. Do you think there were many left outside? Yes, perhaps 150.
470. Then two years ago the adult male population in the area you have referred to was about 900? It is more than that; but there are people who do not pay rates—lodgers.
471. *Mr. McCourt.*] What is the number on the electoral roll? One thousand five hundred.
472. We can reckon that two years ago there were 900 persons liable to be rated in the area? Yes.
473. Has there been much increase in population since that time? Yes.
474. To what extent? About 10 per cent.
475. Roughly speaking, then, there are about 1,000 adults? Yes.
476. Is there anything else you would like to state? I should like to understand from you how near the people must be to the water supply to be rated.
477. Fifty yards from any street or lane in which any reticulation pipe will, or may be laid. Will you tell the Committee whether it is your intention to call a public meeting? I was going to ask whether you would pay any attention to the result of such meeting.
478. That is the only means by which we can gauge the opinion of the people. Perhaps you may come to Sydney and give the result? I will see that the meeting is called within a week.

FRIDAY, 22 JULY, 1892.

[*The Committee met at the Court-house, Wollongong, at 10 a.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor. | William Chandos Wall, Esq.
Thomas Thomson Ewing, Esq. | William McCourt, Esq.
Henry Dawson, Esq.

The Committee further considered the proposed Water Supply for Wollongong and the Surrounding Districts.

John Archibald Beatson, Esq., Mayor of Wollongong, sworn, and examined:—

479. *Chairman.*] You are Mayor of Wollongong? Yes. J. A. Beatson, Esq. 22 July, 1892.
480. How long have you held the position? This is my second year.
481. How long have you been an alderman of the borough? About nine years.
482. You are a native of Wollongong? Yes.
483. Has your Council had this project under consideration formally and definitely? Yes.
484. Has it passed any resolution in regard to it? We have adopted a minute from myself embodying this scheme, unanimously. All are in favour of it with the exception of one, and as he was absent from the meeting I cannot answer for his views.
485. I suppose you believe that you are voicing the opinion of the majority of the ratepayers? Yes; a scheme on the same lines has been before the Council on three or four previous occasions.

J. A. Beatson, Esq. 2 July, 1892.

486. How long is it since your Council passed the resolution favouring the scheme under consideration? I could not tell exactly. It is a considerable time ago.
487. Are the people of Wollongong, when they are dissatisfied with their municipal representatives, in the habit of calling meetings to protest against any action on their part? Yes; they are quite at liberty to do that, and would assuredly do so if they disapproved of the actions of their representatives.
488. And since the Council passed the resolution they have had ample time to do it if they had thought it necessary? Yes. The subject of a water supply for Wollongong has been under consideration for years.
489. And you think that not only the aldermen but the people generally understand the whole of the project? Yes.
490. Had you under consideration MacCabe's and Lahiff's schemes? Yes; MacCabe's scheme was submitted to the Council and dealt with, and sent on to the Minister. Lahiff's scheme was never submitted to the Council, but he supplied an outline of it to the *Illawarra Mercury*, and personally waited on the Minister.
491. Both of these schemes contemplate the using of mining works, tunnels, &c., for the pipes? Yes.
492. And to that extent do you consider they will be objectionable? Yes; as far as my knowledge goes.
493. Do you think there will be too much danger attaching to them from explosions or works falling in? Yes; there are various objections to the schemes.
494. For that reason you have dismissed altogether those schemes, and have come to the conclusion that the Government scheme is the best? Yes.
495. You know the estimated cost of this scheme? £40,000, I believe, for Wollongong.
496. The total cost of the scheme, we are informed, is £66,000. If the northern connections are dispensed with it will reduce the cost by £23,000, leaving £43,000 for Wollongong to bear. Do you think that Wollongong can bear the interest upon £43,000 and a sinking fund to provide for the extinguishing of the capital cost? I am having a return prepared, showing that Wollongong is able to bear the cost upon a £40,000 basis—compiled for a term of about sixty to sixty-five years.
497. We have a statement from the Under Secretary for Works to the effect that the annual value of property within the proposed reticulation area is given by the Mayor as £33,109. Do you remember giving that information? I believe a return was called for, and I suppose that is the information. In what year was that?
498. That is for 1891? That will be 1890-91.
499. Can you tell me what your assessment value is at present? I can hardly tell you, as the Appeal Court is not yet concluded; but if you take 1891-92, I have it as £3,196.
500. That is what was realised? Yes; from all sources.
501. What do you mean by all sources—municipal rates, and gas rates as well? Yes.
502. What is your income from the municipal rates alone? For 1891-92 it was £2,200.
503. But a great many of the properties which are included in that sum will not be touched by the water supply scheme at all? No. That is the revenue from all the properties within the borough.
504. The proposed water supply will not reach all the properties, and therefore they would not contribute to the cost? No.
505. Has any plan been put before you showing the reticulation zone or area? Yes; we have had a plan showing the reticulation along all the principal streets.
506. At all events, the most valuable portion of your municipal taxing property will be within touch of the scheme? Certainly.
507. But there would be some portion of the borough which would not be liable to rates from it? A small proportion.
508. You cannot give us any idea of the proportion? Not exactly. It is only a very small portion.
509. We shall be perfectly safe in striking off the odd £200 for properties outside the reticulation area? Yes.
510. That brings us down to £2,000? Yes.
511. Does your Council think that the proposed works are too elaborate? No; they have expressed an opinion favourable to the scheme, without any reductions whatever.
512. We have been informed that one inch of rainfall upon the catchment area would be equal to a twelve months' supply, not for Wollongong merely, but for the whole of the system, which includes the towns right up to Bulli;—do you not think that that is an excessively large reservoir, or impounding area, for Wollongong alone? Wollongong, I believe, has a big future in store for it. What with the proposed harbour works and other things, it will be a large place eventually, therefore as it progresses population will increase.
513. What progress has Wollongong made during the past five years in population or municipal values? A return which is being prepared will show the municipal values. The population at present is 3,043.
514. Have you any idea what the population was five years ago? No; but the population has increased. At present there is depression all over the Colony, but the future is brighter.
515. What is to make Wollongong the hub of the universe in the future? We shall have improved harbour accommodation. Wollongong is bound to progress, owing to the nature of the district itself.
516. But there is a very limited area in your district;—do you mean as a district for dairying purposes, or mineral getting? There is mineral wealth here, and the soil is good.
517. Is it not a fact that some of the mineral deposits in the district have worked out? I could not say; but I certainly think not.
518. If it has been stated by people in Bulli that the coal is virtually worked out in some parts, is it not rather a serious matter for the future of the district? It is a serious matter; but I hardly believe it, because some little time ago some of the aldermen went through Mount Keira and Mount Pleasant. In Mount Pleasant there is a splendid seam of coal, which the manager told me would last for 200 years to come, and I think the same remark applies to Keira.
519. So that you do not think Wollongong is going to die right out altogether? Certainly not—it is only commencing. The future of Wollongong and the district generally should be extremely prosperous.
520. Do you not think that a less quantity of water than what would be impounded by means of an inch of rainfall would serve the purposes of the borough? I suppose three or four months is the longest period during which rain has not fallen in Wollongong. The proposed scheme would ensure a twelve months supply, thereby providing for all possible wants now, as well as for the future.

J. A. Beatson, Esq.

22 July, 1892.

521. You have a good average rainfall? Yes.
522. Do you know the extent of it? No.
523. Do you know, of your own knowledge, whether the rainfall is heavier on the hills around the catchment area than at Wollongong? It is heavier on the catchment area.
524. Then if you had three or four months supply of water impounded you would have no fear of a water famine? Not with the present population, but I do not know whether such a supply would be sufficient if the population increased.
525. Would it not be far better for you to be put to small expense to start with, and then, if the population increases as you anticipate it will, to take in a larger impounding area afterwards? It is a question as to whether it would not be better to make the work satisfactory to commence with, and adopt the Government scheme *in toto*.
526. You are aware that the proposed dam is of great length owing to the flatness of the country on the south-western side? Yes.
527. It will be a serious item in the expense. If, therefore, you can conserve sufficient water by putting a dam below the junction of the Cataract and the Corrimal Creek and Rocky Creek, would it not serve you for a time. Would it not be as well, instead of impounding 60,000,000 gallons of water, to impound 10,000,000 or 15,000,000? The Council as a body have approved of the larger impounding area.
528. Did the Council look at it in this light—that under the law they will only be charged 5 per cent. on the ratable value of the property, and, therefore, whether it is little or much, it did not matter to them so long as a paternal Government supplied the difference. Or did they look at it in the light that they would have to pay interest on every penny, even up to a 10 per cent. rate? They looked at it on the score of cost, and on the other hand that payment would extend over not more than 100 years.
529. Your municipal boundary on the north is Fairy Creek? Yes.
530. North of that, and also west of your boundary, the municipal district of North Illawarra comes in? Yes.
531. A considerable length of the main from the tunnel down to Mount Ousley, and from Mount Ousley down towards your town, is North Illawarra? Yes. I may state that I have a letter from the Government Railways Department estimating that their consumption of water would not be less than from 10,000 to 20,000 gallons a day. I have also a letter from Lieutenant Luscombe, who is in charge of the fort here, saying that he cannot give me the estimated amount required for military purposes, but he has asked for a return from Sydney in order to place me in possession of the facts. There will be other outside sources, such as shipping, &c., which will require water.
532. *Mr. Ewing.*] I suppose all you want is a proper water supply for Wollongong? Yes.
533. And there is no advantage in paying for more than you want? No.
534. Therefore, the more cheaply you can get a supply, provided it is a sufficient one, the better you will be satisfied? Yes.
535. The amount of water which would be impounded in the proposed dam would be 60,000,000 gallons. The dam to which the Chairman has referred, some distance up the creek below the junction of the Cataract River with the other creeks, would impound about 15,000,000 gallons. Speaking roughly, you have in Wollongong 3,500 people. Allowing 20 gallons of water per day to each man, woman, and child, you would require 70,000 gallons a day for your purposes; 70,000 gallons divided into 15,000,000 would give a water supply for Wollongong for 210 days. You say you have never known rain to cease falling in Wollongong for a greater period than three months; therefore, if you have a water supply of seven months it ought to be sufficient? Yes, in the present state of affairs it would be sufficient.
536. At present, if you had a dam which gave you a water supply for Wollongong for seven months you would be justified in believing it was an effective supply? Yes; for the present.
537. Then anything spent beyond providing that supply would be, for the present, a waste? For the present it would; but I would sooner look to the future, when the demand for an increased supply will assuredly arise.
538. But you must understand that the presence of that dam does not interfere with your operations for the future. If you found Wollongong growing you could build a larger dam quite as quickly as the one to which I have referred? Yes.
539. Does it not appear to be a reasonable thing that you should have a scheme for which you can afford to pay, allowing the future to make provision for itself? Yes, but I strongly approve of the scheme as now submitted.
540. You simply say, as Mayor, that the people are prepared to accept the obligation of a water supply? Yes.
541. Do you think that there is population enough at Keira Village to justify the laying of a pipe to it? Yes; it is progressing and improving rapidly.
542. You think there ought to be one there? Yes; there is no good water there.
543. And the people want it? Yes.
544. What do you call Keira Village? Just at the foot of the mountain; a portion of it is within our municipal boundary.
545. In addition to what you require for your municipal wants you believe that there will be a large demand for water by the Railway Department, for use at the wharf, and in connection with military affairs, and, I suppose, in connection with coke? Yes; and for harbour improvements.
546. You feel there is no doubt whatever that if a reasonable scheme is carried out you can pay for it? Yes. I entertain not the slightest doubt on that score.
547. You expect the Government, when the work is completed, to hand it over to you for management; have you thought of what is to become of the works when they are completed? I understand that a Bill will be framed, on the lines of the Hunter River Bill—that the Government will appoint Commissioners, and that the Municipal Council will appoint representatives.
548. *Mr. McCourt.*] Before the Council passed the resolution approving of the waterworks, had you the full particulars of the scheme before you;—did the Department give you an estimate of the cost? Yes.
549. Did Mr. Darley send you a copy of the report as to the cost? No particulars were laid before us, but the bare statement of actual cost.
550. And upon that you passed the resolution? Yes.
551. If this were a private work would you not deem it necessary to inquire into the particulars of it. Did you obtain the report of any engineer upon the scheme? No. Mr. Josephson, the surveyor, and I have had conversations on the matter, and entered fully into the details of the scheme, which appeared to me to be satisfactory.

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552. But the Council did not employ an engineer of their own to ascertain whether there was going to be any wasteful expenditure? No, they did not deem it requisite.
553. Do you not think they ought to have done so? I do not think so.
554. You took the Government statement for granted? Yes.
555. Do you think the Council could carry out the work cheaper than the Government? I could hardly say.
556. But you do not think it necessary for the Council to have a report from an independent engineer upon the scheme? Not as it has been approved of by Mr. Darley and Mr. Barling.
557. If the Mayor of Goulburn has sworn that, with a population of 12,000, and their waterworks costing £54,000, the people cannot pay the interest upon the amount, how is Wollongong, with a population of only 3,000 to pay interest on £43,000? I do not know; I suppose the Mayor of Goulburn speaks with authority, because he has had the experience.
558. He swore the other day that with a population of 12,000 they are unable to pay the interest on the capital cost of works costing over £54,000? But over what length of time does the period of payment extend?
559. Sixty years. Can you show a better case for Wollongong than that? The Town Clerk will be able to show you from his return that we will be able to pay the interest on the capital cost of £40,000 within sixty-five years.
560. When this 5 per cent. water rate is imposed what will be the total rate the ratepayers of Wollongong will have to pay. What is the municipal rate now? One shilling in the £.
561. And the other rates? One penny for the Fire Brigade Board, and 4d. special lighting rate.
562. Supposing the Bulli portion of the scheme is not carried out, do you not think the Council could manage it cheaper than it could be managed by a Board of Commissioners? I think so.
563. The Board of Commissioners would be a costly way of dealing with it? I think so.
564. The estimated cost of this scheme for Wollongong alone is £43,000? Yes.
565. Are not Government estimates usually exceeded? Yes.
566. If 10 per cent. be added to the amount it will bring the cost up to £47,000. Would you still undertake it even if it cost that? Yes; the need is so great for a pure supply of water, and the time of re-payment extending up to 100 years, that I am sure the inhabitants would pay a high rate to secure the boon.
567. *Mr. Wall.*] Had you not a special meeting of the Council recently? No; only our ordinary fortnightly meeting.
568. I understand that work was suspended here in consequence of your financial position? The Finance Committee submitted a report at the meeting of the Council recommending that work be discontinued for a time in consequence of the general depression existing.
569. How long has this scheme been under the consideration of the Council? For years
570. At that time money, I believe, was at 3½ per cent. The Government were borrowing at 3½ per cent? Yes.
571. The Government have to pay considerably more for money now. In all probability the estimates in connection with this proposal are based upon 3½ per cent.? Yes, they are.
572. This is purely a work for the accommodation of the people of Wollongong, and they would have to pay for it? Yes.
573. With an increased rate of interest, which would render this a more costly undertaking than under a 3½ per cent. rate of interest, would the people be willing to pay the rate of interest at which the Government can borrow money now? The people have always signified their willingness to go into the scheme, and would be prepared to pay a high rate, but not an exorbitant one.
574. But have they considered critically the position in which they would be placed? The scheme has been before them, and they have approved of it.
575. It may be a guide for the people of Wollongong to tell them that the estimate for the Goulburn water supply was £35,000, and the actual cost, £58,000. The estimate in connection with the Albury water supply was £14,000, and the actual cost, £35,000. Assuming that the estimate of the work under consideration were increased by £20,000 or £30,000, have the people taken the precaution of asking the Government to guarantee that the works be carried out for a certain sum? No; all the estimates we had submitted to us fixed the sum at £43,000, and we based our calculations for re-payment on this sum.
576. If the estimate were exceeded by £10,000 or £20,000, would the people still be content? I could not say. That phase of the question has never been submitted to me.
577. Assuming that there were a deficiency, how would it be met? By a special water rate.
578. That must be limited to 5 per cent.? Yes; but the time for payment is so long that we would be able to pay.
579. You state that your rates are £2,200, and that there will be some £200 to be deducted in consequence of houses which will not be served by the water supply. Have you made out any calculation as to the position in which you would be placed? Yes.
580. And do you think you would be able, with the demands upon the supply by the Railway Department and other Departments, to pay your way? Yes; a return is being prepared, and the Town Clerk tells me we shall be able to pay our way.
581. That is, assuming that the cost does not exceed the estimate of £40,000? Yes.
582. The custom is to hand these kind of works over to the Council. You have made no condition as to the year in which they shall be handed over? No.
583. *Mr. Dawson.*] In considering your liabilities in connection with the water scheme, do you include the cost of supervision by engineers, &c.? No.
584. In connection with other water supplies, engineers and other people who supervise the works, have to be paid, and it is found that when this is done, there is great difficulty in paying interest. Have you any idea what the cost of supervision would be? No.
585. You simply calculate the interest only? That is all.
586. Do you think the people would be satisfied with a scheme which would give a seven months' supply, if it could be furnished at less cost than the one proposed? They would be satisfied for the present, but I doubt the wisdom of it.
587. But what are you going to do if you cannot pay a year's rates and interest? During dry seasons, as much as 5s. is paid for a cask of water. I think, under the circumstances, that we could strike and collect a water rate sufficient to meet the interest required.

588.

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588. What is your source of water supply at present? The town lagoon is unfit to drink. It is very deficient.
589. Horses roll in it, and pigs wallow in it? It is an open supply. Water is required here very badly.
590. *Mr. Suttor.*] Can you give information as to the amount of money you have borrowed? The existing liabilities of the Council are:—debentures outstanding, repayable in 1895, £8,000; bank overdraft, £1,769 14s. 7d.; rough total, £10,000—that is, without outstanding contracts not complete; contracts not complete, £457.
591. Are there any arrears of rates? Not many. Last year we took steps to recover all outstanding rates, and succeeded fairly well.
592. At what interest have you borrowed the money? On the £8,000 loan we pay 5½ per cent., and on the bank overdraft we pay 7 or 8 per cent. In connection with the bank we have assets which make our position satisfactory. We have a town hall and grounds valued at £8,000, a quarry at £400, and ground at £300, plant and furniture £200, &c. Our position is very good.
593. *Chairman.*] How does the town dispose of its night-soil? By cesspits and dry-earth closets.
594. Does the Council attend to the night-pan system? Yes.
595. What proportion of the town is served by the night-pan system, and what proportion by means of cesspits? We have nearly 150 dry-earth closets; the remainder are cesspits.
596. What is your charge for removals? Two shillings and sixpence per month for pans, 6d. per cubic foot for cesspits.
597. How many times are they emptied during the week? Once.
598. How much a month does it come to? 2s. 6d.
599. That is really 6d. per pan? Yes.
600. So that, following on the question put by Mr. McCourt, supposing you are charged a water rate of 1s. in the £, your taxation will be brought up to about 3s. in the £? Yes, but the dry-earth closets and cesspits can hardly be called taxation.
601. Have you had any understanding with the Railway Commissioners as to the price they are to pay for water? No; the communication came through Mr. Campbell, the Member for the district, and only gave the probable consumption.
602. It is estimated in a return before us that the charge will be 1s. per 1,000 gallons; is not that rather cheap? I consider it cheap.
603. Have you any idea as to what it costs the Railway Commissioners now to supply themselves with water? No.
604. One shilling and sixpence per 1,000 gallons would be nearer the mark than 1s.? I think it would be better and more reasonable.

John Payne, Esq., Mayor of North Illawarra, sworn, and examined:—

J. Payne, Esq. 22 July, 1892.

605. *Chairman.*] You are Mayor of North Illawarra? Yes.
606. How long have you occupied that position? Fifteen months.
607. How long have you been connected with the Council? From its origin—nearly thirty years ago.
608. Has your Council had under its consideration definitely, this project for supplying Wollongong and surrounding districts with water? I convened a special meeting last Friday, but having no data to lay before the Council we did not know how to discuss the matter. We did not understand the scheme, or know what it meant.
609. The information which was furnished to the Municipal Council of Wollongong was not furnished to you? No information was furnished to us.
610. And nothing was done? No.
611. Do you yourself understand the scheme? I think so.
612. You have since been able to ascertain for yourself what are the particulars concerning it? I am personally acquainted with the whole matter.
613. Were you not personally acquainted with them before the meeting took place? Not with any of the details for carrying out the work.
614. You know that the proposal is to avail themselves of a portion of the Metropolitan water supply catchment area to the extent of some 2,246 acres;—it is proposed to construct a dam below the junction of the Cataract and Angel's Creek, about 700 feet long by 40 feet high, and 6 feet wide, making the reservoir cover 25 acres, with a capacity of 60,000,000 gallons;—we have been told that one inch of rainfall upon that catchment area would fill the reservoir, and that it would be equal to one year's supply for Wollongong and the towns north as far as Bulli;—it is proposed to draw that water through a tunnel at Corrimal Creek, 6 feet by 3 feet 6 inches, coming out on the eastern side of the range—there will be a pipe through that tunnel, and a balance-tank on the eastern side of the range—the water will be then conveyed by pipes to Balgownie, past the school, and on to a reservoir of a capacity of 500,000 gallons to be constructed at Mount Ousley—the water is to be continued through your territory again, and into Wollongong, and the town is to be reticulated—there will be a possible branch at Balgownie, leading on to the northern towns as far as Bulli—the estimated cost of the whole of the works is £66,000—if the northern connection is dispensed with, and the supply is limited to Wollongong, the cost will be brought down to £43,000—it is a fact, I suppose, that the greater portion of that pipe line, where it comes out of the tunnel on the eastern side of the range until it reaches Wollongong, runs through your municipal district? Yes.
615. Do you know anything of the catchment area? Yes; I am continually over it.
616. You have been a resident of the district for a long time? Thirty-eight years.
617. Do you think that a suitable place for catching water for the supply of the town? Conditionally.
618. On what condition? On condition that the mines do not penetrate underneath it.
619. In that case it will be a bad job for the mines? I think so.
620. That is to say, if the mines go too near the water there is a probability of a considerable leakage into them? Possibly.
621. Are you interested in the mines? No.
622. That is a matter which the mining people might be left to look after for themselves? I think the Water Commission ought to look after it, too.
623. Why? Because we might lose the water.

J. Payne, Esq. 22 July, 1892.

624. Are you afraid that the mining managers will make a hole and flood their mines, and that the people of Wollongong will thus lose their water? I do not think the mine-owners contemplate doing that, but I think there is a possibility of the water escaping.
625. Do you know the level of the coal strata? Not exactly.
626. If we are informed that there are nearly 500 feet of cover between the mineral and the bottom of the reservoir, there is not much fear of the water breaking through? It may.
627. So that if that statement is correct, it is pretty certain that there will be no loss of water, or even flooding of mines? I do not know. I know that I have been travelling backwards and forwards many times during the year around the whole of the area, and I know there has been a water supply coming out continually on the Mount Keira Road. I also know that since the miners have penetrated beneath that, two months of dry weather stops it.
628. But that may be only just above their coal measures? It may be.
629. It would be hardly 500 feet above it? I doubt that whether there are 500 feet, because immediately you get on the top of the range you dip down again a considerable distance.
630. I am told that the height above sea level of the particular reservoir of which you have been speaking, and about which you raise a note of warning, is 969 feet;—except in regard to the possible danger of losing the water, you think the catchment area is a good one? Yes.
631. And not liable to be polluted in any way? No.
632. As to the scheme of bringing it through to the eastern seaboard, do you think that is a good scheme? Apart from any scientific knowledge, I think it is an excellent one.
633. I suppose you recognise that it is very desirable, if possible, to get water by gravitation rather than to be dependent on pumping machinery? Much better.
634. Looking at the scheme as a whole, you think it a good one and will answer its purpose? I think it is an excellent scheme.
635. How do the people of your municipal district at present obtain their supplies? Many from the creeks which have their sources in the mountains, and by catchments from the roofs conserved in tanks above and underground.
636. Are not those creeks liable to pollution from mineral and other causes? As far as my recollection goes, all the creeks between Wollongong and Bulli are destroyed, excepting the one I live upon, and it so happens that it is separated from the openings of the mines by two ranges.
637. And if those ranges are more extensively worked all along their face, this spring may be contaminated? I think not. The operations of the works are on the opposite side. Under any circumstances even the water from the creeks is not fit for human consumption in dry weather.
638. Have you known of any case in your district in which the people have been put to great straits through want of water? I know of many. I am, and have been, during the whole of my time, as much or more a resident of Wollongong than of North Illawarra, and I know of many in Wollongong who have been in great straits. I know they have had to pay from 6s. to 10s. a cask for water.
639. How often does that occur (say) in five years? For the past five years it has not occurred once; but it has been an extraordinary season. During my residence in the Colony I have not known of four consecutive seasons equal to the last four, so far as this district is concerned, in the abundance of rainfall.
640. But you have known times when people have been put to great straits for want of water? Yes; on three or four occasions. I happened to be a member of the Wollongong Council in 1876 or 1877, and we spent two or three days in trying to obtain a supply.
641. Does that apply to the people of North Illawarra as well as of Wollongong? No.
642. I suppose that at that time these streams were not so polluted? No.
643. If a similar drought occurred, the people would be put to great straits because of the pollution of the creeks since that time? Yes; and it is sure to come.
644. Do you think the people living upon the line of pipes, from the balancing tank to Mount Ousley, and from Mount Ousley to the Wollongong boundary, would readily connect with those pipes, and pay a rate of 5 per cent. upon the capital value of their properties? I am satisfied the people of Balgownie would. That is the only village which the pipes would touch coming here. Continuing along the main road northward, I have no doubt the people of Corrimal would, because they depend solely upon the catchment from their own houses.
645. Then you think the people in your municipal district, upon the line of pipes from the balancing tank to Mount Ousley, and from Mount Ousley to Wollongong, would readily avail themselves of the supply and pay for it? I think so. I think I am justified in saying so, because one of our aldermen, who is a resident of Balgownie, made the same assertion on Friday night.
646. How far does your municipal district extend northwards towards Bulli? To the dotted line on the plan.
647. Going northward, the other centre of population within your district is Corrimal? Yes.
648. Do you think the people of Corrimal would willingly connect with the pipes and pay for the water if the pipes were continued northward? I would not like to venture an opinion.
649. You mentioned that the people of Keira Village would also gladly avail themselves of the supply? I have no doubt of it.
650. But you are doubtful about Corrimal? I may say it is only a new settlement.
651. You say the people of Keira Village would gladly avail themselves of the supply? I think so.
652. But is not the greater part of that place, especially that portion within your district, above the service reservoir, which is only 212 feet high? No.
653. Perhaps it is desirable that you should distinctly understand;—there is the Keira Village, which is at the foot of the mountain, below the church? We call the place where the church is situated, "Paradise," and that, no doubt, is above the dam.
654. And portion of Keira Village is within your municipal district and portion in Wollongong? Yes.
655. And you think they would readily use the water? Yes.
656. I suppose the rate now imposed upon your people is the ordinary municipal rate of 5 per cent. on nine-tenths of the annual value of the property? Yes.
657. Is there any lighting rate? No.
658. Do you use cesspits or dry earth closets? No; we have no by-laws in reference to that matter.
659. Those people who have wells, then, may have them polluted by means of cesspits? I have not the shadow of a doubt of it. These matters are carried on in a very loose way.
660. At present the only burden on your people is the 5 per cent. rate, 1s. in the £, for municipal purposes? Yes.

661.

J. Payne, Esq. 22 July, 1892.

661. Do you think that a dam or reservoir, capable of holding 60,000,000 gallons of water, is too large for the present population of the district? Yes; but I think we ought to look to the future.
662. But would it not be better if you could get something very much cheaper, which will serve your purposes for some years to come, when the necessary extensions can be carried out without inconvenience? I have no doubt, myself, that if you brought the dam higher up you would get a supply.
663. If the dam is put across the Cataract River below its junction with the Corrimal and Rocky Creeks, at a cost not exceeding £1,000, and if it will impound 10,000,000 gallons of water, would it not serve the people for a very long time to come? I think it would be a penny-wise and pound-foolish thing to do.
664. You would rather go in for a dam further down, below the junction of the Angel Creek with the Cataract River, at a cost of £14,000, so as to get that larger sheet of water? Yes.
665. Do you not think it will be sufficient if we provide a six months' supply? The last time I was on the catchment area it was all dry to the junction of the Lizard with the Rocky Creek. There was sufficient water to fill a 3-inch pipe running down the Cataract River.
666. How long ago was that? Eighteen months.
667. Was that after a very dry time? After as dry a time as we have had for a good bit.
668. But there was sufficient water flowing down to fill a 3-inch pipe, after a very dry season? You do not find the Cataract River running until you get down to the flat. It gurgles up in a few places now and again, then disappears, and runs when you get to the flat.
669. But a dam put down there on the site I have indicated would probably, before reaching rock, have to go at least 4 or 5 feet below the surface of the shingle on the bed of the creek. Do you not think that that would be the means of intercepting all the water which flows away, and that therefore there would be a greater flow, even in such times as those to which you refer, than that which you saw? No doubt it would supply present wants; but I do not think that we have to consider present wants. We are going to be a manufacturing district soon, and to have ironworks.
670. Would it not be an easy matter when that time comes to put the dam further down, and impound a larger quantity of water? It might.
671. At all events, do you not think it better, in order to bring the scheme within reach, to try the smaller reservoir first? I believe in the principle of doing a thing properly.
672. But if doing it properly is going to land you in the Insolvency Court, would it not be better to go in for a less expensive scheme? But we can go to the Government and get them to wipe it off. That is what the Sydney Corporation have had to do five or six times.
673. Do you not think that a six months' conservation of water is quite sufficient for the people of Wollongong at present? Yes.
674. And if the conservation of that quantity will not interfere with the conservation of a larger quantity in the future, would it not be better to obtain the smaller quantity first, and increase it when required? It would be better to secure a supply.
675. *Mr. McCourt.*] If it is a question of losing the scheme altogether, or taking it at a reduced cost, which would you prefer? The reduced cost.
676. When you refer to the people who would be willing to pay for the water, do you refer only to those who would use it? Yes.
677. Are you aware that if it goes along a street, within 150 feet of any house, the occupier of that house will have to pay for it whether he wants it or not? I think the majority would use it. I do not see how they could do otherwise.
678. *Mr. Wall.*] Do you think the people would be able to afford the interest on the great outlay on this work? I think, with an effort on their part, they would be able to afford it.
679. You would not like to saddle the people of Wollongong with a liability which they could not meet? No.
680. You cannot say, of your own knowledge, whether the people can afford to pay for this elaborate scheme or for a lesser one? No.
681. *Mr. Dawson.*] Do you think the people would object to pay a special rate if they could get a good supply of water? I do not think they would. Of course we have people amongst us who would not pay anything if they could help it.
682. *Mr. Ewing.*] You know the catchment area? Yes.
683. Is there more rain on the top of the mountain than on the Illawarra? Yes.
684. What is the rainfall of Wollongong or Illawarra? Between 40 and 50 inches. There is more rain about the mountains. There is always a larger fall at my residence than at Wollongong.
685. You believe there is a rainfall of 50 inches on the catchment area? Yes.
686. You have seen the creeks almost dry? Yes.
687. But still you think the water runs underneath in the gravel? Yes.
688. And that there is quite enough to give Wollongong a water supply? Yes.
689. *Chairman.*] Have you anything else to say? One reason why I am so strong an advocate of Wollongong being supplied with water is, first, from a sanitary point of view, and, secondly, because of the protection it will afford from fires. As a rule, most of the fires occur when the tanks are empty, and if ever a fire takes place at the upper end of Crown-street it will sweep the whole of the road.
690. *Mr. Ewing.*] Would it lessen the rate of insurance? No doubt.

Mr. Andrew Armstrong, auctioneer, Wollongong, sworn, and examined:—

[Mr. A. Armstrong. 22 July, 1892.

691. *Chairman.*] You are in business in Wollongong as an auctioneer? Yes.
692. How long have you been a resident in Wollongong? I have known the town for thirty years, and have been a resident of the neighbourhood for fifty years.
693. You know the catchment area, and all connected with it? Yes.
694. Have you given some consideration to the schemes, which may be called rival schemes? Yes.
695. Do you think the proposal of the Government is the best which can be adopted? I do. There is no comparison between it and anything else I know of.
696. What are your objections to Mr. Lahiff's or Mr. MacCabe's scheme? Various; financial, one of them. I think they are both very expensive. Mr. MacCabe's scheme, particularly, would necessitate a lot of pumping machinery being put down.

Mr. A. Armstrong. 22 July, 1892.

697. We have been told that the cost of the Government scheme will be £66,000. If the northern connection is removed, it will be reduced to £43,000. Do you think Wollongong will be able to stand that amount? I know that some years ago the people were exceedingly anxious to obtain a supply of water, and they were willing to pay any reasonable sum in order to obtain it.
698. You understand that the dam below the junction of Angel's Creek will be a very costly work. Do you not think that a reservoir of less capacity than 60,000,000 gallons would serve the people for a very considerable time? I prefer to go for the Government scheme as it is. I doubt very much whether a dam can be put in any cheaper higher up for the purpose of impounding a less quantity of water. I am aware that the southern tributary has frequently been almost dry. Mr. Payne has stated that he has visited the place when there were not more than 3 inches of water, and I have done so too. On that occasion I think we obtained all the water which was coming, from the simple fact that it ran over a solid rocky bottom, and on each side we put a little tank of earth, so as to catch the stream, and I am satisfied we had not a volume of 3 inches.
699. And there could be no percolation? There was none.
700. How long ago was that? Five years ago.
701. Was it after a dry time? There had been a good deal of dry weather, but I do not think it was a specially dry time.
702. We are told that an inch of rainfall over the whole of the catchment area will fill the reservoir, which is equal to a twelve months' supply. Do you not think that a six months' supply would serve the people very well? Possibly; but I think that if an inch of rain falls over the catchment area you will lose half of it before it reaches the dam.
703. What is your opinion in regard to the rainfall in Wollongong and on the catchment area? The fall is heavier on the catchment area than here. Rain falls there when it does not fall here.
704. You know the district north towards Bulli? Yes.
705. Do you think the people of that district require the water, or would be content to pay for it if it were taken to them? I think it likely that the people of Bulli would not care to have it, but I think they ought to have it.
706. Why is that? Because human nature is such that people will not go into any expenditure which they can possibly avoid. Their interests, however, will eventually force them to avail themselves of the supply.
707. That means that they have not yet tasted of the benefits of taxation, and do not know what pleasures are to be derived from it? But they have tasted of the pleasures of having their roads made for them so far, that they will not desire to do anything for themselves if they can help it.
708. Do you think the people of Wollongong would be prepared to pay liberally for a supply of water? I think they can appreciate a good water supply in view of the fact that in times past they have been put to considerable straits for want of it.
709. Has there been much increase in population in the district during the last few years? Yes.
710. And you think it is still increasing? I would not say that it is at present, but in the past five or six years it has increased very largely.
711. Do you share in the opinion that the mineral wealth of the district is dying out? No.
712. The prosperity of the district is largely, if not wholly, dependent on the quantity of minerals obtained? Not absolutely, but to some considerable extent.
713. North of Wollongong, for instance? North of Wollongong, especially.
714. There is comparatively little area for agricultural purposes between the coast and the range? Not very much.
715. You think, then, there is little fear of the minerals giving out? Any experience we have points to the contrary.
716. You might, perhaps, have to go a little further into the mountain range for it? I think so.
717. *Mr. McCourt.*] Do you think a charge of 1s. per 1,000 gallons of water is a reasonable one? I do not know that I am able to answer the question in a satisfactory form. I think, however, that people will be willing to pay whatever is found to be a fair and reasonable sum.
718. Are you aware that at Newcastle the Government charge the people 1s. 6d. per 1,000 gallons by meter? No.
719. If that is so, would that not be a fair charge for Wollongong? No doubt. We should be prepared to pay what is fair and reasonable.
720. *Mr. Ewing.*] You believe, although taxation is a bad thing, it is better than typhoid? A lot.
721. And the people think so too? Yes.
722. And you think public opinion is in favour of accepting this obligation and paying the interest upon it? I do. An efficient water supply would have a tendency to improve the sanitary condition of the town. The flushing of our streets is an important matter. I also think that a good water supply would have a tendency to prevent conflagrations.
723. *Chairman.*] Do you think that the result would be to increase the value of ratable property? I believe so. I believe an efficient supply of water would reduce the rate charged by fire companies, and consequently, would increase the value of properties.
724. *Mr. Wall.*] You have stated that the people of Wollongong would be prepared to pay for water. Of course, if the scheme is carried out they will have to pay? Quite so.
725. The next consideration is, are the people able to pay for it? I think the people of Wollongong, taken as a whole, are about as wealthy as the people of any other community of a similar character.
726. Take the following brief estimate of cost. The cost of the scheme is £43,000. The interest at 4½ per cent., which would be the least you could get it for at the present time, including a sinking fund, would be £1,935. The cost of working the scheme would be £300, making a total of £2,235 a year. We are told that the rates of the borough, at present, are only £2,200, and the Mayor estimates that £200 might be struck off in respect of properties which will not be served by the water supply. This will leave a deficit of £200 a year. Have you considered how this deficiency is to be provided for? No. I have little or no knowledge of the financial aspect of the matter.
727. It is possible that the scheme will cost a considerable amount more than it was estimated to cost. Do you not think that it would be desirable that the Council should take the precaution of not accepting any scheme, unless under a guarantee that its cost would not result in the imposition of a rate which the ratepayers would be unable to pay? That, no doubt, would be a very prudent course to take.
728. It has not been taken? Not that I am aware of.

729.

729. Has there not been a sort of quasi-understanding on the part of the people, that if the scheme were carried out, and there was any deficiency, the Government would make it good? Nothing of the kind. Mr. A. Armstrong. 22 July, 1892.
730. You do not concur with Mr. Payne, then, that that might be done? I hardly think Mr. Payne suggested that. I think he rather put it in a jocular form. I have no doubt the Council and the people have the utmost confidence in the plan prepared by the Government officer, Mr. Josephson, and they do not think it necessary to employ independent engineers to check it. Possibly that may be done when there is a prospect of the scheme being carried out, but we have had so many disappointments for thirty-two years, that even now I do not know whether we are above being sanguine.
731. You think the people of Wollongong will be able to make up the interest required in connection with the carrying out of this scheme at a cost of £43,000? I do.
732. Although, from the evidence of the Mayor, there is a deficit of £200 a year, yet, in view of the resources of the place, and the supply which is likely to be required by the railways, &c., you think they are likely to make up the amount? I think so.

Mr. Henry Osborne MacCabe, manager, Mount Keira Company, sworn, and examined:—

733. *Chairman.*] You are manager of the Mount Keira Company? Yes. Mr. H. O. MacCabe. 22 July, 1892
734. Have you been a resident here for some time? I have been here all my life, having been born here.
735. You are familiar with every portion of the district? Pretty well.
736. You know the scheme which has been submitted? Yes; I surveyed it.
737. And you are familiar with the catchment area? Yes.
738. Do you think the catchment area is in excess of the demands of the districts to be supplied? For the immediate present, it is indeed.
739. Do you understand that the dam proposed to be constructed is a very costly one, it being 700 feet in length? Yes; I should think the estimate should be £13,000 or £14,000.
740. I suppose you are of opinion that this is about as good an area as we can have? Certainly. It is the most suitable one within reasonable distance. There is no one living upon it, and it is unlikely that anyone will do so, although a good deal of it is private property. The only people working upon it are people who are cutting timber for us.
741. What will be the cover between the minerals now being worked for the various companies and the surface of the reservoir? About 350 feet. I think provision will have to be made that the coal shall remain in the ground underneath the dam, and also for a distance of at least 100 yards outside the margin of the reservoir.
742. Will not your ordinary pillars be sufficient? I think it will be better not to risk it, and it will be fairer to the people from whom you are securing the property.
743. Three hundred and fifty feet of cover seems to be a very good cover, and there will be no fear of settling down? In England, we have drained water through magnesium limestone at 500 feet.
744. But the sandstone cover you have here is pretty solid? Yes; but it will crack.
745. The area of land you refer to outside the margin of the reservoir would be a considerable one. It would mean, in other words, the resumption of 50 acres of land? I should say so.
746. Can you give us any idea of the value per acre of that land? The coal land only we are selling here at £20 an acre. That is the coal in the land only.
747. So I suppose it is pretty well assured that the coal does extend under the area? I have not the slightest doubt of it. We have coal proved close to it.
748. The whole of the area to be resumed would be in the Mount Pleasant property? I think so. Their workings are designed under the area. Their main tunnels are being driven in the direction of it.
749. Do you not think a dam thrown across the Cataract, below its junction with the Lizard, Rocky, and Corrimal Creeks, would impound sufficient water for Wollongong for some time to come? Yes. If you can save £10,000 or £12,000 by impounding a six months' supply, it would be a good thing. I would, however, make provision for carrying out the largest scheme in the future, and also have the coal under the reservoir area reserved and untouched.
750. In other words, you would resume that land at once? Yes.
751. Have you ever known the various creeks to be dry? They were almost dry when I completed my survey in 1875.
752. Was that an exceptional time? Yes.
753. At that time you were connected with the Harbours and Rivers Department? I was working for Mr. Moriarty on this particular work.
754. Therefore, it may be said to be your scheme in its earlier stages? Yes.
755. Do you think a dam, costing about £1,000, could be put across there to impound sufficient water for six months? I would rather not make any statement about that just now, for I do not know what the cross-section was.
756. In reference to the construction of the tunnel, do you think that that is the best thing which can be done? It strikes me that if you could make an arrangement with the Mount Pleasant people to continue their tunnels and to sink a shaft there, you might be able to save some money. The proposed tunnel, I take it, is going to cost not less than £5 a running yard.
757. The estimate is £3 10s.? Sometimes they are low.
758. You have not had any work actually done? No.
759. Therefore, if the department has had work done in sandstone country, namely in Sydney, they ought to be able to form a more accurate estimate than yourself? I will admit that.
760. You believe in the conveyance of water by means of gravitation? Yes.
761. How about the pipes and the surface reservoir at Mount Ousley? I am afraid that the surface reservoir at Mount Ousley is hardly high enough to supply the place we call Paradise.
762. How high is Paradise above water mark? Over 200 feet.
763. We are told that the height at Mount Ousley is 212 feet, and that would not reach Paradise? No.
764. How are the people of Paradise supplied with water? Springs and roof catchments.
765. Which sometimes give out? Yes.
766. Is there any site immediately above Mount Ousley, which would serve as a site for a surface reservoir, which would command Paradise? It is only a question of going further up the hill.
767. Which may be pretty much on an angle? That reservoir, if I understand rightly, is to the westward of where Mr. Good is living. The side of the hill there, according to my recollection, is not steep. You could get some additional 50 feet of elevation.

Mr. H. O. MacCabe. 22 July, 1892.

768. That would not increase the length of the mains at all? No.
769. Do you think the service reservoir is too large or too small. It is estimated that it is equal to about eight days' supply? With such a scheme as that, I think we need not require more than a two or three days' supply, because there is nothing whatever to break down in it, and what I would like to see is the cost of this work kept as low as possible.
770. Do you think a reservoir of half that capacity will be sufficient in view of the fact that there is nothing to break down, and that it is a gravitation scheme? Yes; I think 200,000 gallons would be sufficient. I do not see the necessity of going to great cost, when we have nothing to fear of breaking down.
771. If £5,000 has been the estimated cost of that reservoir, and its capacity is reduced one-half, what will the cost be reduced by? About one third.
772. Do you think the people to the north care about being connected with the water supply? I have read the evidence, and I take it that they do not.
773. Do you think the people of Wollongong would welcome a supply and be prepared to pay for it? I am sure they would be prepared to pay a reasonable price for it.
774. The supply would not be of any benefit to your mine? No. You cannot rely upon the mines being regular customers, but we should be customers to some extent for water for locomotives.
775. What would be your consumption? About 4,000 or 5,000 a day for the locomotives.
776. And I presume the water brought from the catchment area would be much better for the life of the boilers for your locomotives than water from the eastern catchment? No. I have gone to the expense of providing a water supply myself, but still it is hardly sufficient. In dripping seasons I would not want the water.
777. But is not your water supply drawn from above any possible connection with the mineral seams? Yes.
778. Therefore, to that extent, it is very much purer than any supplies below from the eastern creeks? Yes; the water in the immediate vicinity of Wollongong is not fit to boil even in locomotives.
779. Do you know from where the Railway Department obtains its supplies? Yes; either at Austinmer or Dapto—I think principally at Dapto, because it is the shorter distance.
780. In reference to the scheme which you put before the Government—it has been estimated to cost £100,000;—that means drawing a supply from an entirely different catchment area south of the catchment area referred to in the Government scheme? Yes.
781. That also would necessitate pumping-plant? Yes.
782. I suppose, as an engineer, you admit that if one can obtain a gravitation scheme at a reasonable cost it is far better than having pumping-engines? If my scheme would cost £100,000 the Government scheme ought to be put in at £8,000 or £10,000.
783. In any case you admit that your scheme would be dearer than this? I do not think it would cost any more than £40,000, and it could be carried out more quickly.
784. And it is because you are so familiar with mines, and tunnels, and so on, that you think there is very little danger from it;—it is only the people outside who think there may be danger? I have heard it said so by people outside; but I am not afraid to put pipes through the mine. They can be covered up so that they cannot be injured.
785. But suppose an accident happened like the one at Bulli, what then? The pipes can be properly covered up and protected.
786. What if an explosion took place, and the pipes went to rack and ruin? They could be covered up so that they would not break.
787. *Mr. Ewing.*] You state that the cover between the coal and the dam will be 350 feet? Yes.
788. The percolation depends on the kind of country intervening? Exactly.
789. You have sunk shafts here? Yes.
790. What is the country like? First of all there is the ordinary surface stone and clay and boulders, 50 feet; then we come on to 50 feet of shale, 100 feet of conglomerate, and the balance sandstone.
791. And you think there is a chance of the water coming through there? If the coal were taken out altogether.
792. Would you supply 50 acres of the coal for £1,000? That is the latest price at which, I believe, coal was sold, but I would not sell mine at that amount.
793. You think it would be better to spend £1,000 and run the risk? Certainly, or even £2,000.
794. Do you think there would be enough water if a dam were put across half a mile further up to supply it with 10,000,000 gallons? That would store a six months' supply any where there you like. With a catchment area even of half that 2,000 acres there is not the slightest doubt but that there will be sufficient water for present requirements.
795. Could you raise it from Angel's Creek? Yes; from some parts. It is a question as to how far you would have to go up the creek to raise it. You would not have to go very far.
796. Do you know the height of that tunnel? I forget.
797. It is 866 feet on the outside and 969 feet on the western entrance. That would go through all your formations, through your conglomerate and shale, and through your clay and boulders? It will not cut through the clay and boulders except at the immediate start.
798. How high is the entrance to Mount Keira? Seven hundred and twenty feet.
799. And you have sandstone over the top? There is sandstone about 8 feet over the top.
800. *Mr. McCourt.*] Are you aware of any permits under the 28th section of the Act being granted to mine on any portion of the Sydney Water Reserve? I have 500 acres at Mount Keira, and the Mount Pleasant people have the land away to the westward.
801. That is all under this catchment area? Yes. My permit goes under the catchment area too.
802. If the water would percolate there, would it not be objectionable to grant these permits? No. I take it that it would not be well to allow the coal under the dam to be taken away.
803. *Mr. Wall.*] What is the distance between the surface and the coal-seam at the place where it is proposed to put in a dam below the junction of Cataract Creek? About 350 feet.
804. Assuming that the dam is placed below the junction of Cataract Creek? There is very little fall there—not 8 or 10 feet.
805. With the weight of water stored in the dam, do you not think it will be an absolute certainty that the land must go in? As a matter of precaution I certainly would not take the coal out from beneath.

806.

Mr. H. O. MacCabe. 22 July, 1892.

806. In putting the pipes through the mine, would it not be necessary to cut into the rock in order to cover them? Not necessarily.
807. How would you cover them? Build a brick wall and cover them with shale.
808. That would cost something? They could be covered with 2 feet thickness of slack, so that they would not break.
809. Your company would require some royalty for the use of the tunnel? My suggestion was that whilst we were using the tunnel we should maintain it and charge nothing.
810. But whilst you were using the tunnel you would be compensated by the water supply? Yes.
811. And when you did not require that supply you would require £200 a year? Yes.
812. The remuneration your company require—£200 a year—would pay the interest on £5,000 a year at 4 per cent.? Yes.
813. So that it would be almost as cheap for the Government to cut a tunnel as to avail themselves of the tunnel you refer to? It would save them spending £5,000 in the immediate present, and would save them paying the interest on the money for a time. I would like to see the first cost of this work reduced as low as possible.
814. There would also be the cost of sinking to connect with your tunnels? Yes; about £2,000.
815. Also the covering up and cementing of the pipes in the tunnels? Not the cementing of them.
816. How do you propose to cover them up? With a sufficient quantity of slack to prevent stones falling upon and breaking them.
817. With regard to the dam—you would have to connect with the tunnels by sinking a shaft;—that would also be a costly undertaking? Yes.
818. I am at a loss to see where the gain would be? I am not advocating the laying of pipes through the tunnel at all. It is only a suggestion I threw out. I do not wish to fight against the Government scheme. It is a very good one; and if it is said it can be carried out more cheaply than mine I am satisfied.
819. How far is the level of the proposed tunnel below your coal seam? I think the outside of the tunnel must be above Mount Pleasant 150 or 200 feet.
820. If the dam were constructed higher up than the point marked on the plan, would not a larger resumption than 50 acres of land, to which you have referred, be required? No; I take it that when the dam is constructed higher up, you are going to do with pumping one-half. You are not going to throw the contour further back.
821. But if that dam were put in, would not the water be backed up further in the direction of the tunnel than it would be if it were put in at a lower position? It depends altogether on the height of the dam.
822. *Chairman.*] The project of obtaining a supply from Hell Hole has been mentioned;—do you think anything of it? It is of no use talking of it.
823. The water would be subject to contamination? It is not good.
824. And it is a very limited supply? It is. The water is so bad that I would not use it for my boilers.
825. Therefore, we can discard it altogether? I would not consider it for a moment.

Mr. Phillip Mackel, Post and Telegraph Master, Wollongong, sworn, and examined:—

Mr. P. Mackel. 22 July, 1892.

826. *Chairman.*] You are post and telegraph master at Wollongong? Yes.
827. How long have you resided here? Twenty-two years.
828. Do you keep a record of the rainfall of the district? I do; but the figures are given in a book supplied by the Observatory.
829. Have the last five years been droughty? There was a drought three and a half years ago. In 1885, in Wollongong, the rainfall was 28·48 inches; in 1886, it was 35·44 inches; in 1887, it was 57·26 inches; in 1888, it was 24·33 inches.
830. Can you give us the average rainfall in Wollongong for fourteen years? Thirty-eight inches. At Cordeaux River, 6 miles from the sea, 55 inches.
831. Cordeaux is 6 or 8 miles south-west of the catchment area? Yes.
832. Is Wollongong the nearest point on the coast where a record is kept? Yes. There is also an official record kept at Cordeaux.
833. What is the difference in the average rainfall in fourteen years between Wollongong and Cordeaux? Eighteen inches.
834. Do you think from your knowledge of the position of Cordeaux, and the position of this catchment area, that we shall be safe in assuming that the same rainfall occurs over the catchment area as occurs at Cordeaux? Yes.
835. The height is about the same? Yes.
836. I suppose there can be little doubt that there has been rain falling on the top of the mountains which are on the catchment area, when it has not been falling in Wollongong? Yes.
837. That will account for the difference between the rainfall at Cordeaux and Wollongong? Yes.
838. Do you know anything of the scheme for supplying Wollongong with water? No.
839. How is your institution supplied? By catchments from the roof.
840. During your residence in Wollongong, have you ever known the people to run short of water? Yes; on several occasions. On such occasions they have had to obtain water from the small lagoon below the Queen's Hotel. Some got it from the Fig Tree Creek, about 2½ miles away. On the occasion of the last drought, four years ago, the water carriers sunk holes in the sand, near the Tom Thumb Lagoon, and obtained water from there at a cost of 1s. or 1s. 6d. a cask. The water was not good, but was of a milky hue, and unless it was filtered it was not fit for use.
841. Then you think the people of Wollongong would welcome a supply of water? Yes.
842. And that they are prepared to pay for it? Yes; I am prepared to pay for it for one.
843. The Government would pay for you? But I have a house on Smith's Hill, and I have put an underground tank there and two iron tanks. There is an ample supply for the house, but I am willing to abandon it and pay for a proper supply. I may say that I am in a position to know the opinions of the people of Wollongong on most subjects, and I believe they are certainly willing to pay for a good water supply.
844. Do you consider that the people would prefer the smaller to the larger scheme if it could be carried out at a very much less cost, and if it would give them a six months' supply? Decidedly. I can give no technical evidence, but I think a six months' supply would be sufficient.

Mr. P. Mackel. 22 July, 1892.

845. *Mr. Ewing.*] You mentioned to the Chairman that the water supply was obtained partly from the lagoon? Yes.
846. The drainage from the Queen's Hotel, and that part of the town, goes directly into it? Yes.
847. The Fig Tree, from where a supply has been obtained, has been filled with slack? Yes, and the water polluted.
848. So that Wollongong is steadily becoming worse in the matter of water supply? Yes; dependent entirely on rain water.
849. The milky stuff obtained from the flat is not good enough for the nineteenth century? No.
850. It is not a water supply at all? No; it was a last resource which induced the people to go there.

Mr. George Cochrane, Alderman, Borough of Wollongong, sworn, and examined:—

Mr. G. Cochrane. 22 July, 1892.

851. *Chairman.*] You are an alderman in Wollongong? Yes.
852. How long have you held that position? Eight or nine years.
853. Have you been a resident in the district long? I am a native.
854. You are familiar with it in its droughty, as well as its wet, times? Yes.
855. We have been given to understand by the Mayor that the council have approved of the project before us? Yes.
856. At a full council meeting with one member only absent? Yes.
857. Who was that member? I could not say.
858. Were the whole of the facts placed before the council? Yes.
859. Did you give consideration to MacCabe's and Lahiff's schemes? Yes.
860. And to the proposal of obtaining a supply from Hell Hole? Yes.
861. And you came to the conclusion that the Government scheme was the best? Yes.
862. Have you known the people of Wollongong to be in trouble in obtaining water? Yes. About five years ago I had to buy water myself. I keep an hotel, and I had to buy water at 1s. 6d. a cask, and the people would not drink it. I had then to send to the Fig Tree, and to pay 2s. 6d. a cask for it. That was four or five years ago, during drought.
863. These periods of drought do not come often? We have not had them lately.
864. As a rule you have a fair rainfall? Yes.
865. But in view of the possibility of the droughts occurring again, and also of the probability of the present source of supply becoming contaminated as population increases, the people believe in a pure supply of water, similar to the one under consideration? I believe so.
866. We are told that the cost of the supply for Wollongong alone will be £43,000;—do you think the people would be prepared to pay the interest on that sum? As far as I have heard them express their opinion they are all agreeable.
867. Have they not had in their mind's eye the idea that they will be taxed only to the extent of 1s. in the £ for it? They are under the impression that it will cost them about 1s. in the £.
868. Do you think they would be prepared to go as high as 1s. 6d.? I think they would, rather than do without it.
869. We are told that the impounding area will hold 60,000,000 gallons of water, equal to a year's supply. In view of the rainfall here do you not think that that is rather an excessive supply? I believe it is.
870. You know the catchment area? Yes; I have been over it two or three times.
871. Supposing about one-third of it were cut off;—in other words, supposing that the dam, instead of being placed below the junction of Angel's Creek with the Cataract River, was placed below the junction of the Rocky, Lizard, and Corrimal Creeks, do you think that it would impound sufficient water for Wollongong? I believe it would, in view of the present size of the town.
872. Has not the town grown of late years? Not of late years. It has not grown much of late years. It grew pretty rapidly four years ago, but it has been at a standstill since.
873. What do you mean by growth? In population—the buildings were all occupied.
874. How do you account for the stoppage? The general depression. I think we have our share of it here.
875. This district is mainly dependent upon its coal measures;—have any of its coal measures given out? No. There seems to be bad trade at present. The reason of that, I think, is because the harbour is not big enough. Big boats will not come in. They pass on and go to Newcastle.
876. Is not Newcastle coal different from the southern coal? It is a little different, but our coal is more adapted for steam than is Newcastle coal—there is not so much clinker in it.
877. Have you not the same facilities now for putting out coal as you had some years ago? Yes; but there is a general depression all over the Colony, and we are feeling it.
878. But you think Wollongong will go ahead eventually? I have great hopes of it doing so.
879. You do not think the mineral resources have so worked out that the town or district is dying? No; some of them have not been touched at all. There is a big coal-field, out of which an ounce has not been taken.
880. Where is that? Between Kembla and Keira—it was formerly called Wylie's pit.
881. I suppose the people of Wollongong would be prepared to put up with a six months' supply of water rather than a twelve months' supply if it would bring the scheme within a possibility of being carried out? I think a six months' supply would be all that would be necessary for the present.
882. So that if the growth of Wollongong warranted it the larger area could be included? Yes.
883. *Mr. McCourt.*] Was the resolution approving of the scheme passed as a formal motion? Yes; but there was a lot of discussion.
884. Did any of the alderman find fault with or oppose it? No; they all seemed to agree with the scheme.
885. Do you think a scheme costing £43,000 is too much for Wollongong to bear? We had not the actual cost before us. We had different costs before us. There was one estimate of £23,000 and another of £37,000, but all seemed to think the town could pay the interest.
886. What was the estimated cost of the scheme in regard to which you passed the resolution? I do not think it was quite £43,000, but I forget the exact figures.
887. You had not the whole of the particulars of the scheme before you? Not so many as we have now. We marked on the map all the houses which would be supplied by the mains.
888. Did the aldermen know that a 5 per cent. rate would have to be paid? They were under the impression it would be about 1s. in the £.

889.

Mr. G. Cochrane. 22 July, 1892.

889. *Mr. Wall.*] Did you make any estimate with regard to the revenue which would be derived from the water supply apart from the ordinary rates? There was an estimate as to what we might obtain from the Railway Department, and from the shipping.
890. What was the amount you expected to receive from those sources? About £300 a year from the railways.
891. Mr. Darley has stated as follows:—"Estimated receipts from sale of water by meter to harbour trust, shipping, collieries, factories, gardens, and stables, £300 10s." Is that correct? I could not say.
892. Apart from that you expect about £300 from the railways? Yes, and we hope to get a good income from the shipping.
893. The shipping is included in Mr. Darley's statement? Yes; but there would be other shipping which the Government would have nothing to do with.
894. What reason have you to anticipate that you will get £300 from the railways? From the information they have given us.
895. Then you expect to have a revenue of £600 over and above your rates? Yes.
896. Your rates stand at £2,200 at present? Yes.
897. Do you concur in the statement of the Mayor that that might be reduced by £200 because of houses which would not be served? Yes.
898. That would give you a total revenue of £2,600 per annum. The interest with working expenses, is £2,235 per annum, and against that you have £2,000 for rates, and you expect to realise £600 from outside sources. Thus you will have £2,600 with which to pay £2,235? Yes.
899. In making this estimate have you exercised ordinary precautions with the object of ascertaining that you are not over-estimating? I believe so. The Mayor and the finance committee went into the matter fully, and I believe their figures are correct.
900. Then, if the estimate is correct, there is no necessity for any reduction? I do not think there is any necessity; but, of course, if we could get it cheaper so much the better, and if a six months' supply will do I do not see why we should want a twelve month's supply.
901. You have not deemed it necessary to ask the Government to allow you to appoint an officer to see that the scheme is properly completed before you take it over? No. We considered that the Government would do that without consulting us.
902. Do you think it would be wise to have it handed over to you without a report from one of your own officers? I do not think it would be wise to hand it to the Council at all, but to a trust.
903. Do you think it would be wise for a trust to take it over without seeing that it was properly completed? I do not think a trust would take it over without seeing that it was properly completed.

Mr. Patrick Lahiff, Manager, Mount Pleasant Coal-mining Company, sworn, and examined:—

Mr. P. Lahiff. 22 July, 1892.

904. *Chairman.*] You are manager of the Mount Pleasant Coal-mining Company? Yes.
905. You are also an alderman of North Illawarra? Yes.
906. How long have you occupied the position of alderman? Between Wollongong and North Illawarra for thirty years.
907. You have occupied the position of Mayor? Yes, twice.
908. We have been informed by the Mayor that a meeting of the Council was held to consider the water scheme, but that no decision was arrived at in consequence of the lack of detailed information? It is correct.
909. You are acquainted with the scheme before us? I have seen it referred to in a report in the *Illawarra Mercury*. I understand the scheme pretty well.
910. You know there is a large catchment area of 2,246 acres? Yes.
911. I suppose you agree with the other witnesses that the whole of that area is very suitable for its purpose? The whole of it is.
912. So far as its being unaffected by pollution is concerned? Yes, it is beautiful water.
913. We understand that a scheme has been propounded by you to the effect that instead of the Government constructing a tunnel of its own to convey the water through the range, they should continue the tunnel you have already in existence? Yes.
914. We have been informed by the Engineer-in-chief that the adoption of that scheme would cost £6,000 more than the Government scheme? How he arrived at that it is impossible for me to say.
915. There is the sinking of a shaft in connection with your scheme? Yes. I gave the cost of that. I gave the engineer a small printed account of the cost.
916. Your proposed tunnel for the conveyance of the pipes would be very much lower than the Government tunnel? Yes; 450 feet lower.
917. So that a 450 feet shaft would have to be sunk at the intake? Yes.
918. In addition to that your main tunnel would have to be continued 4,340 feet? Yes; but you will understand that the coal pays for itself there.
919. There would be no sandstone; it would be all coal? Yes.
920. And the Government would take out the coal for your company for nothing? No; we should be taking it out for the Government for nothing.
921. Do I understand you to propose to drive this tunnel at your own cost? Certainly.
922. At once? No. Of course, it will take three years under any circumstances before the water can be brought into Wollongong, and in that time we should be up to the source of supply.
923. Why should it take three years? It takes a long time to drive a stone tunnel three quarters of a mile. It cannot be done under two years.
924. Then, whilst the other works were going on you could be extending the tunnel, and doing work in connection with the mine? Yes.
925. It would be in connection with the ordinary workings of the mine that you would continue the tunnel? Yes.
926. So that there would be actually no cost so far as the driving of the tunnel is concerned? No; because the coal pays for itself.
927. The cost would be in the sinking of the shaft at the intake? Yes.

Mr. P. Lahiff. 928. Do you remember the level of the shaft at the intake. The level of the Government dam is given as 969 feet above the sea. The levels at the dam below the junction of the Cataract are given as 955 feet, although you must of necessity come up a little? The coal dips to the west.

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929. But I am speaking of the actual level of your dam. The Government dam is supposed to be 969 feet above water-mark—that is below yours; and yet yours is given as 955 feet above the water-mark—a less height, although you really go a few feet higher up. How did you arrive at your calculations as to height? The height of the seam from sea-level is 640 feet, and then 450 feet to the source of supply.

930. How did you get at the 450 feet? By aneroid.

931. If the proposal to bring the delivery-pipe down a new shaft and along your tunnel were carried out, would it not to some extent interfere with your workings? Not the slightest.

932. It is only a 9-inch pipe? Mine was a 12-inch pipe.

933. Your tunnel has a dip westward? A little. It falls from the mouth of the tunnel to where it was surveyed, about 70 feet.

934. How are you going to get the water up there? Water will find its own level.

935. By the head you have in the shaft? Yes.

936. That will necessitate your having a larger pipe? Mine was a 12-inch pipe, whereas the engineer's was only a 7-inch pipe.

937. Nine-inch? When he comes outside the tunnel it is only 7-inch.

938. In the tunnel your pipe would be 12-inch? Not all through.

939. Would it not require a bigger pipe inside your tunnel when it has to go up hill than when it has to fall away outside? No; for this reason—we would have 450 feet of pressure.

940. The larger pipe would increase the cost as against the Government scheme? Exactly. If I reduced the size of my pipe in proportion to the engineer's pipe the work would cost considerably less. Every 12 feet of a 12-inch cast-iron pipe weighs half a ton.

941. Do you provide for cast-iron pipes in your scheme? Yes.

942. We are informed by the Engineer-in-chief, that his pipes are wrought-iron, that he did intend to put cast-iron pipes in his tunnel, but that on second thoughts, owing to the difficulty of using molten lead for the joints, he would probably use wrought-iron pipes? If you have good metal there is no necessity to go to that expense.

943. Is there not a danger attaching to a water supply which is to be brought through coal workings by falls, explosions, &c.? No; the pipe is let into the floor of the mine—fireclay.

944. Therefore, it would not hurt at all? Not at all. Besides it is just on the rib side—the wall side. It could not be injured in any way.

945. But, I suppose, that, by-and-bye you will finish your workings along that tunnel, and will go elsewhere. Having worked the whole of the coal, you will be careless about keeping the roof up, and there will be falls? We are going to keep it up, we hope, for 100 years.

946. Why? Because we have full supplies for that time.

947. I mean over that particular pipe-line? I mean that particular main road.

948. That will be your main road, and you will draw all your coal through it? Yes.

949. Right from your new shaft? Yes.

950. So that you would keep it in repair for years? Yes. The tunnel goes immediately underneath the place where you are going to take the water from.

951. But, supposing, the market for coal is such that it would not pay you for working the mine? It will be a poor prospect for the coal trade if that is the case.

952. Then, you think, there will be little risk of the water supply being cut off, or of its being damaged by being carried through a mine? I think not, with proper precautions.

953. And if the size of your pipes were reduced to the size of those mentioned in the Government plan, your estimate, instead of being £6,000 over the Government estimate, would be less? My whole estimate did not exceed £25,000, and if I reduced the weight of the pipes it would be £4,000 less.

954. But the estimate is that your scheme will cost £6,000 more than the Government scheme? I cannot understand how they got at it.

955. Do you not think that a dam containing 60,000,000 gallons of water contains an excessive supply, especially in view of the fact that we are told that one inch of rainfall over the catchment area will fill the reservoir? It may be too great for the present wants of the place. It is a dangerous thing, however, to trust to rainy seasons. Therefore, I fully approve of the engineer's view of damming up all the sources of supply.

956. But, do you not think it would be better for the people to take a six months' supply, for which they could pay, rather than a twelve months' supply for which they probably could not pay? I have seen these creeks very dry.

957. But, it is not likely that the town will ever go for six months without rain? It will cost almost as much to provide for a six months' supply as for a twelve months' supply.

958. You, in your scheme, propose to put a reservoir below the junction of the Cataract with the main stream? I do not propose to put a dam down at all for the present wants of the place.

959. You propose to draw from the natural supply? Yes.

960. How does that answer the objection you raised just now? I take in all the creeks by that scheme.

961. But you stated just now that you believed in the Government proposal to impound a large quantity of water? Yes; looking to the future, but for present wants it might be dispensed with.

962. You would even go so far as to have no dam at all, but would draw from the natural flow of water? Yes.

963. But that would be rather risky? I do not think so.

964. But if the surface reservoir on the Wollongong side has an eight days' supply of water, and the creeks run dry for eight days, the people would have no water? No; it would be seven or eight months before that happened. The water does not exhaust itself immediately after a few days of dry weather.

965. Although apparently the creeks were running dry, there would be water percolating through the gravel bed? Yes.

966. Looking at all the facts of the case, and in view of the large expenditure which will be incurred by the proposed dam below Angel's Creek, do you not think it would be better to impound from 10,000,000 to 15,000,000 gallons of water by means of a dam costing £1,000? I am in favour of the engineer's scheme of damming up as much water as he can.

967.

Mr. P. Lahiff. 22 July, 1892.

967. But, if the people cannot pay for the larger scheme, is it not better for them to have a scheme which will give them a six-months' supply? Save the money in some other way, but not in the dam.
968. Can you point out how it can be saved? Yes; by carrying the water through tunnels, as I have told you just now.
969. Do you not think, in connection with a scheme which is to cost £43,000, the amount to be spent in constructing the dam—namely, £10,000 to £14,000—is very large? But the question is, would it cost that.
970. That is the estimate? There is abundance of freestone there, I suppose.
971. The dam will be 700 feet long, with an average depth of 40 feet? It is a big job.
972. If the cost of the entire scheme is so heavy as to put it beyond the power of Wollongong to pay for it, would it not be better to impound 10,000,000 or 15,000,000 gallons? I quite agree with you there. If we find that the larger scheme is too expensive we had better have the smaller one.
973. And if the town increases you can easily go in for the bigger dam? Yes.
974. Do you think the people in your particular municipal district would be prepared to pay for the water? It is a scattered district, and it is hardly reasonable to ask people to pay for water of which they do not have the benefit.
975. But you know the principle upon which these matters are carried out, namely, that those who would have to pay for it would be those who are within 150 feet of any of the mains? In that case I should certainly say they ought to pay for it.
976. And you think the people would gladly avail themselves of it? I think so. They would not object to a reasonable tax.
977. I suppose the present supply is not satisfactory? It is not. It is obtained from roof catchments and brackish creeks.
978. All the water on the eastern side is more or less brackish? It passes over the coal. I think, when the supply is once provided, and people begin to use it, others will follow their example, and will be glad to use it and to pay for it.
979. In view of the disinclination of the people in Bulli to suffer taxation, do you think it would be advisable to leave them out in the cold until they see the benefits of the supply to Wollongong? By leaving them out you cut off a large expenditure of money.
980. They can always be brought within the scheme when they are sufficiently patriotic to form themselves into a local Government area and ask for it? Yes; in my opinion the whole district should pay for the supply of water so long as it is not too great a burden.
981. Do you think there is a likelihood, in the near future, of the mineral deposits being worked out? It will take 100 years to work out the colliery I represent.
982. As a matter of fact, was it not thought some years ago that Bulli had thousands of years of life before it, and has it not now got upon its last legs? One of the peculiar features of that country is its dykes. They are traceable in that neighbourhood, but not elsewhere.
983. Not further south? Not to that extent. The country is more disturbed about Bulli.
984. So that we ought not to look at the future of this district through the spectacles of the Bulli Coal Company? I should think not. No one is more sorry than I am for the Bulli Coal Company. They have done a great deal of good, and I am sorry they have met with such misfortune in the shape of bad coal.
985. *Mr. Ewing.*] You suggested a dam below the junction of the Cataract Creek? Yes.
986. You think a sufficient area of water will be impounded by it? Yes.
987. You said something just now about not using the dam at all? No.
988. How would you make the water run back? There would be a small dam so as to catch the greater portion of the water to fill the pipe.
989. But before you can get the water to run from the creeks you have to make your dam a certain height? Take the race further along.
990. However, you think there ought to be a small dam? Yes.
991. What would your 450-foot shaft cost? £5 a foot—that is £2,250.
992. What would the extra length of tunnel which you would have to cut cost? I do not count that at all; that is in the ordinary course of mining.
993. Were you going to allow the water to come through free of cost? I made no provision as to what the company would charge for its coming through. If you came through that way you would not have an inch of land to buy excepting from the company. Again, coming that way you would save 1¼ miles.
994. Have you any idea what they would charge? I have not asked Mr. Byrnes; but I think they would let you through at a moderate rate.
995. Therefore, part of the cheapness of your scheme is due to the fact that the tunnel will be constructed by ordinary mining operations, and you have no dam? Yes; and the distance is shorter.
996. Supposing you met with burnt coal on your way? That, no doubt, would retard operations.
997. It would upset your calculations altogether? No doubt; but there is no indication of anything of that kind.
998. Still there is a possibility? Yes.
999. And the same thing would apply also to the maintenance of your main ways. If you found they did not suit the working of your mines you would not keep them in repair? We should have to turn if that were the case.
1000. Mr. MacCabe has stated that it might be wise to reserve 50 acres in the neighbourhood of the reservoir, because there may be some percolation or cracks in the sandstone. Do you think that an area of 50 acres of water would affect your workings underneath? I should not like to have the water overhead.
1001. You own the land underneath? It is the property of the company.
1002. What would you think 50 acres of it worth? It all depends on the quantity of coal in it.
1003. But supposing it is worth what you expect it to be worth? There are 7,000 tons in every acre.
1004. What is the royalty upon that? Not less than 6d. a ton
1005. You think then that each acre is worth £175? Yes.
1006. Fifty acres, then, would be worth £8,000? I think 50 acres would be rather too much; half of it would be sufficient.
1007. You have not included that in your scheme? No; I have left the land out.

Mr. P. Lahiff. 22 July, 1892.

1008. You say that the coal immediately under the reservoir should not be taken out? It should not.
1009. *Mr. Wall.*] Is the scheme you have submitted one in the interests of the Government or in the interests of the company you represent? In the interests of the people.
1010. If the evidence goes to show that this land is worth £20 an acre, and that you are asking £175 for it, would that be in the interests of the company? In the interests of those who fortunately have the land.
1011. If we take that as the valuation, and you estimate it at £175, it appears that it would certainly be in the interests of the company? If you have a mine and lay out a large capital to work it, you certainly require to be paid for the coal.
1012. Would you be prepared to construct the tunnel in a certain time? It would depend on the time within which the works were required to be completed.
1013. Is the company prepared to say that they will undertake to carry out the tunnel and work in a certain direction until they have brought it to a certain point? I could not say without consulting them.
1014. Can you furnish any evidence as to the amount which would be required by your company for the right of laying the pipes? I do not think it could possibly amount to more than £100 or £150 a year.
1015. Would there be any other concessions required in the shape of water for the locomotive power working the mines? There might be; but at the present we have water of our own.
1016. Can you say definitely that the company would be prepared to take £150 per annum for the use of the tunnel? I could not, positively; but I have every reason to believe it.
1017. One hundred and fifty pounds per annum at 4 per cent. would pay the interest on nearly £4,000? Yes.
1018. The cost of this tunnel is £5,000? Yes.
1019. I presume the pipes carried through the tunnel would be covered? Yes.
1020. Do you not think it would be better to have an open tunnel which men could enter for the purpose of examining and repairing the pipes? They would be just covered. You could scrape the surface at any time, and if there was a leakage you could see it.
1021. If the controller of the works were to suspend operations in your mine during the period of repair you would want compensation for a suspension of work? We could not work very well whilst there was any water flowing away.
1022. You could not work whilst your tunnel was obstructed? Yes; they could put the pipes down while we were at work. It is 12 feet wide.
1023. But the slack covering the pipes would be thrown back on the tunnel, and would prevent ingress and egress? There would be very little slack.
1024. *Mr. McCourt.*] Has your company any permit to mine on any Crown lands adjacent to this land? Yes.
1025. What royalty per ton do you pay? Sixpence.
1026. Supposing the Government wished to remit 6d. on 50 acres, and to exchange it for 50 other acres—would the company be willing to do that? I think so.
1027. Do you provide, in your scheme, for any reservoir;—using a 12-inch pipe you would have no reservoir at Mount Ousley? No.
1028. Do you think the Government scheme could be carried out with that reservoir, supposing that they used a 12-inch pipe? Yes.
1029. Would the 12-inch pipe be more economical than the construction of a reservoir? The 12-inch pipe would be the cheapest.
1030. You think the Government scheme ought to be carried out with a 12-inch pipe without a reservoir? Yes; for the wants of Illawarra.

Mr. Andrew Thompson, Pilot and Harbour-master at Wollongong, sworn, and examined:—

Mr. A. Thompson. 22 July, 1892.

1031. *Chairman.*] You are pilot and harbour-master at Wollongong? Yes.
1032. How long have you occupied that position? Four years.
1033. How do the vessels coming to the port obtain their water supply? By having it carted to them.
1034. What is the cost of it? About 1s. 6d. per cask of 80 or 100 gallons.
1035. Do many of them obtain supplies? Only when they are absolutely compelled.
1036. The vessels principally trading to this port also trade to Sydney? Yes.
1037. And they can get their supply of water there very cheaply? Not very cheaply. When I had to pay for water there it cost from 2s. to 3s. a ton—under 400 gallons.
1038. How often do vessels trading here depend upon the lagoon for their water? Not any of them, excepting those coming from the south with timber, which cannot get any water elsewhere.
1039. Supposing the water-works were constructed, and the main were laid down around the wharf, and the ships could obtain the water at 1s. 6d. per 1,000 gallons;—do you think they would prefer to fill up here rather than in Sydney? I think so.
1040. What is the tonnage of vessels coming here in a year? When we are in fair working order there are about nine colliers a week.
1041. How many hands will there be upon them? From fifteen to sixteen on each. That is in addition to the passenger boats.
1042. Is there any limit to the water allowed to the men on these colliers? No. I should think they would take about 10 tons a trip for all requirements, using the donkey for discharging cargo in Sydney.
1043. Do these colliers get their water direct from the Sydney pipes along the wharf? No; they depend upon the water tanks coming alongside.
1044. I suppose you use very little water in connection with the harbour itself? Not a deal. When the crane is working we use from 2 to 3 tons a day. There are three cranes there now. The tug boat will use from 6 to 10 tons a week.
1045. You think that if the shipping which comes to the port could obtain water alongside the wharf at a charge of 1s. 6d. per 1,000 gallons, they would obtain it here in preference to obtaining it in Sydney? I am sure they would.
1046. Owing to the fact that when in Sydney they have to be supplied by a floating tank? Yes.
1047. At a cost of 2s. 6d. a ton? Yes.

Mr. William Wiseman, Alderman, Borough of Wollongong, sworn, and examined:—

Mr. W. Wiseman. 22 July, 1892.

1048. *Chairman.*] You are an alderman of the Borough of Wollongong? Yes.
1049. How long have you been a resident? Thirty-five years.
1050. And you have carried on business? Yes; and have retired.
1051. Were you at the Council meeting when a resolution was passed in favour of the Government scheme? Yes; on two occasions.
1052. Who was the alderman who was absent? I could not say, unless it was Mr. Hewlett.
1053. When was the resolution arrived at? Some years ago; but the matter has come before the Council during the last three or four weeks.
1054. Has there been plenty of time for the ratepayers to have dissented from the decision arrived at? Yes.
1055. Have you heard of any one who is opposed to the scheme? Yes; I have only heard of one.
1056. Who is he? Mr. Poulter.
1057. Is he an old resident? Yes.
1058. Is he an alderman? No; but he has been.
1059. Do you think the people of Wollongong could stand the expenditure of £43,000 upon this scheme? Our ordinary rates are about £2,200.
1060. You have to deduct from that the area which will not be affected by the supply? Yes; but I have no doubt that by the time the scheme will be completed our income will be very much larger.
1061. Has there been any increase in the population during the last five years? I think it has increased one-third during the last ten years.
1062. Who is the person who is responsible for collecting the census here? The police.
1063. Was there not a district collector? Yes, Mr. Frederick Smith.
1064. Have you occupied the position of Mayor? Yes.
1065. Has there been much increase in the municipal revenue of late years? Yes, a large increase.
1066. And you think the future increase is likely to be more marked than the past increase? Yes.
1067. At all events you do not think the municipal assessment will go back? That is impossible.
1068. You know the catchment area? Yes.
1069. And the works proposed to be carried out? Yes.
1070. Do they meet with your approbation, or do you think their cost could be in any way decreased? They meet with my approval. I think we should consider the future.
1071. The evidence so far goes to prove that Wollongong will not be able to pay for the scheme if it costs £43,000 at 5 per cent.? It all depends on when it is to be paid back; if it is to be paid back in sixty or 100 years it will be a small amount.
1072. You are aware that a large amount of this expenditure will be incurred in connection with a dam at the impounding reservoir. Do you not think it would be better to have a smaller reservoir if it can be constructed for £10,000 or £12,000 less cost? I would not like to speak for the people, but I should prefer to see the larger works carried out, because I like to look ahead.
1073. But who is going to pay for it? If our population increases as largely in the future as it has done in the last few years, and repayment is to extend over many years, we shall be able to pay up.
1074. But the other witnesses have told us that during the last five years there has been comparatively little increase in population. You surely would not have the Government to construct works for which the people could not pay? I think that if the works are carried out according to the plan we shall, in the course of years, be able to pay for them.
1075. If by cutting off one-third of the catchment area, and by constructing a dam to the south of the junction of the Cataract River with the other creeks, for £1,000, 10,000,000 or 15,000,000 gallons could be impounded, giving you a six months' supply, would not that be sufficient for the present, especially as there will be an opportunity at any time of erecting a bigger dam when the occasion justifies it? Speaking for myself, I should say yes; but I should not like, if the thing turns out to be a failure, for people to say, "Wiseman is to blame for that."
1076. Would it not be better to have 10,000,000 or 14,000,000 gallons impounded than no scheme at all? It would.
1077. Do you come in contact with the people northward as far as Bulli? I have heard that they do not mean to accept the proposal.
1078. You think then they may be left out for the present and included afterwards? I would rather that they were included now.
1079. Why? Because the supply of water has helped to move on the country, and it might help to move them on a bit.
1080. *Mr. Ewing.*] You believe a supply is wanted for Wollongong, and that the people are willing and able to pay for it? Yes.
1081. *Chairman.*] Is there anything else you would like to say? Mr. Moriarty was down here once, and he said that the people who would force the drinking of water from the town lagoon should be pulled up for manslaughter.

Archibald Campbell, Esq., M.P., sworn, and examined:—

A. Campbell, Esq., M.P. 22 July, 1892.

1082. *Chairman.*] You are one of the representatives for Illawarra, in the Legislative Assembly? Yes.
1083. How long have you been a resident of Wollongong? Over twenty-five years.
1084. We have it in evidence from the Under Secretary for Public Works, that the people of Wollongong, through the Municipal Council, have urged the carrying out of the Government scheme; also that the towns north of Wollongong, namely, Corrimal, Bellambi, Wonona, and Bulli, not having any municipal council by which to convey their wishes, have, through the Members for the district, expressed a desire to be connected with the scheme? There must be an error there. None of the people of the districts north of here have made any such request through me.
1085. I will read the question and answer referred to. Mr. Barling was asked: "Has there been any request on the part of the towns to the north of Wollongong to be included in the Government scheme? I do not think we have an absolute requisition from them to that effect. I may say, however, that I have seen the Members for the district, Mr. A. Campbell and Mr. Nicholson, and I think I am correct in saying that

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that they highly approve of it."? It is perfectly correct that Mr. Barling had interviews with Mr. Nicholson and myself, and that we personally expressed approval of it; but at the same time each of us pointed out to him that the Bulli people themselves had made no request, and that we would not answer for their opinion in regard to the matter. Moreover, I went further, and suggested to Mr. Barling that I would not be surprised at all if the people of Bulli were opposed to the scheme being extended to that district.
1086. Mr. Barling was also asked: "Have you communicated with Bulli, Wonona, Corrimal, and other places which will be supplied? I have communicated with the Members, and I think they are in favour of it; but I should not like to pledge them to it." It is perfectly correct, as Mr. Barling states, that individually we each expressed approval of the scheme, as a scheme, but we in no way undertook to express the opinion of the people themselves.
1087. *Mr. Wall.*] Do you think, knowing the cost which the scheme will entail on the ratepayers, that they are in a position to pay for the water supply? I am strongly of opinion that by the time the work is completed, at the usual rate of Government procedure, the population will have sufficiently increased to render the carrying out of the work a remunerative one. A few years ago a gas company was started here, and there were great misgivings as to whether it would be a financial success. The Municipal Council at that time spent £120 in gas lamps; now they spend £600. I take that as a good illustration of what will follow the laying on of water for the town as proposed.
1088. Then in the best interests of the people you would recommend the Council to carry out the undertaking. Very strongly.

Mr. Robert Baxter, hotelkeeper, Wollongong, sworn, and examined:—

Mr. R. Baxter. 22 July, 1892.

1089. *Chairman.*] You are an hotelkeeper in Wollongong? Yes.
1090. How long have you been a resident? Eight and a half years.
1091. How are you at present supplied with water? From the roof, caught in tanks.
1092. Has your catchment ever given out? Frequently.
1093. And then what have you been dependent upon? On wells. On one occasion I had to go to Fig tree Creek, 2 or 3 miles away, and had to pay 3s. a cask for water.
1094. How long is that ago? Four years.
1095. It is only in extraordinary droughty seasons that you have to go outside for supplies? For that distance; but I have had to carry it from a well near the racecourse on two or three occasions. My tank has been empty two or three times since I have been here.
1096. Is there an inexhaustible supply at the well? No; and it gets very brackish.
1097. If you were taxed higher than 5 per cent. for a water supply on the assessed value of your property, would you be able to pay? Yes; I should be very glad to do so.
1098. You recognise the importance of having a good unpolluted water supply? Yes; from a sanitary as well as from a domestic point of view.
1099. Do you believe the people generally are in favour of it? Yes.
1100. You do not know much about the scheme itself? No.
1101. But, as a large consumer of water, you would gladly welcome a supply at the price named? Yes. I have often been obliged to stop the use of the bath in my house; in fact, I cannot afford a plunge bath now. I cannot water my horses, or wash my buggies in the summer time. I have to depend on the lagoon, and the horses do not care to use it.
1102. And does the washing from the buggies go down to the lagoon? Yes; and the waste water from the back yard.
1103. But for the filtration of the sand intervening it would be very bad for the lagoon? Yes; it drains the eastern portion of the town. All the washings from the back yards go to that lagoon. The town lagoon is a most abominable place—the water is contaminated from all sources; it is unfit for human consumption, or even for the consumption of animals.
1104. There are several cesspits which must of necessity drain towards the lagoon? Yes. There are dead cats and dead dogs in it; in fact, it is the town sink

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Mr. Henry Stumbles, Council Clerk, Borough of Wollongong, sworn, and examined:—

Mr. H. Stumbles. 22 July, 1892.

1105. *Chairman.*] You are Council Clerk at Wollongong? Yes.
1106. How long have you held the position? About twelve years.
1107. Have you a statement showing the progressive nature of the value of property here? I have a statement as to the payment of the debt of £42,000.
1108. What is the debt of the municipality? £9,900.
1109. Is that your total indebtedness? Yes.
1110. Including your overdraft? Yes; and outstanding debentures. It includes also the Town Hall property.
1111. Have you any debentures maturing? They mature in 1895.
1112. Have any matured since you became Council Clerk? Yes.
1113. Were they met or renewed? They were met.
1114. Did you borrow to pay them off? Yes.
1115. You did not decrease your indebtedness? No.
1116. Did you borrow at a less interest? Yes; we were paying 6 per cent. in the first instance, and now we pay 5½ per cent.
1117. You never absolutely wiped off any indebtedness which had been incurred? No.
1118. But you have increased your assets to meet them? Considerably.
1119. By the erection of the Town Hall, &c.? Yes.
1120. What are your assets? About £10,000. That includes the Town Hall, plant, and the land we own.
1121. What land is that? The quarry; the allotment we have in Brewer-street; and the pound site, which belongs to the Borough Council.
1122. You have a large overdraft now? £1,900.
1123. Are the banks troubling you? No.
1124. Have they any security? No; it is cash credit.

1125.

Mr. H. Stumbles. 22 July, 1892.

1125. Is it a fact that the Council has recently decided to shorten sail? A little.
1126. Do they contemplate raising a further loan for municipal purposes? No; I do not think it is required. By the time the debentures come due we shall be able to manage them.
1127. When do the next lot fall due? 1895.
1128. How much? £8,000.
1129. Will you be able to meet them without raising a loan? I think so, if things go on all right.
1130. How are you going to do it—your total income is £2,200? That is the income from rates alone. We have also revenue from vehicle licenses.
1131. What does that bring you in? About £50 a year. We have also a special endowment of 10s. in the £.
1132. That may be knocked off at any moment? I think it ought to be increased instead, and made £ for £.
1133. What is the staff of the Council? Myself, Inspector of Works, Inspector of Nuisances, Librarian, and an overseer.
1134. Do you let all your works by contract? Yes.
1135. What is the municipal revenue? Last year it was £3,200.
1136. How is that made up? By rates and endowments, Town Hall, &c.
1137. What is your municipal revenue? £2,200, including lighting rate.
1138. What is your municipal rate pure and simple—your 5 per cent. according to the Municipalities Act? About £1,560—that is 1s. in the £.
1139. Can you tell us what it was the year before? A similar amount.
1140. Has there been any great increase during the last five years? Yes. From 1880 to 1885 there was an increase of about 47 per cent. From 1885 to 1890 the increase was at the rate of 55 per cent. on the municipal rate.
1141. Has there been any increase since 1890? There was a slight increase that year.
1142. Was there any improvement in 1891 and 1892? About the same.
1143. To what do you attribute the falling off? Depreciation in value of property, lowering rentals.
1144. Do you think we have got to the bed-rock of depression? Yes.
1145. Then the people of Wollongong are now taxed 5 per cent. or 1s. in the £ of the municipal rate? Yes. And 1d. in the £ for a fire brigade rate and 4d. in the £ for a gas lighting rate—1s. 5d. altogether.
1146. What about your dry earth closets or cesspits? We make a profit on them.
1147. What do the people pay? Two shillings and six pence per month for dry earth closets, and the cesspits we charge at 6d. per cubic foot.
1148. Do you know whether the Council, when they considered the water supply scheme, had the cost before them? Yes, £42,000.
1149. Was the matter dealt with by the Council as a whole or was it sent to the finance committee? It was dealt with by the Council as a whole.
1150. When you consider questions concerning money matters, do they not usually go before the finance committeee? Yes; but this was a special matter.
1151. Do you not think that a matter of so much moment as this should not have been considered by the finance committee? It has been before the finance committee since, and I have had to prepare a lot of information for them.
1152. Do you know whether the finance committee went on the assumption that at the worst they would only have to pay 5 per cent. upon the cost? That was the idea.
1153. Has Wollongong been put to great inconvenience through want of water? Yes.
1154. Have you ever had any public meetings about it? Yes.
1155. How long ago? In 1889 an indignation meeting was held.
1156. I suppose that was the time of the drought? I think it was.
1157. When a drought comes they begin to abuse the aldermen? It was the Government whom they abused.
1158. Since the resolution of the Council was passed, have any of the ratepayers, who have come in to pay their rates, dissented from it? Not one.
1159. Do you know of any ratepayer who is opposed to the proposal? No.
1160. Have you any figures or any statement to put before us? I have a statement to show the revenue and the way in which the debt is worked off at 3½ per cent.
1161. Have you any other statement to make? There would be an outside revenue from the water supply.
1162. What is your estimate of that outside revenue? £400 from the railways for engines, &c.
1163. What is your idea as to what the consumption of the railways will be? Roughly, I should put it at £400 a year, and the wharfs and steamers would pay £200.
1164. Do you know that the Under Secretary for Works has estimated that the income from the railway will be £182 10s.? No.
1165. And that the estimate for the sale of water by meter to the Harbour Trust, shipping, collieries, factories, and stables is £310. What is your estimate for that? £200 for the wharfs alone.
1166. And what else? I have no doubt manufactures would spring up when we get a water supply.
1167. What do you put down for them? About £600. Then there are other buildings such as hospitals, gaols, &c.
1168. But they are exempt? Surely they ought to pay for water.
1169. *Mr. Wall.*] Have you made any allowance for depreciation of property? A slight allowance.
1170. And that accounts for there being no increase in the rates for the present year? Yes.
1171. Your estimate is that 20,000 gallons will be supplied to the railways? Yes.
1172. That at one shilling per 1,000 gallons would be £365 per annum? Yes.
1173. Do you know that in other towns 1s. 6d. per 1,000 gallons is charged? I do not.
1174. A charge of 1s. 6d. per 1,000 gallons would give you £547 from railways? Yes.
1175. What is the total revenue you expect to derive from other sources? £1,360.
1176. Assuming that you were to reduce your estimate, which seems to be a very sanguine one, by the £600, which you expect from industries, which do not exist, it would still leave a revenue of £2,260. Does that represent actual revenue in prospect? Actual revenue.
1177. Do you know that the Government insist on a sinking fund at 3½ per cent., for a period of sixty years, which would have to be provided for. Up to the present the time allowed for repayment has been twenty-six years? I make it extend on this occasion to about sixty years. According to the statement before me, we should pay off the principal and interest in sixty-four years.

Mr. H. Stumbles. 22 July, 1892.

1178. I understand you have only based your calculation at 3½ per cent. That pays off nothing? make the total cost £105,420 to be paid for by a rate of 1s. in the £.
1179. How much do you propose to pay off as a sinking fund? One thousand six hundred and fifty-five pounds per annum.
1180. Your interest at present will be 4 per cent.? I was not aware of that. I took it at 3½.
1181. But on £42,000. Your amount now with interest on sinking fund will be £1,680 per annum? I am not far out—I make it £1,655 without allowing for increases which are sure to take place.
1182. This increase is on the basis of getting the loan at 3½ per cent? Yes.
1183. But the Government cannot obtain money at that price. It would probably cost you 4½ per cent.? That would alter the matter altogether, and it would take longer to work the debt off.
1184. What is your actual revenue? The revenue from rates on the water lines would be £1,655 per annum taking the present assessment as a basis.
1185. Apart from the £600 which you anticipate raising from the establishment of factories you have still sufficient revenue to cover the expenditure? Yes.
1186. What about working expenses? I have not taken them into consideration.
1187. *Mr. Ewing.*] What factories have you here? Cordial factories.
1188. *Mr. Wall.*] What is the actual total revenue including your rates and other sources of revenue? Two thousand eight hundred and sixty pounds.
1189. According to Mr. Darley's estimate you will require to pay off £2,680 per annum, assuming that you get the money at 3½ per cent.? Yes.
1190. *Mr. McCourt.*] You are aware that it is proposed to place the scheme, if it is carried out, under the management of three commissioners? Yes.
1191. Do you not think it can be worked more cheaply by the Municipal Council if the Bulli connection is not established? Far cheaper.
1192. How many extra men will you require to employ to collect the water rates, &c.? Two additional clerks.
1193. Seeing, that you collect all other rates, could not one clerk collect the water rates? I daresay he could, but I was including pay-sheets and all clerical work connected with the matter.

Mr. John Henry, storekeeper, Wollongong, sworn, and examined:—

Mr. J. Henry. 22 July, 1892.

1194. *Chairman.*] How long have you been residing in Wollongong? Six years.
1195. What is your occupation? A storekeeper.
1196. Are you in favour of the project before the Committee? To a certain extent.
1197. To what extent? I think a smaller scheme by which we had to pay less than a shilling in the £ would be beneficial.
1198. Do you think the people would be prepared to pay a tax of a 1s. in the £? No.
1199. What do you think they are prepared to pay? About 6d. in the £. I think it would be better to devise a lighter scheme.
1200. Do you know of any scheme which would be cheaper? I think they could do without sinking shafts and cutting tunnels.
1201. Are you an engineer? I have been amongst engineering all my life.
1202. Have you any project to submit? No; I only wish to give an opinion. I think a water scheme could be carried out for less than £40,000.
1203. How? By bringing the water near to the side of the mountain, with a large dam at the top, and extending the pipes down the mountain. There would then be no need to sink a shaft or cut tunnels.
1204. How would you get the water over the hill without pumping or carrying it through a tunnel? I do not think you would have to go up much over the hill. I have not surveyed the district.
1205. Do you not think it would cost more to cut a gutter along the mountain for 200 or 300 feet, than it would to tunnel through the mountain? I do not know.
1206. Then your objection is due to the fact that you think the people are so impoverished that they cannot stand more than 6d. in the £ for a pure water supply? Yes. The people in general are against the scheme, because they have underground tanks, and are well supplied with water.
1207. Are there many people of the same opinion as yourself? A good many common sense people, and a good many are not.
1208. Why did they not call a public meeting, and petition against it? It is not too late to do that yet.

Mr. Archibald M'Lachlan, miner and contractor, Balgownie, near Wollongong, sworn, and examined:—

Mr. A. M'Lachlan. 22 July, 1892.

1209. *Chairman.*] What is your occupation? Miner and contractor.
1210. How long have you resided in the district? Nine years at Balgownie.
1211. Do you know anything of the scheme? Yes.
1212. Do you think it will of benefit to the people of Wollongong? Yes.
1213. Do you think the people of Balgownie would be glad to avail themselves of it? Yes.
1214. And pay 1s. in the £ for it? Yes.
1215. Are you put to inconvenience for want of water? Yes. I have sometimes to give them my well, and that which is a catchment off the roof.
1216. Are there any cesspits within reach of it? Yes.
1217. Is the well cemented? Yes.
1218. So that there can be no percolation? Still the water is not good.
1219. Where do you get water from in droughty times? From the creek, which is polluted by coming over the coal-measures.
1220. Do you think the catchment area is in a good position? You could not get a better.
1221. Is there anything else you wish to state? I am opposed to Mr. Lahiff's plan.
1222. Why? The Government would want to get £15,000 to take it through his pit.
1223. We are told that the impounding reservoir will cover an area of 25 acres. We are also told that there are from 300 to 350 feet of cover over the measure between where they work and the bottom of the reservoir. Supposing all the coal is taken out, do you think there is much probability of the ground falling in? No; it would only break the under strata.
1224. But the crack might let the water through? No.

1225.

Mr. A. M'Lachlan. 22 July, 1892.

1225. You have been in the Mount Pleasant Mine? Yes.
1226. Have you done any stone-work at all? Yes.
1227. Is the stone pretty solid? Yes. I sank a shaft first at the back of Bulli Mountain. It is sandstone all the way.
1228. Do you think the sandstone of the country is so solid that it could carry the water without pipes? Yes.
1229. It might require a patch of concrete or cement here and there, but you do not think pipes need be put in the tunnel? No; it would be better without pipes, because at times you would have to go in and fix them.
1230. Do you not think that a twelve months' water supply is rather an excessive one? They do not want that.
1231. Six months would be ample? Three months would.
1232. Have you had much experience of the catchment area? I have been there in dry as well as in wet weather.
1233. Have you seen the creeks dry? Never.
1234. Have you ever seen the Corrimal Creek dry? No.
1235. Have you ever seen the Cataract dry? No.
1236. You think a reservoir going down a few feet beneath the rock would intercept water which at present runs away through the shingle? Yes.
1237. You think a dam higher up at a cost of £1,000 or £1,500, impounding 10,000,000 or 15,000,000 gallons, would be sufficient? Yes; until the population increases.
1238. *Mr. Ewing.*] You sank a shaft at the back of Bulli Mountain? Yes.
1238½. And you went through solid sandstone all the way? Yes.
1239. How far north was this? Two or 3 miles.
1240. Mr. MacCabe, in putting the other shafts down, found it was not solid sandstone? But the strata is thrown up towards him. My strata might have left him.
1241. But, until you are really working at your tunnel, you do not know what it is? No.
1242. But, it is reasonable to suppose it would be sandstone fit to carry the water? Yes.
1243. Why do you think Lahiff's scheme is such a bad one? Mount Pleasant is always making water, and if anything went wrong with your pipes you would never get at them without pumping out the water.
1244. The coal dips towards the west? Yes.
1245. Where does the water come from? From the surface, in time of rain, through broken strata.
1246. *Mr. Wall.*] What is the thickness of the sandstone through which you sank? Three hundred feet.
1247. Do you know what height above sea-level you met with the sandstone? Nine hundred feet.
1248. If the height of the proposed tunnel is 969 feet above sea-level, it will be 69 feet above the sandstone? No.
1249. Therefore, if the mouth of the proposed tunnel is 960 feet above the level, it will be 60 feet above where you met the sandstone? Yes.
1250. Therefore, it would not be in the sandstone at all? Yes; but I was down the gully. The metals dip going back.
1251. How far did you sink from the surface before meeting the sandstone? Not 2 feet. The proposed tunnel would have to be a cross-cut, going up to give you gravitation.
1252. You state you met with sandstone at 900 feet above sea-level and continued through it for 300 feet? Yes.
1253. If you had been 60 feet higher above sea-level, you would not have met the sandstone at all? It depends on how far back you would go, because the metals dip.
1254. But what thickness is the strata of sandstone through the mountain? You can see it easy.
1255. But you have never gone through it to test its capability. You have only gone through 300 feet below the level of the tunnel? Yes.
1256. But you have never penetrated the solid in order to ascertain whether it will convey the water? But you see all the strata in the creeks as you go up the mountain. Sandstone, however, is not the best bed for keeping water out—there are always cracks in sandstone. Black metal is better.
1257. Have you sunk a shaft through the whole stratification of the sandstone there? Through 300 feet of the top of it, commencing at 900 feet above sea-level.
1258. *Chairman.*] In other words, in the shaft you put down on Robson's property you started down in the gully with sandstone? Yes.
1259. And if you had been higher up you would still have had sandstone? Yes.

Mr. William Davis, ironfounder, Wollongong, sworn, and examined:—

Mr. W. Davis. 22 July, 1892.

1260. *Chairman.*] What is your occupation? Ironfounder.
1261. How long have you resided in Wollongong? Ten years.
1262. Do you know the scheme before the Committee? Only from what I have seen in the press.
1263. Do you think the scheme proposed is a good one? I do; without it we cannot have any industries. In my industry I have found the want of water a great handicap.
1264. What means have you for conserving water? I catch all the Lord sends.
1265. From the roof? Yes.
1266. And when that is exhausted what have you to do? To carry it from the lagoon.
1267. Would you be prepared to pay a rate of 1s in the £ for a supply of water? I should be agreeable to pay what charge is imposed. If my neighbours could afford to pay it I would try.
1268. The information goes to show that the people would hardly be prepared to pay more than that, and, unless it is more, the whole scheme cannot be carried out? I cannot say. For my part why should not the scheme be the same here as at Newcastle—Bulli to be supplied.
1269. But the Bulli people say that they do not want it? They appoint a lot of deputations for things which do not affect their pockets.
1270. You think the proposal can be carried out? Yes.
1271. And if carried out at less expense than proposed the better? Yes.
1272. Have you heard any one in the town dissent from the resolution of the Municipal Council? No.

Mr. Charles Frederick Smith, auctioneer, Wollongong, sworn, and examined:—

Mr. C. F. Smith. 22 July, 1892.

1273. *Chairman.*] What is your occupation? An auctioneer.
1274. How long have you been a resident of Wollongong? I am the oldest male native of Wollongong here.
1275. You collected the census of 1891? I was the enumerator.
1276. Have you any record of the previous census? Yes; I enumerated it ten years ago.
1277. How far did your district extend? To a little beyond Clifton on the north, and as far as Lake Illawarra—the southern shore of it—following the Macquarie River downwards extreme west from Mount Brown on the south-west.
1278. How far west? Almost as far as there was any population to speak of—to the boundary of Berrima district.
1279. Did you keep your returns in separate districts? Yes.
1280. For instance, could you give us the population between Wollongong boundary and Bulli, including Bulli? Yes. This is a copy of the official return furnished to the Statistician.
1281. According to the return you furnished to the Government Statistician in connection with the census of 1891–92 the population of Bulli and Wonona was 2,578? That is correct.
1282. Did you take any cognisance of the household properties? I think the number of the inhabited and uninhabited houses is stated.
1283. The houses in Bulli and Wonona were 491 inhabited and 32 uninhabited? Yes.
1284. In the same return you furnished the Government Statistician with the population of North Illawarra? That portion was collected by a certain collector—a district.
1285. What would the boundary of his district be? Perhaps it went very little beyond North Illawarra.
1286. And from the southern boundary of Wonona district to the northern boundary of Wonona, including Bellambi, Corrimal, and Balgownie, in the North Illawarra municipality there was a population of 2,515? Yes.
1287. Inhabited houses, 511; uninhabited, 93? Yes.
1288. Would any portion of Keira be included in the last return? Yes; but nothing of the municipality of North Illawarra would be included in Wollongong.
1289. What would be the population of Keira? I could not tell exactly.
1290. The Wollongong population was 3,043, and the houses inhabited, 543, and the uninhabited houses, 118? Yes.
1291. Could you give us the figures of 1881-82? I fear not. I had some records but they were spoiled in my late office during a fearful storm.
1292. Can you state from memory whether in the three districts I have quoted from your return there was a marked increase on the return of ten years ago? I should say they have increased more than double.
1293. Where was the increase most marked? In Bulli.
1294. Where was it more marked next? In the North Illawarra district.
1295. And the least increase was in the municipality of Wollongong? Yes, *pro rata;* but it had doubled. It was the mining population which had increased the most.
1296. Do you think that since the census was taken there has been any going back in the districts I have named? I think there is some slight decrease. There was a large number of navvies on the railways, many of whom have been absorbed by works here, and many of whom have gone away.
1297. Do you think population in the three centres I have referred to is likely to go back? I do not.
1298. Bulli and Wonona are largely dependent on the Bulli mines? Not so much on the Bulli Mine as the other pits to the north and south of it. I consider the most important coal-measures on the south coast are at Bellambi.
1299. Even supposing the Bulli Coal Company's land is worked out, you do not expect any decrease in the population in the Bulli and Wonona districts? No.
1300. It will be more than made up for by the extension of trade in and about Wonona? Yes, and Bellambi.
1301. You think there is not likely to be any decrease in the North Illawarra and Wollongong districts? I do not.

TUESDAY, 9 AUGUST, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Water Supply for Wollongong, and the Surrounding Districts.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, and President of the Metropolitan Board of Water Supply and Sewerage, sworn, and further examined:—

C. W. Darley, Esq. 9 Aug., 1892.

1302. *Mr. Suttor.*] We understand that a modification of the proposed scheme has been made? I have had a survey made. I directed a survey to be made for a dam site about half-way between the junction of Corrimal Creek and the Cataract River, at a place where there is a suitable site for a dam, but I find that the storage capacity will be rather too small. Half-way between the two junctions of Corrimal Creek with the Cataract River, and Angel's Creek with the Cataract River, I have had two surveys made, and the cost of a dam calculated on one site.
1303. What will be the capacity of a reservoir there? The capacity, keeping the same water level, so as

to

C. W. Darley, Esq. 9 Aug., 1892.

to work into one scheme in the future, if the original work be carried out, will be about 8,000,000 gallons.
1304. The capacity of the original reservoir was 60,000,000 gallons? Yes.
1305. Are you prepared to recommend that the modified scheme be carried out? I could not recommend the construction of that reservoir. I think it will be too small for the town.
1306. *Mr. Humphery.*] What will be the cost of the dam? About £4,053 as against £12,000 on the proposed site.
1307. Will there be any difference in the cost of the service of this proposed dam, and the cost of the service from the other? No; the tunnel will remain the same, and the pumping will remain the same, all the way through. The only thing that it might be desirable to reduce is the size of the service reservoir for Wollongong.
1308. What reduction will be effected if the service reservoir is omitted? I could not altogether recommend its omission at present, but we could save £2,000 by reducing it in size.
1309. So that that will be a total saving of £10,000? Yes, on the original estimate. I might explain that it might be possible to dispense with the reservoir by introducing what is known as a pressure-reducing valve. I cannot say, however, that we can introduce it in this case, but it is a matter to which, if the work be carried out, I would give close attention. Without the introduction of such a contrivance the pressure on Wollongong would be too great.
1310. Assuming that the reservoir may be dispensed with, what will be the difference in cost? The amount originally put down for a reservoir was £5,000.
1311. So that a greater saving, which could be effected by adopting the new proposal, would be £13,000? Yes; but I do not say at present that it will be feasible to do away with the reservoir altogether, but it can be reduced in size.
1312. *Mr. McCourt.*] You say that the dam now proposed will impound 8,000,000 gallons? Yes.
1313. How many months' supply will that give to Wollongong? Allowing for soakage, &c., not more than two months.
1314. How do you arrive at two months? I take the population to be 3,000. Allowing them 30 gallons per head, there will be a supply for eighty-eight days, or two and three-quarter months. You must, of course, allow for soakage, and evaporation. Therefore, I do not think there would be more than a two months' supply.
1315. Do you think that would be ample? It would not be worth while carrying out the scheme with such a small storage.
1316. If the evidence tends to show that the creek, even in the most extremely dry weather, has never been dry, what then? The question is whether it really never has been dry. What we want to do is to provide from a drought occurring.
1317. But, if the evidence shows that the creeks have always been running, would not the im pounding of 8,000,000 gallons be sufficient? It depends, altogether, on how much they are running. We know that many miles below, after picking up numerous and large creeks, the Cataract River has ceased flowing. I would not rely, altogether, on the information, because I do not think anyone has been living up there long enough in dry weather.
1318. One witness stated that he had lived there twenty-six years, and had never known it to be dry during that time? These statements have to be received with great caution.
1319. What would be the elevation of the balance reservoir? Eight hundred and sixty-six feet over the town.
1320. By making that a little larger, could the reservoir at Mount Ousley be done away with? No; that is simply to break the pressure, and to act as a pipe-head.
1321. Is Mount Ousley higher than Mr. Franklin's residence? A good deal higher. Mr. Franklin's residence is about 130 feet.
1322. Supposing the rock is found to be fairly sound and solid, will not the water be able to flow through the tunnel without the aid of pipes? It will be necessary still to put the pipes in. Down that steep incline the velocity is so great that, unless there is a reservoir, and some means of taking it below, we cannot regulate it. At the regulating tank we must have an automatic valve to regulate the supply coming forward.
1323. Could it not be regulated at the inlet to the channel? No; we must keep the water at a constant level in the balance tank.
1324. Do you not know that it is regulated at the inlet to the Sydney Water Supply? Yes; by keeping a man standing by; but the cases are quite different; you could not do that here. There is nothing to stop the whole contents of the reservoir passing through the tunnel, if it is not governed by this pipe.
1325. The tenour of your evidence is that you recommend the original scheme for Wollongong? I do, except in regard to the modification in the reservoir. I think you might save something like £2,000 in the construction of the reservoir, or we might possibly save £5,000 by the introduction of a pressure-regulating valve.
1326. *Dr. Garran.*] What was the reason for making this intermediate reservoir as large as you proposed it first—why did you fix upon the capacity you did fix upon? In nearly all cases in which we have constructed small reservoirs for towns, we have had demands for larger ones. At Bathurst we put in small reservoirs, and we are now putting in another one. At Albury we have had to put in a larger reservoir. It is cheaper to put in one reservoir of fair size, than two small ones of half size.
1327. The original size, then, was adapted to the scheme as you framed it? It was a 500,000-gallon reservoir. I think with the available pressure, and a good pipe leading down to the reservoir, it would be a very safe gravitation scheme.
1328. Supposing you afterwards found it was too small, you could add to it without very much additional expense? Yes; the site is suitable for adding to it.
1329. Could you make a second one of the same size, or increase the area of the original one? We could add another alongside.
1330. Then it would only be the expense of making another small reservoir alongside? Yes.
1331. And that, altogether, would probably cost £6,000 instead of £5,000, as originally proposed? Yes; and, in the meantime, you would save the interest on the money. We can reduce the size, and reduce the cost.
1332. You mean you could make a smaller reservoir, even if you put the dam where you originally proposed

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proposed to do it? In either scheme the service reservoir can be reduced in size and cost.
1333. But your reduction will not be more than £2,000? From £2,000 to £3,000.
1334. Do you know what is the longest drought on record in Wollongong? No observation has been taken there. We are simply guided by the Cataract River.
1335. Although this smaller reservoir might be capable of holding 8,000,000 gallons, still, if you had a four months' drought, you might not have 8,000,000 gallons in it? That is what I am afraid of. If we had a four months' drought it would run dry.
1336. If you carry out a smaller scheme first, and a larger one afterwards, how much additional cost will it involve? The dam for that reservoir would be, practically, thrown away.
1337. That is £4,000? Yes. You would then have to spend £12,000 more on the new dam.
1338. But the total loss we should have to incur from trying the smaller scheme first, would be £4,000? Yes.
1339. *Mr. Wall.*] What is the altitude of your storage reservoir above the town of Wollongong? Two hundred and twelve feet.
1340. What is the altitude where the tunnel discharges through the hill? Eight hundred and sixty-six feet.
1341. If you could add sufficient capacity to your dam, by constructing the larger dam at the points indicated in your first scheme, could you not bring the water, by reticulation, into Wollongong from there, without the necessity of any reservoir at all? The pressure would be so great, that it would be ungovernable. It would burst many ordinary pipes.
1342. What do you mean by ordinary pipes? The lead service-pipes and fittings.
1343. You think the inflow into the pipes could not be so regulated, automatically, as to dispense with the intermediate reservoir altogether? I have explained that it is a matter which I will work out, in order to ascertain whether I cannot introduce a pressure-regulating valve.
1344. If you could work that out, you could dispense with the necessity of the construction of the reservoir, and you could, also, convey the water from the main dam in almost a direct line. You are not coming in a direct line? It would only save 200 or 300 yards. I follow the roads, because it is cheaper to do that, than go across farms.
1345. Have you based your calculations in regard to the storage for the supply of Wollongong, upon local rainfall, or have you taken into consideration the inflow of water from the creeks to the dam? From local rainfall, as near as we could get it. I could find no local rainfall observations.
1346. But if the creeks are continually running, the local rainfall must be, in a great measure, supplemented by the inflow of water from them? There is no other source of supply than the rainfall.
1347. My opinion is that many of the creeks start from springs? The springs must be fed from rainfalls.
1348. Springs, as a rule, are not affected by drought—a storage may have taken place for years? You will not find it so in this instance. This is on the top of the mountain, and it is not likely that there is any higher country in the neighbourhood, from which it can be fed.
1349. If the evidence goes to show that the creeks have never ceased flowing, and that the rainfall has varied considerably, there must be a considerable storage in the sources of these springs? I accept that statement with great caution, because I know, as a matter of fact, that the Cataract River lower down has ceased flowing. I have seen it dry.
1350. May not that be attributable to the porous character of the ground, over which the water flows, before reaching the Cataract? No; it is sandstone rock.
1351. However, you have based your calculations on the rainfall? Yes.
1352. How long do you think 8,000,000 gallons will supply the people, if the water is taken direct from the dam, without an intermediate reservoir? Not more than two months at the most.
1353. *Mr. Ewing.*] With regard to this dam—what sort of a dam is it? A good sandstone rock.
1354. With pretty steep sides to the creek? Fairly steep. It is overlaid with alluvial deposit from 7 to 10 feet.
1355. How is it, that with a good bottom and pretty steep sides approaching the creek, you can only get a dam with a capacity of 8,000,000 gallons? The creek is so narrow.
1356. Why not raise the dam a little? You will increase the cost, and I want to work the dam in with the larger dam hereafter.
1357. In giving your estimate with regard to the cost of the smaller dam, you have been, to some extent, controlled by the possibility of eventually working it in with the bigger dam? Yes.
1358. Supposing we disregard the bigger dam. Cannot you get 16,000,000 gallons of water in the place you have marked in pencil on the plan—what is to prevent it? I daresay we could do it, but it would be nearly as costly a dam as the other one.
1359. But the reason the other one cost so much is, because of the flatness of the approach to the southern side of the creek. If you have a good approach at the second site the dam will be much cheaper? The section shows it is very flat.
1360. But still it is possible to get a dam of 16,000,000 gallons capacity at the present site, and you do not really know what it will cost? I have not an estimate for that.
1361. But it may be possible to disregard the large dam, and accept a new one in this position? It might be. If you laid the larger dam aside altogether, you might get a higher one to store more water on this particular site.
1362. Do you know what amount of water, falling over the reduced catchment area, will give you 8,000,000 gallons in the dam? I have not worked it out. The catchment area is ample to keep it filled.
1363. As far as we can gather, there are 50 inches of rain there. Do you think that will be ample? In anything like ordinary seasons it is ample to keep it filled.
1364. And to keep a dam, twice the size, filled? Yes.
1365. We have been told that it would be quite possible that, when the coal underneath was taken out, there would be a chance of the country subsiding. What is your opinion? I do not think there will be much risk of that. There would be about 632 feet of cover between the bed of the stream, at that point, and the coal, and I think it will be quite safe. I think the proprietors working out the coal, for their own sake, would not risk bringing the river into the workings, for they would have to pump the whole of it out again. I may mention that the Hetton Company at Newcastle is working under the harbour with a cover of only 225 feet in one portion of the mine, and 208 feet in another, and from 70 to 80 feet of that is pure sand.

1366.

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1366. But when the coal is worked out and the pillars are removed, there is no reason at all why it should not go down. Can you tell us what strata it is? It is sandstone rock.
1367. You are aware that more than 600 feet have come down at times? In bad country, but this rock is very good.
1368. If it were to come down, do you know how far the draw would be? Coming down 600 feet here would be considerable draw, but I do not think any proprietor would so work out his colliery, as to risk bringing down 600 feet of head.
1369. Supposing the works strike cinder, or the mine is worked out and left to itself, the props will rot? They must leave the pillars.
1370. But they work out the pillars when they have done with the mine? They cannot work it all out—they would bring the whole mountain down.
1371. Still, in your opinion, it is not worth while considering that aspect of the case? I do not think so. If the place is going to be worked out altogether Wollongong might as well be moved away.
1372. *Chairman.*] When you were last before the Committee you gave us some details as to how the £43,000 was made up, but there are two or three items, about which we have no explanation. We understand now, that the estimated cost of your large impounding dam would be £12,000? The large impounding dam and all the works connected with it, clearing the site, excavation, concrete, and outlet works, will cost £12,290.
1373. What was the estimated cost of your 9-inch pipe in the tunnel? £950.
1374. And your balance tank? £300, including automatic gear.
1375. You estimated the cost of the tunnel at £5,064? Yes.
1376. And the 7-inch pipe and the balance tank to the service reservoir at Mount Ousley, £4,300? Yes.
1377. The service reservoir at £5,000? Yes.
1378. A 10-inch pipe to Wollongong £3,700? Yes.
1379. Reticulation-pipes at Wollongong, £5,750? Yes.
1380. The 4-inch pipes to Keira Village, £546? Yes.
1381. Resumption of land £2,000? Yes; and I have put down £3,772 for engineering contingencies.
1382. What is the length of the new dam which you have been surveying? About 210 feet long, on the top.
1383. And the height? The maximum height is 18 feet.
1384. Do we understand that the dam at that place, and of the dimensions mentioned, will only impound 8,000,000 gallons of water? Keeping the same height as the original water-level, it will.
1385. What are we to understand by the same height as the original water-level? Level at the top of the original dam, so that the same outlet works will do for the two schemes.
1386. You did not make it clear to me, on the last occasion you were examined, how you were going to utilise the whole of the water in the impounding reservoir, when the intake works were so much higher than the bottom of the reservoir. There were 10 or 15 feet difference? No; I run a gullet from the head of the reservoir, from the tunnel, right out to the junction of the two creeks.
1387. But would not that fill up with the sludge which comes down? A pipe will be laid in the gullet, which is included in the cost of the tunnel pipe.
1388. In that case, you would be able to exhaust every inch of water in your reservoir? Yes.
1389. We understood, when you were being examined before, that there would always be, at least, 10 feet of space between your available water-line and the bed of your creek, allowing for sludge to silt up? I do not suppose I would take the pipe down to the very bottom of it, but it would go very near.
1390. Would it not be a very easy, and comparatively inexpensive matter to divert the waters of Angel's Creek, by a race above your proposed smaller dam. That is to say, if the reservoir we have been talking about, of 8,000,000 gallons capacity, were constructed, would it not be possible to intercept some of the water from the Angel's Creek water-shed, into this impounding reservoir? It might be, but I do not think you would gain anything, because, when the other creeks were running, they would keep the dam full.
1391. But it is the absence of storage capacity which is the objectionable feature of the small dam, and not the quantity of water;—I take it, that if the Cataract River is dry, the Angel's Creek will be dry? No doubt.
1392. Would it not be possible to put a small and inexpensive dam across Angel's Creek sufficiently high up to impound a fairly large quantity of water, and yet be able to divert it by a race to the reservoir? That would cost as much as the two together. The race would cost as much as a big dam.
1393. If it has been proved that Wollongong cannot stand the expense of a scheme like this;—would you rather let the people go without water, than carry out the second scheme? We might try and enlarge one dam a little more by raising it; but I do not like the idea of carrying out a scheme, the circumstances in connection with which, may be some day quite forgotten, and for which we shall be blamed.
1394. We were informed, in Wollongong, by the gentleman who keeps the rain-gauge there, that for a period of fourteen years, the average rainfall at Wollongong was 38 inches. For the same period, the average rainfall at the Cordeaux Station, which is of the same elevation as your proposed catchment area, and distant from it in a south-westerly direction not more than 6 miles, was 55 inches. We were also informed, by various local people, that they are sure it is frequently raining on the mountains when it is not raining in Wollongong. In view of this excessive rainfall, do you not think we should be safe in assuming that a storage of 8,000,000 gallons will be sufficient for the place? I have not been able to get the information you refer to. I was unable to find the Wollongong observations in Mr. Russell's report.
1395. This is quoted from Mr. Russell's book, by his Wollongong correspondent;—if what I have stated is correct, do you not think we should be pretty safe in giving Wollongong a reservoir capable of holding 8,000,000 gallons? Yes, if it is correct; but I and another officer made careful search for it.
1396. The probability is that the return of Mr. Mackle, the witness I refer to, was quoted from a more recent book than the one you have;—I think from the one just issued?, If the average was for fourteen years, it ought to be in the old books.
1397. However, one would naturally suppose there would be more rainfall on the mountains than on the low lands? Undoubtedly.
1398. And if there is this average rainfall, do you not think a reservoir, capable of holding a two months' supply of water, will be sufficient? It might be worth while risking it.

1399.

C. W. Darley, Esq. 9 Aug., 1892.

1399. You have already stated that it is inadvisable to use the tunnel you propose to make for the conveyance of water, without the intervention of pipes? Yes; we could not regulate the quantity of water coming down without a pipe.
1400. Whether, if the tunnel is 6 feet or only 6 inches, I suppose the regulation of the water is only a matter of cover? You must automatically govern the water coming down. It would not do to have a man standing by to let the water come down as it is required. The balancing tank at the lower end will will be fed from a pipe passing through the tunnel, and will be automatically regulated by a ball valve, so that, as the water is drawn away, it can be replenished.
1401. Do you think the country will be of a sufficiently solid character to enable you to do without pipes? No; you are bound to meet with some seams and joints in a tunnel of that length.
1402. At all events, the tunnel will have to be constructed, whether it has to run the water direct through, or to carry a pipe? Yes.
1403. And when it is constructed, you will be in a better position to say whether it is sound enough to allow of the water coming through without a pipe? I think it is very questionable. It will have 100 feet head on it at the lower end of the tunnel, and that is a high pressure for an unlined tunnel.
1404. What was the length of your original dam? Five hundred and seventy feet.
1405. Independent of any possible breakdown of pipes, it is desirable to have some sort of service reservoir, in view of rainy seasons, which might, to some extent, temporarily spoil the water? It would, but I think we might risk it. It is not country off which the water is likely to be very turbid. It will very quickly settle, and of course, we shall not draw off the bottom water. There will be an arrangement at the outlet works, by which the water can be drawn off at different levels.
1406. *Dr. Garran.*] One of your great troubles is getting this fall without straining the pipes? Yes.
1407. Would not that be in favour of something like the scheme suggested by one of the mine-owners, of sinking a shaft of 300 feet, and then making your tunnel along the line of the coal. You would get 300 feet of drop in that way? You would have to pipe down the shaft of course.
1408. Would it be necessary to put the piping down the shaft? Undoubtedly.
1409. What you would gain in working your tunnel on the soft coal, would help to pay you for the cost of sinking the shaft? It would be worse country to travel through. You would have to line it all through. I am in hopes of being able to drive the tunnel through sound rock, so that it will not require lining.
1410. *Mr. Hoskins.*] Could you guarantee to keep a shaft up, with a large stream running down it? It would be a very costly work to prevent utter destruction to everything.
1411. *Mr. Neild.*] You referred, a short time ago, to lead service pipes. Is it contemplated to use lead for the service pipes in connection with this scheme? There must be a lead connection between the main and the service pipes in all cases. The connections to house-fittings are usually lead. When you get a pressure of 300 feet it becomes very severe on the fittings generally.
1412. *Chairman.*] How long will it be before you can furnish information as to the cost of a dam to hold 16,000,000 gallons on the proposed new site? In a day.
1413. Will you kindly furnish it as soon as you can? Yes.
1414. *Mr. Hoskins.*] Does the revised estimate contemplate the dropping of the proposal to supply water to Bulli and Mount Keira? Yes; the estimate I have given to day omits wholly the Bulli service. I have taken £23,000 off for the Bulli service.

TUESDAY, 16 *AUGUST*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM MCCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee further considered the proposed Water Supply for Wollongong and the Surrounding Districts.

Joshua Percy Josephson, Esq., A.M.I.C.E., Supervising Engineer, Department of Harbours and Rivers, sworn, and examined:—

J. P. Josephson, Esq., A.M.I.C.E. 16 Aug., 1892.

1415. *Chairman.*] You are Supervising Engineer in connection with the Harbours and Rivers Department? I am.
1416. How long have you been connected with the Department? Over twenty-four years.
1417. Have you had immediately under your jurisdiction all works in connection with this proposed Water Supply for Wollongong? I have.
1418. You visited the site of this impounding reservoir with the Committee a few weeks back? I did.
1419. You have since made some surveys and an examination, as to putting a dam higher up the valley, have you not? I have.
1420. Did you work out the probable cost of that, or merely furnish data to the officers in the office here to work it out? I furnished data to the Engineer-in-Chief to work it out by.
1421. We have been informed by Mr. Darley that it is estimated that a dam at the particular site, immediately below the junction of the Cataract and Corrimal Creeks, would cost £4,000;—I suppose you are not in a position to check that statement in any way? You mean below the junction of the Cataract River and Rocky Creek?
1422. Are you in a position to say whether you think that is excessive, or do you think they have worked it out in the Department more closely than you have been able to do? I think it is a little excessive. I think a much cheaper dam could be placed there than that.

J. P Josephson Esq., A.M.I.C.E. 15 Aug., 1892.

1423. Do you remember the length of it? One hundred and thirty-five and a half feet, with a 20-foot contour.
1424. As a matter of fact, it is from the figures that you furnished that the information has been got out? Just so.
1425. And you think a dam of the length and size referred to could be constructed for very much less than £4,000? I do.
1426. We have also been informed that this dam would only impound some 8,000,000 gallons—do you agree with that? It is all according to the contour. I think, if I remember rightly, that a 15-feet contour will contain 8,000,000 gallons, but that a 20-feet contour will contain 20,000,000 gallons.
1427. But that is the full height of your dam? Yes; but if you have a reservoir of only 8,000,000 gallons, you will have only 7,000,000 gallons available. You must leave a certain amount for sludge; you cannot use the whole of it.
1428. We have been told by Mr. Darley that it is proposed to take a gullet down the creek—taking a pipe down in all probability, and leaving the mouth of it above the natural bottom of the creek, so that practically he could draw the whole of the water from the reservoir? He could draw it within 5 feet of the bed of the creek.
1429. Do you not think that that is a great deal to waste—to allow 5 feet of water there? Well, the bed of the river is not all the same level, and you must allow for a certain amount of sludge. I think that with a 5-feet contour there will only be 1,150,000 gallons left for sludge.
1430. Then do I understand that you think that with a dam of the size you refer to, which, in your opinion, could be constructed for less than £4,000, a larger quantity of water than 8,000,000 gallons could be impounded? I do.
1431. How much? Twenty million gallons.
1432. Do you think that the dam you propose would safely impound 20,000,000 gallons? I do—there or thereabouts.
1433. How much would it be possible to safely draw away, so as to leave sufficient depth for sludge? If you drew the amount of water from the 10-feet level it would give you 17,000,000 gallons—that is 283 days' supply, allowing 20 gallons per head for 3,000 people.
1434. You say that with a dam at that particular spot, and of those dimensions, you would have available 17,000,000 gallons of water? Just so, and that without making the gullet; but with that you will have 19,000,000 gallons—that is to draw off to the 5-feet line. I am allowing to draw off to the 10-feet line.
1435. So there will be 10 feet of water in the dam when you have done drawing it off? Just so.
1436. But if you left only 5 feet for sediment? We would have over 1,000,000 for sludge.
1437. In other words, 19,000,000 gallons of water available? Just so.
1438. What would 17,000,000 gallons be equal to in the consumption for Wollongong? Two hundred and eighty-three days' supply.
1439. For Wollongong alone? Yes.
1440. Without the surrounding districts? Yes—that is about nine months' supply.
1441. Knowing that place intimately—the water-shed and the rainfall of that locality—are you of opinion that 17,000,000 gallons of water, if impounded, would be ample for Wollongong for some time to come? I think so—plenty.
1442. Having a less area in your impounding reservoir would also decrease the cost of resumption, would it not? It would, slightly.
1443. It was proposed to resume all the land which the water would touch, and, perhaps, a little distance around it? Just so.
1444. And as you have taken your water-line farther in—in other words, the difference between 60,000,000 and 20,000,000 gallons—you would have less land to resume? Yes; the 20-feet contour—that is, the top water-level—would cover 11 acres, as against 25 in the original plan. The 15-feet contour would cover about 6 acres, and the 10-feet contour about 3 acres, and the 5-feet contour about three-quarters of an acre.
1445. Do you think that we should be safe in assuming that £2,000 would cover the cost of a reliable dam at that particular point to which you have just referred? I think so—thereabouts. I think £2,000 would make a very fair dam there.
1446. To be safe, £3,000 will be quite sufficient? Plenty.
1447. Do you know anything of the character of the sandstone through which it is proposed to take the pipes? Only from the surface.
1448. Would you think it is likely to be good, sound stuff? I think so. I have spoken to the miners there, who know the country well, and they think we will get very good material.
1449. You know that it is proposed to carry a pipe-line through that tunnel? I do.
1450. If, in excavating that tunnel, it were found fairly satisfactory, I suppose water could be conveyed through it without the use of the pipes? Yes; we could save that piping, if necessary.
1451. We have been told by Mr. Darley that there would be a tremendous pressure on the outlet of the tunnel when it is full of water;—I suppose blockades could be made at the other end sufficiently strong to resist that pressure? Yes; it could be regulated. I do not think there would be any difficulty in that at all.
1452. Do you know the position of the proposed service reservoir near Mount Ousley? I do.
1453. It is proposed to construct a service reservoir to contain 500,000 gallons;—do you think that that reservoir might be done away with altogether, in view of the fact that yours is a gravitation scheme? It could be done away with; but I would not recommend this—only to have one of a smaller size.
1454. What size reservoir do you think? I think half that would suit very well.
1455. But where is the necessity for a service reservoir at all, if your scheme is so simple that it is not likely to get out of order? There is great pressure on the pipes, and, therefore, risk of their bursting at any moment. The pipes are always full.
1456. The pipes;—where? The pipes from the balance reservoir, on the side of the mountain. I think it will be risky to do without a reservoir of some sort, however small.
1457. If you reduce your service reservoir to 250,000 gallons, that will not give you a long time to remedy any defect in pipes that may break? The big one at present contains eight days' supply; but that allows 20 gallons for each inhabitant, and that could be reduced by half when necessary.

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1458. If you had a smaller reservoir, and a breakdown occurred between the reservoir and the balance tank, you could reduce the quantity of water supplied to the people in Wollongong and lengthen it out for an eight-days' supply? I think so.
1459. I suppose there is some little contamination of the water in the impounding dam when rainy weather sets in? Little or none. There is nothing to contaminate it—the country is all sandstone.
1460. Then, excepting for the possible risk of some break in the pipes between the service reservoir and the balance tank, the reservoir could be done away with altogether? The service reservoir is more for the convenience of the town. We could do with half that size, and that would save £3,000. I think we could build one half that size for £2,000.
1461. We were told that the estimated cost of the large one was £5,000? I think you could do it for that.
1462. You think £3,000 would be plenty? Yes, and if they wanted a duplicate one they could build it, when necessary; there is plenty of ground.
1463. Would you, then, recommend that until Wollongong and its district requires a larger supply, the 17,000,000 impounding area should be taken, as against the 60,000,000 gallons? I think so. I advise the Committee to cut it down all they possibly can.
1464. Your dam, on your 60,000,000 gallons' area, was a very costly one? Very costly; it was a very ugly site.
1465. What was the length of it? Five hundred and seventy feet, that is 21 feet height of water only. If it had been 30 feet it would have been 764 feet 6 inches.
1466. Would it be a comparatively easy thing to divert the waters of Angel's Creek by a race into your proposed dam? I think it would. I did not run the levels, but I selected a good site for the dam.
1467. You think that, at comparatively little expense, you might divert some of the head waters of this creek into your new reservoir? If wanted.
1468. But having virtually nine months' supply, you do not think it is at all likely? I think not. I took the quantity flowing down the streams which will go into our dam, and there is about thirty-nine days' supply running to waste in twenty-four hours.
1469. Would you like to risk your professional reputation and carry out the dam at a cost of, say, £3,000, which would impound 17,000,000 gallons of water? I think so.
1470. And carry out the scheme with a service reservoir with only half the proposed capacity? Yes.
1471. You think you would be perfectly safe in risking your professional reputation? I think I should be perfectly safe in recommending it.
1472. If your whole professional career depended on that being a success on the reduced estimate, you would be quite prepared to risk it? Yes, I think so.
1473. *Mr. Humphery.*] Will you state what the reduced cost will be, if your suggestion be carried out? I do not know the exact cost of Mr. Darley's original plan.
1474. The original dam is estimated at £12,000—what will be the cost of your dam? I think £3,000, and £2,500 would be saved on the service reservoir.
1475. That could be saved? I think you are perfectly safe in that.
1476. What next? I think we could save the cost of the pipes through the tunnel. I think that would be all we could save on it. We could save that, providing it is very good sandstone which we go through.
1477. Do you say that by the amended scheme an efficient water service could be procured for Wollongong, and there would be no probability of a stoppage in dry weather, if for a considerable time? I think so. I have not the least doubt about it. We have running rivers there, and they are always discharging. I have never known them to stop running.
1478. Have you carefully examined the site of your proposed new dam? Yes.
1479. What kind of examination have you made? Sunk trial holes to the solid rock.
1480. Are you perfectly satisfied that it is suitable? It is very good—an average of about 9 feet in depth. That was on one site—I had not finished on the other, but I think they will be both alike.
1481. Of the two sites, which is the better site for a dam? The one we are talking about—135½ feet. Trial holes have been sunk on that since I have returned.
1482. You are quite satisfied that it is, if anything, superior to the originally proposed site? I think so—much. It is a much shorter dam. With a 20-feet contour we go 135½ feet, and with the other nearly 570 feet—that is in the length.
1483. *Mr. Ewing.*] You think you could get a dam 20 feet high, 135 feet long, to impound 17,000,000 gallons of water, at a cost of £3,000? I think so.
1484. How do you come to that conclusion—what are your quantities? I have taken a crib dam, and you get that for about £10 a foot there.
1485. That is how you get £1,000 less than you previously had? I think you could make the Engineer-in-Chief's dam a little lighter.
1486. You have worked out the quantities, and you say that a crib dam will do as I have mentioned? Yes; I think it will answer very well.
1487. *Chairman.*] Supposing you were not in the service, and tenders were invited for the carrying out of the Water Supply Scheme on the lines now suggested by you, and also to maintain it for a number of years, would you have any hesitation in at once taking it up? I think not.
1488. Since you have been in the district have you heard anything further about the surrounding towns—as to whether they do, or do not, desire to go into this scheme? No more than that Bulli, at a meeting, decided not to do so.
1489. You think that this minor scheme could be carried out, and if in the future the population of Wollongong increases to any great extent, or the surrounding towns desire to come in, then the larger impounding area might be availed of? Quite so.
1490. And it would be only the sacrificing of the dam, at a cost of about £3,000? That is all.
1491. That would be the only thing thrown away? Yes.
1492. Excepting, perhaps, the continuation of the intake pipes farther down towards Angel's Creek? Quite so.
1493. And this smaller one would serve Wollongong, with its present rate of increase, for many years to come? I do not think there is the least doubt about it.

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1494. *Mr. Ewing.*] What sort of dam is Mr. Darley going to put in? I think it is a concrete one.
1495. Will you briefly describe a crib dam? You can get all the materials in the district. You would let in piles so much apart, and have walings from pile to pile, and then sheet piling in between that—two rows of this, 5 feet wide—all filled in with clay, well strutted at the back, and pitched over the top, for the water to run over the weir.
1496. *Chairman.*] Have you seen an estimate that has been furnished by Mr. Darley to us;—his estimate of the dam to impound 20,000,000 gallons? I have not.
1497. Mr. Darley, when before us, gave the information to which I have referred, about impounding 20,000,000 gallons at a cost of about £4,000, and he was asked by the Committee to give the cost of a dam on the same site, to impound from 16,000,000 to 20,000,000 gallons of water, and the following is his estimate—"Concrete dam, 240 feet long, 24 feet high; top water-level 975 feet, or 6 feet higher than the water-level of original scheme. Estimated cost, including clearing land and outlet work, £5,614 10s. 6d., as compared with £4,053 17s. for a reservoir to hold 8,000,000 gallons. Catchment area 2·19 square miles. It is quite possible that this may be large enough for some time to come." So the only difference between you and Mr. Darley is, that his estimated cost of a dam of 20,000,000 gallons at that particular site is £5,600 and odd pounds, whilst you would not put down more than £3,000? Yes, but he is calculating for 24 feet height of water, and I am speaking of 20 feet height of water. That increases the length of the dam to 240 feet.
1498. You think that not sufficient allowance was made for the holding capacity of that reservoir originally? I do not see any necessity to go higher than 20 feet, when it will increase the cost very much.
1499. But, taking Mr. Darley's estimate, it will be very much cheaper than the original one? Yes; very much.
1500. But, of course, only conserving 20,000,000, instead of 60,000,000 gallons? Yes.
1501. But you think that 20,000,000 gallons will be ample for many years? I think so. The quantity of water running down the Cataract River on the 24th of last June, was 1,383,000 gallons per day; on the Rocky Creek, 452,000 gallons were passing down per day; on the Corrimal Creek, 297,000 gallons were passing down per day; and on the Lizard Creek, 193,000 gallons were passing down per day; making a total of 3,246,000 gallons passing down per day.
1502. All this being above your proposed impounding dam? Yes. Angel's Creek, which we have to omit, was passing down 921,000 gallons per day.
1503. So you are only missing the Angel's Creek water? That is all.
1504. By bringing your dam higher up, at a possible cost of £3,000, as against £12,000 below? Yes, certainly.
1505. That was in the middle of the winter, was it not—June? Yes.
1506. It would hardly be fair to reckon on that all the year round? I have seen it running in summer as much as that. I was there four months in summer, and during all that time I saw it running as much as that.
1507. But local evidence was given at Wollongong that, at times, these creeks have been nearly dry? That is only on the surface, but they could not calculate the quantity underneath.
1508. One witness said his estimate of the water was made from getting it on a rocky bed where there could be no percolation? I have seen a certain quantity passing over and under the rock.
1509. You are aware that the rainfall at Cordeaux, 6 miles south-west, is excessive, compared with that on the lower lands? Yes.
1510. *Dr. Garran.*] If you dispense with piping in the tunnel, will you not have some trouble at the mouth of the tunnel,? Not if we regulate it at the penstock.
1511. When you get the water out of the tunnel could you not let it go down in the form of a cataract to the level you want, so as to save pipes that distance? I am afraid not. The nature of the country is very much against it.
1512. Is it not rock-faced? No; boulders. I daresay, after excavating, you would get rock, but the surface is alluvial chocolate soil.
1513. What depth? It varies.
1514. After it washed away you would have rock? Yes; rough rock, and we should lose the water.
1515. One of your difficulties is the pressure of water on the pipes, and the height which it has to fall, and if you let it fall in the open, you get rid of that trouble? I am afraid we shall lose all the water, unless we build some sort of a canal, or open race, to confine it, and enclose it, and that will cost more than the pipes. I have already spoken about Paradise coming under this scheme. I find that Paradise is about 200 feet higher than Mount Ousley.
1516. *Chairman.*] And could not be controlled by this scheme? I think not. It is 200 feet higher than our present level.
1517. But if there were a sufficient population at Paradise to warrant it, a separate pipe could be taken along the Mount Pleasant land direct from the balance tank? Yes; there would be no difficulty in that.
1518. It would only require a small pipe to serve those people? That is all.
1519. But you would not shift the position of your service reservoir, so as to serve Paradise? No. I do not think we would.

WEDNESDAY,

WEDNESDAY, 17 *AUGUST*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Water Supply for Wollongong and the Surrounding Districts.

Frederick Augustus Franklin, Esq., M. Inst. C.E., sworn, and examined:—

F. A. Franklin, Esq., M. Inst. C.E. 17 Aug., 1892.

1520. *Chairman.*] You are a civil engineer? Yes.

1521. You understand the scheme before the Committee for supplying Wollongong and the Surrounding Districts with water? I understand the extended scheme—that is, the first scheme that was proposed while I was at Wollongong, the total cost of which is £66,000.

1522. Since the inquiry was opened the districts north of Wollongong have requested not to be included, and in view of that fact estimates have been got out for a dam, higher up the Cataract Creek, to impound from 16,000,000 to 20,000,000 gallons of water as against 60,000,000 gallons. We are told that a dam built at the particular spot to which I have referred, to impound the lesser quantity of water, could be erected at a cost of £5,069? That depends on the section of the creek and the height of the crest of the dam.

1523. That was for a dam 240 feet long and 24 feet high? It provides for a very large volume of water.

1524. Do you think from 16,000,000 to 20,000,000 gallons of water will be ample for the requirements of the town for many years to come? I think that volume of water is a very large one for present requirements.

1525. And if it is desirable to have a larger impounding area in the future, a dam may be constructed lower down? That may be an intercepting dam, or it may be buried by a higher level if necessary. A cheap dam at present would be the best economy.

1526. Do you think the scheme generally is the best which can be devised? The scheme proposed to you first is a very grand one—with a catchment area of 2,246 acres.

1527. What I mean by the scheme being best is in regard to the position being the most suitable for impounding the water, and also in regard to the means suggested for bringing the water from the impounding area to the population. Do you think, on both these points, this is the best scheme which could be devised? Undoubtedly.

1528. Is there any likelihood of any pollution taking place in the catchment area? I think not.

1529. You have probably heard of the proposal to sink a tunnel and to convey pipes through the workings of the coal-mines. Do you favour that proposal? I do not know the details, but I am not in favour of it as a project. I think there are many elements of danger in it.

1530. How long have you resided at Wollongong? Twelve years.

1531. Do you think the people really require a supply of water, or are their necessities met at present? They have been wanting a water supply for many years. In 1883, as Mayor, I got a resolution passed to borrow from the vote which supplies country towns. That was carried to the extent of £14,000, and it was based upon an early estimate of our requirements—upon a survey made by Mr. MacCabe, in 1882, in which an area of 300 acres' catchment gave us 112 days' supply for the then population. That was estimated not to cost £20,000.

1532. Do you think the people of Wollongong would bear the cost of a scheme if it cost more than £30,000? I think that is too much.

1533. How would you cheapen the scheme so as to bring it below £30,000. The proposed new dam is estimated to cost £5,069? I base my opinion on an estimate of 8,000 population. The population of Wollongong represents three-eighths of that, and if you take three-eighths of your proposed expenditure, something like £24,000 would be the proportion chargeable to Wollongong.

1534. We are told that the scheme provides for a service reservoir at Mount Ousley, with a capacity of 500,000 gallons—do you think that that is an excessive capacity? Not for a large scheme. It is too large for the supply of Wollongong. I think you might reduce it by one-half, because I see no difficulty about the service line from the balancing tank. Any interruption there could be got over in a few days.

1535. The scheme is so little likely to get out of order above the service reservoir, that you think a small service reservoir will do? Yes.

1536. If it is estimated that it will cost £5,000 to erect a service reservoir with a capacity of 500,000 gallons, what would the cost be reduced to if the size were reduced one-half? You might reduce the cost one-half.

1537. We should be safe in allowing £3,000 to cover everything if we reduce the size one-half? Yes.

1537½. Is there any other portion of the scheme which might be reduced in order to bring it within reach of the people? The one thing which looked to me to be exceedingly large was the dam of the reservoir. That was a very large matter in the first proposal. I think a very large reduction could be made, and if there is any doubt about Wollongong's future, I think that, for a good many years to come, you could have a weir which would impound all the water required for Wollongong alone, and for a considerably-increased population, at a much lower cost. I have estimated the cost of the first reservoir as proposed, allowing a very moderate area in concrete for the cross-section, and I have estimated, assuming the section at its maximum depth in the centre and running off to two wedges, that it would cost, at ruling prices, £12,600.

1538. Moving the dam higher up, and impounding less area, would give us a less costly dam? Yes. I think if you go to a moderate area to impound the quantity of water you have mentioned, you might put up an inexpensive dam. You have all the material there at your hand. You can build a timber structure there with a life of about twenty-five years.

1539.

F. A. Franklin, Esq., M. Inst. C.E.

17 Aug., 1892.

1539. *Mr. Hoskins.*] Can you drive piles there, or is it rock? If you cannot drive them you can attach them to the rock in pockets, concreted in cement, and made as firm as they would be if driven 40 feet. In that case, I think £2,000 ought to give you a good dam under 175 feet.
1540. *Mr. Ewing.*] What will your dam cost? Two thousand pounds at the outset.
1541. What your Mount Ousley reservoir cost? Half of what you have estimated—about £2,500.
1542. We are justified in believing that for £4,000 the impounding dam and the reservoir at Mount Ousley can be constructed? Yes.
1543. *Mr. O'Sullivan.*] In estimating the cost of your service reservoir, I presume you have taken into account the probable increase of population at Wollongong? It could be increased without interfering with the supply. It is always well to make a division wall, and if you have to put in another segmental portion in addition, there will be no difficulty.
1544. The works you suggest would be equal to any strain likely to be placed upon them by a large increase of population? I think you have provided a great safety valve. You have more water at your head than will be used.
1545. *Mr. Hoskins.*] Supposing this work cost £30,000. Do you think the people, in addition to the taxes they have to pay now, would cheerfully submit to pay taxes, to pay interest, and to maintain the works? I think so, but I am very desirous you should not go to the expense of £30,000 if you can avoid it. I think some further reductions might be made in your conduit to the tunnel. You might avoid pipes, and by some detailed arrangements of check valves, you might still further reduce the expenditure; but with regard to the pipe-line into the town, I do not think any alteration can be made. We have always been used to consider that we could get a water supply for £20,000.
1546. Do you think the water could be conveyed cheaper in a concreted invert through the tunnel than along cast-iron pipes? You would save the cost of the pipes. The only question would be in regard to some detailed arrangements in discharging into the balance reservoir, and the discharge orifice there would have to be regulated by a ball-cock valve, automatically.
1547. Would not a concrete invert be nearly as expensive as pipes? There is no reason why it should not run on an invert from the tunnel, as it does in an open conduit from the reservoir.
1548. I think an answer was given to the effect that the bottom of the tunnel would be so steep, that unless you had wrought-iron pipes, with some special kind of joint, the water would inflict a good deal of injury? That would be possible. If the incline of the tunnel is very great, you will have a large hydraulic pressure. You will have to have pipes of sufficient strength to sustain the column of water.
1549. Therefore, if there would be a considerable fall through the tunnel, would you not rather suggest that there should be wrought-iron pipes instead of concrete inverts? Yes, assuming they have considered that point. I should say so; I would not offer an opinion about the alteration there.
1550. Then, you think the people of Wollongong would not be able to pay the water rate which would be imposed, the cost of maintaining the scheme, and the interest on the money borrowed? I would not like to say that. I think if we were bound to get our supply at a cost of £30,000, it is so absolutely necessary that we would willingly pay for it. The place has been retarded in its progress for the want of a water supply.
1551. *Mr. Davies.*] You seem to indicate that a good permanent supply of water might be obtained for £15,000 or £20,000? Twenty thousand pounds.
1552. And you admit that the scheme submitted is a capital one? Yes.
1553. But too expensive for a small population? Yes.
1554. Do you favour the carrying out of the supply by the Water and Sewerage Board, or by some local authority? It would be much better under the Council.
1555. You would not favour an expensive Board being brought into existence? No.
1556. You are aware that in the Hunter River district the Board has been brought into existence at a cost of £4,000 a year? That is a different condition.
1557. Do you think it would be practicable for the Metropolitan Water and Sewerage Board to take charge of this particular supply? It seems to me that, under Local Government, that would be patch-work. The most simple way would be for the Municipal Council to deal with the supply, under proper regulations.
1558. It would be necessary to make some provision in the Bill authorising the construction of the work, for the Town Council to strike and collect the rates, and pay them to the Treasury? Yes.
1559. It would not do to treat the matter as an ordinary municipal matter? No.
1560. You would not give the option to the Council to strike a special rate? No; it should be under a regulation.
1561. *Dr. Garran.*] With a very rapid descent to your service reservoir, would friction on the cast-iron pipes be very great, in consequence of the rapidity with which water would come down? There is an amount of friction on the pipes; but I cannot tell what the height of the column would be from the balancing tank to the service reservoir.
1562. Would there be any special wear and tear on the pipes? No; but there would be a heavy column of water held in the pipes.
1563. Would the pipes have to be made extra strong? Yes.
1564. And you think that expense has been fairly allowed for? I do not know what they have done in the matter, but that is a very nice consideration.
1565. It would not do to economise on the pipes? I think not.
1566. Do you think it would be possible to lead the water from the mouth of the tunnel down to the face of the cliff? I do not think it would. I noticed in Hobart that that sort of thing is done, but it is not advisable.
1567. What is the objection to it? In Hobart they have a very continuous, firm stratum of rock. We have a discontinuous stratum, a very large quantity of shale in joints, and a great deal of friable material.
1568. Do you know the Mount Pleasant Mine? Yes.
1569. This catchment area is part of the property of that mine? Over it.
1570. Do you know how near the workings are to where the dam would be? I do not know whether they have worked in as far as the proposed work. The new reservoir is on the same site as the large one.

F. A. Franklin, Esq., M. Inst. C.E. 17 Aug., 1892.

1571. It would not do, after a concrete dam had been made, to take the coal away and let the roof down? I do not think that is possible. Three hundred and fifty feet are between the coal-measure and the surface.
1572. And you think they might mine without injury? In horizontal workings, certainly.
1573. Have any cracks in the ground ever been observed on the table-land above the Bulli Mine? No. There has been no crack or sign of settlement.
1574. And you would not mind building a concrete dam, knowing the coal was going to be taken away? No.
1575. Then you do not think it necessary to buy this area from the coal company? No.
1576. Not even a solid concrete dam would be likely to show a crack? I should think not.
1577. *Mr. McCourt.*] What is the distance of the proposed reservoir from the centre of Wollongong? Nearly 3 miles.
1578. Would it be possible to get the reservoir closer to the town on another hill? There are two stratified spurs immediately under Mount Keira. That would be 1½ mile nearer to town, on the base of the mountain, than Mount Ousley.
1579. Do you not think it dangerous to have the reservoir so far from Wollongong, in case anything went wrong with the pipes between the reservoir and the town? There is always a danger where there is a long line of pipes running as a service pipe; but you would have the same danger leading from the balance reservoir.
1580. But there would be eight days' supply in the reservoir, and that would give you time to do anything behind the reservoir? The only objection I can see to that is that you have to provide pipes for a very heavy hydraulic pressure in the vertical leg. You must provide equally strong pipes on an extended line until you reach the service reservoir, and I think the shorter the distance from the balance reservoir to the service the better.
1581. You do not think it would be better to bring the reservoir nearer to Wollongong? It would be much nicer; but it would not be less expensive, because, although you might lose certain service-pipes, you would also lose supply to a certain amount of occupied area. North Illawarra is crossed by the pipe now, and I think they might assist in the system.
1582. What hill do you think it might be done upon? I do not think I could tell the name; but there are two hills of complete sandstone strata immediately between Mount Pleasant and Mount Keira.
1583. Would Garden Hill do? I think it is too low.
1584. Would Osborne Hill do? There you would get sufficient elevation. There, however, you have the same objection again. You have a large pressure in your service-pipes, and you must have a very strong pipe on that length.
1585. Do you think it would be necessary, for the purpose of perfect safety, to have two pipes instead of one? Two would be safer than one.
1586. The tunnel, 6 ft. x 3 ft. 6 in., is estimated to cost £3 10s. per yard;—do you think it could be done for that? I think you could get it done for less as things are going now.
1587. *Mr. Hoskins.*] It has been computed that if this scheme is carried out the people will have to pay increased taxation to the amount of 1s. in the £ on the rental value of their property;—do you think they can afford to do it? I am sure they pay more than that now, indirectly.
1588. Do you think, after the scheme has been carried out, they may complain and take action with a view of being relieved of their burden? I think they would esteem a supply of water a great blessing, and there would be no difficulty in getting fair payment—say at so much per room.
1589. *Mr. Suttor.*] You have stated that the municipality proposed to borrow £14,000;—was it borrowed? No. At that time we had a proposal before us, on a first survey on the same site, of a moderate catchment area of 300 acres. That gave us a catchment of 6,800,000 gallons, and if taken on the present population of 3,040 at Wollongong, at 20 gallons per head per day, that catchment would have given us a four months' supply. That scheme did not appear as if it would cost more than £14,000.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Water Supply for Wollongong and the Surrounding Districts.

APPENDIX.

A.

[*To Evidence of J. Barling, Esq.*]

PROPOSED SCHEME BY MR. H. O. MACCABE.

Dear Sir, Wollongong, 30 April, 1892.

I have the honor to enclose for your consideration the accompanying copy of a letter from Mr. H. Osborne MacCabe (Manager of the Mount Keira Colliery), to Mr. J. A. Beatson, J.P. (Mayor of Wollongong), making a suggestion regarding the carrying out of works whereby to supply Wollongong, and adjacent localities, with water.

You will notice that Mr. MacCabe's proposal is to have the water supply conveyed through the said colliery in the manner indicated by him, and on conditions which he sets forth.

In forwarding this letter to you, I desire to request most respectfully that any consideration this proposal may receive by your Department shall not retard in any way the steps at present being taken by you to have the supplying of Wollongong and adjoining places with water carried out as soon as possible.

Hon. W. J. Lyne, M.P., Minister for Works. I remain, &c.,
A. CAMPBELL.

Mr. Darley for report.—D.C.M'L. (*per* U.S.), B.C., 2/6/92. Mark this scheme on the plans as near as possible, and let me see it. Mr. Pridham also to report on the points raised, and give an approximate estimate. On the face of it, the scheme seems to me wild and worthless in the extreme.—C.D., 4/5/92. Mr. Tillet, Mr. Pridham.—G. A. TILLET, 6/6/92.

Wollongong Water Supply.

Sir, Wollongong, 28 April, 1892.

In response to your letter of 25th instant, and with reference to a conversation between yourself, Mr. Turner, and myself, in which I suggested that by erecting a pumping engine at the intersection of Cordeaux River and Goondarin Creek, and forcing the water thence about 4 miles 60 chains to about the north-east corner of B. Fox's 60 acres, parish of Kembla, sinking a shaft there to the top seam (about 400 feet), laying the pipes along the main tunnel of the Mount Keira Mine, about 1¾ mile to the tunnel mouth; and thence along the Mount Keira railway and boundary of Garden Hill Estate to reservoir at Garden Hill, 2¼ miles.

A considerably increased catchment area would be obtained as compared with the scheme surveyed by myself some seven years ago at the junction of Angel's Creek and Cataract River, west of Brooker's Nose. The catchment area there is under 4 square miles; Goondarin scheme catchment area exceeds 20 square miles.

I said I believed Captain Osborne would grant the free use of the tunnel, and would not ask compensation for land for pipe-line (and his land extends about 3 miles 70 chains of the total length of pipe-line), on condition that he obtained the right to use free the shaft sunk (12 feet diameter) for furnace shaft; the right to use free the flowing water for hydraulic power through any machine which would not damage the water for drinking purposes; and the free use of any quantity of water up to 15,000 gallons a day for boilers, coke-ovens, locomotives, or other purposes connected with the colliery. I also suggested that so long as the colliery used the tunnel in which pipes are laid and shaft for ventilation and haulage purposes, the colliery should maintain the tunnel and shaft; but that when either or both became useless to the colliery, the Water Board should maintain either or both; that when the colliery became exhausted or ceased working, so that no water was required or used, then the Water Board should pay rent £200 a year while they used the land for conveying water. Provision to be made for a sufficient quantity of coal to be left alongside tunnel for support when removing pillars in second working.

This work could, I believe, be executed at less first cost to the Municipal Council than the scheme already surveyed, and it could be completed in a shorter time. I submit you this sketch of a scheme, as requested by you, to present to the Minister for Works for his consideration. Yours, &c.,

To the Mayor of Wollongong. H. OSBORNE MACCABE.

Report, estimate, and plan herewith. A special plan had to be compiled to show the scheme, the one prepared for the Public Works Committee not extending far enough to the south-west.—T.P., 11/6/92. Submitted.—G. A. TILLET, 11/6/92. The Engineer-in-Chief, Harbours and Rivers, *per* Mr. Tillet.

A 1.

MINUTE PAPER.—WOLLONGONG WATER SUPPLY.

Proposal by Mr. H. O. MacCabe.

Department of Public Works, Harbours and Rivers Branch, Sydney, 10 June, 1892.

IN accordance with your instructions, 5,717–92, I have carefully examined Mr. MacCabe's suggestion, as set forth in his letter to the Mayor of Wollongong, and have the honor to report as follows:—

Mr. MacCabe proposes that the water should be pumped from the confluence of the Goondarin Creek and the Cordeaux River to a point near the top of the range (approximately shown on the accompanying plan), about 4 miles 60 chains from the proposed pumping-station.

It is suggested that a shaft 12 feet in diameter and 400 feet deep should be sunk here to the top seam of the Mount Keira Mine, to serve the double purpose of a ventilator and water-pipe conduit, the water to be conveyed thence through the mine to the mouth of the main tunnel, a distance of about 1¾ mile, and thence along the Mount Keira coal railway to a service reservoir on Garden Hill, about 2¼ miles from the tunnel mouth.

Mr. MacCabe considers that the above scheme is preferable to that proposed by the Department for two reasons:—1st, that the catchment area would be greater; and 2nd, that the cost would be less.

With regard to the catchment area, I find that no records have been kept of the rainfall on the range, but the mean annual rainfall of Wollongong being 40 inches, it will certainly, considering the difference in elevation, be safe to count upon that quantity. The catchment of the storage reservoir proposed by the Department is about 3½ square miles—14,500,000 × 3½ × 40 = 2,030,000,000 gallons = 5,561,700 gallons per day; deducting half for losses by evaporation and absorption (a very large percentage) leaves a mean daily quantity of 2,780,850 gallons available.

The Cataract River, owing to the favourable position and spongy character of its source, has, I believe, a constant dry-weather flow.

The proposed storage reservoir will contain 60,000,000 gallons, or about twelve months' supply for the present population of Wollongong, Bulli, and the intermediate villages. When the population (now about 6,000) has increased to 15,000 or 20,000, the supply can easily be supplemented to any required extent by constructing a second reservoir a little lower down the river and pumping into the first, when necessary. The cost of such additional works, when required in the future, would, of course, be more easily borne by the prospective increased population than at the present time.

With

With regard to Mr. MacCabe's contention that the cost of his scheme would be less than that proposed by the Government, the following estimate, which, in the absence of levels is necessarily rough, will show that such is not the case.

Approximate Estimate.

	£	s.	d.
6½ miles 12-inch pipes to end of tunnel	10,330	0	0
2½ miles 7-inch W.I. pipes to Garden Hill	4,300	0	0
·62 miles 10-inch pipes, thence to Wollongong	820	0	0
6·3 miles 6-inch W.I. pipes to Bulli	10,080	0	0
Storage reservoir (concrete dam)	8,000	0	0
Engine-house and pumping machinery	7,000	0	0
Shaft 12 feet diameter, 400 feet deep	2,500	0	0
Storage reservoir at tunnel mouth to enable hydraulic machines to be worked	3,000	0	0
Service reservoir for Wollongong	5,000	0	0
,, ,, for Bulli, &c.	5,000	0	0
Reticulation of Wollongong	5,750	0	0
,, of Bulli, &c.	6,800	0	0
Cost of pumping 1,000,000 gallons per day for Wollongong, Bulli, &c., plus 15,000 gallons per day for the use of the colliery=1,015,000, gallons per day, say 370,000,000 gallons per annum at £2 10s. per 1,000,000 gallons=£925 per annum, which capitalised at 4 per cent. =	23,125	0	0
Survey engineering, &c. at 10 per cent.	9,170	0	0
Total	£100,875	0	0

Mr. MacCabe's proposal provides for the use by the colliery of the water-power derived from the vertical fall of 400 feet in the ventilation shaft. Without a storage reservoir at the mouth of the tunnel (included in my estimate), to receive the spent water after it has done its work in the various machines, it would be practically impossible to carry out this idea.

The only other point which I think requires notice is the great risk attendant upon laying water-pipes for the supply of a large community through a coal mine, an explosion, fire, or fall in which might suddenly cut off the supply by damage to the pipes, which might take weeks to repair.

There is no doubt that the proposed scheme would be a highly satisfactory and profitable one to the proprietor of the Mount Keira Colliery, if carried out as suggested by Mr. MacCabe.

The Engineer-in-Chief. T. PRIDHAM.

I suggest that a copy of this report be forwarded to Mr. A. Campbell, M.P., in reply to his letter of 30th April. I could not recommend that Mr. MacCabe's suggestion be entertained. Apart from the scheme costing very much more than that proposed by the Department, it is open to many very serious objections. Having to supply the mine proprietor with an unlimited quantity of pumped water leaves a great element of uncertainty as to what the working expenses would be.—C. W. DARLEY, 13/6/92. The U.S., P.W. Seen.—W.J.L.

B.

[To Evidence of Mr. H. S. Fry.]

RESIDENTS OF BULLI AND WOONONA AND THE PROPOSED SCHEME.

Sir, Bulli, 26 July, 1892.

According to promise, I convened a meeting of the inhabitants of Bulli and Woonona at the Oddfellows' Hall, on the evening of 25th July, to consider the proposed water scheme for Wollongong and Bulli, and the following motion was carried unanimously :—

"That we, the inhabitants of Bulli and Woonona, deem the present time to be inopportune for such a scheme of water supply as that at present proposed."

I am, &c.,
HENRY STRANGE FRY.

J. Garrard, Esq., Chairman, Public Works Committee, Sydney.

Bulli, 26 July, 1892.

THERE were between 70 and 80 persons present. The meeting called by advertisement in local papers.

HENRY STRANGE FRY.

J. Garrard, Esq., Sydney.

C.

[To Evidence of C. W. Darley, Esq.]

MINUTE PAPER.—WOLLONGONG WATER SUPPLY—ESTIMATE OF MODIFIED SCHEME.

Engineer-in-Chief, Harbours and Rivers, to the Secretary, Public Works Committee.

Department of Public Works, Harbours and Rivers Branch, Sydney, 12 August, 1892.

THE Chairman of the Parliamentary Public Works Committee requested me to prepare and furnish an estimate of the probable cost of the construction of a reservoir in Cataract River, to store (say) 16 to 20 million gallons of water. The following is the estimate :—

Concrete dam, 240 feet long, 24 feet high. Top water level 975·00, or 6 feet higher than the water level of original scheme.

Estimated cost, including clearing land, and outlet works, £5,614 10s. 6d., as compared with £4,053 17s. for a reservoir to hold 8 million gallons.

Catchment area = 2·19 square miles.

It is quite possible that this may be large enough for some time to come.

C. W. DARLEY.

[One plan.]

Sydney : Charles Potter, Government Printer -1892

SKETCH PLAN

SHOWING PROPOSED WATER SUPPLY

FOR

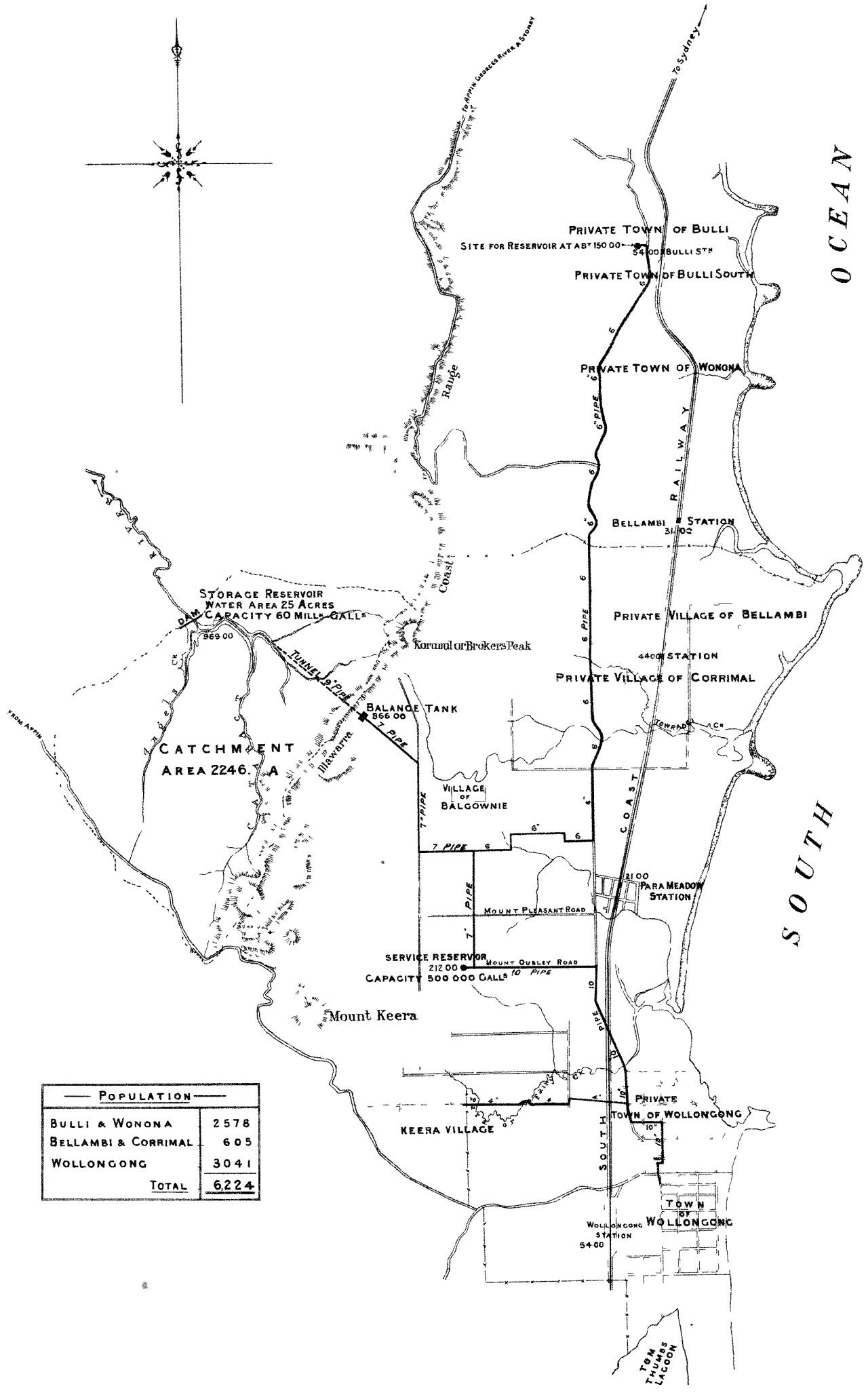
WOLLONGONG, BULLI, &c.

SCALE.

CHAINS 20 10 0 0 20 40 60 80 100 120 140 160 180 200 220 CHAINS

MILES ¼ 0 ⅛ ½ ¾ 1 1¼ 1½ 1¾ 2 2¼ 2½ 2¾ MILES

A. Bailey
14.3.52



POPULATION	
BULLI & WONONA	2578
BELLAMBI & CORRIMAL	605
WOLLONGONG	3041
TOTAL	6224

(Sig 63)

PHOTO-LITHOGRAPHED AT THE GOVT PRINTING OFFICE
SYDNEY NEW SOUTH WALES

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLAN,

RELATING TO THE

PROPOSED WATER SUPPLY

FOR

ARMIDALE.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1892.

[2s. 3d.] 205—a

MEMBERS OF THE COMMITTEE.

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The Honorable JAMES HOSKINS.
The Honorable FREDERICK THOMAS HUMPHERY.
*The Honorable ANDREW GARRAN, LL.D.
The Honorable JOHN DAVIES, C.M.G.
*The Honorable WILLIAM JOSEPH TRICKETT.

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WILLIAM MCCOURT, Esquire.
EDWARD WILLIAM O'SULLIVAN, Esquire.
JOHN CASH NEILD, Esquire.
CHARLES COLLINS, Esquire.

[*The Honorable ANDREW GARRAN, LL.D., on 5th October, 1892, resigned his seat as a member of the Committee, and on 12th October, 1892, the Honorable WILLIAM JOSEPH TRICKETT was appointed to fill the vacancy.]

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Sketch Plan showing proposed Water Supply for Armidale.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

WATER SUPPLY FOR ARMIDALE.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing works of water supply for the town of Armidale," have, after due inquiry, resolved that it is expedient the proposed works should be constructed; and, in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Official description of the proposed works.

1. The proposed works provide for a gravitation scheme to be obtained from a catchment area of 7 square miles on the eastern slope of the Dividing Range and at the head of the northern branch of the Duval Creek. Calculating from the rainfall of three consecutive driest years, this catchment area should give 2,639,000,000 gallons annually. The construction of a dam at a point marked on the map, about 10 miles from the town of Armidale, will provide storage capacity for 19,000,000 gallons, a supply sufficient for 126 days at 30 gallons per head per diem for a population of 5,000, which is 1,200 more than the population of Armidale at the present time. The foundation of this dam will be made wide enough to permit of the dam being raised, if it should be necessary in the future, to a height which would increase the storage capacity of the reservoir to 70,000,000 gallons. From the reservoir the water will be conveyed through 9½ miles of 9-inch cast-iron piping to a service reservoir capable of holding 300,000 gallons which will supply the whole of the town with the exception of a small portion at Gaol Hill. That portion it is proposed to serve by means of an elevated tank with a capacity of 10,000 gallons. The site of the storage reservoir will have to be resumed, but the route of the pipe-line, for nearly the whole of its length, will follow the public road or go through reserves. The small portion of land necessary to be resumed for the pipe-line and the site of the storage reservoir will make the total resumption of land necessary, 391 acres. The provision made in connection with the scheme for reticulation consists of 12¾ miles of 6-inch, 4-inch, and 3-inch pipes.

Estimated cost.

2. The estimated total cost of the scheme is £43,500, this amount being made up as follows:—

	£	s.	d.
Storage reservoir	6,834	0	0
Service reservoir	1,500	0	0
Service tank at Gaol Hill	600	0	0
Cottage for caretaker	250	0	0
Main pipe-line	17,627	14	9
Service main to town	831	12	7
Reticulation	9,780	9	4
Land	1,955	0	0
Engineering and contingencies	4,121	3	4
Total	£43,500	0	0

The Committee's method of inquiry.

3. Following their usual practice, the Committee examined the Under Secretary for Public Works and the Engineer-in-Chief for Harbours and Rivers, in Sydney, and then appointed a Sectional Committee to visit Armidale and there inquire regarding the proposed scheme by inspecting the sites for the reservoirs and the route of the pipe-line, and taking local evidence. The Sectional Committee examined seventeen witnesses, comprising the mayor, some of the aldermen, the consulting engineer to the Borough Council, medical practitioners, business men, Government officials (including the engineer of the Harbours and Rivers Branch of the Department of Public Works, who principally designed the scheme), and private residents.

Financial position of the Municipality in regard to the scheme.

4. It is considered that the municipality will be well able to bear the cost of the scheme; and that it is willing to do so is shown by a resolution passed by the Borough Council, and brought before the Committee by the Under Secretary for Public Works, in which they agree to undertake all the liabilities and obligations consequent upon the works being carried out. The annual expense is calculated at £2,040, of which £1,740 is the amount necessary to provide interest at 4 per cent. on the capital expenditure and the sum required for the sinking fund, and £300 working expenses. The estimated annual revenue derivable from the scheme is £2,406 4s. 6d. This estimate of revenue, supplied to the Department of Public Works with the signature of the Mayor of the borough and the seal of the Council, is in detail as follows :—

	£	s.	d.
Actual amount of rates as per last assessment on properties within the prescribed distance of mains—a full rate of 1s.	1,394	9	6
Estimated rates from public buildings, as per valuation attached	258	15	0
Estimated consumption of water by Railway Department, as supplied by Railway Commissioners	228	0	0
Estimated income from street-watering rates	75	0	0
Estimated sale of water to Messrs. Kickham and Wade, of the Imperial and Tattersall's Hotels, as per their own proposals, extra to rate	100	0	0
Estimated revenue from sale of water to private consumers, breweries, and factories, water-power, and swimming baths	250	0	0
Estimated consumption of water by hospital, gas-works, show-grounds, sale-yards, and town halls	100	0	0
Total	£2,406	4	6

It was also estimated in connection with this that there would be an increase of general rates for the next two years, based on the calculation from the increase for the past two years, amounting to £260. The Sectional Committee had placed before them an estimate of revenue amounting to £2,475, and though they are of opinion that in several of the items of revenue deductions should be made, they think that on the whole there will be a slight surplus of income, which, with the natural growth of the town, will be increased by the time the works are completed.

The evidence in the inquiry.

5. The evidence given by the witnesses examined in the inquiry is strongly favorable to the scheme. On the part of the Department, care appears to have been taken to secure effectiveness in both the source of the supply and the construction and operation of the works, as well as reasonable economy in the expenditure. In the first place, after urgent representations as to the necessity for an adequate water supply, an engineer was sent into the district for the purpose of inquiring into the question, and a report upon the subject was prepared by him. A second engineer subsequently visited the district; and, later on, he was followed by the Engineer-in-Chief for Harbours and Rivers. By these means the matter was subjected to close and repeated examination; a scheme was decided upon which promised to be satisfactory in regard to supply; and the cost was kept down to the lowest sum compatible with the necessary works being well constructed. The estimate will in all probability not be exceeded. While the Armidale Borough Council approve of the scheme, the people of Armidale also favour it. Of the seventeen witnesses examined by the Sectional Committee, fifteen were questioned as to their opinions regarding the proposal, and all but one expressed their strong approval of it. The remaining one was for a time more favourable to a suggestion of his own, but during the course of his examination it was clear to the Sectional Committee that the scheme he had in view was indefinite, and before the close of his evidence he gave in his adherence to that proposed by the Department. Ample opportunity has been afforded local residents or others to suggest to the Department

Department any scheme thought preferable to that ultimately decided upon. The Departmental Engineer who first visited Armidale in connection with the proposed scheme, and who had most to do with it, was in the district for about six months, during which period he was in frequent communication with the local authorities, and all suggestions with regard to a possible source of supply and method of bringing the water to the town were received by him and inquired into. Within a reasonable distance the district was thoroughly examined, and the scheme adopted he believes to be the best, if not the only one, within short reach. The Mayor of Armidale informed the Sectional Committee that the proposed works had been considered by the Borough Council, that the Council had passed a resolution approving of them, and that no other scheme had been submitted or proposed in opposition. The aldermen are unanimous on the subject, and no contrary action has been taken by the ratepayers, who are well acquainted with the decision of the Council.

Decision of the Committee.

6. The Sectional Committee regard the scheme as one that from its simplicity and completeness, is creditable to the engineer who designed it and to the Department generally; and the Committee have no difficulty in arriving at the same conclusion. The evidence given in the inquiry and the Sectional Committee's report were taken into consideration by the Committee on Wednesday, 16 November, and the following resolution was passed:—

> "That, in the opinion of the Committee, it is expedient the proposed Water Supply for Armidale, as referred to the Committee by the Legislative Assembly, be carried out."

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 16 November, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

WATER SUPPLY FOR ARMIDALE.

THURSDAY, 15 *SEPTEMBER*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee proceeded to consider the proposed Water Supply for Armidale.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 15 Sept., 1892.

1. *Chairman.*] You desire to make a statement to the Committee with regard to the work which we are now considering? Yes. The proposal before the Committee for the supply of water to the City of Armidale is the outcome of a resolution which was passed by the Council on the 28th July, 1891, to the following effect:—

"That the Council of the Borough of Armidale, having taken into consideration the question of water supply for the City of Armidale, do hereby request His Excellency the Governor, with the advice of the Executive Council, to take all such steps and cause such works to be executed as may be necessary to provide a Water Supply for the City of Armidale, and the said Council, on behalf of the Borough of Armidale, hereby agree to do and undertake all the liabilities and obligations mentioned in section 125 of the Act 44 Vic. No. 14, and it is hereby expressly agreed that such liability is accepted for the total amount to be expended on such works, whatever such amount may be."

Previously to this, however, urgent representations had been made to the Department on the subject, and in 1889, Mr. Grimshaw, an officer of the Department, proceeded to the district for the purpose of inquiring into the question. This officer prepared a report, and estimated the cost of suitable works at £50,000. Subsequently the district was visited by Mr. Engineer Pridham, and later on by the Engineer-in-Chief for Harbours and Rivers himself. As a result, the estimate has been revised, and now stands at the sum of £43,500; this alteration being due to the reduction in the size of the storage reservoir. The supply, which is a gravitation one, will be obtained from a catchment area of 7 square miles on the eastern slope of the Dividing Range, being the head of the northern branch of the Duval Creek, situated in the parish of Exmouth, county of Sandon. The mean average rainfall of the district is 32½ inches, or 26 inches in three consecutive driest years. Calculated at the latter rate, this gives a quantity of 2,639,000,000 gallons falling on the catchment area annually. It is proposed to construct a dam at a point marked on the plan, which will have a storage capacity of 19,000,000 gallons. This will give a supply for 126 days at 30 gallons per head per diem, for a population of 5,000. The present population is estimated at 3,800. The foundation of the dam will be wide enough to admit of its being raised 10 feet if required in the future, at which height the capacity will be about 70,000,000 gallons. The site of the dam is 10 miles from the town of Armidale. The water will be brought from this reservoir by means of a 9-inch cast-iron pipe 9½ miles long to a service reservoir of a capacity of 300,000 gallons, the site of which is also marked on the plan. This service reservoir will supply the whole of the town with the exception of a small portion at Gaol Hill, which it is proposed to serve by a small elevated tank with a capacity of 10,000 gallons. The site of this tank is shown on the plan. The pipe-line will follow, for nearly the whole of its length, either the public road, or will go through reserves, but the site for a storage reservoir will have to be resumed, as also a small portion for the pipe-line, making a total of 391 acres. It is not of course proposed to resume the whole of the watershed, but no fears need be entertained as to risk of pollution of the supply from alienated ground. Ample powers are given by the Country Towns Water Supply and Sewerage Act to prevent anything being placed on the watershed which would be likely to injure the water supply. Section 54 of that Act reads as follows:—

Where any owner or occupier of any land within Water District to be proclaimed as hereinbefore provided or any reservoir or source of supply the Council does or permits to be done on his land any act or permits to remain thereon any matter or thing which in the opinion of the Council is likely to injure the water supply if notice to discontinue or remove the same be given to him in writing by the Council and if he neglect or refuse to discontinue such act or to remove such matter or thing he shall for each such offence forfeit a sum not exceeding ten pounds and a further sum of forty shillings for each day (if more than one) that such offence continues.

J. Barling, Esq. 15 Sept., 1892.

The scheme provides for 12¾ miles of reticulation consisting of 6-inch, 4-inch, and 3-inch pipes. The estimated cost of the work is made up as follows :—

	£	s.	d.
Storage reservoir	6,834	0	0
Service reservoir	1,500	0	0
Service tank at Gaol Hill	600	0	0
Cottage for caretaker	250	0	0
Main pipe-line	17,627	14	9
Service main to town	831	12	7
Reticulation	9,780	9	4
Land	1,955	0	0
Engineering and contingencies	4,121	3	4
Total	£43,500	0	0

The financial aspect of the matter appears to be as under :—

	£	s.	d.
Annual payment, at 4 per cent. on capital cost to meet interest and provide sinking fund	1,740	0	0
Working expenses	300	0	0
Total	£2,040	0	0
Estimated revenue	2,406	4	6

From this it would seem that the town will be well able to bear the cost of the scheme. At the request of the Council we are now laying about 51 chains of 4-in. pipes, in the most important business streets of the town, in order to provide a temporary supply by pumping, on the understanding that the cost, which is estimated at £560, shall ultimately form part of the main scheme; and they have agreed in the meantime to pay 6 per cent. on the outlay. A copy of the agreement to this effect I now hand in. The estimated revenue is made up by the Municipal Council in this way :—

	£	s.	d.
Actual amount of rates as per last assessment on properties within the prescribed distance of mains—a full rate of 1s.	1,394	9	6
Estimated rates from public buildings as per valuation attached	258	15	0
Estimated consumption of water by Railway Department, as supplied by Railway Commissioners...	228	0	
Estimated income from street-watering rates	75	0	0
Estimated sale of water to Messrs. Kickham and Wade of the Imperial and Tattersall's Hotels as per their own proposals extra to rate	100	0	0
Estimated revenue from sale of water to private consumers, breweries, and factories, water-power and swimming-baths	250	0	0
Estimated consumption of water by hospital, gas-works, show-grounds, sale yards, and town halls	100	0	0
Total	£2,406	4	6

That is the estimated income sent to us under the signature of the Mayor and the seal of the Council, and to it is added this note :—

Estimated increase of general rates for next two years based on the calculation from increase for the past two years	£260	0	0

I believe they supply the pumping plant themselves.

2. *Mr. Davies.*] You cannot tell us definitely whether you are supplying the pumping plant? Mr. Darley will be able to tell you that.

3. *Chairman.*] Have the Council had this particular scheme before them. The resolution which you read was simply the resolution required by the Department. We cannot tell from it if the Council have had this scheme definitely before them? I do not know that they have passed a resolution approving of this particular scheme, but I think I can show you that they have approved of it. I find a memorandum of mine with the papers, dated the 1st April, 1891. It reads as follows :—

During the recent visit of the Minister to the north, a deputation from the Armidale Council waited upon him in regard to the question of a water supply for the town. The Council are under the impression that a cheaper scheme can be carried out than the one proposed, and the Minister promised that the whole subject should be considered, and an officer sent to interview the Council. Will Mr. Darley kindly have the matter attended to at his earliest convenience.

Mr. Grimshaw was again sent to report on the matter, and this is his report :—

I have the honor to report that in accordance with instructions I met the Armidale Council on the 4th instant, with regard to the matter. I found they were not prepared with an alternate scheme for a water supply, nor had they any suggestions to make that had not been previously fully considered, nor were they prepared with any statement showing what revenue might be expected from rates and sale of water. The Council were, however, of the unanimous opinion that, as they could meet the interest and sinking fund of the original scheme it was preferable, and passed a resolution to that effect.

4. They have not sent that resolution on to you officially? Mr. Grimshaw's report was dated 11th June, 1891, and the resolution of the Council, which I have read, was dated 28th July, 1891, so that they must have known then what the scheme was, and considered it.

5. It was after passing a resolution in the presence of Mr. Grimshaw, that they sent on the orthodox resolution required by the Department? Yes.

6. Has there been any scheme suggested from outside for the supply of water to Armidale? I am not aware of any other scheme.

7. No check has been taken upon the statement made by the municipal authorities of the estimated revenue? I do not know that it has been checked. It is a specific estimate, and I felt that as the Committee would be going to Armidale they would investigate the matter for themselves. I think it is pretty correct.

8. *Mr. Hoskins.*] Were the expenses connected with Mr. Grimshaw's visit to the town charged in the account you read—would they be included in the estimate of the cost of the work? I should be glad if you would ask Mr. Darley that question. I imagine they would.

9. You have not taken any steps to verify the estimate of revenue which has been sent here? No; it seemed near enough, and I knew that the Committee would thoroughly investigate the matter.

10. *Mr. Davies.*] I gathered from the answer which you gave to the Chairman, that the annual income from rates derived by the Council is estimated at £700? The annual income from rates is £1,394. That is at 1s. in the £.

J. Barling Esq. 15 Sept., 1892.

11. I gather from your evidence that the pipes required for this scheme will cost £27,000. You mean the reticulation pipes.
12. The whole of the pipes? The reticulation service will cost £9,780 9s. 4d., the service main to town £831 12s. 7d.; and the main pipe line, £17,627 14s. 9s.; making a total of £28,239 16s. 8d.
13. The cost of the pipes will be more than half the cost of the entire scheme? Yes.
14. Is it proposed that they should be imported, or would they be manufactured in the Colony? In all probability they would be manufactured in the Colony.
15. Have you any knowledge of the difference between the cost of imported pipes and the cost of pipes manufactured in the Colony? We have the particulars in the office. I have not got them with me at the present moment.
16. Can you supply them to the Committee? Yes; I think that can easily be done.
17. Who do you propose shall collect the water rates? The Municipal Council.
18. In the estimate of cost, the £560 spent in providing a temporary service is included? Yes.
19. You intend that the Municipal Council shall strike the rate and collect the money? Yes.
20. And pay it into the Treasury? No; they would pay an annual amount into the Treasury, paying the whole sum off in sixty years. They would have to pay £1,740 a year.
21. You have had some experience of the working of the Country Towns Water Supply Act? Yes.
22. Other municipal councils have been trusted in this way, but have you received any return from them? From a few.
23. *Mr. Hoskins.*] For one year? We have received money from Hay for one year, and from a few other places also; but full information has been given in regard to this matter.
24. *Mr. Davies.*] You propose to empower the local Municipal Council to levy and collect the rates? Yes.
25. And you trust to their generosity for a return? We have power under the Act to compel the money to be paid.
26. That is under the existing Act? Yes.
27. From the knowledge which you have from information supplied to you of the rates collected there, do you think an expenditure of £50,000 upon a water supply scheme is justifiable? The cost of the scheme would be £43,500, and I should think it would be perfectly safe to carry out the scheme if the statement of the Council can be credited, and there does not seem to me to be anything incorrect on the face of it.
28. Have you any knowledge as to the financial position of the Armidale Municipal Council at the present time—as to their borowing powers and liabilities? I think that is stated in the municipal directory for the current year. I may point out, however, that these works will create a revenue of their own, which I think will be sufficient to meet the expenses of the scheme.
29. Would it not, according to your evidence, take the whole of the income to pay the interest and working expenses of the scheme? Not the whole of the income. I pointed out that the working expenses and the interest on capital, together with the sinking fund, would come to £2,040, and that the estimated revenue was £2,406.
30. Is not that made up in a very precarious manner? It does not appear so in the face of it. The main item is the revenue derived from the one-shilling rate. No doubt they will have to strike a shilling rate.
31. But are they likely to obtain £100 a year from the hotel proprietors? I should not think there is any improbability about that. They would use an immense amount of water at the hotels, and, I suppose, would be charged by meter.
32. The value of the Lithgow water was put down yesterday at 6d. per 1,000 gallons? That is to the Railway Commissioners.
33. What do you expect the value of water would be to the Armidale hotel proprietors? In Sydney the charge now is 1s. per 1,000 gallons. It used to be 1s. 6d. per 1,000 gallons, and I should think that they would have to pay 1s. 6d. per 1,000 gallons in Armidale.
34. We are not told the £100 is to be charged by meter, or in what way it is to be charged? I have simply given in the statement to the Committee, and they can thoroughly investigate it at Armidale, when they will have the opportunity of examining the Mayor and the Council.
35. How is the balance of the revenue made up? The estimated rates from public buildings amount to £258 15s.
36. What public buildings are they? The post office and dwelling, the lands office, the old telegraph office, now used as a land board-room, the office of the superintendent of police, the road superintendent's office, the court-house, the lock-up, the gaol, the railway station, the station-master's house, the goods and engine shed, the public school and dwelling, the police barracks, the residence of the superintendent of police, the West End public school, and the West End lock-up.
37. Did you not also name the hospital before? The estimated revenue from the hospital, gas-works, show-grounds, sale-yards, and town halls is £100.
38. Are you not aware that hospitals and charitable institutions are supplied free? Yes. That amount is very small, however.
39. Does not its inclusion in the estimate show that the estimate is not very reliable? When I say that it is fairly reliable, I do not mean that it is exactly correct. I should say that it is near enough for practical purposes. They have allowed £1,394 9s. 6d. for rates, and their rates according to the last return amounted to £1,452. They have put down the estimated increase for the next two years at £260, and I thought there was no improbability about that.
40. But is it not quite possible that that increase might be made up by rates in arrears? Yes; but I suppose they have arrears of rates every year.
41. Does the amount you mention include the gas rate as well as the municipal rates? No; the lighting rate is given in the directory as £698.
42. Can you tell the Committee what the present liability of the municipality is—how much have they borrowed? I am not able to tell you that, but it hardly touches this particular question, because these works would create a revenue of their own.
43. But they might have to strike a special rate? I think it would be comparatively light. In all probability the cost of their present water supply is a great deal more than they would have to pay in rates for the new supply.

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44. Under the existing Act the Council have no power to strike a higher rate than one shilling? No.
45. *Dr. Garran.*] Do you know whether the two hotel proprietors to whom you have referred have expressed in writing their willingness to pay £100? I should imagine they must have done so because the Council's estimate states "as per their own proposal." I have not got their proposal.
46. The revenue from factories, &c., is put down at £250—would they have to pay that in addition to the ordinary rate? They would pay by meter.
47. Then they would not be charged the ordinary rate? I suppose not.
48. But are they not included in the general rate? I cannot say for certain.
49. If they are included they come in twice over? Yes; but I should not think that that is the case.
50. Is there any street watering rate at present? They have no water supply.
51. Is it uncertain at present whether the residents would agree to a street watering rate? They would be compelled to agree to it in order to make up the revenue. £75 is a very small amount.
52. How are the public buildings supplied with water now? I cannot say for certain, but it must be from wells and tanks.
53. And would the law compel them to pay water rates? Yes, we should be compelled to pay rates.
54. *Mr. Neild.*] How are you going to get water into the Gaol Hill reservoir? It will flow there by gravitation.
55. I understood you to say that the levels would be only sufficient to fill the main service reservoir? No. What I mean is this: In the daytime, while there is a large draught on the service reservoir, there will in all probability be but a mere dribble into the tank; but at night when there is no demand for water the tank will get full. I think there is a difference in head of 5 feet between the Gaol Hill reservoir and the service reservoir. In the lower parts of the town there will be a very great head indeed—something like 230 feet, I believe.
56. Would not any agreement to take water on the part of the hotel proprietors be most unreliable—they might die or sell out and their successors might not care to continue the allowance? Of course those things would have to be taken into consideration, and when you visit the place you will be able to test the value of the statement.
57. Do you know whether the revenue estimated to be derived from swimming-baths has been based upon a knowledge of the present consumption? I cannot answer that question.
58. Do you not think that it is likely that if there is a free distribution of water throughout the town the swimming-baths may not be used? Of course a good supply of water to the various houses would make a difference to them, but only a part of £250, it is estimated, will be derived from them. The balance will come from the sale of water for breweries and factories, and for water power.
59. Is not the use of water power a new thing in connection with country towns? Yes; but there will be a splendid head of water—something like 230 feet.*
60. I am inclined to think, from a lengthy experience in these matters, that a number of the items will cause disappointment—take, for instance, the revenue from street watering.—do you know any of the suburbs of Sydney where they water the streets, or are many of the streets in the city watered? I do not know exactly how many are watered. I do not think very many are.
61. You are not aware that street watering is extensively carried on in the suburbs? No.
62. Or any country towns? I believe they do a good deal of street watering in the country towns. I believe they water the streets in Albury, but whether they charge for it I am not able to say just now.
63. Of course if the streets can be watered for nothing it is all very well, but if the people have to pay for the water they generally object. You have had some knowledge of municipal matters yourself, and you know that there is an unwillingness among people to pay for these things? They do not like to pay more than they can help.
64. So that after all we cannot place much reliance upon the £75? Perhaps not; but I think that under the new Act we shall be able to bring more stringent powers into operation against the municipalities, and they will then be compelled to make up the necessary revenue. If they do not, the Government have power to get receivers appointed to take over the rates.
65. You are reckoning interest at 4 per cent? Yes.
66. At present and prospective borrowing, rates at 4 per cent. would provide no sinking fund at all? That is if we paid that amount of interest on debentures?
67. Yes? That is of course a financial matter which will be regulated by the rise and fall of the money market at home.
68. Do you think it is wise to base an important calculation upon an existing impossibility? I only know that that is what the Government have decided to charge. I think the view of the case to which you refer has been brought up before.
69. The 4 per cent. basis of calculation was probably adopted when the borrowing powers of the Colony were greater than they are now? Yes.
70. When the Colony could practically borrow at 3½ per cent.? I daresay that was the case. Of course the present state of the money market is, as we all know, or rather as we all hope, extremely exceptional.
71. It has been exceptional for two or three years? I hope it is not likely to last.
72. *Mr. O'Sullivan.*] The estimate of revenue which you have received from the Municipal Council of Armidale refers only to the present day? It is dated 6th June, 1891.
73. Armidale is a thriving town, surrounded by fine agricultural land, and is very likely to progress in the future? I think so, undoubtedly. The estimate struck me as rather a moderate one.
74. The chances are that it will be exceeded? I think so. I think there is every probability of it.
75. The danger of the hotelkeepers going insolvent and the swimming baths going "bung" may be a mere myth? I should think so, certainly.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, sworn, and examined:—

C. W. Darley, Esq. 15 Sept., 1892.

76. *Chairman.*] The scheme which the Committee are now considering has been put forward by your Department? It has.
77. Have you visited the place at all? I have.

78.

* NOTE (*on revision*):—I wish to modify this statement, for I have seen in Albury, water-power used to drive a printing machine, and there may be instances of this kind elsewhere.

78. The catchment area which we are informed is some 7 square miles in extent is partially alienated, is it not? A portion of it is alienated, just about the site of the storage reservoir, but the great bulk of it is a forest reserve. C. W. Darley, Esq. 15 Sept., 1892.

79. What is the nature of the settlement upon the catchment area? The country is used for grazing, and close above the reservoir there is one small farm, where, I think, at one period there has been some tillage.

80. There is no mining population there? None at all.

81. This is not likely to be a mining centre? I think not. I do not think there are any minerals anywhere near there.

82. You do not think that the catchment area is likely to be contaminated in any way? From the information which I have received I should not think so. I do not think it is country likely to be occupied to any extent.

83. What is the length and height of the dams at the proposed storage reservoir? The dam will be 300 feet long, and about 28 feet at its maximum height.

84. And will impound 19,000,000 gallons of water? Yes.

85. We have been informed by Mr. Barling that by adding another 10 feet to the height of the dam it could be made to impound about 70,000,000 gallons? Yes.

86. What is the estimated cost of the dam? £6,834.

87. I presume it will be a concrete dam? A concrete dam. I might mention that it will be a little costly, but I looked upon Armidale as such a growing town that I thought it advisable to construct a dam which could, in the future, be raised 10 feet without removing the work already done.

88. How much would it decrease the cost of the dam, supposing you did not provide for that contingency? It would take nearly £1,000 from the cost.

89. What is the fall between the outlet of the storage reservoir and the service reservoir, just outside the town of Armidale? One hundred and forty-five feet.

90. And they are 9½ miles apart? Yes.

91. What is the difference in level between the service reservoir and the tank on Gaol Hill? As I have sketched it out there is only a difference of about 5 feet.

92. So that there will be a difference of 150 feet between the storage reservoir and Gaol Hill? Yes.

93. How much of the 19,000,000 gallons impounded in the storage reservoir will be available? I should say that quite 18,000,000 gallons will be available.

94. The reservoir must be pretty steep—the bottom cannot be very flat? The ground is pretty flat.

95. Would not more than one-nineteenth of the water be left there? Not necessarily. I think it would draw down to about that.

96. What is the nature of the country? A great deal of it is decomposed granite.

97. Will not a considerable amount of earth be washed down into the reservoir from the hills? No. I think the water will always draw off to within 1,000,000 gallons. There is a rocky bar where we shall put the dam, and you could draw very nearly to the bottom of that. The 19,000,000 gallons will be above the draw-off pipe, and we do not put the draw-off pipe at the bottom.

98. You propose to have a service reservoir near the town of a capacity of 300,000 gallons. Would it be possible to do away with that reservoir? I think the pipe-line is rather too long to enable us to do that.

99. If you had to depend on the storage reservoir only, would that mean an increase in the size of the main? You would have to increase the main very soon, because the great draught to the town takes place in two or three hours during the day, whereas water would be running into the service reservoir twenty-four hours during the day.

100. If the service reservoir were done away with, there would have to be an increase in the size of the main? Yes.

101. The cost of the service reservoir would, to some extent, equalise the increased cost of the main? Yes.

102. What is the estimated cost of the service reservoir? £1,500.

103. Do you propose to use cast-iron pipes for the main? No; wrought-iron pipes.

104. Would the branch main pipes be cast-iron or wrought-iron? Cast-iron.

105. And you would make the ordinary service main fill the Gaol Hill tank? Yes.

106. I suppose there will be no water going into the Gaol Hill tank during the day—it will be supplied when the draught from the town eases off at night? I propose to shut off the large reservoir, and turn the pressure on direct from the main at night, in order to fill the tank on Gaol Hill. The consumption of water from that tank will be comparatively small, because there are very few houses on the hill.

107. Would that not very much increase the pressure on the main between the service reservoir and the tank? Yes; until the tank was full.

108. Would it not affect the principal portion of your reticulation—all the pipes branching off the main running from the service reservoir to the tanks? It would only be the hydraulic head that would be increased. If you put a stop valve at the tank which would prevent the water running in when the tank was full, you would only get the vertical high pressure.

109. You will have to be pretty careful about the manipulation of your valves? There will be a telephone or something of that kind, so that the man will know how long to leave the valve open.

110. What height will the service reservoir be above the lowest portion of the town? About 240 feet.

111. Adding to that the difference in height between the storage reservoir, and the service reservoir, the pressure would be very heavy? It would be very little heavier than we have on the North Shore now. These small pipes are fit to carry a very high pressure.

112. Does the line drawn round Gaol Hill enclose the area that would be served by the tank? Approximately.

113. That is very limited compared with the balance of the reticulation area? Very limited. I do not think there are half-a-dozen houses within that area.

114. The Gaol Hill tank would command the highest point of Armidale? It is on the highest point.

115. Mr. Barling has estimated the working expenses at £300 per annum. Is not that a very small estimate in view of the fact that there will be three reservoirs and various stop-cocks? There will be no skilled labour required. Two turncocks could do all the work.

116. But there will be 9½ miles of wrought-iron main? One object I had in using wrought-iron pipes was to reduce the risk of fracture.

C. W. Darley, Esq. 15 Sept., 1892.

117. Surely you must have one man at the storage reservoir, and one at the service reservoir? It would be quite sufficient for a man to run up to the storage reservoir once a week.
118. Would it not be rather dangerous to leave the storage reservoir like that. Larrikins might cut off the water or play tricks there? One of the men and his family might reside there. The family could look after the reservoir, while he went into town to attend to his work there. At Orange, where the distance is not quite so great, one man does the whole work. His cottage is near the reservoir. I think two men could attend to this service—three at the outside.
119. £300 per annum would hardly pay the wages of three men, and provide the tools necessary for dealing with small breaks, &c.? Two men ought to do all the work.
120. Do you think that on more mature consideration you would put down a little more than that? I think it would be safe to put down a little more than £300.
121. Of course you know nothing of the estimate of the Council as to the revenue? No.
122. Do you think it is possible to cheapen the scheme in any way? I do not think you can take much off it. Of course I have allowed fair prices for the work all through. It might be done for a little less.
123. I suppose the £4,121, for engineering and contingencies, is the percentage usually allowed on works of this kind? Yes. I think the estimate is an outside one. I was careful rather to over-estimate than to under-estimate the cost.
124. Are the Council and the Department agreed as to what is necessary in the way of reticulation. We are told that there are 12¾ miles of reticulation? Yes. The Council considered the scheme, and marked out the reticulation on the plan, in conjunction with our engineer. We have curtailed it as far as possible, but it does not do to curtail it too much, because in that way you lose revenue.
125. We have been informed that the Department has already laid down reticulation pipes at a cost of £560. Will that form a portion of this scheme? Yes; it is a portion of the whole scheme.
126. I understand that the pipes that are used now in connection with the pumping scheme will form part of the main scheme—who supplied the pumps? They have a well in the gasworks, which belong to the Council, and a small pump there which they use in connection with the gasworks, and they thought it would be wise to pump water into the town, to use in case of fire.
127. I suppose the pipes already laid down could withstand an increased pressure? Yes; they were put down as part of the main scheme.
128. The Department only put down pipes which would form part of the main scheme? Yes. I told the Council that we would make no connection with the pump, or do anything extra. We did not go off the street. They will have to run a pipe from the pump to connect with the pipes in the street.
129. *Mr. Davies.*] We are told that there are 7 square miles of catchment area—is that private property? Only a small portion of it.
130. How much? Under 300 acres.
131. What do you estimate the value of that land to be? I have put it down as £5 an acre. I estimate that 391 acres will be required altogether, and I have put down £1,955 to pay for the land.
132. Do you propose to resume the whole of the catchment area? No; it is all Government land, except what I propose to resume. There are a few selections just on the site of the reservoir—a few 40-acre blocks, and I propose to resume them.
133. What do you estimate the daily consumption of the district of Armidale would be? The present population of the place is 3,500, and the reservoir will provide 126 days supply for 5,000 people.
134. If anything goes wrong with the main from the storage reservoir, from what source would the town be supplied? The service reservoir would hold enough to supply them until the pipes are repaired.
135. In case of a break how long would that supply last? From two and a half to three days. It would practically last four days, because the people could be warned to be economical. We are only using 26 gallons per head in Sydney, and in country towns they do not use much over 20 gallons per head.
136. So you would have time to make any repairs? Ample time.
137. What quantity of cement would be used in the building of dams and reservoirs—how many casks? Somewhere about 2,500 casks.
138. What is the difference in cost between colonial cement and imported cement? They are very nearly equal in cost now.
139. Which is the more expensive? I do not know. Our contract price this year has fallen very much. I should think that they are about equal.
140. You estimate the cost of pipes at something like £28,000—is that based upon the cost of colonial made pipes? The wrought-iron pipes could be manufactured in the Colony, and the cost of the cast-iron pipes is estimated to allow of colonial manufacture.
141. What would be the difference in cost between imported and colonial made pipes? Cast-iron pipes?
142. Yes? About £1 12s. a ton.
143. What will be the difference in wrought-iron pipes? I think we can manufacture wrought-iron pipes very nearly as cheaply as we can import them.
144. The difference will not be so great? It will not be very great. We have not called for tenders for imported pipes of this size, but we got in tenders for 22-inch wrought-iron pipes, and it was quite as cheap to get them in the country as to import them.
145. What is the largest size in wrought-iron pipes that you will be using in connection with this scheme? Nine-inch.
146. What gauge of iron? About three-sixteenths thickness.
147. Riveted? Yes.

WEDNESDAY,

WEDNESDAY, 12 *OCTOBER*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Sutton.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
Thomas Thomson Ewing, Esq.	Charles Collins, Esq.

Henry Dawson, Esq.

The Committee further considered the proposed Water Supply for Armidale.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, sworn, and further examined:—

C. W. Darley, Esq. 12 Oct., 1892.

148. *Mr. McCourt.*] You estimate the cost of this work at £43,500? Yes.

149. Do you think that that will fully cover the cost of everything? I think so. I have allowed full prices.

150. In the case of other water-works, has it been found that the estimate has covered the cost? It has practically been the case with every scheme for which we have made our own estimate, and which has not been afterwards increased.

151. Why have the works been increased—on account of the inadequacy of the original scheme? The Corporations have applied for further reticulation. We have just completed the Cootamundra water supply scheme, and although we sent the plans of that scheme to the Council for them to mark the reticulation they needed upon them before we made our estimate, they are now asking for 3 or 4 miles of additional reticulation after the work has been finished. No estimate can anticipate that sort of thing. Another item which it is always difficult to foresee is the cost of land.

152. The excess of the cost over the estimate has, in most cases, been caused by the Municipal Councils asking for increased works? Yes.

153. It has not been the fault of the Department? No. I think the cost of all the work which we have carried out has come very close to our estimate.

154. If the Armidale Council is satisfied with this scheme you can carry it out for the amount estimated? Yes.

155. The storage capacity of the reservoir is to be 19,000,000 gallons? Yes.

156. Will that be sufficient? I think it will be quite sufficient for some time to come unless the town grows very considerably.

157. *Mr. Hoskins.*] Can you say whether the complaint made by the Municipal Councils of Bathurst, Goulburn, and other places against the Government for having largely increased the cost of their water supply schemes over and above what they anticipated, is to be laid to the blame of these Councils or to the blame of the Government? If there is any blame at all it should be divided, but I do not see that there can be any blame in the matter. The estimate for supplying the towns which you have named with water was not made by the Department; it was made by Mr. Clarke, who largely based his prices on his experience in India, where labour is very cheap. No one could possibly undertake to carry out the work at the prices he put down. Further than that, in his estimate he did not include the cost of reticulation. In Bathurst we had to carry out over 22 miles of reticulation. All that is quite forgotten in speaking of the increase of the estimate. No one would have attempted to carry out the work at the prices set down by Mr. Clarke. In Bathurst we followed his plans closely—in fact, too closely. It was one of the first schemes that were got out, and Mr. Moriarty did not like to depart from Mr. Clarke's instructions; but when the tenders came in the prices contained in them were nowhere near the estimates set down. In some cases he did not put down for land as many hundreds as it cost thousands.

158. Do you not think that the Department ought to have asked Mr. Clarke on what data he based his estimate? I do not think the Department had anything to do with the matter. The reports were sent in to the Government, and until the works were put into the hands of the Department, after Mr. Clarke left the country, we had nothing to do with the matter at all.

159. The Municipal Councils of those places were misled as to the probable cost of the water-works because of Mr. Clarke's estimate being taken? There is no doubt that the estimates were to some extent misleading.

160. *Mr. Davies.*] I asked you when you were last under examination what was the difference between the cost of colonially-manufactured pipes and imported pipes;—have you the information? The tender is not in yet for the colonially-manufactured pipes. It will be in this day week.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.
Water Supply for Armidale.

APPENDIX.

A.

[*To Evidence of J. Barling, Esq.*]

WATER SUPPLY FOR ARMIDALE—AGREEMENT BETWEEN THE BOROUGH OF ARMIDALE AND THE MINISTER FOR WORKS.

AGREEMENT made the ninth day of April, in the year of Our Lord one thousand eight hundred and ninety-two, between the Borough of Armidale, in the Colony of New South Wales (hereinafter called "the said Borough") of the one part, and the Honorable William John Lyne, the Minister for Public Works of the said Colony (hereinafter called "the said Minister") of the other part: Whereas the said borough recently requested the said Minister to make provision for a temporary water supply for the town of Armidale, in the said Colony: And whereas the said Minister, acting on behalf of the Government of the said Colony, has agreed to lay water-pipes from portion thirty-nine, corner of Beardy and Markham Streets, Armidale aforesaid; thence along Beardy-street to Taylor-street, Armidale aforesaid (the said length of pipes being wholly within the limits of the said Borough), as a temporary scheme, at an estimated cost of five hundred and sixty pounds, conditionally that the sum to be thus spent, and the works thus constructed, shall be included and merge in any more extensive scheme that may in future be approved and carried out in manner prescribed by law; and that, meanwhile, the said Borough shall pay into the hands of the Colonial Treasurer of the said Colony interest on the said sum of five hundred and sixty pounds after the rate of six pounds per centum per annum, by equal half-yearly payments of sixteen pounds sixteen shillings on the first days of January and July in each and every year during the continuance of this agreement, the first of such payments to be made within six months after the works now asked for are reported as completed by the Engineer-in-Chief for Harbours and Rivers, to which said conditions the said Borough has consented and agreed. Now this indenture witnesseth that, in pursuance of the said agreement, and in consideration of the premises, the said Borough doth hereby, for itself and its successors, covenant with and to the said Minister and his successors in office, that it will well and truly pay, or cause to be paid, into the hands of the said Colonial Treasurer interest on the said sum of five hundred and sixty pounds, after the rate of six pounds per centum per annum, by equal half-yearly payments of sixteen pounds sixteen shillings on the first days of January and July in each and every year during the continuance of this agreement, the first of such payments to be made within six months after the works now asked for are reported as completed by the Engineer-in-Chief for Harbours and Rivers. And, further, that the sum to be so expended on the said temporary water supply works shall and will be a charge against the said Borough should a more extensive scheme in the future be approved and carried out in manner prescribed by law; and that the said temporary supply works shall merge in the permanent scheme when and so soon as the same shall be carried out; and that in the event of the said interest and payments being at any time during the continuance of this agreement in arrear for the space of thirty days the said Minister may retake possession of the said pipes and works, and collect all monies and make charges for the supply of water along the said length of pipe-line. In witness whereof the said Borough hath caused its Common Seal to be hereunto affixed, and the said Minister has hereunto set his hand and seal the day and year first before written.

The Common Seal of the Borough of Armidale was affixed hereto by the Mayor in pursuance of a resolution of the Council of the said Borough, in the presence of,—
JOHN MOORE, jun.,
Council Clerk.

WILLIAM DREW,
Mayor of Armidale. (L.S.)

Signed, sealed, and delivered by the said the Honorable William John Lyne, the Minister for Public Works, in and for the Colony of New South Wales, but not so as to incur or come under any personal liability in respect of the premises, in the presence of,—
J. BARLING.

WILLIAM JOHN LYNE. (L.S.)

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

WATER SUPPLY FOR ARMIDALE.

REPORT.

THE Sectional Committee appointed on the 12th of October, 1892, to whom was referred the duty of examining the local witnesses, and the inspection of the locality of the proposed works in connection with a Water Supply for Armidale, have the honor to report to the Parliamentary Standing Committee on Public Works as follows:—

The Committee, consisting of Mr. J. Garrard, M.L.A. (Chairman), the Hon. J. Davies, M.L.C., Mr. E. W. O'Sullivan, M.L.A., Mr. W. McCourt, M.L.A., Mr. J. C. Neild, M.L.A., and Mr. C. Collins, M.L.A., left Sydney by the 6·15 p.m. train on Monday, 17th October, 1892, arriving at Armidale early on Tuesday, 18th October, at 9 a.m. A meeting was held at the "Imperial Hotel," Mr. Garrard being called to the chair. Accompanied by Mr. Engineer Grimshaw, of the Harbours and Rivers Branch, Department of Public Works, and Mr. W. Drew, Mayor of Armidale, the Committee then proceeded to inspect the proposed temporary water supply at the Municipal Gas-works, and the 51 chains of reticulation connected therewith. They also visited the site of the proposed overhead tank or reservoir on the Gaol Hill. At 1 p.m. the Committee left Armidale by special vehicles, proceeding along the Glen Innes Road, inspecting *en route* the site for the main service reservoir, and also the main pipe-line, and arriving at the site of the proposed storage reservoir (Sam's Swamp, 10 miles from Armidale) at 3·30 p.m. After inspecting the position of the impounding dam, and the catchment area, both of which seem to have been well chosen for their respective purposes, the Committee returned to Armidale, arriving shortly after 6 p.m.

On Wednesday, 19th October, at 10 a.m., the Committee opened their inquiry at the Armidale Court-house, and examined the following witnesses:—Mr. W. Drew, Mayor of Armidale; Dr. G. Wigan; Alderman C. Wilson; Mr. J. T. French, Consulting Engineer to Borough Council; Mr. J. Moore, Council Clerk; Mr. B. A. Moses, member of the local Land Board; Mr. F. Braund, storekeeper; Mr. P. Wade, hotel proprietor; Mr. J. Kickham, hotel proprietor; Mr. H. G. Mallan, retired storekeeper; Mr. J. S. Chard, land-owner; Mr. W. C. Higginbotham, storekeeper; Alderman Dr. W. Murray; Alderman J. M. Duncan, miller; Mr. J. W. Grimshaw, Engineer of the Harbours and Rivers Branch, Department of Public Works; Mr. W. Robins, Railway Station-master; and at 7 p.m., in the "Imperial Hotel," Mr. J. Hackett, Railway Locomotive Inspector.

This closed the inquiry, and the Committee left Armidale at 10·40 a.m. on Thursday, 20th October, for Sydney, *via* Tamworth.

It will be seen from the foregoing that seventeen witnesses were examined by the Sectional Committee, and the evidence attached hereto will show that (excluding the two last witnesses, Messrs. Robins and Hackett, who were examined only as to railway requirements) they were, with the exception of Mr. Mallan, strongly in favour of the proposal before the Committee, and that at the conclusion of his evidence Mr. Mallan acknowledged the indefiniteness of his scheme, and fell in with that proposed by the Departmental engineer.

Your

Your Committee are of opinion that the scheme before them is one that, from its simplicity and completeness, reflects credit upon the Department generally, and especially upon the engineer who designed it. They are also of opinion that in view of the steady growth and future requirements of Armidale, it is a wise step to construct the foot of the impounding dam sufficiently strong to allow, in the future, of an addition to its height, so as to conserve a larger quantity of water. They are furthermore of opinion that no reduction can with safety and true economy be made in the size of the main service reservoir, and from the inquiry made they have little doubt the whole scheme can be carried out for the estimated sum, viz.: £43,500.

From the evidence of the Mayor it will be seen that an estimate of revenue has been placed before the Sectional Committee, differing in some respects from that previously furnished by the Borough Council to the Under Secretary for Public Works, and submitted by Mr. Barling to the Committee in Sydney. The explanation offered is that the last statement is the outcome of more reliable information than was available when the first was compiled. For the information of the Committee, your Sectional Committee herewith submit both statements:—

	Statement furnished in Sydney.	Statement furnished in Armidale.
Actual amount of rates as per last assessment on properties within the prescribed distance of mains—a full rate of 1s.	£1,394 9 6	..... £1,315 15 0
Estimated rates from public buildings, as per valuation attached ...	258 15 0	..... 258 15 0
Estimated consumption of water by Railway Department, as supplied by Railway Commissioners...	228 0 0	..... 187 10 0
Estimated income from street-watering rates...	75 0 0	..... 213 0 0
Estimated sale of water to Messrs. Kickham and Wade, of the "Imperial" and "Tattersall's" hotels, as per their own proposals, extra to rate...	100 0 0	..... 100 0 0
Estimated revenue from sale of water to private consumers, breweries, and factories, water-power and swimming-baths	250 0 0	.. ... 250 0 0
Estimated consumption of water by hospital, gas-works, showgrounds, sale-yards, and town hall	100 0 0	..... 100 0 0
Estimated consumption by the Proprietary School	.....	..... 50 0 0
Total	£2,406 4 6	..... £2,475 0 0
Estimated increase of general rates for next two years, based on the calculation from increase for the past two years	£260 0 0	three years £275 0 0

While your Committee are of opinion that in several of the items of revenue, especially that relating to public buildings, deductions must be made, they think, on the other hand, that on further inquiry it will be found that the item for water supplied to the Railway Department will be increased, and that on the whole there will be a slight surplus of income over expenditure, which, with the natural growth of the town, will be increased by the time the works are completed.

The members of the Sectional Committee are therefore unanimously of opinion that the works as submitted to the Committee should be carried out.

J. GARRARD,
Chairman.

October 20, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

WATER SUPPLY FOR ARMIDALE.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

WEDNESDAY, 19 *OCTOBER*, 1892.

[*The Sectional Committee met at the Court-house, Armidale, at* 10 *a.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. John Davies, C.M.G. | Edward William O'Sullivan, Esq.
William McCourt, Esq. | John Cash Neild, Esq.
Charles Collins, Esq.

The Sectional Committee proceeded to consider the proposed Water Supply for Armidale.

Mr. William Drew, Mayor of Armidale, sworn, and examined:—

Mr. W. Drew
19 Oct., 1892.

1. *Chairman.*] You are Mayor of Armidale? Yes.
2. How long have you occupied the position? This is my second term of office.
3. How long have you been an alderman? Fifteen or sixteen years.
4. How long have you resided in Armidale? I have been over twenty-five years in business.
5. You understand the proposal before the Sectional Committee? I do.
6. Your Council have, I understand, considered the proposal and passed a resolution endorsing it? They have.
7. Has any other scheme been submitted or propounded by your Council, or any of the residents? Not that I am aware of.
8. Since this scheme has been matured, has any adverse criticism been passed on it by your Council, or by anybody interested in Armidale? No.
9. Has any public meeting been called for by the citizens or the aldermen, for the purpose of getting the people's opinion on the question of incurring this responsibility? I do not think any public meeting has been called to get the opinion of the ratepayers. The aldermen were unanimous on the subject, and they naturally thought that they voiced the opinions of the ratepayers.
10. At all events the ratepayers have taken no contrary action? No.
11. It is well-known in and about the town that the Council have committed themselves to the scheme, as far as the resolution was concerned? Yes.
12. There has been plenty of time for the people, if they thought fit, to protest against the action of the Council? Yes.
13. There has been no protest of any kind? No.
14. What is the population of the borough of Armidale at present? According to the last census the population within the borough was 3,700.
15. What is your income from the municipal rate alone? From the general rate alone it is £1,400.
16. Do you desire to make a statement? Yes; I desire to state the estimated income from rates and other sources to be derived from the water supply for Armidale:—

	£ s. d.	£ s. d.
Total amount of rates at the assessed annual value of the Council on properties in the Central Ward	16,829 1 0	
Less amount of rates on properties not touched by service mains	779 3 6	
	16,049 17 6	
Yielding rates at 1s. in the £		802 9 9
East Ward,—		
Total amount of rates at the assessed annual value	6,485 14 6	
Less	1,298 3 6	
	5,160 11 0	
Yielding rates at 1s. in the £		258 0 6
West Ward,—		
Total amount of rates at the assessed annual value	6,253 17 0	
Less	1,149 2 0	
	5,104 15 0	
Yielding rates at 1s. in the £		255 4 9
		1,315 15 0

17. How do you reconcile that estimate with the following estimate which you furnished to the Under Secretary for Public Works—actual amount of rates as per last assessment on properties within the prescribed distance of mains—a full rate of 1s., £1,394 9s. 6d.? We struck off the properties that the mains

Mr. W. Drew. 19 Oct., 1892.

mains do not touch. We wanted to be very accurate. We have been more careful, I think, in preparing the later estimate.

18. Will you now proceed with your statement? Estimated rates from public buildings as per valuation, £258 15s.

19. Will you name the buildings? The public buildings which will be rated for water rates are valued as follows:—Post office, £500; lands office, £500; old telegraph office, £375; court-house, £400; lock-up, £100; gaol, £500; railway station, £1,000; station master's house, £75; goods and engine shed, £600; public school, £500; police barracks, £350; Superintendent Garvin's dwelling, £100; West End school, £100; and West End lock-up, £75; total, £5,175.

20. With reference to the Railway Commissioners, have you not the following item further on in your estimate.—"Estimated consumption of water by Railway Department"? We have an estimate for the consumption of water at the railway station buildings.

21. But if the Commissioners are supplying themselves with water at a certain rate not only for engine purposes, but also for station purposes, and they take your water by meter, that item will have to be struck out of your calculation? We look upon the railway station as a public building to be rated.

22. For your purposes you have assessed the railway station? Yes. The consumption of water by the Railway Department is estimated at 7,500,000 gallons, which at 6d. per 1000 gallons, will give a revenue of £187 10s.

23. That is their own estimate of the probable revenue and their own valuation of the water per 1000 gallons? The Council have no agreement with the Commissioners, further than that at the expiration of three months we can terminate the contract, but we think that 6d. is a very low price for the water.

24. If that is what it is actually costing them for water, are they likely to pay you more? We think they ought to pay as much as they pay other Councils.

25. Is it reasonable to suppose that they will pay you more than it actually costs them now? Of course we have not gone into the question of what it costs them.

26. On the basis of 6d. per 1000 gallons you estimate that you will receive a revenue of £187 10s. from the Railway Commissioners, but in the estimate which you furnished to the Under Secretary you estimated the probable revenue from this source as £228;—how do you account for the discrepancy? Have you since obtained more reliable information? I do not think the Department were aware of the probable quantity which the Commissioners would require.

27. Any other sources of revenue? Estimated income from street-watering rate, Beardy-street, Central Ward only, at 6d. in the £, £213.

28. Do you levy a street-watering rate at the present time? No.

29. Is it likely that the people in the Central Ward will go in for a street-watering rate of 6d. in the £ in addition to a water rate of 1s. in the £? I think so. They have always complained in the summer of the dust in the streets, and we have never had proper facilities in the past to water the streets.

30. Now you have brought up your estimate of revenue from this source from £75 to £213? If the whole of Beardy-street were taken in it would give us a revenue of £528 from this source.

31. I suppose you could not force a special watering rate on the people unless they applied for the service? Certainly not.

32. But if the majority of the people in that particular ward or street desired a street watering rate you would force it on the minority? We would enforce whatever is the law on the matter. The estimated sale of water to Messrs. Kickham and Wade is £100. They estimate that they will consume that amount of water each in the year.

33. You are going to charge them the ordinary water rate? That will be optional, I think. We can adopt the meter system if we choose

34. But have you not included those buildings in your estimated revenue? We have.

35. Consequently, if you charge them by meter, you will have to deduct that amount from your estimated income from the ordinary rate? It is only giving you the probable income. If we think a higher income can be received by meter, we can charge by meter. I do not think that affects our proposed system.

36. Messrs. Kickham and Wade's hotels are included in your annual assessment, therefore you must reduce your annual assessment by that amount, if you are going to supply those buildings by meter? Yes, of course we rate them in the general rate.

37. You cannot charge them both ways for the water? No.

38. Do I understand that Messrs. Kickham and Wade have made an offer to pay £50 per annum for the use of the water? Yes.

39. And what amount are their buildings assessed for the municipal rate? The Council Clerk perhaps can give you that information.

40. Will you state the other sources of revenue? The estimated revenue for the sale of water to private consumers, brewery, factories, water power, and swimming bath, is £250.

41. By meter for gardening purposes, and so on? Yes.

42. How many breweries have you in the town? We have one brewery. We have lemonade factories and tanneries.

43. Is there likely to be any demand for water for motive power? I believe that if they can get good water they would be very glad to use it.

44. Have you any swimming baths? We have a large bath at the West End. It is waiting for the water supply; it is supplied with water from the creek now.

45. Does it belong to the corporation? To a private person.

46. Will he take water if it is available? I should think he would, as it would make his bath more valuable. It is used in the summer months. I think that £250 is a low estimate of the revenue we should derive from those sources. The estimated consumption of water by the hospital, gasworks, show ground, sale yards, Town Hall, &c., is set down at £100.

47. But hospitals are exempt from water rates? I did not know.

48. Have any of these buildings which you have just enumerated been included in the ordinary rate—for instance, do you charge rates on the show grounds? No.

49. On the gasworks you do not charge rates, because it is your own property? I think we have struck a rate on that property.

50. If you have struck a rate on that property it is included in the first line in your estimate? Yes.

Mr. W. Drew. 19 Oct., 1892.

51. Then that amount will also have to be deducted? The Council Clerk can give evidence as to that matter.
52. What sale yards do you refer to? We have municipal sale yards, and it is contemplated to have sale yards on a larger scale.
53. Does it cost you anything to supply water there now? Not that I am aware of.
54. Are the Council likely to pay for water for the sale yards? I think it will be very inconvenient to supply water at present.
55. Do you strike any assessment on the town hall? No.
56. That will be supplied by meter, I suppose? Yes.
57. Have you any other source of revenue? The consumption of water by the Proprietary School is estimated at £50.
58. Is it situated within your municipal boundaries? Yes.
59. Would it not be assessed under the ordinary rate? It is not assessed now.
60. Because it does not exist? Yes. It is a low estimate because there will be possibly 100 boarders and a large establishment. It is a very modest amount.
61. Any other source of income? The increase in the general rates for the next three years—we do not anticipate to get a supply for two or three years, even if it is sanctioned at once—is put down at the modest sum of £275.
62. But in your estimate which you furnished to the Under Secretary for Public Works you gave this item: "Estimated increase of general rates for next two years based on the calculation from increase for the past two years, £260." Which estimate are we to take now? £275.
63. There is no prospect of standing still as regards the assessed value of the properties? During the last ten years it has been progressing. There has been no backward step. It is a progressive town.
64. From your knowledge of the district you think it is a fair increase to expect in the rates? I think it is below the mark.
65. As you do not expect the works to be finished before that time you think you can very well calculate on receiving that additional revenue at that time? Yes.
66. What is the total revenue which you expect to receive? £2,750.
67. Including, of course, the estimated increase in the general rates? Yes.
68. Have you any other statistics to furnish? Those are all.
69. What is the indebtedness of your borough? We owe £11,500 on the gas-works, and we owe £8,000 on the general revenues of the borough; but then we have the new town hall and the gas-works as against that liability.
70. Are the gas-works paying their way? Yes. We have reduced the minimum price of the gas, and the lighting rate has been reduced to a very low amount. The profits have not been so great during the last half-year.
71. Because of that reduction? I think so.
72. But they are paying? Yes.
73. You have really borrowed only £8,000 on your general rates, and against that you have the security of your town hall property, and you are not encumbered in any other way? That is so.
74. What is the amount of your borrowing power? I think our full borrowing power would be £9,000.
75. What rates are now being paid? The usual general rate of 1s. in the £, and the lighting rate of 4d. in the £.
76. Any dry earth-pan rate or sewerage rate? No.
77. 1s. 4d. in the £, then, is the total amount of rates which the people are paying? Yes.
78. So that if this scheme is carried out, instead of paying only 1s. 4d in the £, they will have to pay 2s. 4d.? Yes.
79. Plus a meter rate for any water supplied by meter? Yes.
80. How do the people of Armidale now get their supplies of water? Principally by underground tanks and galvanised iron tanks.
81. No natural springs? Wells; but they are so liable to pollution from the cesspits.
82. Do you still allow cesspits to be used? Yes.
83. Have you any dry earth-closets? We have both. The Council attend to the dry earth-closets.
84. How do you charge for that service? We let that service pay its way.
85. How much do the people pay? The contractors collect the amount. It is a matter between the contractors and the ratepayers.
86. The corporation have nothing to do with individual ratepayers in the matter? No further than to appoint the contractors. It is contemplated, I think, to take over the service.
87. What does it cost the people for their dry earth-closet system? About 6d. per pan per week.
88. One service? Yes.
89. What is the proportion of dry earth pans to cesspits? I think we must have sixty or eighty dry earth pans.
90. All the rest are cesspits? Yes.
91. What is the proportion of properly constructed cesspits to mere holes dug in the grounds? I think a good many cesspits are properly constructed now.
92. Perhaps your idea is different from mine. Do you mean cesspits constructed with loose bricks or water tight receptacles? Many of them are bricked and some are cemented. A good many of the principal places have cemented cesspits.
93. Are very many of the wells from which the domestic water is obtained simply holes in the ground, or are they principally tanks cemented? I think they are holes in the ground bricked round.
94. And cemented? Bricked. I do not know about being cemented; underground tanks, of course, must be cemented.
95. So that given an ordinary cesspit and an ordinary well on a property, if the cesspit is higher than the well the probability is that it will contaminate the water supply? Yes.
96. Has any special sickness been attributed to that cause? I have heard of a few cases of typhoid fever where the medical men have condemned the water in the wells.
97. Where is the nightsoil taken to by the contractor who empties the dry earth-pans? To a place on the common, appointed by the Council for its burial.
98. Away out of the town? Yes.

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99. You think there can be little doubt that the proximity of the cesspits to the water supply is a source of danger to the health of the people? I think so.
100. You think that the people generally recognise that fact, and that they will be prepared to pay for a pure supply? Yes; besides, we require water for many purposes—for watering the streets, and for extinguishing fires. The large establishments require far more water than they can conserve.
101. Has Armidale ever been put to any great straits for want of water? In long, dry summers there has been a scarcity of water. The wells have run dry, and the tanks have run out.
102. That could have been provided against by providing more receptacles for the rain-water? Possibly. Of course it is in the summer that the want of water is felt most.
103. Have any public meetings ever been held to agitate for a water supply other than at dry times, when the people feel the pinch? There have been no public meetings convened by the ratepayers about the question of a water supply.
104. You know the estimated cost of this work? Forty-three thousand pounds, I believe.
105. You know the items which make up that total? Yes.
106. Do you think that any of the items could be reduced, and the cost of the work cheapened? Not unless you dispensed with the service reservoir.
107. We are told that that will cost only £1,500, and that the strain on the system will be rather too severe without an intercepting reservoir of that kind. We are also told that the dam for the storage reservoir is to be 28 feet high, and that it will impound 19,000,000 gallons of water, which is equal to 126 days' supply for 5,000 persons—your population is only 3,800—at 30 gallons per day, and that by adding to the dam in the future to the extent of 10 feet, some 70,000,000 gallons of water can be impounded. In view of that contingency, the Department propose to make the root of the dam sufficiently strong to carry this extra 10 feet of superstructure. Do you think that provision is necessary, or do you not think 19,000,000 gallons of water will do for Armidale for very many years to come? I am inclined to think that the smaller amount would do. I would like to see the cost set down as low as possible.
108. We are informed by Mr. Darley that if we do we will only save about £1,000 in the construction of the dam, which is estimated to cost £6,834;—do you think it would be worth while to save that £1,000 there, or do you anticipate such a large increase in the population of Armidale, owing to the existence of a water supply and the efficiency of the municipal government, as to warrant this provision for a larger demand? Perhaps £1,000 is not such a very big amount compared to the work; but if it could be added to hereafter I think that the smaller amount would perhaps be ample for the present.
109. We are told that there is a danger of disturbing the dam afterwards unless it is made of the strength which is referred to;—you do not know any place nearer to Armidale than the proposed watershed where a supply could be intercepted? We have pointed out to Mr. Grimshaw all the places we know of, and he has inspected them.
110. You are satisfied with his report that this is the nearest available supply? Yes.
111. The main pipe-line from the storage reservoir to the service reservoir is estimated to cost £17,627, and the proposed reticulation has been submitted to the Council, I think? Yes.
112. And it is very complete? Yes.
113. Do you think that without suffering any very great loss of revenue we could decrease the reticulation, which is estimated to cost £9,780? Perhaps it would not be advisable to decrease it.
114. You think you should be given every source of revenue? Yes.
115. Looking at the question from both sides, you think you cannot recommend any alteration in the reticulation service? No.
116. The Department estimate the land to be resumed for the storage reservoir and the pipe-line at 391 acres at £5 an acre;—in your opinion is that a fair estimate or is it likely to be exceeded? I should think it is a fair estimate.
117. And not likely to be exceeded? No; land is not very valuable in that neighbourhood.
118. You see the difference between the amount which you are able to raise and the annual cost of the scheme is very small, and we want to see that the cost is not under-estimated? I think £5 would be a very fair price for the land.
119. I suppose your Council have not considered the working of the scheme when it is completed? No.
120. If the Department have put down a sum of £300 to cover the working expenses, you would take their estimate rather than challenge it in any way? I think so.
121. Does it not strike you that it is a rather small sum to defray the working expenses of a scheme like this? I believe there is not much expense besides the expense of a turncock to look after the services. The gravitation scheme is recommended because of the smallness of the cost.
122. You do not know of any pumping scheme which could be obtained nearer to Armidale than this scheme? No; I have heard that two or three miles up Armidale Creek might be dammed. Mr. Grimshaw has inspected the locality, but it has a very sandy bottom. If it could be got closer to the town there is no doubt that it would be a good thing.
123. If this scheme were carried out, do you think there would be a reduction in the rates of fire insurance in the town? Well, there should be.
124. Although the people would have to pay for the supply, they would not only get the convenience of a purer and better water, but also get the benefit of a reduction in the amount of their fire premiums? Yes.
125. Have you given any very great thought to the possibility of doing away with the service reservoir which you mentioned just now? No; only I heard Mr. Grimshaw make the remark whether it could be got without a service reservoir—whether it could be brought into the town in pipes. I do not think he recommends that plan.
126. Would there not be a very heavy head of water from the storage reservoir down to the lowest part of the town? Yes.
127. You cannot suggest any part where you think it might be cheapened in any way? No, not to get such a supply as this. I must admit that it is a big amount, but I think it is the cheapest in the long run to get a good one.
128. Do you think the Committee would be right in recommending the saving of the £1,000 in the construction of the storage reservoir, so as to provide for the impounding of only 19,000,000 gallons? I think so. It is a matter for those who understand the question better than I do to offer an opinion on.

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129. It is a question as to whether the town may not want a larger supply than 19,000,000 gallons? I think that smaller storage would be sufficient for the town.
130. We are told that 19,000,000 gallons will give a population of 5,000 persons, at the rate of 30 gallons per head per day, a supply for 126 days—what is the longest drought you have had? About three four, or five months.
131. A 126 days' supply will go very dangerously near to running out, will it not, in a drought? Yes.
132. Your population at present is only 3,800? Yes; but we are not so subject to droughts here as are other parts of the Colony. The rainfall on New England is very good.
133. We have been informed that the average rainfall is 32½ inches per annum? Yes.
134. If a four months' supply for 5,000 persons, at the rate of 30 gallons per head per day, can be conserved in that reservoir, do you think it will suffice for as large an increase in the population as you may expect for the next ten years? I think so.
135. You do not think there is a reasonable possibility of the population being more than 5,000 for the next ten years? It is hard to tell what the future will bring forth; but it certainly will be 5,000, if not more, during the next ten years.
136. You think it is quite possible that we might save £1,000, and just go in for the storage of 19,000,000 gallons? I think so.
137. *Mr. Neild.*] Has there not been some considerable increase of late years in the population of Armidale? There has.
138. Has it been greater during the last two or three years than it was during the previous two or three years? It was greater.
139. I mean has it been greater between 1888 and 1892 than it was between 1884 and 1888? I think so.
140. Was there any great increase been 1884 and 1888? The Hillgrove mines contributed a little towards the increase at the start; but that population has, I think, pretty well gone to Hillgrove.
141. Has not the influence of the Hillgrove gold-mines tended to greatly increase the population and prosperity of Armidale during the last four or five years? No doubt it has; but other causes have been operating, too—our climate, for instance.
142. Your climate has not altered during the period I have mentioned? But the facilities for travelling have altered.
143. Have not a good many of the new buildings in Armidale been erected by persons who have been fortunate investors at Hillgrove? Some of the principal buildings have been erected in that manner.
144. Do you think they would have been erected apart from the Hillgrove discoveries? Perhaps not on such an elaborate scale.
145. Are you looking forward to anything similar to Hillgrove to produce a like development in the near future? We are always expecting some new gold discoveries, not at Hillgrove only, but at Tilbuster, Enmore, and Mihi Creek.
146. These are matters of possibility? Yes; Armidale has become known as a place for education, and we think that this new school will induce population to settle here and educate their families.
147. It will become a sort of modern Athens, I suppose? A University of Oxford, perhaps.
148. Would all the properties from which you expect to derive these rates be within the limits of the proposed water supply? Yes.
149. And, consequently, they would be liable to be rated for water? Yes; I have given the value of the properties that are not affected.
150. Have you made any estimate of the present consumption per head in the town? No.
151. Have you any idea as to how many gallons per head are consumed by the people? Most people, as I said before, provide their own water.
152. As a man of experience, you should be able to form some idea of the consumption by the size of the tanks that the people have. Do you think that they consume anything like 30 gallons per head? I do not think they do.
153. Twenty gallons per head? I do not think so.
154. If there is to be a largely increased consumption of water there will be a larger discharge into the gutters, and so on, I suppose, of water which has been used for some purpose or other? Yes.
155. Therefore, the municipality will have to deal with a larger volume of sewage? Decidedly.
156. Have you any proposal under consideration for drains to carry off this increased amount of sewage? It is in the future; we are beginning to see the necessity for having underground sewers.
157. Where would this increased volume of sewage find its way? It would have to find its way most likely into the creek.
158. Would it interfere with anybody lower down? Possibly it might, if we did not take it lower down.
159. Are you acquainted with the rates which are charged for fire insurance in the town? Yes.
160. Are you acquainted with the rates which are charged for fire insurance in Sydney, where a water service exists? Yes; I think the rates are very low in Sydney.
161. What is the rate for a brick-built iron-roofed dwelling, for instance, here? I should think from 7s. to 10s.
162. As high as that? I think so.
163. What would a first-class business be charged? I should think 7s. I think we pay 8s. for our town hall.
164. It is suggested that £300 would be sufficient to maintain the works, provided that the turncock, whose duties would require him to be in town daily, lived at the service reservoir. Do you think that the distance to and fro would be too far to allow him to come into town daily? Unless he came by train I think it would be rather far.
165. He could do it on horseback? Not very well.
166. The ride would be 14 miles each way? I should think it would be 10 or 11 miles.
167. It is 10 miles to the town by the pipe-line which is much more direct than the road? Yes.
168. With reference to the estimated revenue from the public buildings, you have estimated the post-office at £500, the lands office at £500, and so on. Do you think that if these buildings were used for any other than Government purposes they would fetch anything like as high rentals as those? I think so; they are something like the banks.
169. Do you rate any bank as high as £500? Approaching that amount, I think.

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170. I see that you hope to receive so much revenue from private consumers who will be supplied by meter. Would not the properties of these private consumers be included in the general rating just as the hospital and other properties would? We included the increased quantity which some private consumers may require for breweries, factories, water power, and swimming baths.
171. What establishments would be likely to use water power? Flour mills.
172. Have you any information that would guide you to the belief that you can supply water power to mills cheaper than steam power? Well, it is an accepted fact that you can supply water power cheaper than any other motive power if you have the pressure.
173. Have you had any negotiations with any mill owner as to the supply of water power? I have heard one say that he would adopt water power if it were available.
174. How many flour mills have you in the town? Three; there are four altogether, but one has not been used for a long time.
175. *Mr. Collins.*] What interest are you paying on the loan of £11,500 which you borrowed for gas-works? Six per cent.
176. Does the revenue from the lighting rate pay the interest on that sum? It does.
177. Have you any sinking fund? We provide for depreciation of plant and property.
178. How much do you put by a year for that purpose? One hundred pounds.
179. To pay off a debt of £11,500? Yes.
180. And as regards the loan of £8,000, how much interest do you pay on that sum? Six per cent.
181. Do you get any revenue, besides the rates, to pay for that? The town hall revenues, which I should think amount to £300 a year.
182. The interest on that loan, at 6 per cent., amounts to £480. What did the new town hall cost? The new town hall cost about £3,000.
183. In what way has the other money been spent? In furnishing the town hall. I was thinking of the tender, but to the amount of the tender we must add the expense of the clerk of works and other things, so that it must have cost nearly £4,000.
184. What has the other £4,000 been spent in? In constructing permanent works for the municipality—kerbing, guttering, culverts, and roads.
185. Besides the money out of your annual revenue? Yes.
186. What does it cost to maintain your Council; how much money is paid to the officials, and how much to the maintenance men? I think the officials cost between £400 and £500 a year at present. As regards the maintenance men, owing to this borrowed money, we have had a much larger staff during the last two years than we intend to keep.
187. What does it cost you a year for that? I could not exactly say.
188. Does it cost you £400 a year? Oh, yes.
189. Five hundred pounds a year? Yes; I see that we will have to retrench now that we have come to the end of our rope.
190. One thousand pounds a year is rather expensive for maintaining a borough like this? But we have been spending borrowed money.
191. And not providing for the repayment of the loan? We shall provide when the time comes.
192. Do you think the people can afford to pay a shilling general rate, a shilling water rate, and a 4d. gas rate? Most people think that the water is an equivalent for the money.
193. You think that the ratepayers are in a position and will be willing to pay a total rate of 2s. 4d. in the £? There may be some grumblers, but I think the majority will approve of the action of the Council.
194. You have a system of water supply now? No; we are having a temporary scheme put down.
195. At whose cost? The Government are lending us a sum to build a temporary scheme.
196. How much? £600.
197. Are you paying anything out of your own funds towards it? We have not paid yet.
198. Do you intend to pay? Yes.
199. You have an agreement between yourselves and the Government to pay at the rate of 6 per cent? Yes.
200. If the water supply is not carried out would you continue that? Certainly; but it is to be merged into the permanent scheme.
201. *Mr. McCourt.*] You say that your general rate of 1s. in the £ gives you a revenue of £1,452? Yes.
202. And you estimate that a water rate of 1s. in the £ will return a revenue of £1,392? Yes.
203. The two rates will be about equal;—how many miles of streets have you in the town? I have heard it said that we have 52 miles of streets.
204. Are you aware that this scheme only proposes to reticulate 12¾ miles of streets? Yes.
205. If that is so there will be a large amount of property which you will not be able to reach with your water rate? We have allowed for the properties that will not be reached by the pipes.
206. But if you have 52 miles of streets it is all ratable property? Yes.
207. If the scheme only provides for the reticulation of 12¾ miles of streets, your estimate of the revenue from the water rate must be excessive? We have calculated from the rate books. A large portion of the borough is Government land which has not been sold.
208. That is a sufficient explanation of the large number of the streets;—are you aware that under the Local Government Bill the Government propose to lend money to municipalities at the rate of 4 per cent.? Yes.
209. If the Bill is passed in that form would it not considerably relieve your Council? It will if we can convert our loans into 4 per cents. under the Government.
210. It will relieve your Council and enable you to carry out this water scheme? Yes.
211. When the Council passed the resolution approving of the scheme, were they in possession of the whole of the particulars? Well, we had to pass a resolution that we were in favour of the scheme before the Department would take any steps to make a survey.
212. You have to pass a formal resolution; you have not passed that resolution yet? I think we have passed all the resolutions needed.
213. Did you pass that resolution without having the particulars of the scheme before you? We had Mr. Grimshaw, and we had the particulars of the scheme before us.

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214. I mean a detailed account of the scheme? It was thought possible to reduce the scheme, and through the influence of Mr. Bruce Smith, Mr. Grimshaw was sent up again to go over it more carefully, and the Council adhered to the scheme which was proposed.
215. Have you an engineer of your own? Yes.
216. Did you submit the scheme to him? Yes.
217. Did he approve of it? Yes.
218. He did not think it was excessive? No.
219. *Mr. Davies.*] It is absolutely necessary for the health of the townspeople that Armidale should have a better and more permanent supply of water? I think it will conduce very largely to the health of the town.
220. On sanitary grounds it is most important that you should have a permanent supply? Yes.
221. Your annual income from the general rate is £1,394, and you have borrowed a sum of £8,000, on which the interest is £480 a year? Yes.
222. What salaries are paid to your officials—to the Council Clerk and the Engineer? The Council Clerk receives £200 a year, but he is also caretaker and librarian; Mr. French, the Engineer, receives £150 a year; the inspector of nuisances receives £75 a year; and the assistant librarian, a young lad, receives about £26 a year. I think those are all the officials connected with the Council.
223. What other expenses have you to defray? Only the valuator's.
224. What is the cost of the annual assessment? About £15 for two valuators.
225. So that out of an income of £1,394, you spend something like £900 in salaries and interest? That is from the general rates alone. We have given the engineer notice that we shall not require his services after a certain date. We have also the rents from the town hall.
226. How much do you spend on maintenance, kerbing, guttering, and scavenging? Last year, including salaries and improvements, we spent between £4,000 and £5,000.
227. You spent £450 in salaries and £480 in interest;—how much did you spend in wages to your labourers? During the last two years, as I told the Chairman, we have been spending loan money on the streets. We have not reckoned up the amount which we have annually spent.
228. If I take the expenditure to be so large as that sum it will make your Council look hopelessly insolvent and make the district appear to be in such a position that it will not be able to pay anything like a tenth of the cost of this work. I want to know have you spent more than £400 during the last year in maintenance, kerbing, guttering, scavenging, and carting rubbish? Yes.
229. What is the annual expenditure under those heads? As I said, we have been spending far more than we received last year. We shall have to live within our income now. We can only spend the balance.
230. That is very small, you admit? We have three day men and one carter.
231. If your income from the general rates is so small to maintain the roads and streets, how do you hope to be able to obtain a sufficient sum to pay for the cost of this water scheme? The revenue will be devoted to that purpose.
232. You are simply to receive the revenue and pay it into the Treasury? Yes; it will be treated the same as the lighting rate.
233. You bought your gas-works from a private company? Yes.
234. How did you raise the purchase money? By loan.
235. You had already pledged the revenues of the borough to the amount of £8,000? That was subsequently. We have power to borrow under the Municipal Gas Act as well as under the Municipalities Act.
236. Is it fair to the debenture holders? They are aware of it.
237. You have pretty well reached the length of your tether in that respect? I think so.
238. And the only assets you can point to are the town hall and the gas-works? Yes.
239. And the income from the gas-works is barely sufficient to pay the interest on the borrowed capital? At present it is not.
240. Do you hope to get a larger income from that source? It will depend on our scale of charges. I think we could if we raised the scale.
241. Would it increase the number of consumers? I thought you were referring to the town hall. The gasworks are paying their way.
242. Only the annual interest and the working expenses? They are also returning a profit. Last year they returned a profit of £90.
243. It would take a precious long time to pay off the capital cost with that revenue? We are reducing the cost of manufacturing the gas.
244. Of course you have to provide for depreciation of plant, too? We are reducing the cost of the gas; we reduced the price a little too soon, I think.
245. What does it cost? Ten shillings per 1,000 feet.
246. What is the annual income from the letting of the town hall? On an average, I think it is £300 a year.
247. From that amount you have to deduct the cost of the gas? Yes.
248. How much will that be? I do not exactly remember.
249. It does not yield a clear revenue of £300 a year? No.
250. What did the building cost? It must have cost between £4,000 and £5,000 altogether. The building itself cost £4,000.
251. It does not pay you 6 per cent.? No; it does not pay.
252. You estimate that you will get a certain income from a street watering rate;—how do you strike the rate? On the basis of the shilling general rate.
253. Do you water the streets on the receipt of a petition from the residents, or how is it done? On petition.
254. You do not propose to establish a general system of watering the streets? We can only charge those persons who will get the benefit of the service.
255. The people who will petition the Council, and undertake to pay the cost of the service, will be the only persons who will be served? Yes.
256. You have adopted the system to some extent already? It was tried some years ago, but the facilities for watering the streets were so poor that the people complained, and it was given up.
257. How do you propose to carry out the service—by stand pipes or horses and carts? I believe by hydrants.

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258. Have your Council calculated the cost of the stand-pipe and hoses and connections? No.
259. It will be an additional charge for this service? Yes.
260. You have not debited yourselves with the cost of the service? No.
261. This service will run into a considerable expenditure? Yes; the hydrants are being supplied to us already for the temporary scheme for Beardy-street.
262. By the Government? Yes.
263. Do you know the cost of the temporary scheme as far as it has gone? £601.
264. What length of streets will be served? Fifty-one chains. I did not inform you that besides the £1,400 we receive an endowment from the Government.
265. How long have you had your endowment? Last year we received perhaps £700.
266. At the rate of 10s. or at the rate of 5s. in the £? Not an endowment, but a special vote.
267. You have passed the period for getting an annual endowment? Yes; we receive a special endowment, and last year the special endowment for roads and bridges and the special grant amounted, I think, to £700. This year it is very much less. I think we have received only £290 this year.
268. But according to the Act you are not entitled to receive any endowment? No.
269. How much did you receive last year from all sources? I expect we must have received nearly £3,000.
270. You have not the particulars at hand? No; the Council Clerk can give the particulars.
271. The total amount of your rates is 1s. 4d. in the £. How much are the people charged for the emptying of their cesspits? Sixpence per pan for the dry-earth closets, and about 10s. per cubic yard for the cesspits.
272. You think that the ratepayers will not complain if they are called upon to pay an extra shilling in the £? Not if they get the water.
273. In your estimated revenue from public buildings you include the railway station and the station-master's residence. Will not those buildings be served by meter at so much per 1,000 gallons? Of course what they will use for the station buildings will be another thing.
274. Do you strike a rate at the present time on those buildings? No.
275. Do you strike a rate on this court-house? No.
276. On the post and telegraph offices? We cannot; but we can strike a rate for water service.
277. All these buildings will be new sources of revenue? Yes.
278. Who assessed the value of these buildings? The Council Clerk, who is our valuator.
279. As Mayor of this town, are you of opinion that the value of the Government buildings is not over-estimated? No; I think they are fairly assessed.
280. You think that a rate struck on these amounts will not be excessive? No.
281. A large population will not be supplied with water even if you have this scheme? That is marked on the plan.
282. Which is bearing a general rate? A large portion of the town is Government land; it accounts for the 52 miles of streets.
283. Will there not still be a large portion not served with water? I have given credit for that.
284. How are you going to make up the difference of £796 when you include it in the general income? That is what we base our estimate on. The assessed annual value of the properties not touched in the Central Ward is £779, and a rate of one shilling in the £ on that sum will represent the loss on the service in the ward.
285. What revenue do you expect to get from the water rate on the assessed value of the properties that will be served? £1,315.
286. From two large hotels you expect to get £100 a year;—will not these hotels be supplied by meter at so much per 1,000 gallons? If they choose, or if the Council choose they may be.
287. Have they not a right under the Act to ask that they shall be supplied by meter? I think it is optional with the Council.
288. You can only assess these hotels at so much in the £, and the revenue from each hotel will not come to £50? But if we thought that they used more water than is represented by the rate on the assessed value of the properties we could put the meter on to each hotel.
289. But if the charge is to be 6d. per 1,000 gallons it would take a very large consumption to give a tenth of the revenue which you expect to derive from each hotel? We should not supply the hotels for 6d. per 1,000 gallons; we should want at least 2s. per 1,000 gallons.
290. It would take a tremendous consumption to return anything like half the revenue which you set down in your estimate? We are told that they use a large quantity of water in a day.
291. One thousand gallons of water is a large consumption? It is, but they use a great quantity of water.
292. Do you think you will get £100 a year from the two hotels? They say it would be worth that much to them. They will be glad to give evidence about that.
293. Would not the breweries and factories from which you hope to get a revenue of £250 be supplied by meter? I think that the Municipalities Act gives us power to charge so much a room, which is equivalent to 1s. in the £, and if we were to charge by meter some houses never use water at all, and we should get no revenue.
294. But the Act gives you power within a certain radius to levy a water rate, whether the water is connected or not? Yes.
295. How do you make up that estimate of £250 from breweries and factories? From the quantity of water which they are likely to require.
296. It is only an assumption. You have no idea that you will get £250 from those sources? I think it is a reasonable assumption.
297. On what do you base that assumption? I take it that the swimming baths would require a good lot of water. They are re-filled every week or so.
298. If you are going to have a general system of water supply, the people will have their own baths, and how many persons would go to the public baths? That is a matter of speculation.
299. The estimate is a speculation? Yes, partly.
300. *Mr. O'Sullivan.*] Armidale is a progressive town, is it not? Yes.
301. You have a natural increase of population? Yes.
302. With the increase in the value of property which that population effects, the presumption is that the estimates will be more than realised? Decidedly.

303.

Mr. W. Drew. 19 Oct., 1892.

303. As a matter of fact, the swimming baths will be largely used by young people who go for a swim, as well as by those who go for a dip in the summer? Yes.
304. Therefore the prospects are that the baths will very largely avail themselves of the water supply? They have been a great success in summer. They were put down by speculative parties, and they were paying very well, I understood.
305. I suppose there is no danger of the Railway Commissioners not agreeing to take the water? They have agreed to take the water at 6d. per 1,000 gallons.
306. You are willing to serve them at that price? At present we are, if we cannot get any more.
307. I presume the ratepayers generally are willing that the Council shall undertake these liabilities? Yes.
308. There have been no meetings held in opposition to the scheme? No.
309. Have you called the ratepayers together to take their opinion? No.
310. Do not you think it would be advisable to take that course before you finally decide on the scheme? We can do so. I am sure the ratepayers are in favour of the scheme. I think the Council are voicing the wishes of the ratepayers.
311. You are taking it for granted that if there are no signs of dissent they are agreeable? Yes.
312. *Chairman.*] The town hall buildings must represent £7,000? Reckoning the whole of the buildings, the land and buildings would be worth between £6,000 and £7,000.

George Wigan, Esq., M.R.C.S., Eng., sworn, and examined:—

G. Wigan, Esq., M.R.C.S., Eng. 19 Oct., 1892.

313. *Chairman.*] How long have you resided in Armidale? Seventeen years.
314. *Mr. Neild.*] You are acquainted with the present system of supplying the inhabitants with water? Yes.
315. In your opinion, is the present method of using the cesspits, as described by the Mayor, likely to prejudice, or does it, to your knowledge, prejudice the purity of the water in the wells in the town? It does.
316. Have you reason to attribute any outbreaks of illness to the impurity of the well-water? I have.
317. Has it been serious? Amongst the children, especially, it has been serious. On several occasions there has been typhoid fever in the lowest streets.
318. Have you heard any expression of opinion from the residents with reference to this scheme? Nothing but what is favourable.
319. Do you think the people will be willing to bear the enhanced cost for the sake of getting a pure and continuous supply? All those whom I have heard express their opinions are favourable to the scheme.
320. I suppose, then, we may assume that silence gives consent to this proposal? I think so.
321. You think it will be an advantage to the health of the people, and will promote cleanliness? Yes.
322. Have you considered the result of discharging into the streets or channels the increased volume of sewage when the people use a much larger quantity of water? I think there would be less likelihood of stagnation with a larger quantity of water flowing in the gutters. At the present time in many places in the streets running north and south the water stagnates in holes. If fresh water were passed down these gutters every day there would be no stagnant water; it would be washed out and carried down to the creek.
323. Even from this standpoint you think it would be beneficial to the health of the people? Yes; even with the streets in their present state it would be beneficial.
324. Have you reason to expect the town to extend as rapidly in the future as it has done during the last few years? I think it is likely to increase as fast as it has done during the past four years.
325. So that the prospective increase which is looked for in the rates is, in your opinion, likely to be realised? I think so.
326. Under these circumstances you do not consider that the proposed water-works will entail an undue charge on the pockets of the residents? I do not think so.
327. *Mr. McCourt.*] Is Armidale becoming a sanitorium for people from Queensland and other places? Very much so since the railway line has been opened direct from Queensland.
328. I suppose if you had a real good water supply, the number of your visitors who come here in search of health would be greatly increased? I think so.
329. *Mr. Davies.*] I suppose the medical profession realise that it is a very healthy district? We do.
330. From your evidence I presume you are anxious that it should be made more healthy by having a thorough system of water supply? Yes.
331. You have stated that a good deal of sickness is directly attributable to the want of a pure supply? Especially in the dry summers. Of course in the wet summers we do not find so much sickness.
332. Have you visited the proposed source of supply? I know the whole district thoroughly. I have not been on the ground since it was marked out; but I know it thoroughly well.
333. You know the character of the water? Yes; it is very good water indeed.
334. You feel satisfied, as a medical man, that it will be a great benefit to the district to have this water supply? Yes; I am visiting surgeon to the gaol, and I find that whenever we have been obliged to have water carted there, which is very often indeed, the men are troubled more with bowel complaints than usual.
335. Where is it carted from? From any well in the town.
336. *Chairman.*] Is there anything else that you would like to state to the Committee? I am the secretary to the Proprietary School, and we have made no provision for a water supply with the idea that this scheme will be carried out. When it is in full going order we shall have about 100 souls in the school.
337. Do you think that the estimated revenue of £50 for the school, whether it is charged on the assessed value or by meter, will be realised by the corporation? I hope we get it for £50.
338. When do you expect to have the buildings ready? By the end of December, 1893. You were asking about bath-rooms. There are really no bath-rooms in Armidale, comparatively speaking. We have to depend on a bucket of water for our bath.
339. Except at the "Imperial" and other hotels? I put the bath-rooms down at about thirty in the whole town.

Mr. Charles Wilson, Alderman, Borough of Armidale, sworn, and examined:—

Mr. C. Wilson. 19 Oct., 1892.

340. *Chairman.*] You are an alderman of the borough? Yes.
341. How long have you occupied the position? Three years—one year as mayor and two years as alderman.
342. How long have you resided here? Twenty-three years. I was council clerk for seventeen years.
343. *Mr. Collins.*] Do you think that all the statements of the Mayor are correct? They may not be actually correct, but in the main they are as correct as it is possible for them to be.
344. Had you much to do with this proposal when it was before the Municipal Council? It was initiated when I was mayor.
345. From your knowledge of the ratepayers, do you think they would feel inclined to pay an extra rate An alderman who would put up to-morrow for election and state that he was against the scheme would not get twenty votes in the town.
346. Do you think that with the lighting and general rates the people are able to pay for this water service? Well, I look on the water rate in a different light from any other rate. I look upon a water rate as a charge for value received. There are a great many persons now who have to buy their water.
347. What do they generally pay? One shilling for a cask of about 60 gallons.
348. Do many people pay that price? In weather like this, of course a great many people with small tanks manage to catch a supply, but in dry summers a great number of the residents have to buy their water.
349. Would half the people have to buy water in dry seasons? I do not know that a half would, but I should say a third would.
350. Do you mean with underground tanks or galvanised-iron tanks? Galvanised-iron tanks.
351. A galvanised-iron tank does not give very good water? When it remains in the tank it is not very good.
352. It would be far better to have water from a well? In weather like this, where it is constantly being renewed, it is all right.
353. The water from galvanised-iron roofs is not very good? It is all right if it is properly preserved.
354. Are you acquainted with the scheme before the Committee? Yes.
355. Do you know the source of supply? Yes.
356. Are you acquainted with the character of the water? Yes.
357. You think there is no necessity for obtaining another site? No.
358. Do you know of any other site better situated? Although it is rather expensive, I think it is the only real site about Armidale where we can get a proper and permanent supply.
359. You think that it is a permanent supply? Yes.
360. No matter if there is a drought for six months? There is no question about its permanency.
361. *Mr. Davies.*] For some years to come you will have a very small sum to maintain your streets and roads after paying the interest on your loans and the salaries of the officials? Well, out of our general rates alone we shall have about £600 or £700.
362. That is to maintain 52 miles of roads? That statement as to the 52 miles of roads is very misleading because the roads which are built on, and which the Council have to keep in repair, I suppose measure about 17 or 18 miles—perhaps 15 miles would be very much nearer the mark. A great portion of the 52 miles of roadways in the town are simply roads in their natural state, not touched in any way or likely to be.
363. Will you extract rates from people who have no macadamised roads? It is unimproved ground on each side. From the ground that is unsold and belongs to the Government we get no rates, and from the other land—unimproved land—we get a very small return indeed.
364. What is it—5 per cent. on the capital value? Yes.
365. What does it cost per mile to form, ballast, metal, kerb, and gutter a road? It would be a very expensive matter per mile.
366. Still it has to be done by the mile? I think we have pretty nearly formed all the roads which we shall require for some years.
367. What roads have you formed and ballasted during the last two or three years? We have put iron metal on about three or four miles of roads in the town.
368. Out of borrowed capital? Yes.
369. You have material for road making very close at hand? We have very good gravel and plenty of stone.
370. What does the metal cost per ton delivered broken on the road? About 5s. 3d.
371. That is very reasonable? Yes. I believe it costs 12s. 6d. in Sydney.
372. Do you think the balance of your income, after providing for the salaries and interest, is sufficient to keep 17 miles of roads in a good state of repair? You must consider that we receive grants and endowments.
373. From whom do you get an endowment? From the Government.
374. But you have passed the period when you are entitled to an endowment? But we have never been without an endowment and are not likely to be.
375. You are living in hopes of getting an endowment still? We are living in hopes that we will get a little more under the new Bill than we have been getting. We receive rents from several paddocks, and we get a couple of hundred pounds clear rent from the Town Hall.
376. After deducting the annual cost? The revenue is about £300 a year, and the expenses amount to £100.
377. What did it cost you annually for lighting the town before you had gasworks? We had very little lighting indeed. We had only some fifteen or sixteen kerosene lamps.
378. How many gas lamps have you now? Over fifty.
379. Do you debit the Council with that? The gas accounts are kept quite separate from the other accounts.
380. What do you charge a year per lamp? I think it is £7. It comes out of the lighting rates.
381. You do not remember what it cost per lamp when you had kerosene lamps? We had a contract. We supplied the oil, but the lights were very inferior. We had only one row of lights from the town to the railway station.

Mr. C. Wilson. 19 Oct., 1892.

382. Are you of opinion that the residents of Armidale can bear an additional burden of £1,200 or £1,400 a year for a water supply? It is a very small matter distributed all over the town.
383. But small as it is you think that it will be available? I am certain that ninety persons out of every 100 residing along the pipe-line will be only too pleased to pay the rate. There will be a few, of course, on whom it may press a little heavily, but very few indeed.
384. But properties that will not be connected for many years to come will have to bear the rate just the same as if they were connected? Yes; if they are within a certain distance of the main.
385. You do not anticipate any great complaint from that class of ratepayers? No; they understand the position.
386. *Mr. O'Sullivan.*] I presume that if at first you cannot raise as much money by a shilling rate to meet your liabilities in connection with this scheme the ratepayers would be inclined to pay 1s. 3d.? I do not know that the people are disposed to pay more than they can help, no matter what advantages they may receive.
387. Bearing in mind the probable increase in the population and in the value of the properties, you think the rate will be sufficient to meet the liabilities? I have no hesitation in saying that Armidale only needs a water supply to make it a very large sanatorium. People are coming here from Queensland, and all the hot parts of the country, and their only cry is for increased accommodation and a good water-supply. I am certain that with a good water supply the population of this town will increase, and continue to increase, irrespective of the Hillgrove or any other mines.
388. How much do you think it costs the people a year for the water which they obtain from the water-carts;—what does it cost an ordinary family? That depends on the season. We have paid 1s. 6d. a cask for water, and then it was very inferior.
389. It would be very much cheaper for them all the year round to pay a rate and have a sure supply of good water? Yes. People would not require to go to the expense of providing tank accommodation. I could name a number of persons whom it has cost over £100 to provide a water supply for the houses which they have built. We could sell these tanks and turn them into money if we had a supply.
390. I suppose the people who are conscious of these facts are quite satisfied to see this scheme undertaken by the Council? There is no question about it. Every alderman who has stood for election during the last three or four years has favoured the proposal, otherwise he would not have had a show of being returned. If there had been any doubt on the question we should have called a meeting, but we were so certain that the people were unanimous that we did not think it was necessary.
391. *Mr. Collins.*] Did you get a grant for the road through the town? We got the proportion we were entitled to per mile.
392. How much do you get for the Great Northern Road? We get £75 for one grant and £50 for minor roads.
393. It goes into your revenue? Yes. With reference to the erection of the dam, I think it would be a very great mistake for the sake of saving £1,000 to make a foundation which could not be built upon hereafter. I have no doubt that before very long there will be lots of machinery in Armidale. All these machines will require water, and on that account it would be a very great mistake when the scheme was being constructed to leave anything undone which would prevent us from increasing the supply afterwards.
394. *Chairman.*] I suppose the people know that they will have to pay for this water scheme? They do, and they think they are getting value for their money.
395. Have they any idea that they will have to pay an increased rate of 1s. in the £? Everybody knows that he will have to pay an additional rate of 1s. in the £.
396. It is pretty well known? It is.
397. With reference to the matter of the dam, do you not think that 19,000,000 gallons—a supply of 30 gallons for 5,000 persons for 126 days—is quite sufficient for Armidale for many years to come? I have great faith in the future of Armidale. With the advantage of a water supply, I am sure it will become a very big town in a very short time.
398. Do you remember what the population was seventeen years ago? I do not remember what the population was when I first came here twenty-three years ago. You can scarcely find any of the Armidale which was in existence then.
399. What was the population five years ago or ten years ago? I should think it was under 2,000 ten years ago.
400. It has increased by 2,800, so that in all probability in another ten years it will reach 5,000? Yes. It is an exceedingly small municipality, 3,800 does not really represent the population of Armidale as you see it, because there are dozens and dozens of houses outside the boundary.
401. But it is the population that you are going to serve. You cannot operate outside the borders of your municipality? No; but we may very probably have a larger range of self-government which will reach them. There is a regular township in one place outside the municipality.
402. With regard to the estimated consumption of 30 gallons per head per day, it does not follow that each individual will have a number of baths a day, but that a large quantity of the water will be used for manufacturing purposes;—do you not think it is a very large consumption to reckon per head? It is a great deal larger than what is used now. If the people have an unlimited supply they will use more water, and they will water their gardens.
403. But if the construction of this scheme, which you think is of such moment to Armidale, is jeopardised because of the slight margin between the annual cost and the annual revenue, would it not be far better to cut down where it is possible, and bring the scheme within your reach? Of course, if it is a question as to whether we are to have the supply or not, I should cut down the cost, but for the sake of saving £1,000, I think it would be a mistake to cut down the foundation.
404. But if the supply so provided will meet all your probable requirements for the next ten years, would it not be better to save the interest on the £1,000 all that time? I question whether it would do for ten years; I do not think it would.
405. You believe that Armidale will make rapid progress? Yes.
406. Do you think it would do for five years? Possibly.
407. As a practical man, with large experience, can you suggest where a saving can be effected without jeopardising the efficiency of the scheme? Only by doing away with the intermediate dam. It is a matter for professional men rather than for amateurs to consider.
408. We are told that without the service reservoir you would have a head of 400 feet at the lower part of the town;—would it not be a rather heavy strain on the mains? I think the reservoir ought to be kept under if possible.

Mr. C. Wilson. 19 Oct., 1892.

409. We are told that the difference between the level of the storage reservoir and the level of the service reservoir is 145 feet, and that between the service reservoir and the town there is a fall of 201 feet, bringing the pressure on the pipes up to nearly 400 feet—it would be a rather serious matter? Yes.
410. It would be rather too dangerous to risk? It is a matter for professional consideration.
411. With these facts before you do you not think it would be much safer? Yes. As regards fire insurance, I know a good deal about that question. I know that the rates are being constantly increased on account of the town having no proper water supply. I am sure the property owners would save a very large percentage on their assurances if we had an efficient water supply.
412. It has been estimated by the Department that it will be necessary to resume 391 acres of land—so much for the pipe-line, and so much for the storage reservoir—at about £5 per acre; is that a fair value to put on the land? I think it is too much. You cannot get more than £2 or £2 10s. for any of the adjoining selections out there.
413. You think that £5 per acre would be quite ample, and that the estimate is not likely to be increased? No.
414. The cost of the work is not likely to be increased by having to pay more for the land? I am sure it is more likely to be decreased in that particular.
415. Is there any other way in which you think it may be cheapened? No.
416. Do you think the catchment area, which is very large, covering some 7 square miles, is likely to be contaminated in any way? I do not think so. I do not think there will be anything further than possibly cultivation.
417. Do you know the character of the country. Do you think there is likely to be any large mining settlement about there? I do not think that it is likely, but it is impossible to say where minerals may not be discovered.

Mr. John Thomas French, Consulting Engineer to the Borough of Armidale, sworn, and examined:—

Mr. J. T. French. 19 Oct., 1892.

418. *Chairman.*] You are Consulting Engineer to the Borough of Armidale? Yes.
419. How long have you held the position? A little over two years.
420. How long have you been a resident here? Two and a half years.
421. *Mr. McCourt.*] Are you acquainted with the particulars of this scheme? Yes. I was deputed by the Council to make inquiries into the matter.
422. Are you perfectly satisfied that it is a good scheme, and the best which can be obtained? I think it could not be surpassed with regard to its adaptability to Armidale. There are no rival schemes that I know of that are worthy of consideration.
423. Nor could it be cheapened in any way without interfering with its efficiency? I think that any retrenchment would not be advisable - that is my professional opinion.
424. You think the storage reservoir is large enough? Yes; if the dam is carried out as originally designed.
425. I mean the service reservoir? Yes; because having such a large pressure we must have a reservoir to keep the water down to a workable pressure in the mains in the town.
426. Do you think it is large enough? Yes; I think it is one fairly suited to our wants.
427. How many days' supply will the service reservoir hold in case of an emergency? I could not say from memory.
428. It is supposed to hold 300,000 gallons? About three days' supply, I think, is the estimate.
429. Could any possible breach in the pipes be repaired in that time? Yes. There is no heavy strain on the pipes between the storage reservoir and the service reservoir; and any ordinary break could be repaired within twenty-four hours.
430. Do the pipes go through any flooded country? No.
431. That is flooded country where the surface of the soil would be likely to be disturbed, and the pipes be likely to be injured? We have no flooded country of that kind.
432. It would not be possible to use a 6-inch pipe instead of a 9-inch pipe for the main? It would be possible, but I do not think it would be advisable.
433. Would it bring sufficient water in for a town like Armidale? I do not think it would.
434. In the estimated cost of the work the sum of £4,121 is set down for "engineering and contingencies". Do you think that is a large expenditure on an outlay of £43,000? It is a very ample one. It is a very easy scheme compared to a scheme in which machinery is involved.
435. Do you think it is over-estimated? I think it is, because I know from my own experience in several contracts, that the price allowed by Mr. Grimshaw is in excess of what we can get the work done for now.
436. For preparing the plans, and the other work, do you think it is an excessive sum? I think it is.
437. Supposing you had to prepare plans, make surveys, and supervise the carrying out of the work, what do you think would be a fair charge? I should say one-half of that sum; but a great many schemes have had to be surveyed and investigated right to their source, and that expense has to be added to the cost of this particular scheme. If we take the scheme as it is, I think the £2,000 would be ample for the purpose; but of course I cannot say what is the value of the other schemes which have been investigated.
438. But still you think the £4,000 is a very ample provision, and might be reduced? I think so.
439. *Mr. Davies.*] You practice in the town, and have been for some time, and are still connected with the Municipal Council? Yes; but I have the right of private practice.
440. Have you a copy of the report which you furnished to the Council on this scheme? I have not
441. Who has? I did not furnish a written report. I was simply appointed one of a committee to report on the scheme for the Council. We reported verbally, and after the Council adopted the scheme we met Mr. Grimshaw, and we went through the items.
442. There has been no official report? No.
443. You have traversed the whole of the pipe-line to the source of supply? Yes.
444. As a professional man, and as one connected with the Municipal Council, you fully approve of the proposal? Yes; I think it is one of the most ample and complete schemes I have ever had anything to do with.
445. Do you think that £300 would be sufficient to provide for turncocks and other officials? I do, because the greater part of the main service runs through our common, which consists of 4,000 acres, and the person in charge of the reservoir can very easily act as commonage ranger as well. The engineer would

would look after the pipes in the town, and the men who had to water the streets would, of course, look after the hydrants immediately under their supervision; so that I think £300 is in excess of what it will actually cost the Council. There will be no necessity for that man to come into the town, except to report an injury.

446. Are you aware that it is contemplated to have telephone communication with the source of supply? I think it would be essential.

447. And the other turncock would be in the town? Yes.

448. Do you think that £300 would cover the amount of their salaries, the cost of the repairs, and the maintenance of the services in case of leaks and breaks? I think so. Any breakage in the pipes immediately in the town would be repaired by the engineer with the permanent staff.

449. Would it not be necessary to keep the accounts separately? We do so even now with the gasworks. If I were the engineer for the Council I should simply report a breakage in a main, and I would take the corporation men to mend the pipe and debit the cost to the water supply.

450. You think £300 would be quite sufficient to provide for contingencies? I think it is ample.

451. From your general knowledge of the town do you think that the ratepapers would be able to bear an additional impost of 1s. in the £? I have spoken to a great many of the ratepayers; I do not think I have spoken to three ratepayers who are adverse to the proposal.

452. As a resident of the district, and as consulting engineer to the Council, you think it is absolutely essential to health and life that Armidale should have a good supply of water? Yes.

453. *Mr. O'Sullivan.*] With regard to the watershed there seems to be a very extensive drainage from the hills into the creek or lagoon? That is one of the peculiarities of New England. The loss of water would simply be by evaporation. There would be little or no loss by soakage.

454. All this points to the fact that it is a very reliable source of supply? It is.

455. And one not likely to cease if there is a drought for any period? It is a better source of supply in my opinion than if it were a stream, because there is no danger of that dam being silted up as it would be if we were damming a stream.

456. *Chairman.*] There is a small stream running through the watershed? Yes; but the silting up from that would be very small.

457. It is only with a larger stream and a sandy bottom that you have a danger of silting up? Yes.

458. It is an exceptionally good site, in your opinion, for a dam? It is a site formed in every way for a dam.

459. You do not know of a better catchment area about the district within so convenient a distance? I do not.

460. Can you suggest any portion of the scheme which could be cheapened in any way without impairing the efficiency of the service? I cannot. With regard to the size of the dam, I was asked by the Council to ascertain the probable revenue which we should derive from the sale of water for power purposes. I got the price of the motors so that I could tell probable consumers the cost of the service, and I believe that the revenue from this source would be very great. For instance, one miller alone said that he would be perfectly willing—and it would be a considerable saving to him—to give £1 a day for sufficient power to run one pair of stones. He explained that it cost him £1 a day for fuel, and there was also the labour of the man who had to get up to light the fire. With water-power the stones would run more steadily and turn out better flour. We have seven blacksmiths in the town, and with the exception of one, all the blacksmiths I spoke to were willing to pay 10s. a week for sufficient power to work the fans. I suppose we would reduce the pressure to 75 lb. to the inch. In that case, considering that we have three mills working fairly constantly, and one mill which has been hung up for some time, our estimate of revenue from this source is remarkably small. For instance, there are chaff-cutters, as well as lemonade factories, in the town. The tannery, too, would use water-power. That is one reason why I think it advisable that the dam should not be made any smaller. I think that the revenue from the supply of water-power would increase very greatly.

461. What would be the cost of the water motors? We could get an Excelsior water motor, 3 horse-power, recommended by Mr. Darley, for £10.

462. The smallest which are made? No; they are made as low as one-man power, which costs only £2.

463. You think that the blacksmiths would go in for a one-man water moter? When they see that it does not involve a heavy expenditure for machinery.

464. What have they to gain? Does not the man who does the striking have to blow the bellows? But still you have less consumption of fuel, and you get a steadier and better heat.

465. Where does the less consumption of fuel come in? Because you have one steady blast, and in the other way you have to jerk.

465½. Do the blacksmiths know that they would have to buy the motive power themselves? I said "Would you be prepared to pay 10s. for it," and they said "Yes, if we can get motive power for that."

466. Do you know any city or town where water-power is used in the general way that you anticipate it will be used here? I know of only one town which has the pressure that we have here. The majority of the schemes are pumping schemes, and a pressure of 20 lb. to the inch would comparatively speaking be valueless for motive purposes. I know of no town which has a gravitation supply with that pressure.

467. You think it will be inadvisable to cut down the root of the dam, because you think there will be such a demand for water-power for machinery in and about the town in a very short time that 19,000,000 gallons will not be sufficient, and that it will be necessary to raise the dam an additional 10 feet? I do. I think as a business transaction the increased revenue you would get from motive power would be far in excess of the extra percentage we would have to pay on the £1,000.

468. If your anticipations are not borne out, and the population does not increase as rapidly as you expect, of course the £1,000 will be lying dead for a long time? Yes.

469. Is there any other way in which the scheme could be cheapened without risking its efficiency? I could not make any suggestion towards decreasing it.

470. You are thoroughly in favour of an intermediate service reservoir? Yes. With regard to the mileage of the streets, I would like to say that we have forty-three 10-acre blocks of Government land unsold within the boundary of the municipality. In framing our estimate we have also considered the sale of any water to any property through which the main would run.

471. Are not a great many of these blocks available for sale now? A great many of them are.

Mr. J. T. French. 19 Oct., 1892.

472. Well, if they are available for sale and there is such a demand to settle here, how is it that they are not taken up? I do not know.
473. Waiting for a water supply? No; all the land which has ever been offered for sale has sold very readily, and a great many persons are waiting for the Government to sell now. The Government seem to be rather dilatory.
474. The land is not for sale privately, and it must be put up by auction? Yes.
475. It is necessary for the Lands Department to be moved before any land can be sold? Yes; there are six valuable blocks in the south-west corner of the borough. We have 46 acres in the centre of the town, facing the Proprietary School. Nearly all the land you saw on the slope is Government land. It would make beautiful building sites. On the northern boundary, adjoining Dumaresq Creek, it is nearly all Government land. There is Government land unsold within 30 chains of this Court-house.
476. Is there any other point you wish to bring before the Committee? No.
477. Do you think it will be necessary to resume any more land than is actually required to cover the water area? Mr. Wilson, one of the best authorities on land values here, states that the estimate will be in excess of the value of the land. Of course if it is necessary to resume land in the future, it will be more expensive then than it is now. I do not think it is absolutely necessary for the purity of the water supply to resume more land.
478. You think that Mr. Wilson is a good authority on land values? I think he is about the best in the town.
479. And if he says that £5 an acre is a very liberal estimate you concur in his opinion? Yes.
480. *Mr. Davies.*] Will the Crown lands which you have pointed out be served by the proposed water supply? We would have to lay mains, but they would not be expensive mains.
481. *Chairman.*] They would not be within the radius of the proposed reticulation? No; very small mains would serve them, because they would get the pressure.

Mr. John Moore, Council Clerk, Borough of Armidale, sworn, and examined:—

Mr. J. Moore. 19 Oct., 1892.

482. *Chairman.*] You are the Council Clerk of the Borough of Armidale? Yes.
483. How long have you held the position? About three and a half years.
484. Have you resided in Armidale some time? Nearly all my life.
485. *Mr. Davies.*] What is the annual income of the borough from the general rate? For this year it has been about £1,477.
486. Any increase on the previous years? An increase of about £140.
487. How is the increase made up—by arrears of rates or by increased settlement? By the erection of new buildings and an increased assessment on some buildings.
488. Your estimate of the probable revenue for the water rate is based on the values of the properties within the reticulation service? Yes.
489. What proportion of the residents will not be within the reach of the water supply? There will not be very many, except on the eastern corner of the town.
490. What streets are they? Below the police paddock on the eastern portion; then on the northern portion, straight up from this place, on the northern side of the creek.
491. How many persons reside in these localities? Perhaps at the outside, 150.
492. They are already rated for general purposes? Yes.
493. But they will not come within the scope of the proposal? No.
494. How are they supplied now? Some by underground tanks, others by galvanised-iron tanks.
495. The same as the principal portion of the people in the centre of the town? Yes.
496. The properties that will not be served are not of the same value as the properties in the central portion? No; they are mostly small cottages and unimproved lands.
497. You heard the Mayor's evidence as to the annual cost of the scheme;—is that correct? I think so.
498. You have no desire to supplement any part of his statement? No.
499. He was correct in the figures which he gave? I do not remember anything which was wrong.
500. With respect to the estimated revenue from the two hotels, have the proprietors entered into any written undertaking to pay £100 a year for a water supply? They have only made a verbal statement.
501. They are not bound by anything? No.
502. Referring to your rate-book, will you state the amounts at which Mr. Kickham's hotel and Mr. Wade's hotel are rated? At £495 and £405 respectively.
503. How much a year is paid by them? £24 15s. by Mr. Kickham and £20 5s. by Mr. Wade. A portion of Mr. Wade's premises are let off as offices independent of that, and they pay separate rates.
504. How much? £80.
505. The general rate on the two hotels amounts to £50 a year? Yes.
506. Do you think the proprietors would be prepared to pay £100 a year for a water supply when the general rate is only £50 a year. I think it costs them more than £50 a year now for their water.
507. How is it supplied? They have underground tanks, and in summer time they have to cart water almost every day.
508. You think it costs them £50 each a year? I believes it does.
509. Have they not large tanks to catch the rain that falls on their roofs? I believe they have tanks which hold about 20,000 gallons.
510. You have a very uniform rainfall here? Not in summer time; sometimes we go a considerable time without any rain.
511. You do not regard £100 as an excessive estimate? No.
512. These hotel keepers have never demurred to paying £25 a year for rates? No.
513. They look upon that sum as a very reasonable charge? Yes.
514. You think they would look upon £50 as a reasonable charge? I cannot say that.
515. Seventy-five pounds a year for each hotel for water and general rates would not be too much in your opinion? I believe it costs them more than that now as regards their water supply.
516. But if you are going in for a general scheme, and the whole of the ratepayers are to be charged a rate of 1s. in the £ on the assessed value of their properties, would it be fair to charge hotelkeepers £25 a year more than you charge anybody else? It would be hardly fair, but I suppose it would be by meter.

Mr. J. Moore. 19 Oct., 1892.

517. At the rate of 2s. per 1,000 gallons would it come to £25 a year by meter? I think it would.
518. It would reduce your estimated revenue by £50 if they adopt a meter? I see it would.
519. *Chairman.*] Are not the water rates from their places included in the estimated revenue of £1,515? Yes.
520. *Mr. Davies.*] You cannot charge both ways? No.
521. With reference to the supply of water to breweries and factories as motive power, have you any data on which the estimated revenue of £250 a year is based? No; only hearsay.
522. It is a haphazard estimate? No.
523. A brewery does not exist? I believe it does.
524. Is it not closed? Not that I am aware of.
525. Suppose it was in full swing, what would be the annual consumption? I could not tell you.
526. With reference to your gas-works, at present do you supply the receivers with water from the creek with an engine—would you not continue to do that? Very often we are short of water at the gas-works.
527. Has not the creek always got water? No.
528. You have a well there; have you ever known it to be dry? Yes.
529. It has been pumped dry, and it has filled again at night by percolation? Yes.
530. You have never been short of water? Not beyond a few hours.
531. The gas-works would be practically always supplied from that source with as much water as you require? I believe so.
532. If you have not a sufficient supply why would you go to the expense of laying down a pipe which is to be merged into the general system to water the streets and to extinguish fires? I forgot that the well has been recently enlarged.
533. Since it has been enlarged you have not known it to be short of water? No.
534. At any time you can get a supply of water by digging a well? In the bed of the creek.
535. Even if it is dry on the surface there is always water to be found there? Yes; by sinking.
536. It would rise to the surface of the bed of the creek? Yes.
537. There is no doubt about there being a supply for the gas-works? No.
538. You would not be likely to get a return from that source? Not to any great extent.
539. Would your sale-yards come within the proposed water supply? Yes; they are just behind the show grounds.
540. How much water would they consume? Not very much.
541. Of course many of these items are mere fictions? If a supply were laid on there would be a quantity taken for the troughs.
542. Is there very much stock sold at the yards? Not just at present.
543. How many head of stock are sold there in the year? I could not say from memory.
544. Very small, I suppose? Not very much.
545. Would it amount to 1,000 head? I do not think so.
546. Five hundred? Probably it would.
547. What dairy cattle are sold there? Different kinds: fat stock and store stock.
548. A very small quantity in the year? Not very much.
549. The income would be very small? Yes.
550. How much money would be received from the use of water power for factories? I cannot say.
551. Have your Council had any communication with the Railway Commissioners with reference to supplying their engines with water? Yes.
552. What is the estimated income from that source? In a letter they say that their annual consumption will be 7,500,000 gallons.
553. Is £228 a year the estimated revenue from that source? No; £187 10s.
554. What is the date of their letter? Fifth of September, 1892.
555. Have they written officially to you stating that they are prepared to pay 6d. per 1,000 gallons for the water? Yes.
556. With this supply do you think you will be able to comply with their request at the price? We have a right to terminate the agreement on giving three months' notice.
557. Do you think the price would pay? I do not know exactly what it will cost per 1,000 gallons to bring in the water. If it costs the Council about 4d. per 1,000 gallons probably it will pay.
558. But having a greater abundance than you would require for the townspeople it would probably pay you to supply the Railway Commissioners at that rate? Yes; if we had more than sufficient water.
559. Then, with regard to the station-master's residence and the railway station, would not the water for those buildings be included in the charge of 6d. per 1,000 gallons? No; the supply of 7,500,000 gallons is purely and solely for the use of the engines.
560. *Chairman.*] How do you know that? That is what their present water supply is used for.
561. Do you think it is possible that the Commissioners would pay you two rates—6d. per 1,000 gallons for the supply of the engines, and 5 per cent. on the capital value of the railway station and the station-master's residence? Well, if they use water only for their engines I should think they would.
562. How are these properties supplied at the present time? I believe they are supplied from underground tanks.
563. By the Commissioners? From the roofs.
564. Where would be the necessity for any further supply for the station properties? I suppose they have a sufficient supply there.
565. I presume it is a good supply which they have? I could not say.
566. Have you had any complaints from the station-master that he has an inadequate supply of water? No.
567. Have you had any complaints from the station authorities with reference to the shortness of their supply? No.
568. So that your estimated revenue from the station buildings and the station master's house is a mere assumption? Yes.
569. And the Commissioners have not been acquainted with your intention to assess those properties for the purpose of levying a water rate? No.
570. *Mr. O'Sullivan.*] It has been stated that the Council receive rent from certain paddocks;—how much per year do they receive? £12.

571.

Mr. J. Moore. 571. I presume you intend to levy a rate on all houses within the reticulation area, even if they do not take the water? Yes.

19 Oct., 1892. 572. *Mr. Neild.*] You propose to assess the post-office at the value of £500 a year. Are there any buildings in the town which are assessed as high as the post-office? Yes.

573. The "Imperial Hotel" assessment is not including the shops? No; the "Imperial Hotel" itself without the shops.

574. As regards the banks in the town—what is the highest assessment? £375.

575. Is there as much accommodation in the post-office as in that bank? I think so.

576. Is it as valuable a building? Yes.

577. At what amount do you propose to assess this Court-house? I think it is put down at £400.

578. Do you think that there is any business in the district which would pay £400 a year for these premises? I do not think the Government would get a building suitable for a Court-house for less than £400 a year.

579. If about £500 a year is a fair assessment for the "Imperial Hotel," do you think the post-office possesses anything like an equal annual value? If it were let for business purposes it would be worth £500 a year.

580. It possesses no business position superior to the "Imperial Hotel" corner, does it? It is quite equal to the "Imperial Hotel."

581. But is there anything like the accommodation in the post-office that there is in the "Imperial Hotel"? No.

582. Is the cost of the building anything like the same? No. Of course the cost of the hotel includes the shops.

583. At how much is Mr. Kickham actually assessed for the "Imperial Hotel"? £550.

584. The water for the use of the railway engines and so on would be supplied by meter? Yes.

585. If the water is suppied to the Railway Commissioners by meter you cannot possibly restrict the use of the water to the engines, and they will be able to use the water for whatever purpose they like? I suppose so.

586. Of course if they pay for the water by meter you cannot expect to assess the premises also. You could not possibly charge both ways? No.

587. So that your estimated revenue will have to be reduced by the amount of the rate on the annual value which you place on the railway properties? Yes.

588. What is the proposed assessment of the railway properties? The railway station is assessed at £1,000, the engine and goods shed at £600, and the station-master's house at £75.

589. If the Railway Commissioners take all the water which they require by meter, these sums amounting to £1,675 would have to come off your estimate? Yes; if it is by meter.

590. Is it not a fact that the majority of the new buildings—important private dwellings and some important business shops—that have been erected during the last four or five years, have been erected by persons who have been fortunate in their investments at Hillgrove? Yes; some of them.

591. That applies to a good many of the better buildings which have been erected? To several of them.

592. *Mr. McCourt.*] Do the railway engines take their water in here now? Yes; it is a depôt for watering.

593. Guyra is a depôt on the north, and Macdonald River is a depôt on the south. How far are those depôts from Armidale? Guyra is 25 miles and Macdonald River is about 40 miles.

594. The Commissioners would make Guyra or Macdonald River the permanent depôt in the near future? I do not think so.

595. If you intend to increase the price of your water I suppose they will? I do not think so.

596. Do you think the price which you propose to charge to private consumers is too high? No.

597. Do you know that the proposed charge in Newcastle is 1s. 6d. per 1,000 gallons? I do not know that.

598. At any rate you think that 2s. per 1,000 gallons is a fair charge in Armidale? I think it is not an exorbitant charge.

599. You do not think the people will grumble at that price? I do not think so.

600. *Chairman.*] Where are the Commissioners getting their water for the locomotives now? They have a pumping-station on the Dumaresq Creek, with the pipe to the engine-shed.

601. Do you know whether that water is good enough for household purposes? No.

602. Therefore they have to provide catchment tanks at the station-master's residence, and the railway station? Yes.

603. Did you make the estimate of the probable revenue to be derived from Government buildings? It was not made by the ordinary valuators? I believe it was. I believe they presented it to the Council.

604. Did the Council look at it? I do not think they did.

605. They were the same sworn valuators who valued the rest of the properties in the borough who valued these Government buildings for this purpose? Yes.

606. Of course you have taken off the usual one-tenth? Yes. I believe it is with the 10 per cent. off.

607. Who made up the estimate of probable revenue from street watering? I did.

608. Why is there such a large increase on the estimate which was sent on to the Secretary for Public Works, namely, £75? When that estimate was made, the borough was not divided into wards, and we had not the same means of getting at the streets as we have now.

609. Do not you think it is rather excessive to estimate a revenue of £213 from your special watering-rate? I do not think there would be any objection by the residents. It includes the main business portion of the town.

610. What is the rate? Sixpence in the £.

611. Is not that a very heavy rate for watering the streets. Do you know any place where that amount is struck? I believe it is 6d. in Maitland.

612. Do they willingly suffer it there? I suppose so.

613. You have not had much experience of street watering here? No.

614. You have not been deluged with petitions from business people to water the streets? They have complained at times of the annoyance caused by the dust, and of no means being taken to water the streets.

615. Have they ever expressed a willingness to pay a special sum for street watering? Not to me personally, but I believe that representations have been made. Mr. J. Moore. 19 Oct., 1892.
616. At how much did you assess the hospital? One thousand pounds.
617. But you have included the hospital in the estimated revenue of £100 from the "hospital, gas-works, show grounds, saleyards, and town hall"? That was the water which would be consumed by the hospital for necessary purposes, such as for gardens.
618. Not for the house itself? For the house, if necessary.
619. Do you not know that hospitals are exempt from paying rates? I did not know that they were exempt from water-rates.
620. In connection with your gas-works I suppose steam power has to be employed for pumping the water out of the well? Yes.
621. And although you may have that there, yet it will be cheaper to buy water than to keep pumping machinery in operation? I cannot say.
622. Are there any other places besides the two hotels included in the subsequent items of estimated revenue? No.
623. What is the book value of the town hall properties? I believe it is £7,000.
624. How was it erected—under the provisions of a special Act, or out of your general loan? I cannot say. I was not connected with the Council at the time.
625. The ground, I suppose, was given by the Government? Yes.
626. The Council have put the improvements on the land? Yes.
627. You now value the ground and the buildings at £7,000? Yes.

Mr. Barnett Aaron Moses, Member of the Land Board, Armidale, sworn, and examined—

628. *Chairman.*] You are a member of the local Land Board? Yes. Mr. B. A. Moses. 19 Oct., 1892.
629. How long have you occupied that posistion? Since 1884.
630. How long have you resided in Armidale? Twenty-six years.
631. You were in business before you accepted your present position? Yes.
632. Have you ever been a member of the Borough Council? No.
633. *Mr. O'Sullivan.*] What business did you formerly carry on? A tannery and boot factory, employing something like eighty hands.
634. Is that business still in operation? Yes.
635. I presume it is a factory where water is very largely used? Very largely consumed.
636. It ought to be a contributor to the municipal revenue? No doubt.
637. Are there many other such industries in Armidale? Yes, there is another tannery.
638. Any industries which would be likely to consume water in the same way? There is a saw mill in the town which will consume a lot of water. It is worked by steam, and there are various flour-mills.
639. I presume that all of these places, like the tannery with which you were formerly connected, would consume an enormous quantity of water? A tannery, of course, would consume more than anything else.
640. You have witnessed the progress of Armidale, more especially of late years? Yes.
641. Do you regard Armidale as a progressive town? It is progressing.
642. It has progressed particularly during the last four or five years? Yes, and it is still progressing.
643. What were the chief causes of its progress during the last four or five years? The various selectors were doing very well, and the mines too. I may say, as a member of the local Land Board, that all the selectors are in a first-class position, doing well indeed.
644. The progress therefore is not phenomenal? Certainly not.
645. But it is likely to be maintained by the position of the town and the character of the resources around it? And the climate. For instance, during the summer months a great many Queensland people come here. The hotels are crowded with visitors.
646. Have you heard any of the evidence as regards the probable revenue? I have not.
647. In your opinion, will this town be in a position to sustain the expense of this water scheme? I should think the people would be too glad to bear the rates. There is no town in Australia which is worse off for water than is Armidale. We depend on our own catchment for our supply. We dare not use the water in the wells, because drainage percolates from the cesspits into the wells. Some six years ago the various tanks gave out. I have a catchment of something like 11,000 gallons, and it all gave out. We were in a great way for water, and the people with 400 and 800-gallon tanks, if dry weather continues for about six weeks or two months, are in dreadful straits for water.
648. Where do you obtain water then? We do the best we can. We make use of the well water, which is very unhealthy, and may lead to typhoid fever.
649. As an old resident, who is in a position to know the opinions of the townspeople, can you state whether there is a general desire on their part to have this scheme? I should most certainly think so. No one would object to pay a water rate in Armidale.
650. You have not heard of any dissentient? Not one; quite the reverse.
651. *Mr. Davies.*] During your residence of twenty-six years you have been a large employer of labour here? One of the largest in New England.
652. From your knowledge of the district and the residents of the town, do you think they can afford to pay 2s. 6d. in the £ in water and general rates? That I would not like to say. I have not gone into figures.
653. The total rates at the present time come to 1s. 4d in the £, and the water rate will be at least 1s. in the £? I daresay they are well able to pay an extra 1s. in the £.
654. You think they would not demur to pay that rate? No.
655. You are strongly of opinion that it is absolutely necessary for their health and convenience that they should have a full supply of water? Most certainly.
656. You know the source of the proposed supply? I have an idea where it is.
657. Have you ever been in the locality? Yes.
658. You know that the water is of very good quality? I believe so.
659. You believe it will be the means of assisting settlement? I firmly believe that.
660. And would increase the number of residents? I believe it would induce people to build here.

Mr. B. A. Moses. 19 Oct., 1892.

661. It would be a means of increasing the annual income and distributing the burden over a large number of people? Yes.
662. *Chairman.*] You do not know anything of the details of the scheme? Nothing.
663. You think the local Council are voicing the opinions of the people in giving their adherence to the scheme? I think so, certainly.
664. We have been informed by the Mayor that the Council, having had the scheme thoroughly explained to them, have come to the conclusion that it should be carried out. You think the people will not object to their action? Most certainly not.
665. Are the people likely to object if they find the Council doing something of which they do not approve? They are sure to do so.
666. Therefore if the aldermen were committing the borough to a large annual payment which the people thought unjustifiable they would soon make their voices heard? Most certainly they would.
667. You have not heard of any opposition to the proposal? None whatever.
668. Would the tannery with which you were connected be likely to use water-power? No; they have steam-power.
669. Where is it situated? At the west end of the town.
670. At a low level? Yes.
671. Have you considered whether it would pay you better to use water-power with sufficient head as against steam-power? No.
672. You were not one of the persons who were waited on by Mr. French when he was getting an estimate of the probable revenue to be derived from the sale of water-power? No.
673. What would be the consumption in your tannery per year? I cannot say without going into figures. I am not in business now, you must remember. The tanneries consume a great quantity of water.
674. As a business man what is your idea of the probabilities of the water being used for power purposes? I am not in business now.
675. Do you think it is at all likely? I would not like to say.
676. Is there anything else which you would like to say in support of the project? No; only that you cannot use the water from the creek, because all the rubbish from the streets falls into it, and the ground being all gravelly the soakage percolates from the cesspits into the wells. We require underground tanks to be cemented to prevent soakage.

Mr. Frederick Braund, storekeeper, Armidale, sworn, and examined:—

Mr. F. Braund. 19 Oct., 1892.

677. *Chairman.*] You are a storekeeper? Yes.
678. How long have you been in business here? Over three and a half years. I have known Armidale for the last eleven years.
679. Do you know the details of this scheme? Nothing, but what I have seen on the map.
680. Do you think the people of Armidale generally would be agreeable to pay a rate of 1s. in the pound for a water supply? I think so. From past experience, I should be very willing to pay the rate. Some years ago I lived in an old town in the old country where there was no water supply, and the question was fought out at the municipal election for years, until a majority got in who were favourable to the construction of a water supply. The town had great natural facilities for drainage, but it was always subject to disease. I have seen cholera there twice, and small-pox, and it was scarcely free at any time from typhoid fever. The year before the water was brought in the death-rate was, I think, 36 or 37 per thousand; it was one of the most unhealthy towns in England, but three years after a water supply had been provided the death-rate went down to 16 or 17—so much so, that the Registrar-General in his quarterly return commented on the benefit which the town had derived from a water supply.
681. You think that a good and wholesome supply of water is a first essential to the health of the people, and that if the people are not, they ought to be willing to pay any reasonable rate for a supply? Yes.
682. Your business place is situated in the main street. Have you ever suffered inconvenience from the dust, or petitioned the Council to water the streets? I have spoken of the matter, not to the Council directly, but to business people. The dust does a great deal of damage.
683. Suppose a water supply were provided, do you think the people in the business portion of the town would be prepared to pay over and above the 1s. in the £ for their ordinary supply, a special rate for watering the streets? I think so. I shall be willing to pay a special rate if it is not unreasonable.
684. A rate of 6d. in the £, for instance? Yes, we should save on it.
685. By preventing your goods from being spoilt by the dust? Yes.
686. Do you think there are many more business men as intelligent as you in that respect? I think every business man in the street who has goods to spoil will be glad to pay the rate.
687. An ironmonger for instance, would not care to pay? I do not know—the dust spoils some ironmongery as well as drapery.
688. Do you think a revenue of £213 per annum would be likely to be realised from a street-watering rate? If a 6d. rate would bring in that amount, yes.
689. Do you think the majority of the business places would be willing to pay a 6d. rate? I think so.
690. Beardy-street is, of course, occupied by the most valuable town properties? Yes.
691. Have you ever been put to any great straits for want of water? No; I have a well—it is partly a spring, and partly surface soakage. I should be very glad to close it up. There is a cesspit on the property.
692. Is it above the water supply? We do not use much of that water for drinking purposes; it is about 40 yards away. I was ordered to clean it out when I came to the place, and to my astonishment I found that it was over 30 feet deep. It filled up in a short time.
693. I suppose you have overhead tanks? We have a well, it is about 50 yards away.
694. Is it a spring? It is partly spring and partly soakage. After rain the water gets a little milky in appearance.
695. Are many people in the same position? I do not think they are so well off. There are very few people with wells; they mostly catch their water from their roofs.
696. In your contact with the people, have you heard many averse opinions expressed against the adoption of this scheme? No, I have not heard one averse opinion expressed.
697. Did those with whom you have discussed the subject know that they would have to pay for their water? Yes.

698.

698. They do not expect the Government to bear the cost of the scheme? No; it will be borne by the people; but the repayment, I understand, will extend over a great number of years. Mr. F. Braund.
699. But did the persons with whom you conversed understand that matter as clearly as you do? I cannot answer for that. 19 Oct., 1892.
700. Did you think they did? It is only reasonable to suppose they would.
701. Armidale has not been a very great sucker on the general Government? I do not know.
702. It has never desired to shirk its proper responsibilities? I think not.
703. Have you ever been in the Borough Council? No.
704. But you have taken an active interest, I suppose, as a citizen in the local government? Yes.
705. If the corporation were not voicing the wishes of the majority of the people would the people soon take an opportunity of showing their dissent? Very quickly, I think.
706. They are sufficiently alive for that? Yes.
707. You are not prepared to offer an opinion as to the details of the scheme? No. It will be of great value to us in case of fire. May I mention an incident which happened in the town I spoke of just now immediately after the water was brought in? It closed the mouths of all those who had objected to the adoption of the scheme. A fire broke out in a rather thick business part of the town. The town had two engines and a small one, and the two large engines having got chocked with some grit were not workable. We thought we should have a great fire on that account, but a standpipe was affixed to a main, and the pressure alone was sufficient to throw the water over a three-storied building. Not a word was said about paying for the water after that experience.
708. *Mr. Collins.*] Do you think that the rates for fire insurance would decrease with a water supply? I should think so.
709. What is the average rate now for a business place? I think it is 8s.—I am paying 10s.
710. The companies would take that into consideration if you had a permanent water supply? I think so, for that question is always asked.
711. *Mr. Davies.*] How much do you pay a year for your business premises to the Council? I think the business place is assessed at over £300; I think I pay about £15 a year.
712. Would you be prepared, provided that you had a water supply, to pay £45? In a few years that charge will be lessened very considerably. I take it that the people who purchase the water will pay for it, and that as the income increases the amount of the rate will decrease.
713. You would not regard it as excessive in the first instance to pay £45 as against £15? I should think not. It will be a matter of £22 10s. for the water.
714. What appliances have you for putting out a fire? There is a town fire-engine.
715. Where do you get your water supply? From tanks and wells. At one fire they ran short.
716. There is no doubt in your mind as to the necessity for this water scheme? Not the slightest.

Mr. Patrick Wade, hotel proprietor, Armidale, sworn, and examined:—

717. *Chairman.*] You are the proprietor of "Tattersall's Hotel"? Yes. Mr. P. Wade.
718. How long? Nine years. 19 Oct., 1892.
719. Did you reside in Armidale before you became the proprietor of the hotel? For about twenty-nine years, off and on. I have been a constant resident for about seventeen years.
720. *Mr. Neild.*] Did you hear the statement made this morning, that you agreed to pay the sum of £50 per annum for the water which will be supplied to your hotel? Yes.
721. Do you agree with that statement? I do not. I never agreed to pay that amount. I do not know how it came out. I was quite surprised when I heard it.
722. Are you aware that such a statement has been made under the seal of the Council and the signature of the Mayor, and forwarded to the Secretary for Public Works? The first I heard of it was here to-day.
723. Then if this statement has been signed by the Mayor, and sealed with the seal of the Council, you do not agree with it—"estimated sale of water to Messrs. Kickham and Wade, of the "Imperial," and "Tattersall's Hotels," as per their own proposals, extra to rate, £100"? I am agreeable to pay a rate of 1s. in the £, but I never agreed to that.
724. It says, "As per their own proposals, extra to rate." Did you agree to pay some portion of this £100 in addition to a 1s. rate? No; I never agreed to anything. I told the Mayor that I would use a lot of water, and would not object to pay a rate of 1s. in the £.
725. You will pay a rate of 1s. in the £, but you will not agree to pay £50 in addition to that sum? No; I would be quite agreeable to pay 1s. 6d. per 1,000 gallons for water.
726. Not in addition to a rate of 1s. in the £? No.
727. This statement is a mistake? It must be a mistake. I never said I would; someone else must have said it.
728. For what purposes would you use water—for domestic purposes, baths, and so on? Yes; and for stables.
729. In agreeing or expressing your willingness to pay a rate of 1s. in the £ for water, did you expect that service to include the water required for your stables? Yes; everything.
730. Are you aware that in Sydney horses and cows and so forth have to be paid for separately and in addition to the rate levied on the premises? I was not aware of that. I conserve an immense amount of water myself. I conserve about 21,000 gallons. I have about that quantity now on my premises.
731. Does your supply run short sometimes? Yes. It would not keep me going for three weeks. If we had no rain for three weeks I should have to cart water.
732. What is the average number of persons on your premises? In busy times I have as many as forty and fifty.
733. Can you give an idea of the consumption per head on your premises? I could not give the consumption per head; but I could tell you pretty nearly my total consumption.
734. Do you think the people in your hotel one with the other, young and old, use 30 gallons per head a day? More than that. One of them uses nearly that in a plunge bath.
735. *Chairman.*] Thirty gallons? Yes, in a big plunge bath.
736. *Mr. Neild.*] Would the consumption be as high as that taking the little ones with the big ones? Oh no, the average would not be that.
737. If the supply is 30 gallons for every inhabitant of the town young and old, you do not think the population will use that quantity? I know that some of the inhabitants use far more than that. 738.

Mr. P. Wade. 19 Oct., 1892.

738. Have you given your consent to pay a street-watering rate of say 6d. in the £? No; but I would be agreeable. I do not see how it will cost 6d. in the £ because the Council is not going to water all the streets. When we had a watering-rate before it was only 3d. with a watering-cart. It was a failure. We paid the rate for twelve months and we only saw the cart twice. It was one of Mr. Drew's schemes. I bought the cart from the Council.
739. You appear to have been under the impression that a rate of 1s. in the £ would cover the water required for your domestic purposes, and also your stables? Yes, with the water I catch.
740. But you would be willing to pay as high as 1s. 6d. per 1,000 gallons? Quite willing.
741. Would you prefer to pay a rate of 1s. 6d. per 1,000 gallons by meter rather than pay a rate of 1s. in the £ on the annual assessment? I would rather pay by measurement.
742. In wet weather you would save a lot? Yes. Last summer we had a drought, and if the weather had not broken up in a week or ten days I do not know what I should have done. I rent a place half a mile from here for a well. I had to beg water from everybody.
743. You rented a paddock? A small paddock with a good well.
744. I suppose it cost you more than 1s. 6d. per 1,000 gallons when you had to buy your water? Yes.
745. Have you any idea whether the people in the main street would object to pay a street-watering rate of 6d. in the pound? I believe that not many would object. I think all the business people would be glad to get the street watered. I know the dust does a lot of harm, and the storekeepers are always complaining of the state of the street.
746. Do you know the source from which it is proposed to draw the supply for the town? Yes.
747. In your opinion is the water wholesome all the year round? From what I have heard I believe it is. It appears to be a good-looking water.
748. Have you seen the locality in dry weather? I know the country well.
749. I suppose a visit to the watershed after a rainfall, as we saw it yesterday, would give but a faint idea of what it is in dry weather? It looks quite different in dry weather. It is a loamy sort of soil, but there is always a spring in that swamp.
750. As an old resident with a good knowledge of the district, do you know of any source of contamination in that locality? I do not.
751. Are there any features in the scheme which you would like to refer to? No. Two or three times I asked if they had ever tried if they could get water from a place called Malpas or Falconer's Creek. There is an immense watershed there.
752. How far distant is it? It would be about 20 miles. It is a running creek. It heads at Ben Lomond.
753. What advantage would there be in that source? Running water all the year round.
754. Have you considered what the additional pipe-line would cost? No, but it would not require a dam.
755. As regards the scheme before the Committee the storage reservoir is to cost £6,800 and the pipe-line is to cost £17,600;—suppose you were to go to Falconer's Creek you would save £6,800 on a dam, but it would cost £17,000 for the extra length of pipe-line? You would have a never-failing supply.
756. Do you think that the proposed supply may fail? I could not say. I suppose the gentlemen who know the rainfall up there could say. The place I mean is very high.
757. Do you think the people of Armidale would care to go in for a scheme the pipe-line of which would come to over £35,000? I do not think they would—they could not afford it.
758. Do you know any source of supply nearer Armidale than the proposed one? There is a proposal by Mr. Mallam, to get a supply at the back of the cemetery.
759. How far is that away? About a mile from here.
760. What is the nature of his proposal? He will tell you when he gives his evidence.
761. *Chairman.*] Are you prepared to pay a rate of from 2s. 6d., to 3s. in the £ on the assessed value of your property, including all the rates? I do not see how it will cost 6d. in the £.
762. If it did? I would be quite agreeable.
763. You regard a permanent supply as being the most important to your business, and the town generally? I would be quite willing.
764. You would not regard it as an excessive rate? Not with the advantage I should gain.
765. You have stated there must be a misapprehension with reference to your promising to pay £50 a year to the Council for water? I can only say that I never said it.
766. What is your annual consumption? I reckon that I get through 400,000 gallons a year—very nearly 1,500 gallons a day. In less than a fortnight, or three weeks, I should have to cart water if we had no rain, even with my storage of 20,000 gallons.
767. What does it cost you per 1,000 gallons to cart water? I cannot estimate the cost. My man keeps carting when he is not at work. I have often to cart eight or ten loads a day. I have the large water-cart, holding 200 gallons, which the Council had.
768. That would cost a considerable sum? If I had to pay for it it would.
769. You have to pay for your labour? My man carts it in his spare time.
770. You are prepared to pay 1s. 6d. per 1,000 gallons by meter? Yes; I would pay by meter rather than pay a rate of 1s. in the £.
771. *Mr. O'Sullivan.*] Did you directly or indirectly give the officials of the Council to understand that you would be willing to pay to the extent of £50? No.
772. I mean including the shilling rate? I never told anyone that I would pay £50 a year for water. I gave them to understand that I would consume a lot of water.
773. Did you lead them to understand that at a rate of 1s. in the £ it might mount up to £50? I do not recollect it.
774. *Chairman.*] Perhaps it was made during one of those times when you were paying so dearly for your water? I cannot recollect it.
775. *Mr. O'Sullivan.*] Do you think it is likely that public officials would come forward and make such a statement unless you led them to believe indirectly that you would pay that amount? I have no recollection. I know we had a conversation, and I always said I was quite agreeable to pay a rate of 1s. in the £. That rate would amount to about £32 a year, and a watering-rate of 6d. in the £ would, I daresay, bring it up to £50. I daresay they counted it in that way.
776. Putting all that aside, in view of the fact that you would obtain a regular supply of good wholesome water for your hotel, would you be willing to pay £50 a year for that benefit? I would, willingly.

Mr. John Kickham, hotel proprietor, Armidale, sworn, and examined :—

Mr. J. Kickham. 19 Oct., 1892.

777. *Chairman.*] You are the proprietor of the "Imperial Hotel"? Yes.
778. How long have you resided in Armidale? Two years and five months.
779. *Mr. Collins.*] You were in the Court when the Mayor stated that you were willing to pay £50 a year for water in addition to a rate of 1s. in the £ on the assessed value of your property? No. I think I told the Mayor, and Mr. Grimshaw too, that I would be willing to pay £50. I understood it would be worth about £50 a year to me, and I would be willing to pay that sum, but of course that would include all water rates.
780. Did you include the watering of the street? No.
781. You would be willing to pay an extra rate of 6d. in the £ for watering the streets? I do not think it would cost that much. I think it would be a little bit heavy.
782. If the Council find that they cannot water the streets for a less rate, would you be willing to pay? I suppose I would pay my share like the rest, but of course that would be confined to Beardy-street; the other streets would object to pay a rate.
783. How do you get your supply of water now? From tanks; in dry weather we have to draw it.
784. Have you a large catchment? I have, I suppose, the largest in the town, because I have the catchment of the big rink beyond my place with a double roof.
785. How many thousand gallons do you conserve? I think about 22,000 or 23,000 gallons.
786. How long does it last? It would last about three weeks in summer time.
787. When it runs out where do you get your supply? I have to draw it from a well down the street.
788. How many gallons a day do you draw? Six or seven loads a day. I have a tank which holds about 260 gallons, and it is fixed on a dray. I would draw about 2,000 gallons a day if the man were constantly at work, but he has to do other jobs as well.
789. What does it cost you a day? Man and horse would cost about 12s. 6d. a day.
790. Is it good water? Yes. In Armidale it would have the character of being good water.
791. Does it ever go dry? Not to my knowledge
792. Have you ever heard of it going dry? I believe it got very low a few times.
793. In a droughty time you would not be able to get water there? We have not had a drought since I have been here.
794. If you had a drought for four or five months? I think they would have to appeal to the Government to draw water, because half of the wells are not fit for use.
795. You think that this scheme ought to be carried out? Yes.
796. You do not think the ratepayers would object to pay the extra amount? I do not think they would. Of course some people would object to pay anything.
797. But as most of the people who have not wells or tanks have to pay at the rate of 1s. for 60 gallons of water they will not object to pay a rate of 1s. in the £ on the assessed value of their properties for an unlimited supply? I should say not. They have to pay 1s. 6d. for a cask of 60 gallons. They pay that price for the water for the gaol.
798. They will not object to pay an extra rate of 1s. in the £? No. A rate of 1s. in the £, or 1s 6d. per 1,000 gallons is, I think, reasonable enough. I know it would cost me more for labour to pump a thousand gallons to supply the baths at my place.
799. Even though you have the water on the premises? Yes.
800. *Mr. Davies.*] You are paying £25 a year now in general rates? Yes.
801. Would you be prepared to pay £40 a year for a water rate and a street-watering rate? No, not for water, because I have always considered it was the cheapest rate I ever paid.
802. You would not consider it an excessive thing to pay an additional rate? No; especially in Armidale, where it is a luxury. All our visitors are surprised we have not a permanent supply laid on.
803. You regard it as absolutely essential to the health of the people of the town, as well as of the visitors, that you should have a good supply? I do.
804. *Mr. Neild.*] You are prepared to pay your share of the cost of watering Beardy-street, even if it costs you about £12 10s. a year? Yes.
805. Will it be any particular advantage to you to water Beardy-street, and not to water Falconer-street which runs past your other frontage? Beardy-street carries most traffic.
806. Would you gain any particular advantage by having one street watered without the other? Most of the dust rises in Beardy-street. There is a very heavy traffic in the street in the summer.
807. You do not propose to pay £25 a year for a watering-rate, £12 10s. a year for a street-watering rate, and £50 a year in addition to those sums? No; the £50 includes all water rates.

Mr. Henry Guy Mallam, sworn, and examined :—

Mr. H. G. Mallam. 19 Oct., 1892.

808. *Chairman.*] Are you in business in Armidale? I was, but I sold out to my boys.
809. How long have you resided here? Thirty years next February.
810. *Mr. McCourt.*] Are you acquainted with the particulars of the scheme before the Committee? I am.
811. Do you think it is the best scheme which could be devised for Armidale? I am inclined to think not. My idea is that water sufficient for the present Armidale could be had from the hill to the south. I mean above the cemetery, where Proudfoot had his works up.
812. *Chairman.*] Above the gaol? Yes.
813. *Mr. McCourt.*] You think that a sufficient quantity could be impounded there? I do, and have done for the last sixteen years.
814. Have you any idea what it would cost? I spoke to a practical man who has been working since his childhood on races and dams, and he said he could do the whole lot for £15,000. If it could be done for that sum it would save a great deal of expense to Armidale. It would provide a dam and a reservoir, but not pipes. I am speaking only of the water. Sufficient water, I believe, could be conserved there for £15,000.
815. Do you know how much water it would impound? Really I could not say; but looking at the quantity of water which passes down the channel and at the watershed, I think it would be amply sufficient for the present Armidale, and probably sufficient for five or ten years to come.
816. That would be only a temporary scheme at the best? Naturally.

817.

Mr. H. G. Mallam. 19 Oct., 1892.

817. How far would the cemetery be? It is half a mile below the place where I would conserve the water.
818. Any drainage from the cemetery to the water supply? It is up-hill. The cemetery is 25 or 30 feet lower down.
819. You think the proposed scheme is too costly? I think that being more costly than the one I have in my mind's eye, it is an unnecessary expense at the present time. I have no doubt it is a perfectly good scheme, and would probably give even purer water than could be obtained at this hill. At the same time, there is plenty of water going to waste there to supply the requirements of Armidale for five or ten years.
820. After that you would have to take up this scheme? Exactly. But would not the population of Armidale be in a better position to stand the outlay?
821. You would lose the £15,000, the cost of this work? I do not think it is necessary.
822. You would use a reservoir there as well as here? Exactly.
823. *Mr. Davies.*] You said you had an estimate from a practical man of the cost of impounding the water at your site? He said he would be very happy to take a contract for £15,000.
824. That is independent of the pipes? I am not speaking of the pipes at all, but simply of the impounding of the water.
825. Are you aware that the pipes alone for the proposed scheme will cost £27,000? I have not gone into this scheme at all, I know nothing about it.
826. If you impound water at your site it will be necessary to have a service reservoir and a reticulation service to supply the town? Granted.
827. And if it costs £15,000 or £20,000 for the pipe service there will not be much saved if we adopt your suggestion? I think you are rather over-estimating the cost of the pipes. It is not three quarters of a mile to the nearest point of Armidale from this spot.
828. But the reticulation is the largest item in the expenditure? I know nothing about the pipe business, that is not in my line at all.
829. There will be no difficulty about the water coming down by gravitation? No. There is a difference between 10 miles of piping and three quarters of a mile of piping.
830. After all you would have a temporary source? A source which, in my opinion will last another five years, perhaps ten years.
831. Would it not be better to spend £47,000 on a permanent supply than to have a temporary supply at a cost of about £30,000? Are you quite sure that it will not cost more than your estimate?
832. That is the estimate of the engineers and those who worked out the quantities? Do they never make mistakes?
833. Quite true, but the evidence goes to show that it is a very liberal estimate. It is not like some works. The pipes cost so much a ton, and so many tons of pipes go to a mile, so that there cannot be any mistake made in estimating the cost of the scheme. It is not like an engineering difficulty where a man may make his mistake in his estimate. There would not be any permanent saving by adopting the course you suggest? I knew nothing about the visit of the Committee until I saw a notice in a newspaper yesterday that you were going to sit here.
834. In view of the undoubted quality of the water at the proposed source and the permanency of the supply, which could be increased as the population grew without incurring great expense, would you advocate the adoption of your proposal in preference to the departmental proposal, even if you saved £20,000 at the present time? I really could not say.
835. You would not like to say? I would not.
836. As a practical man and a very old resident, do you not think it is better and wiser to adopt a scheme which can supply the district for the next thirty years at a small additional expenditure, than to adopt the temporary supply which you suggest? I know nothing of the scheme.
837. You only speak of the idea which has occured to yourself? Exactly. I am not in a position to speak of your scheme, because I do not know it.
838. After the lucid explanation of the departmental scheme which the Chairman has just given, are you still of opinion that it would be better to adopt a temporary scheme than to carry out a general scheme? I am inclined to think that the saving is a good one, and if I am correct in thinking that there is a sufficient quantity of water to be saved on that hill, it would be a far better thing for Armidale to save £20,000.
839. How much water is impounded on this site? None at present, it runs down the gulleys in large quantities after storms.
840. Through the surface? It is all surface drainage. I should fancy there is a catchment area of about 1½ mile square—probably the engineers will now be able to tell whether it would be sufficient.
841. Is it private property? I should think it is.
842. That portion would have to be resumed? Some portion would have to be resumed. The site for the dam would have to be resumed. There would be no need to resume the catchment area.
843. What about the population? The settlement is not large up there.
844. But it would be open for settlement? That is true.
845. Would it not be necessary to purchase the whole of that land? I could not say.
846. As an old resident, how much do you value that land? I have not bought or had much contact with land outside the town.
847. What do you think is the probable value of that land? I am really a very bad judge of land up there. I have no idea of its value.
848. As regards the departmental scheme, the land is all Crown land? It would make my scheme a very expensive one if all this land has to be resumed.
849. It would bring your figures pretty well up to the same amount? Yes.
850. Your scheme would be only a temporary scheme, whereas the other scheme would be a permanent scheme, which could be enlarged to meet the requirements of the town, and which would supply the purest water in the district. Now, having had these facts put before you, what is your opinion on the two schemes? I have no doubt that your scheme is the best, notwithstanding that there is plenty of water to be had there.
851. *Mr. O'Sullivan*] Would it be wise to have your reservoir so near the cemetery? The cemetery is 30 feet below. My dam would be probably 40 feet above the cemetery. 852.

852. You see it will cost £15,000 for a dam, and the total cost of the other scheme, irrespective of the pipe-line and other items, is only £14,660, so that really your scheme will be more expensive, to say nothing of the resumption of private land? I think not. Mr. H. G. Mallam. 19 Oct., 1892.
853. You admit that the other scheme is a better one? As a permanent work I have no doubt it would be far better.
854. But do you think it will be better for the people of Armidale to adopt this scheme than to adopt your scheme? When you talk of resuming the whole watershed, I think my views had better be dropped altogether. They do not hold water.
855. I take it that you will be inclined to approve of the scheme? I do approve of it, I never had anything against it, but I thought there would be great saving in getting water so near at hand.
856. *Mr. Neild.*] Have you at any time put your scheme before the local authorities? I have written to the newspapers.
857. You did not communicate with the Mayor and Council? Privately.
858. How long ago? Two or three years ago. For the last sixteen years I have been privately agitating to get a water supply from this source. It is not a project which is suddenly sprung.
859. Have any surveys been made to ascertain the feasibility of your proposal? Nothing, except my travels in rainy weather. It is almost all private property.
860. *Chairman.*] Did I understand you to say that the dam for the impounding area would cost £15,000? No; the dam and reservoir and filters.
861. It would require filters? I think so.
862. Is not that rather an objectionable feature? I do not know. After going through three charcoal filters I think it would come out pure.
863. It means not only providing filters but occasionally re-arranging them? It requires arranging, no doubt.
864. If we can find a catchment area which is not liable to pollution of any kind, no doubt it is far better? I grant that.
865. Are there many people residing on this catchment area? Not a very large number. I suppose there are fifteen houses.
866. Would they be near your storage reservoir or above that? They would be spread over the country in all directions.
867. Not necessarily where the water would be stored? No.
868. How high is it above the town there? I think it is 60 feet above the highest level of Beardy-street.
869. It would not serve Gaol Hill? Decidedly not. It is on a level with that hill as near as possible; it may be a few feet higher.
870. How far is it from Beardy-street? About three quarters of a mile.
871. Then to the estimate of £15,000 you must add the cost of bringing a main from the reservoir to the town and then through the town? Yes, there would be every expense except the saving of the water.
872. Has your suggestion ever been put before the Harbours and Rivers Department. I am not aware.
873. Do you know of any other place besides this one near the cemetery which you think would be suitable for a catchment area? I know none so good.
874. I suppose you recognise the importance of a water supply? Most decidedly.
875. Do you think the people of Armidale would be prepared to pay for a supply? Oh, anything reasonable.
876. Say a rate of 1s. in the £ on the annual assessment? I look upon that as reasonable.
877. Do you think that the storekeepers would be prepared to pay a special rate for watering the streets? All the storekeepers in Beardy-street would be only too happy to pay heavily: they would save largely.
878. I suppose you have not given any thought to the question of using water as motive power? Yes.
879. Do you think that this water, if it is brought in, is likely to be used for motive power? I think the saw mill people would use it immediately. A great many logs are coming up here. They use steam-power now, and I believe water-power would be very much less expensive to them.
880. If the Council have estimated that they will receive £100 a year from supplying water for motive-power to the factories, and so on, do you think it is an overdrawn estimate? I think it is an underdrawn estimate.
881. Is there anything else which you would like to say to the Committee? I think not.

Mr. John Sofala Chard, landowner, Armidale, sworn, and examined:—

882. *Chairman.*] Do you wish to make a statement to the Committee? I do. I am a landowner and ratepayer; I have lived here about twelve years and the object of my remarks is to show that a great waste is going on under the present system of water supply. Taking the cottages with the big houses, each householder when he builds a house has to expend £25 on an average on a water supply. About forty houses are being built every year; so that £1,000 a year is spent in providing a water supply for new houses, and that supply is not a good one. It is very often insufficient, and if it is drawn from wells it is unhealthy. In forty years, at the rate of £1,000 a year, a sum of £40,000 will be spent in providing a water supply. The population of the town has nearly doubled during the past ten years, and if we reckon that in the next ten years it will double itself, and that again in the following ten years it will again double itself, we shall have a far greater amount of loss in the erection of new houses and the renewing of houses, and instead of £40,000 being spent in this way it will be £60,000 at the least. I have taken the increase on the system which goes on year by year. The doubling theory will not go on for ever, the expenditure for the next forty years will lie between £40,000 and £60,000, and that is the cost of the proposed scheme. I know from conversations with landowners and other people that they would very much prefer to have a water scheme. It is more profitable for a man who is putting up a house to pay a rate on the annual assessment than to invest his capital in providing an extra plant for conserving water. Mr. J. S. Chard. 19 Oct., 1892.
883. What about those who have got a water supply now? I am looking forward more to the others. I wish to show that it is a wasteful system of getting a water supply.
884. *Mr. Davies.*] Your estimate is based on the cost of the tanks—underground and overhead? Yes.
885. As a property holder, you believe that it would be more economical to have a water main with which you can connect? Yes.

Mr. J. S. Chard. 19 Oct., 1892.

886. You believe that a proper system of water supply would be to the advantage not only of property holders who have made up their minds to erect additional buildings, but also of the general population? Yes; in time to come when they want to renew their buildings. A great many of the places are weather-board and will not last more than forty years.
887. You regard the present as an opportune time for providing the residents with a permanent supply? Yes.
888. Do you think the residents and property owners are quite prepared to pay an additional rate? Yes.
889. There will be no demur on the part of any one as far as you know? No. Of course some of those who have properties with tanks might think it a little bit hard, but I think the general number, particularly those who have land and intend to build, would not.
890. Who generally pays the rates here—the landlord or the tenant? I think the tenants mostly pay. I cannot say definitely.

Mr. William Cyril Higinbotham, storekeeper, Armidale, sworn, and examined;—

Mr. W. C. Higinbotham. 19 Oct., 1892.

891. *Chairman.*] What is your occupation? I am a storekeeper.
892. How long have you been in business here? Two years.
893. Is that the full term of your residence? Yes.
894. *Mr. O'Sullivan.*] Have you heard the evidence which has been given on this scheme here? Yes.
895. Do you substantiate the statements of the Mayor and other official witnesses? Yes, in every way.
896. Have you heard any one dissent from the proposal? No; I do not think there is one individual here who would dissent from it.
897. I suppose you recognise the necessity for the scheme? Decidedly.
898. Do you know of a better proposal? No; I look upon it as the best scheme which could be possibly laid out for this town.
899. From the way in which the town is progressing you consider that the estimated revenue from the water rate will be realised? I feel confident that it will. In 1881 the population was 2,177; in 1891 it was 3834, showing an increase of 1,657 or 76 per cent. in the decade. It was a bigger increase than the increase in Sydney,
900. Did the Hillgrove gold-field have anything to do with the increase in the population or did it take any people away? I think it rather took people away than added to our population, although there were finer buildings put up after the mine started.
901. I suppose the gold-field drew a number of people away from the town? I think so.
902. Therefore the increase is a natural one? Yes.
903. Possibly less than what it might have been but for the diggings? Yes.
904. *Chairman.*] Is there anything else which you would like to say? I think not, except that as store-keepers we are interested in the scheme being carried out, and are quite willing to pay the rates.
905. You said that in your opinion it is the very best scheme which could be proposed; have you had any knowledge of water schemes? I was in the Water Conservation Department of the Colony for some years.
906. And therefore you claim to have a special knowledge? Yes.
907. Do you know the catchment area? I have seen the plans, and went over them with Mr. Grimshaw. I thought at the time that it was as good a scheme as I had ever seen.
908. Do you know the country adjacent to the town? Yes.
909. You do not know of a better place for conserving water? I am pretty certain that there is no better place.
910. Within a short distance? No.
911. Do you know the place alluded to by Mr. Mallam? I did not hear his evidence. I do not think there is any site beyond the cemetery which is worth looking at.
912. Is your place of business in the main street? Yes—J. Richardson and Co.
913. Would your firm be prepared to pay a street-watering rate in addition to the ordinary water rate? Yes, because a certain amount of damage is done to the stock by dust. I reckon that damage at about one-sixteenth per cent.—about £80 a year.
914. Do you think the people would be prepared to pay a 6d. street-watering rate? Yes; it would pay them to do so.
915. You have stated that you have not heard of any one who objects to the adoption of the scheme;—do you think they know that they will have to pay for their water supply? Yes.
916. They do not expect to be treated like Hillgrove, for instance? Has it been treated in an exceptional manner?
917. Is it a fact that the Government provided a water supply for Hillgrove on the promise of the people to pay for it, and that the people repudiate their responsibility? I do not think the people ever promised to pay for it. I do not think any engagement was entered into. There was no one to speak for the people.
918. Do you mean that there was no written promise? There was no body of people who could engage to pay for the supply.
919. So they are excusing themselves under the plea that there is no local governing body which can be sued or dealt with? Yes, I suppose so.
920. Do the principal people who run Hillgrove come from Armidale? There are a great many Armidale people there.
921. So that if they forget to be honest in Hillgrove they may forget to be honest in Armidale? Hardly. It is not a matter of honesty, it is a matter of the Government having given them a scheme and not having sufficient power to enforce payment.
922. The Government knowing that there was no law which would enable them to enforce payment were unwise enough to grant a scheme, trusting to the honesty of the people? I believe the people will pay in time.
923. If the people who run Hillgrove are largely drawn from Armidale and if they have not been true to their promise implied or otherwise, morally or legally, do you not think there is a possibility of the Armidale people forgetting their promise? I think it is too old and substantial a town to do that.
924. Not only do you think that the people are willing and able to pay, but that there is no fear of their repudiating their responsibility when the water supply is given? No.

925.

925. You have no thought of this town going down during the next ten years? As an evidence of its prosperity, I may mention, as a business man, that our own business increased £15,000 in the turnover last year. Mr. W C. Higinbotham. 19 Oct., 1892.
926. Are the people of Armidale alive to their interest when any matter comes on, if they think that the Borough Council are not going a straight course? Very much alive.
927. So that if the people were very much against this project which the Council have undertaken they would probably enter their protest at a public meeting? Undoubtedly.
928. Would you be one of the first to take part in it? I would be there.
929. Their silence may be said to give their consent to the scheme? Yes.

William Murray, Esq., M.B., Univ. Dub., M.R.C.S., Eng., sworn, and examined:—

930. *Chairman.*] You have been a resident of Armidale for some time? Seven years. W. Murray, Esq., M.B., &c.
931. You are also an alderman? I was elected to the Borough Council in March last.
932. Were you an alderman when this proposal was discussed in the Borough Council and a resolution was passed? It has been discussed since I have been in the Council, but the resolution approving of it, was passed before I was elected. 19 Oct., 1892.
933. Do you know the salient points of the scheme? Yes.
934. Do you think that Armidale is able to bear that large expenditure for a water supply? According to the rating of the town, and according to what I can hear as to the amount of money required to pay the interest, I think it is. I do not pretend to be a financial authority.
935. But if it will necessitate the imposition of a rate of 1s. in the £, do you think the people will be prepared to pay that cheerfully? No doubt a good many people will not bear any rate cheerfully; but the question is not so much their bearing the rate cheerfully as the necessity of their bearing the rate for their own good.
936. If they do not bear the rate cheerfully they ought to bear it? Undoubtedly.
937. Do you think that any serious illness has occurred through the defective water supply? At times of drought undoubtedly.
938. There can be no doubt on that point? I have not the slightest doubt in the world.
939. As a medical man you consider that a good supply of wholesome water is the first essential to the public health of the community? Undoubtedly.
940. Was yours a contested election? It was.
941. Did the water scheme come up as an election cry? Not at all.
942. Both candidates were in favour of the proposal? As far as I know.
943. It was not a very burning question? I have never heard any great discussion of the question at all. It seemed to be taken as a matter of course. It has not excited opposition as far as I am aware.
944. Have you heard of any other scheme which would be less expensive? I have heard of no other scheme than the one promulgated by Mr. Mallam which is, I think, altogether out of the question.
945. Do you know where he proposes to conserve his water? Somewhere above the burying ground.
946. What is your objection to his proposal? I should not think that there is sufficient catchment area.
947. He fancies it is about 1¼ mile square? There is cultivation about there and there is likely to be more cultivation. I have never examined the ground.
948. It is more liable to pollution than the other watershed? Undoubtedly. I do not know that I have been actually over the country, but it is very wild and rough.
949. He also said that his scheme would necessitate screening tanks. That shows that the catchment area is in a disturbed state and is liable to pollution? Yes.
950. We have an estimate of the revenues which your Council think will be derived from the scheme. They expect to get a revenue of £100 a year from supplying water for motive power. Have you gone into any of these figures yourself? No.
951. They have been compiled either by the Mayor, or the Council Clerk, or the Engineer, and have been accepted by the Council? I do not think they have been put before the Council for acceptance. The valuation is done by the Council Clerk and another person; the assessment is left in their hands. With regard to the use of water for motive power, that estimate must be to a greater or less extent speculative. It will depend altogether on the amount at which we shall be able to supply the water. It will depend on whether we can compete with steam or not.
952. If that estimated revenue is altogether speculative, it is rather an awkward thing to recommend a scheme of this description? I mean speculative with regard to the use of water for motive power.
953. The same thing holds good in regard to supplying £250 worth of water to factories and breweries. There is also an estimated revenue of £50 for supplying water to the Proprietary School, which has yet to be built? It is in process of building. I may say that we have cut out the estimate for an underground tank, pending the decision of this question. If a water supply is brought to the town there is no doubt that we shall connect the school with the main, and not put down any underground tanks, or make any other provision.
954. There can be little doubt that a revenue of £50 can be realised from the school? I have no doubt whatever; and I hope a good deal more. To begin with we are making provision for 100 souls in the house.
955. In their estimate the Council have included the hospitals and other buildings. Are you aware that under the law hospitals are exempt from water rates? I thought so, but I was not aware of it for certain.
956. I do not know whether the revenue from the street watering-rate has been brought up from £75 to £213 as a set off against the reduction in the estimated revenue from the Railway Commissioners, from £228 to £187 10s. Can you give us any information as to these figures? With regard to the street watering-rate, I think the revenue would be uncertain, but I have very little doubt that the main street would give a good return, judging from the constant outcry there is amongst the shopkeepers and hotel-keepers. With regard to the revenue from the railway station, I think it would depend very much on whether they can supply the railway station at 6d. per 1,000 gallons. I should think it is open to very considerable doubt.

W. Murray, Esq., M.B., &c.

19 Oct., 1892.

957. The Commissioners tell us in a letter that they are prepared to take your water at 6d. per 1,000 gallons, the price which the water now costs them, but it is not quite clear whether that is limited to the locomotives, or whether it includes the whole of the railway services? I believe that in the case of Liverpool the Commissioners declined to take water at less than 6d. per 1,000 gallons, but very soon they were glad to take a supply at 1s. per 1,000 gallons or more. As a matter of fact, they are paying 1s. per 1,000 gallons now.

958. You think they are quite as capable of playing a game of bluff as anybody else? Undoubtedly; we have had experience of that in the Council.

959. Is there anything else which you would like to say? First of all I would like to say there has been a steady increase in the number of houses since I have been in Armidale. Judging by appearances, I would almost go as far as to say that there are almost half as many houses again. A question was asked whether a large proportion of the houses, especially the better class built of late years, were not built by people who had made money at Hillgrove. There were three good houses built by them and only three, namely, the Imperial Hotel and two private residences. There has not been one single house beyond the mediocre class, and only a few of them. I do not think there have been a dozen altogether built by people who have made money at Hillgrove. There have been some very fair houses built by people who have lost money at Hillgrove. But if one takes the houses which have been built during seven years, and which had nothing to do with Hillgrove, there is a very considerable proportion I think in favour of the town, apart from Hillgrove altogether. For instance, there were the Joint Stock Bank, the City Bank, a very fine house which Dr. Wigan built about six years ago, and a very large addition to Tattersall's Hotel. I am quite certain that the owner of Tattersall's Hotel did not make much money at Hillgrove. Several other houses of a good class which I could mention and which cost a large sum have been and are being built, and others are projected. I believe, when Hillgrove is practically, as far as Armidale is concerned, dead. There has been a steady increase and there has been a steady rise of rents. When I came here seven years ago and went into the house which I have occupied since then my rent was raised as compared with that of the previous tenant. Again, there are absolutely no houses vacant in the town. If a house becomes vacant it is run after. A lady patient of mine had to leave her house lately, and she is obliged to stay at an hotel as she cannot get another house. Again, a number of visitors come here every summer, and the number is increasing year by year, and one of the constant complaints of these people is that they do not like to be in a place where the water supply is so doubtful—they are afraid of it. We get plenty of rain, but our rainfall is very far from being uniform. It is in times of drought, which happen more or less every summer, when we experience the want of water. There is always a source of danger in using water collected from roofs in a town, and the larger the town grows the greater the danger becomes. By rights no water ought to be used for drinking purposes which comes from roofs without a proper filtering apparatus in every tank. If everybody were compelled to have a proper filtering apparatus, it would add very considerably to the expense of storing. I consider it absolutely necessary. With regard to repudiation by the people of Hillgrove, it has been stated that the principal people in Hillgrove come from Armidale. I have known Hillgrove since, so to speak, there was no Hillgrove—one small hotel, one store, and a few miners' cottages, and when I come to reckon up the people along the main street now I can find no people of prominence at all compared with the number of people in Hillgrove who have come from Armidale, so that the morality of Armidale can scarcely be judged by the morality of Hillgrove.

960. *Mr. Davies.*] As an alderman and a doctor, there is no doubt in your mind as to the necessity for a water supply here? None whatever.

961. And any supply from roofs and wells is highly dangerous to health? A constant source of danger to young and old.

962. That is your experience not only here but in other districts? I have never lived anywhere where there was not a water supply. My experience has been in England and Wales.

Mr. John Mackay Duncan, Alderman, Borough of Armidale, sworn, and examined:—

Mr. J. M. Duncan.

19 Oct., 1892.

963. *Chairman.*] You are an alderman of the Borough of Armidale? Yes; for the last four and a half years.

964. How long have you resided in Armidale? About fourteen years.

965. Do you carry on any business? A flour milling business.

966. Do you desire to give some evidence as to the possible use of this water, if supplied, as a motive power as against steam power? Yes.

967. Do you think it is at all likely that water will be used as a motive power as against steam? I should use the water if it were cheaper than steam. Steam comes very expensive, now that wood is getting so dear. It has to be carted long distances. If there is sufficient pressure I think we should use water power.

968. Do you think you would get sufficient head at your place for your purpose? I think so.

969. Have you gone into the cost of providing the necessary motor, and so on? No.

970. Until you ascertain that information and know the price of the water, you cannot say how it will compare with steam power. It is just a question of cheapness? Exactly.

971. If it is cheaper it will be adopted by you and others similarly situated? I do not think there would be any doubt, because it is the best power.

972. Do you woo the suffrages of the electors next February? No; I was out last February.

973. In your speeches did you make a point of this proposed water supply? I said I was in favour of it.

974. Did they know the cost? Yes.

975. And that they would have to pay for the scheme? Yes.

976. And in spite of that you were returned? Yes. Even in using steam I would use fully 1,000 gallons every hour, because the water we are using for our boilers is full of minerals. The boilers only last a few years. They required to be chipped every six weeks.

977. You would be a large consumer of water, independent of motive power? Yes.

978. Do you think that others are in a similar position? I think so.

979. The water is so bad for their boilers that they would use purer water? Yes; it is more severe on portable engines than on Cornish tubular boilers.

Mr.

Mr. James Walter Grimshaw, Civil Engineer, Harbours and Rivers Branch, Department of Public Works, sworn and examined:—

Mr. J. W. Grimshaw. 19 Oct., 1892.

980. *Chairman.*] You are an engineer in the Department of Harbours and Rivers? Yes.
981. You have had a good deal to do with the scheme before the Committee? I have.
982. How long is it since you first came to Armidale in connection with this water supply? August, 1889.
983. Did you at that time mature the scheme which is now under our consideration? Yes.
984. How long were you engaged in the district in connection with this scheme and others which may have been proposed to you? About six months.
985. Were you in frequent communication with the local authorities during your stay? Yes.
986. And any suggestion of a possible source of supply was received by you and inquired into? Yes.
987. You have thoroughly scoured the district within a reasonable distance? I have.
988. And you believe the scheme before the Committee to be the best, if not the only scheme within a short reach? I do.
989. You heard Mr. Mallam's evidence as to a possible catchment area beyond Gaol Hill;—was that the first time you heard of that possible catchment area? On the first or second day after my arrival. I was informed that there was a well there which might possibly prove a suitable source of water supply. I examined the well, and I reported that on the occasion of my first visit it was not even overflowing, that it seemed to be supplied by surface drainage, and that I believed it would not be anything like sufficient for the requirements of the town.
990. Was the well above the cemetery? I think it is below; I was under that impression at the time.
991. It would add very much to the quality of the water? I do not think its position is a good one, but at the same time I think Mr. Mallam is referring to some neighbouring site. I traversed over the same country and I saw nothing suitable.
992. Near the place which was used by Mr. Proudfoot? It was close in that direction. I saw no catchment area which was suitable.
993. Presuming that there is a catchment area there, and that it is limited to 1½ square mile, is it sufficient to supply the town with water? Yes, if it is suitable country.
994. Is there much population out there? No; there are some settlers, and a great deal of ground is cultivated.
995. But you do not think that there is a suitable catchment area there? No; I went all over the ground very carefully.
996. Have you investigated any proposal for a pumping scheme originated either by yourself or by anybody else? Yes. I went along the lower end of Tilbuster Creek and the Commissioners' Waters, and also Guyra River. The Commissioners' Waters are below the town and take its drainage, and therefore are unsuitable. They are very fine waters otherwise. Tilbuster Creek is simply a sand-bed; there is no suitable position for storage. I investigated several lagoons in the neighbourhood of Armidale, and found that they did not appear to be permanent. I investigated Dangar's Falls which are too far away, and the water is not suitable. I investigated the Guyra River; it is very good water and permanent. It comes from Ben Lomond, the same source that Mr. Wade was speaking of, but very much lower down. The distance is almost as great as is the source of the present scheme—about 8 miles—and I do not think the water was of the same quality. It is more sheep country.
997. And would not be any cheaper? There would be the annual expense of pumping. All these would be pumping schemes. I also inspected the Mother of Ducks, which is about 26 miles away, and the water is of very indifferent quality, and from what I could learn it has been known to be very nearly dry. It would be expensive to gravitate the water. The fall is not into Armidale, but further to the west. There is a smaller lagoon that I liked very much, but I believe it is liable to dry up. There is a swamp in the same neighbourhood that I rather liked, but further than the present scheme. I also tried the head of Falconer's Creek and the Devil's Pinch. I believe there is good holding ground, but I could not find any site which would make a reservoir of sufficient size I think I mentioned the spring which Mr. Mallam referred to. As regards obtaining water from wells, I looked into a great many, and they were all very small—quite insufficient for the supply of a large city—the largest being that used by the Railway Department. They told me that it had been pumped dry on several occasions. I also went to the head of Dumaresq Creek. There were two branches, and one of them coming from Duval Mountains would give a very nice supply indeed. I considered the scheme, but could not recommend it as it was a complicated scheme—it was not satisfactory to my mind.
998. Wherein did the complication arise—was it a pumping scheme? No, a gravitation scheme; but the storage reservoir had to be some distance from the source, and consequently it would have to go through pipes—which would be naturally large—to the storage reservoir. I went up the other branch of the Dumaresq Creek and could not find any site for a storage reservoir. I happened to see Sam's Swamp. It struck me that it was a very good place. My first impression was that we should have to bring a pipe-line by the road along which we drove. Afterwards I found that I could get over some hills and take a more direct course. Then I found that, fortunately, most of the catchment area had been, by a late district surveyor, reserved as a forest reserve. There are only a few selections on the site, and I believe only one is purchased right out. The reserves from this place to Armidale are suitable for bringing a pipe-line in—in fact it is the only suitable way, and quite as direct as you could possibly wish. There is a very good site for the service reservoir on the hill. It is on the second plateau and it gives a sufficient head. It has quite sufficient pressure for the town. Some time afterwards the municipality, realising the magnitude of the scheme, which I estimated at £50,000, thought it might be possible to formulate a cheaper scheme. I came here with that purpose. From their estimate of the probable revenue it appeared to me quite unnecessary to lessen the cost, but in order to make sure I made out a reduced scheme which brought down the estimate by reducing the height of the dam to 10 feet. I allowed only £2,000 for the dam, expecting that it would be of no further use if the smaller scheme were utilised and that later on a big dam, built a little further down, would really store a very large quantity of water. At the time I mentioned that we might forego the service reservoir; but, of course, there would have to be a small one there, if only for the sake of reducing the pressure on the pipes.
999. We understand that you have always been willing to receive any information from any local authority or person who could suggest, from local knowledge, a possible catchment area or scheme—sometimes the Departments do not care for interference from outside people? I am almost rather glad myself

to

Mr. J. W. Grimshaw. 19 Oct., 1892.

to get suggestions. For the first month I was not committed to any scheme, so that I had no reason for refusing to accept a suggestion.
1000. Every reasonable proposal which had been made you have investigated? Yes.
1001. You are quite sure, from the sinking of trial shafts, that you have good holding ground for your storage reservoir? I am thoroughly satisfied.
1002. In view of the comparatively slow growth of Armidale, do you not think it would be sufficient to provide for the storage of 19,000,000 gallons, instead of making the root of the dam so much stronger with a view to raising the wall in the future? Only if it is absolutely necessary.
1003. You would still like to leave it so that you could build on it? I should.
1004. If you have such a good rock foundation for your dam, would there be any very great harm in afterwards building up on the outside of the dam? It would be all right as long as the foundation was not disturbed.
1005. If you prepare the foundation so that you would not require to disturb the rock by shooting? I think it would be better to put the concrete in—at any rate, some concrete.
1006. If you prepare the full width of the foundation would it be sufficient to fill up afterwards? Yes, but I think it would be better to put some concrete in then and there.
1007. Would it be enough to put in 4 inches of concrete? I think it would be better to put in more.
1008. Looking at the thing all round, you think that it would be far better to take it out to the full width, so as to allow you to build 10 feet higher in the future? Certainly.
1009. You recommend that if there is to be any saving effected it should not be in the form of reducing the cost of the dam? Not to any extent.
1010. Did you work out the figures as to the cost of the dam? I did, and they have been worked out since in the office.
1011. You think that it may be constructed for that sum? Yes.
1012. You have no doubt? No.
1013. If you were outside the Department and were contracting for this work, you would have no hesitation in taking a contract to construct the dam for that money? No; I worked out the estimate of the cost of the concrete, and it came to £2 a cubic yard.
1014. So that you would be 10s. to the good? Yes.
1015. You think that the estimate of £6,834 will not be exceeded in the construction of the dam? It will not be exceeded. We sank a number of trial pits all along.
1016. As regards the cost of the wrought-iron pipe—£17,000—do you think it is at all likely that it can be or will be reduced? No; it coincides very closely with the estimate I made previously.
1017. Do you agree with the Engineer-in-Chief that the main should be wrought-iron and not cast-iron? It is purely a matter of expense.
1018. Do you think that a service reservoir of 300,000 gallons capacity can be constructed for £1,500? Yes; I looked through the estimates. I do not see that any exception can be taken to it.
1019. You would have no hesitation in accepting a contract at that price? No.
1020. I suppose the officers who made the estimate have had something to do with similar works? Yes; they have great experience.
1021. Is it worth while to save £500 by having a reservoir of less capacity? No.
1022. We have been informed that it will hold from two and a half to three days' supply, so that in the event of anything going wrong with the pipe-line it will be sufficient to serve the town for three or four days? Yes.
1023. The reservoir on Gaol Hill would be simply a wrought-iron tank? Yes.
1024. That will command the gaol itself? Yes.
1025. With reference to the item of £9,780 for 12¾ miles of reticulation, are you of opinion that it will be unwise to diminish the length so as to reduce the cost, or would you, by reducing the reticulation, reduce the revenue? It would reduce the revenue. I do not think there is any reticulation which is not required.
1026. You went into the matter very carefully with the local authorities? Yes.
1027. With reference to the item of £4,121 for "engineering and contingencies"—is that based on the usual percentage for works of this kind, or does it include the cost of the other surveys you were engaged on? I think they would be included.
1028. That may account for this apparently large sum? I think there has been an expenditure of £700.
1029. Do you know, as a matter of practice, whether the cost of initiating a scheme of this kind is or is not charged against the scheme when it is carried out? I have always understood it was, but I am not very sure.
1030. Do you think there is every reasonable prospect of the scheme being carried out for £43,500 as estimated by Mr. Darley? I do.
1031. In this estimate they put down the freight—a first-class freight—at £4 14s. a ton;—is that correct? When I was here Mr. Eddy was visiting the town, and the Mayor asked him whether any reduction in the freight might be expected in the case of a large number of pipes coming up. Mr. Eddy said he could not state at the time what it would be, but that on similar occasions he had made a reduction and that he was quite willing to do so in this case. I believe it may be 10 per cent.
1032. Consequently there may be a reduction in that estimate? I think so.
1033. As regards the reticulation which is now about to be made, independent of the main scheme, the Department will lay that down;—will the cost of that be included in the main scheme? Yes; it will be done by the Department under their supervision.

Mr. William Robbins, railway station-master, Armidale, sworn, and examined:—

Mr. W. Robbins. 19 Oct., 1892.

1034. *Chairman.*] You are railway station-master at Armidale? Yes.
1035. How long have you held the position? Three years.
1036. Are the arrangements for supplying water to the locomotives and the station and your house immediately under your control? No, not the locomotives.
1037. Where is the supply for the locomotives drawn from? From Armidale Creek. The pumping-house is situated on the banks of the creek.

1038.

1038. Does the creek ever give out? In 1891 it did not give out altogether, but we had to economise. Mr. W. Robbins.
1039. The engines only took sufficient to carry them on to the next watering station? Yes; it also supplies the urinals at the station and we had to cut them off at intervals during the day. 19 Oct., 1892.
1040. Is the water fit for human consumption? No.
1041. Where does the supply for drinking purposes at the station come from? It is caught from the roof of the station and is conserved in an underground tank.
1042. Have you ever been short of water for that purpose? No; it has not been more than one-third empty since I have been here.
1043. How is your own residence supplied? By a separate underground tank; the water is caught from the roof.
1044. Have you ever been short of water? It has never been down one-third of the tank.
1045. Is it very good water? It is caught on a galvanised-iron roof and conserved in a cemented tank.
1046. Does the smoke from the engines pollute the water? I have not noticed anything; the water is very clear.
1047. Are your family healthy? Yes; we have had no sickness.
1048. Supposing the supply from the roof catchment gave out, you could not be supplied from the creek? No; that water is too bad to be used for drinking purposes.
1049. Have you any idea of the quantity of water used for the locomotives? It varies so much that it is impossible to tell. The tank holds 20,000 gallons and it takes 8 hours to fill it.
1050. Is a man kept for the purpose? A man is kept at the pump.
1051. And another man at the tank? That is under the supervision of the locomotive inspector—he has several men there.*
1052. What is the wage of the man at the pump? Seven shillings a day, I think.
1053. Do you know what quantity of fuel he uses? No.
1054. Supposing this water scheme for the town is carried out, and the Borough Council are prepared to supply the railway station and your residence with good wholesome water, do you think it is likely that the Commissioners would take that supply, or do you think that they would still make you use tank water? I think they would compel us to use tank water for the station and my residence, but I am unable to say what would be done in connection with the locomotive tank.
1055. Supposing you were asked to report as to whether it would be advisable to still use the tank water for the station and your residence, or whether it would be more advisable to use the corporation water, how would you report? I would report in favour of the tank water, because I know it is clear and good.
1056. You believe in State economy? Yes.
1057. So that if the Borough Council estimate that they will supply the railway station and your residence from this water scheme, you think that they have not sufficient grounds for making that estimate? I certainly do not.
1058. Especially if they are going to assess your station at £1,000, and your residence at £75 a year? I consider it unnecessary. I am quite prepared to produce a sample of water from each tank.

WEDNESDAY, 19 OCTOBER, 1892.

[*The Sectional Committee met at the "Imperial Hotel," Armidale, at 7 p.m.*]

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. JOHN DAVIES, C.M.G. | JOHN CASH NEILD, Esq.
WILLIAM McCOURT, Esq. | EDWARD WILLIAM O'SULLIVAN, Esq.
CHARLES COLLINS, Esq.

The Sectional Committee further considered the proposed Water Supply for Armidale.

Mr. James Hackett, locomotive inspector, Armidale, sworn, and examined:—

1059. *Chairman.*] What is your occupation in the railway service? I am locomotive inspector. Mr. J. Hackett.
1060. How long have you been in the Armidale district? About seven months. 19 Oct., 1892.
1061. The water supply for the locomotives is under your jurisdiction? Yes.
1062. Where do you get your supply? It is pumped from the creek.
1063. Does it ever go dry? Not since I have been here, but I have heard that it has been pretty short.
1064. What do they do for water then; do they go on to the next station? We take in sufficient water to take us on to the next station; or, if it is very dry weather, the same as I experienced in the south, we would put on a water train, which is rather expensive.
1065. What is the capacity of your tanks? Twenty thousand gallons.
1066. How long does it take to pump up that quantity? The man pumps about 8 inches an hour, and the tank is 5 feet high.
1067. Have you only one man working at the pump? Only one.
1068. Do you know what it costs you per 1000 gallons for your water? I never went into it, though I could give the price.
1069. How much does he pump up a day? About 25,000 gallons.
1070. Each day? About 25,000 gallons is the quantity we use there. Some days it is less; that is when the traffic is less. On other days it is fully 25,000 gallons for supplying the engines and washing out.
1071. On an average what quantity has he to pump up—20,000 gallons or 22,000 gallons? About 20,000 gallons on ordinary days.
1072. And sometimes up to 25,000 gallons? Yes.
1073. How many hours does it take a man to pump up that quantity? Nine hours. While he is pumping we are using the water. He makes a day's overtime during the week.
1074. He makes ten hours a day? That would be pretty near it.
1075. What does he get a day? He is an old servant of the Department, and his rate is 8s. 6d. a day.

1076.

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*NOTE *(on revision)*:—Meaning at his depôt, not in attendance at tank.

Mr. J. Hackett. 19 Oct., 1892.

1076. That is for a 9-hour day? Yes.
1077. You may say, then, that including his overtime it costs 9s. 6d. a day? Yes.
1078. What fuel does he burn in a day or week? On an average he uses about 6 cwt. a day.
1079. How much does that cost—10s? About 13s. 6d. per ton.
1080. What other charge is there against the pumping? Only the stores; sixpence a day would cover that.
1081. Supposing you were to draw your supply from the proposed scheme, is there any work attached to the tank which would be done away with? Only the pump.
1082. Nothing else at the tank? No.
1083. Have you ever estimated how much it did cost you? No; it is a simple calculation—the time, coal, and stores.
1084. Occasionally you have some repairs? The repairs are very little; you can put down wear and tear and depreciation in plant at about 4s. per day. The boilers last eight or ten years or more.
1085. It would be about one of the cheapest pumping-stations for locomotives that the Commissioners have? I could hardly say that. The pumping-station at Tenterfield being farther away, the coal depôt is more expensive, but there is not so much water consumed there, and the water is pretty good. To Guyra I send out a cleaner at 5s. a day, and he pumps there three days in the week.
1086. The water you have there is not fit for human consumption? It is no good for domestic purposes, but it is a fair water for locomotives; it is the worst water I have in the district.
1087. Is it mixed up with impurities? It contains some impurities.
1088. Any acids in the water? No.
1089. It is only just the dirt? Lime. There is a brewery at the head of the creek, and when the water is blown out of the boilers you can smell the beer pretty strongly.
1090. There is no objection to the quality of the water? No.
1091. I suppose you do sometimes have an objection to the quality of the water? Yes.
1092. The Armidale water is considered very fair? Yes.
1093. Is there any likelihood of the pumping-station being shifted from here, or of more water being required here? There may very possibly be more water required.
1094. If they run more trains? If they run a branch line.
1095. Where is the next station? At Guyra on the north, and at Uralla on the south; that is nearly at a standstill—not a train a week stops there. The mails fill up at Guyra coming this way.
1096. They have a long stay in Armidale. I suppose they always fill up at the station where they have to stay longest if the water is available? Yes.
1097. There is no prospect of Armidale ceasing to be a stopping place, as it is now? I do not think so; it is pretty central. There are trains running from here to Glen Innes, and from here to Tamworth. The mail train stops here 20 minutes in the morning; it is a changing station.
1098. *Mr. Davies.*] The water for the locomotives costs about 1s. per 1,000 gallons? I think 1s. per 1,000 gallons would cover the expense.
1099. If you pay 9s. 6d. a day for your labour, it would bring the cost to about 1s. per 1,000 gallons? Yes.
1100. If a supply can be provided by the Council at a somewhat less price than that, do you think that the Commissioners would be likely to take the water? I am very certain that the Commissioners would fall in with it. At Cootamundra we were hunting for the water for years, and the Construction Department were looking for water. We could never find a supply there, and the consequence was that our engines had to run to Gundagai. We had to have a travelling water-tank. The corporation started a scheme, and since I left they have succeeded in getting a supply. I went into the particulars for the locomotive engineer, and the Commissioners agreed to take the water, and I believe it has been taken.
1101. If pure, clean water can be supplied for the engines, and it does not cost the Commissioners any more than it costs them now to pump water into the tanks, do you think they will take the water from the Borough Council? I think they would do it very gladly.
1102. If the question is submitted to the Commissioners I suppose it will be referred to you for report? Very likely; they may ask some questions similar to those which the Chairman has asked me.
1103. Have any such questions been asked? Not since I have been here.
1104. You have not furnished any report? No.
1105. Of course in the event of being asked for a report, I presume you will simply state facts as you have stated here? Just so.
1106. You know the advantages which would accrue to the Department if you had a good, sound water, free from impurities? We should have to be supplied with a sample of water for the purpose of being analysed.
1107. The water which it is proposed to bring into the town is spoken of by medical men and experts as the best water to be got in the district? A tremendous amount of water evaporates in the locomotives. If there is any sediment in the water it is bound to accumulate very quickly.
1108. *Mr. McCourt.*] What are you paying for your water at Cootamundra? I think it is somewhere about 1s.
1109. Do you know that it is proposed by the Commissioners to give the Borough Council of Armidale only 6d per 1,000 gallons for the water supplied to the station? I have not heard that.
1110. If that is so, do you not think it is too cheap a price for the water? It looks very low.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Water Supply for Armidale.

SECTIONAL COMMITTEE.

APPENDIX.

A.

[*To Evidence of Mr. J. T. French.*]

RAILWAY FREIGHT ON PIPES FOR ARMIDALE WATER SUPPLY.

Dear Sir, Miller's Buildings, Armidale, October 20, 1892.

In giving my evidence yesterday, in answering your question, "Could the estimated cost be reduced in any way?" I forgot to state that his Worship the Mayor and self interviewed the Railway Commissioners *re* reduction of railway freight on pipes.

Mr. Eddy stated, "In consideration that the quantity is so large, and it can be carried to suit the convenience of the Railway Department in return wool trucks, &c., they would reduce the price to half."

Taking this fact into consideration, this will reduce the full cost to £40,000.

Yours obediently,
JOHN T. FRENCH.

To Chairman, Works Committee, Armidale Water Supply.

[One plan.]

Sydney: Charles Potter, Government Printer.—1892.

SKETCH PLAN

SHOWING PROPOSED WATER SUPPLY

FOR

ARMIDALE.

SCALE.

CHAINS 20 0 20 40 60 80 100 120 140 160 180 200 220 CHAINS

MILES 1/4 0 1/4 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 2 1/4 2 1/2 2 3/4 MILES

14.8.92.

Mt Boral

Boundary of Catchment Area

F.R.880

T.S.R 375

F.R.1023

Area of Catchment about 7 Square Miles

W.R.1010

Tilbuster Run

Storage Reservoir Dam Capacity 86,000,000 Gals. WL 615.00 Proposed

T.S.R. 539

W.R.692

Northern Railway

Boundary of Catchment Area

1.x.M

3" Pipe

T.S.R. 447

Road to Glen Innes

Little Duval Mt

Parish of Exmouth

F.R.1023

2.x.M

3.x.M

Duval Gold Field

Top of Mt Duval

W.R.1070

3" Pipe

T.S.R. 539

Duval Creek

Tilbuster Creek

Parish of Duval

Bridge

T.S.R. 375

4.x.M

3" Pipe

T.S.R.373

7.x.M

T.S.R.373

T.S.R 375

3" Pipe

Temporary Common

Permanent Common

5.x.M

Parish of Armidale

Site for Main Service Reservoir Capacity 300,000 Galls TWL 470.00

Pipeline

Northern Railway

Bumaresq Creek

City of Armidale

Proposed Elevated Tank Capacity 10,000 Gals TWL 465.00

To Newcastle

(Sig 205)

PHOTO LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE AND PLAN,

RELATING TO THE

PROPOSED WATER SUPPLY FOR LITHGOW.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

[2s.] 206—A 1892.

MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable WILLIAM HENRY SUTTOR, Vice-Chairman.
The Honorable JAMES HOSKINS.
The Honorable FREDERICK THOMAS HUMPHERY.
*The Honorable ANDREW GARRAN, LL.D.
The Honorable JOHN DAVIES, C.M.G.
*The Honorable WILLIAM JOSEPH TRICKETT.

LEGISLATIVE ASSEMBLY.

JACOB GARRARD, Esquire, Chairman.
THOMAS THOMSON EWING, Esquire.
WILLIAM CHANDOS WALL, Esquire.
WILLIAM McCOURT, Esquire.
JOHN CASH NEILD, Esquire.
EDWARD WILLIAM O'SULLIVAN, Esquire.
CHARLES COLLINS, Esquire.
HENRY DAWSON, Esquire.

MEMBERS OF THE SECTIONAL COMMITTEE.

The Honorable WILLIAM HENRY SUTTOR, Chairman.
The Honorable WILLIAM JOSEPH TRICKETT.
THOMAS THOMSON EWING, Esquire.
WILLIAM CHANDOS WALL, Esquire.
HENRY DAWSON, Esquire.

[*The Honorable ANDREW GARRAN, LL.D., on 5th October, 1892, resigned his seat as a member of the Committee, and on 12th October, 1892, the Honorable WILLIAM JOSEPH TRICKETT was appointed to fill the vacancy.]

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Proposed Water Supply for the Borough of Lithgow.

5

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

WATER SUPPLY FOR LITHGOW.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing water-supply works for the town of Lithgow, in the county of Cook," have, after due inquiry, resolved that it is expedient the proposed water-supply works should be constructed; and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly :—

Description of the proposed works.

1. The proposed works consist of a storage reservoir with a capacity of 15,000,000 gallons, formed by constructing a concrete dam across Farmer's or Coerwull Creek, at a place amongst the hills north of the Zigzag Valley and 3½ miles north-east of Lithgow; a line of 9-inch cast-iron pipes through which the water will flow by gravitation from the storage reservoir to the middle of the town; and the necessary reticulation, which will be provided for by means of 6-inch, 4-inch, and 3-inch pipes. The storage reservoir will give 25 feet of available water above the outlet pipe, obtained from a catchment area of four square miles of broken, rugged country, part of which is reserved, and the remainder so situated that there is no anticipation of the purity of the water being affected by future settlement. A service reservoir was at first proposed in addition to the storage reservoir, but it is found that this expense can be avoided for the present by using the storage reservoir as a storage and service reservoir combined, and this will be done. The main pipe-line will be 3½ miles in length, and the scheme provides for 3 miles 70 chains of reticulation. The delivery capacity of the scheme is stated as at least 700,000 gallons in twenty-four hours.

Estimated cost.

2. The estimated total cost of the works is £15,000, and this is made up of the following items:—Storage reservoir, £3,700; pipes and special castings, £7,024 5s. 10d.; pipe-laying, £1,500; engineering and contingencies, £1,225 14s. 2d.; and land, £1,550. The estimate for the land is mentioned in the official description of the works as a very rough one, but it is not thought that the amount stated will be exceeded.

Position of the Municipality with regard to meeting the cost of the scheme.

3. The amount annually required for interest and for the repayment of the capital expenditure in sixty years is £600. The estimated revenue derivable for the purpose is £1,500. This amount is made up by estimating the assessed annual value of the property liable to be rated at £20,000, which, at a rate of 1s. in the £, will produce £1,000, and then adding £500 as the income which is likely to be obtained from supplying water to the Railway Department and to factories and gardens. These figures show a balance in excess of the amount required for interest and sinking fund of £900, but the working expenses in connection with the scheme are estimated at £160 per year, and this reduces the surplus to £740. This is pointed to as an ample margin for any possible excess in the estimate of revenue.

The Committee's inquiry.

4. The Committee examined in Sydney the principal officers of the Department of Public Works concerned in the proposed water supply, and a Sectional Committee inspected the localities where the works will be situated, and took the evidence of local witnesses at Lithgow.

The evidence.

5. The evidence will be found to deal with the question very completely. The Under Secretary for Public Works, giving a general statement of matters connected with the proposal, explains that the question of a supply of water to Lithgow has been before the Department for many years, and that frequent applications on the subject have been received from the local Council. When completed the works will be under the control of the Council, as the scheme will come within the provisions of the Country Towns Water Supply and Sewerage Act. The evidence of the Engineer-in-Chief for Harbours and Rivers and that of the Assistant Engineer, who was the original surveyor of the scheme, indicate that the proposed works have been carefully considered in all essential details—that the scheme is well designed, and will prove effective and cheap. Next in importance to these witnesses is the Mayor of Lithgow. He states that the people of Lithgow are unanimously in favour of having a water supply, and that they are willing to accept the Government scheme and to undertake the liabilities attached to it. As a municipality Lithgow occupies in its financial circumstances a very satisfactory position. According to the evidence of the Mayor it has never been in debt, and at present it has a surplus of income. At the Council meeting previous to the visit of the Sectional Committee there was shown to be a credit balance of between £100 and £200, and this after the borough had carried out all its heaviest work. The only matters in respect of which the borough is likely to find it necessary to go into debt are said to be water and gas, and in regard to these the prospect of meeting liabilities is very favourable. The other witnesses examined show by their evidence the necessity for an adequate water supply for Lithgow, and, with the exception of one or two who think a more assured supply could be obtained from a locality known as Marangaroo, approve of the proposed scheme.

A suggested preferable scheme.

6. The idea of obtaining a water supply from Marangaroo is not new to the Department of Public Works. It was put forward some time ago, and after a thorough investigation was found to be unsuitable. Instead of being a gravitation scheme, which the present proposal is, it was found that the water would have to be pumped, and the cost thereby probably increased by £35,000, making the total cost £50,000. Mr. Andrew Brown, of Bowenfels, who is the principal advocate of the Marangaroo scheme, states that the water supply at Marangaroo has never been known to be dry, whereas, he says, in Farmer's Creek, the water course associated with the present proposed scheme, has very frequently had very little water in it. The officer of the Department who investigated the proposal found more water present, and a much better prospect of an adequate supply in connection with Farmer's Creek, than at Marangaroo. He is satisfied, he states, that the Farmer's Creek scheme is by far the better of the two.

Objections by Mr. Andrew Brown.

7. Mr. Andrew Brown complains that the Farmer's Creek scheme will deprive him, to a certain extent, of the use of the water flowing down the creek. He is the owner of a mill on the creek at Bowenfels for the manufacture of woollens, the machinery of which is driven partly by water and partly by steam. The interference with the natural flow of the water in the creek for the purpose of retaining it in the storage reservoir to supply the people of the town would diminish the operations of his mill, he states, to the extent of £100 a year. On the other hand, it is stated on the part of the Department of Public Works that the damming of the creek for the purposes of the storage reservoir will not interfere with the supply to the mill. The catchment area draining into Farmer's Creek is fully double the extent set down as that for the proposed scheme, and half of it would contribute to the contents of the creek below the dam. There would be four square miles of catchment area, it is explained, supplying water to the creek below the dam, and there are large feeders to the creek below the dam which, it is asserted, would supply ample water for Mr. Brown's purposes. The Departmental survey, in connection with the present proposed scheme, was made, the Committee are informed, at a time immediately after the driest period on record, when 750,000 gallons of water were passing down Farmer's Creek per day, and Mr. Brown was then using the water, and it was sufficient for him. With an average rainfall the volume of water in the creek would be over three times the quantity then running.

8. The Sectional Committee at the close of their visit of inspection and inquiry unanimously reported to the Committee in favour of the carrying out of the proposed scheme. They found that the site of the proposed dam was well situated for cheaply and securely impounding an ample supply of pure water; that the route of the pipe-line appeared to have been wisely chosen; and that the municipality was both willing and able to meet the additional charge upon the ratepayers necessary after the construction of the proposed works. The Sectional Committee's Report.

9. From the evidence, and from the inquiry made by the Sectional Committee, the Committee are of opinion that the proposed works should be constructed, and on Wednesday, 16th November, they passed the following resolution:— Resolution of the Committee.

> That, in the opinion of the Committee, it is expedient the proposed Water Supply for Lithgow, as referred to the Committee by the Legislative Assembly, be carried out.

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 16 November, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

WATER SUPPLY FOR LITHGOW.

WEDNESDAY, 14 *SEPTEMBER*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM McCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee proceeded to consider the proposed Water Supply for Lithgow.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 14 Sept., 1892.

1. *Chairman.*] You desire to make a statement to the Committee in reference to the proposal now under our consideration? Yes. The question of the supply of water to Lithgow has been before the Department for many years. As far back as 1880 a scheme was proposed by Mr. James, one of its officers, for a supply to this township, which was not then incorporated, the date of incorporation being 4th June, 1889. This proposition, without going into minute details, consisted of the damming of one of the tributaries of Farmer's or Coerwull Creek, called Sutherland's Gully. Subsequent observations, however, proved that the supply from this source would be insufficient in dry weather and it was therefore abandoned. In 1889, Mr. Keele, another officer of the Department, investigated the matter and made a complete survey for a gravitation scheme from Farmer's Creek, which is the proposition before the Committee, and which I will presently describe. The Department has had frequent applications from the Council to provide a supply for the town, and a letter dated 5th January, 1892, has been received, signed by the Mayor, Mr. Thomas Bennett which reads as follows:—

Sir,

Council Chambers, 5 January, 1892.

I have the honor to inform you that a meeting of the Council held on Monday, 4 January, it was decided to accept the Government scheme for a Water Supply for the Town of Lithgow, as provided by the officers of the Harbours and Rivers Department, and that the Department be requested to have it constructed as soon as possible.

I have, &c.,

THOMAS BENNETT, Mayor.

Since that time the Department has been continually urged to proceed with the work. The official description of the scheme is as follows:—

The scheme provides for the construction of a dam of concrete across Farmer's or the Coerwull Creek, in the position shown on the plan. It will have a height of 30 feet, giving 25 feet of available water above the outlet pipe and will impound 15,000,000 gallons derived from a catchment area of 4 square miles, the whole of which consists of broken rugged country. Part of this catchment area, as will be seen by the plan, is reserved, and it is not anticipated that any danger to the purity of the water is likely to arise from future settlement upon it. It was proposed originally to construct a service reservoir for the town supply, situated about 3¾ miles from the dam, but it is now thought this might be dispensed with for the present, and a saving of £1,500 effected by using the storage reservoir as a storage and service reservoir combined. The water will be drawn from the reservoir by means of a 9-inch cast-iron pipe which will be brought into the middle of the town, the distance being 3½ miles, the reticulation branching from this main in various directions. The scheme provides for 3 miles 70 chains of reticulation, consisting of 6-inch, 4-inch, and 3-inch pipes.

The total estimated cost is £15,000, made up as follows:—

	£	s.	d.
Storage Reservoir	3,700	0	0
Pipes and Special Castings	7,024	5	10
Pipelaying	1,500	0	0
Engineering and Contingencies	1,225	14	2
Land	1,550	0	0
	£15,000	0	0

The estimate for the land must be looked upon as a very rough one.
The scheme is estimated to deliver at least 700,000 gallons in twenty-four hours.

C. W. DARLEY,
8/9/92.

The population of the town according to the last census is 3,867, and I learn from the last Municipal Directory that there are 700 houses in the municipality, 736 ratepayers on the roll, and that the revenue from rates is £1,534 1s. 6d., the Government endowment amounting to the same sum. I am not able to give the estimated number of persons who will be supplied from the scheme, but the annual value of the property

J. Barling, Esq. 14 Sept., 1892.

property liable to be rated is estimated at £20,000, which, at 1s. in the £, will give £1,000. The income likely to be derived from the supply of water to the Railway Department and factories and gardens is estimated at £500, giving a total income of £1,500. The annual amount required for interest and for the repayment of capital in sixty years will be £600. The working expenses are estimated at £160, or a total of £760, which it will be seen shows an annual profit of £740, thus leaving an ample margin for any possible excess in the estimate of revenue. The income likely to be derived from the supply of water to the Railway Department being such an important factor in the estimated revenue, I thought it better to write to the Railway Department and find out whether they intended to use the water or not. My letter was as follows:—

8 September, 1892.

Dear Mr. McLachlan,

The proposal for the water supply at Lithgow is coming before the Public Works Committee this afternoon, and I notice amongst the papers that it is stated your Department will be prepared to take water from these works if constructed, and the Council expect a revenue of something like £500 per annum from this source. I thought I should find verification of this statement from your Department, but there appears to be none. I should, therefore, like to know from you whether I am at liberty to say that this statement is correct. As it is coming on this afternoon I should like to have an answer on this point this morning, as it is a cardinal feature in the financial aspect of the case.

To that I received the following reply:—

It is contemplated to take the water from the Council, provided it does not cost the Department more than our present source of supply, which is estimated at a little under 6d. per 1,000 gallons. Our present consumption is set down at about 1,200,000 gallons per month.

Yours, &c.,
H. McLACHLAN.

That would come to about £360 per annum, and it ought not to be very difficult to make up the balance by supplying factories, gardens, and so on.

2. *Mr. Davies.*] Sixpence per 1,000 gallons is very cheap? Yes; but then the demand is so great.

3. *Chairman.*] Is the amount of £1,550 put down as the estimated cost of land, the estimated cost of resumptions in connection with the catchment area, or of resumptions for the pipe line? There is a small portion of the catchment area which we shall probably have to resume, but none of us could give any very definite information at present with regard to the cost of resumption. The pipe line from where it leaves the catchment area, follows the road. Mr. Darley will give you a more detailed estimate.

4. He can also give us the reasons why it is proposed to have cast-iron pipes? Yes.

5. And also as to the head of the water? Yes, but I might tell the Committee that the head of water would be amply sufficient to cover the highest buildings in the town.

6. The catchment area is not within the bounds of the Municipality? I have not got the boundaries of the Municipality on the plan.

7. It does not form the catchment area for any other town? I think not.

8. The catchment area is just to the north of what is called the Zig Zag Valley proper? Yes, I think so. The railway is marked on the plans.

9. *Mr. O'Sullivan.*] How is it that this proposal has been brought before the Committee? I think I can explain that. It was supposed at first that the work would cost something like £18,000, and the Minister thought that while it was not absolutely necessary to lay the proposal before the Committee, yet, as so many estimates were exceeded, he would rather not take the responsibility of approving of a scheme which might cost more than £20,000.

10. *Mr. Ewing.*] The Minister can send any proposal here he likes? I think so. The Act does not preclude any proposal from being laid before the Committee.

11. *Mr. Davies.*] The scheme is a gravitation scheme? Yes.

12. Under whose control will the works be placed when they are completed? Under the control of the Municipal Council. This comes under the Country Towns Water Supply and Sewerage Act.

13. What provision will be made to enforce the repayment of the cost? There is a provision under the Act appointing receivers, and I do not think there ought to be any difficulty about this scheme. This is one of the few schemes worked entirely by gravitation, and it is one which must, I think, pay, because the working expenses will be so small.

14. The Minister stated last night that £900,000 had been spent in supplying country towns with water, and that scarcely one shilling of that had been repaid. If this work is authorised, what new power will be created to enforce payment? I think the Minister has pointed out that the matter is under the consideration of the Cabinet. The previous proposition was that there should be a sixty years basis, but the whole matter is under the consideration of the Minister at the present time, in connection with another work. In this particular case I should think it was a very safe thing to carry out.

15. There are several other schemes which were thought to be equally safe? This stands out very markedly from most schemes. If the Council levied a rate of 1s. in the £—which they could do—the scheme must pay. I do not think they would have any occasion to levy so high a rate.

16. There can be no question, from your evidence, as to the scheme being a paying one. The only question is whether precautions will be taken to enforce payment, so that the money derived from rates will go into the Consolidated Revenue? I think the matter as to municipal repayments for waterworks has come to that pass now, that a settlement of the case will inevitably be come to.

17. *Mr. Wall.*] Does your estimate for pipes include the cost of the reticulation pipes to the service pipes from the houses? Undoubtedly.

18. It provides for a complete system of reticulation? Yes, there are 3 miles 70 chains of reticulation provided for in the scheme.

19. That would be sufficient to connect with the service pipes throughout the town? Yes.

20. *Mr. Collins.*] What would the resumptions of land cost? We are none of us able to give very definite information about that.

21. It might come to a great deal more than you estimate? I think that is not likely.

THURSDAY,

THURSDAY, 15 *SEPTEMBER*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Sutton.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Water Supply for Lithgow.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, sworn, and examined:—

C. W. Darley, Esq. 15 Sept., 1892.

22. *Chairman.*] The scheme which we are considering was prepared by you? Yes.
23. Have any other schemes besides this been put forward? We have surveyed for, and examined two or three different schemes; but we found this the most suitable. This is the only scheme which we put forward.
24. There is no fear of the catchment area being polluted in any way? I do not think so. It is rugged, rocky country.
25. The dam which it is proposed to put across the creek is comparatively inexpensive? Quite a small dam. It will be built across a rocky gorge.
26. We have been informed by Mr. Barling that the height of the dam would be about 30 feet, and that it would impound about 25 feet of water? The maximum height from the foundation would be 36 feet.
27. And it would impound 25 feet of water? Yes.
28. It would have a capacity of 15,000,000 gallons? Yes.
29. How many gallons would there be available out of that. I suppose something is allowed for sludge, &c.? The great bulk of that would be available. There would not be much mud there. The country is sandstone, and it is not likely that there would be much of a deposit. The great bulk of the water would be available.
30. You propose to take the water by 9-inch cast-iron pipes from the reservoir down to the reticulation area? Yes; close to the boundary of the town.
31. What difference is there between the level of the dam and the level at which the reticulation service commences? About 135 feet.
32. Why are you using cast-iron pipes? The pipe line will be very crooked. It will wind about the valley, and we shall have to cross and recross the creek very often. I think, under the circumstances, cast-iron pipes would be the best, because they are in short lengths and easily joined. I like wrought-iron pipes where there is a straight run. The pressure on the main will be less and less as you approach the reservoir, and will increase as you get towards the town. The pipes near the reservoir will have the minimum amount of pressure on them.
33. But in view of the fact that you are going to do away with the service reservoir, is it not rather risky to rely upon a cast-iron main? Not for the pressure which we will have.
34. There will be about 135 feet of pressure? That would be in the centre of the town.
35. Have you had any trial holes sunk on the site of the dam. Is there a good foundation there? Yes; we got rock at the deepest part, about 4 feet below the surface.
36. What is the length of the dam? One hundred and fifty feet.
37. What would be its width at the bottom and at the top? It will be 3 ft. 6 in. wide at the top, and will taper down from that. It varies at the bottom according to the depth. I propose in this case to make the dam in the form of an arch, because, as the gully is pretty narrow, it will be advantageous to do that, and we shall be able to reduce the thickness of the dam.
38. Will there be any means of filtering the water? No; I do not think so. It will come off a clean catchment area. The country is like the Nepean country. There is not a sign of mud there. It is all sand and sandstone.
39. But will not the thunderstorms bring down some débris? Nothing but what will precipitate pretty quickly; nothing to hurt the supply.
40. How much will the outlet pipe be below the dam? We shall have a floating pipe and let out the water some distance from the surface. We do not take the water from the bottom. The outlet pipe will float below the surface, so that we can take the water out at any depth.
41. In reference to the reticulation, have you decided as to what streets will be reticulated, or have you put down a lump sum? We decided as to the streets after a consultation with the Council. A complete plan of the reticulation has been prepared.
42. The Council quite agree not only to the scheme as a whole, but also to the reticulation service? I understand so. They have written to that effect.
43. It is not likely that the estimate for the works will be exceeded? I do not think so. I think I have taken full prices all through.
44. I suppose this is one of the most simple and inexpensive water supplies that we are likely to have in this Colony? As a gravitation scheme I think it is.
45. The gravitation scheme is less costly than a pumping scheme? Sometimes we have to go a long distance with the pipes. In many cases gravitation schemes are more costly than pumping schemes, because it is seldom that you can get a reservoir so near the town as this will be.
46. Have you been over the catchment area? I have been up to the site of the dam and over a portion of the catchment area.
47. The greater portion of it is Crown land? A good deal of it is.
48. The other portion of it will have to be resumed? I do not think it will be necessary to resume anything. The dam will be on the water reserve, and I do not think it will be necessary to resume land.
49. You do not think that the catchment area is likely to be used for anything that will be detrimental to the water supply? No; the country is hardly fit to feed a kangaroo—it is all rocks.

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50. *Mr. Hoskins.*] As the reservoir has a rocky bottom, have you any fear of the water escaping through cracks or crevices? I do not think it will escape. There are two walls of rock exposed there which seem to be very good. Of course, in constructing the dams we shall cut a gullet which we shall fill with concrete, and this will intercept all veins. The dam at Lithgow will be very similar to that at Manly, and to those across the gorge at the Nepean.
51. You intend to have all the joints in the rock filled up with concrete? Any joints we find we shall fill in.
52. Do you feel pretty confident that cast-iron pipes will stand a pressure of 135 feet? Yes; the reticulation pipes about Miller's Point and in that neighbourhood are carrying a pressure of 336 feet.
53. *Mr. Davies.*] What do you estimate that the cost of the pipes will be, for the whole service? The 9-inch main will cost £3,386 15s., and the service pipes £1,759 5s.
54. Are the pipes in stock, or will they form a portion of the proposed contract? If the work was to be carried out they would come within the contract.
55. Are they pipes which will be manufactured in the Colony, or will they be imported? I have put down a price that would cover their manufacture in the Colony. I have put down a price which I feel sure is outside what the contract price will be.
56. Is the price you estimate in excess of that paid for imported pipes hitherto? Yes.
57. Much? Yes, considerably.
58. How much? I have put down £1,080 more than I can import the pipes for.
59. In this one case? In this one case.
60. If that rule were applied to all water supply systems, it would make a very considerable difference in their cost? Yes; though it is hardly a point which I can go into. I am only stating facts.
61. The cost of this work is to be covered by rates which will be levied upon the people supplied with water? Yes.
62. And a rate would be struck in proportion to the amount expended upon their construction? Yes.
63. The more cheaply the work is done the lower the rates which the consumer will have to pay? Yes. Our object would be to carry out the work as cheaply as possible.
64. That is the only gravitation scheme which you propose to carry out? No; Armidale would be a gravitation scheme.
65. And Wollongong is a gravitation scheme? Yes.
66. The estimated cost of this work is about £15,000. Does that provide for the resumption of land? I have put down £1,550 for the resumption of land, but that is always an uncertain item.
67. And you are not so strong in your opinion as to its sufficiency? I think the amount would be sufficient.
68. But there is no possibility of being accurate in an estimate of that kind? Until the thing is actually settled we do not know what claims will be made. We do not require very much land.
69. Is there much land to be resumed in connection with the catchment area? None.
70. It is all Crown land? Nearly all. Some of it is under mineral lease, but the bulk of it is Crown land.
71. Is there any possibility, so far as you know, of the water being polluted by the refuse from buildings? No liability whatever. The country is not likely to be occupied at all.
72. It could not be used for any other purpose than that to which you think of applying it? It is fit for catching water, that is about all.
73. It is not fit for mining? There is coal underneath it, but it would be drawn from the valley. There is a coal-pit near the mouth of the valley—the Zig Zag Colliery, I think.
74. The country is similar to the present Metropolitan watershed? Very similar.
75. *Dr. Garran.*] What is the pressure, at present, from Crown-street to the lowest level of the city? One hundred and forty feet.
76. Then the pressure at Lithgow would be rather less than the Crown-street pressure? Yes.
77. What is the rainfall in this district? The average is taken at 40 inches.
78. The area of the watershed is quite sufficient for that rainfall? It is ample. I estimate the mean quantity falling at 2,320,000,000 gallons.
79. The locomotives are at present supplied from this same watershed? Yes; they draw from the same watershed, but lower down, as the water passes through the town.
80. It is contemplated that the Municipal Council shall supply the Government in the future? I think so. I am under the impression that the Commissioners have come to an understanding with the Council to the effect that they will take water from.
81. At present they get their water for nothing? Yes; but they have to keep up a pumping station, and some of the mines pump into the creek above where the railway people draw from.
82. There is no misunderstanding between the Railway Department and your Department—because you are really taking their water supply? There is enough for all.
83. If there were a very dry season and the creek ceased to run, you would keep all the water at the top? There is really enough for all; but if the creek did cease to run the Railway Department would then be in a better position than they would be now, because they could draw from the reservoir.
84. They will not be worse off? They will be better off.
85. In answering Mr. Hoskins' question about the floor of the dam—did your reply have reference not only to the floor of the embankment, but also to the floor of the reservoir? Only to the floor of the concrete dam.
86. Are you sure that there are no cracks or fissures in the reservoir itself? There are cracks and fissures, but we do not count on them. We never dream of lining the bottom of a reservoir. We have not lined Prospect Reservoir.
87. There is a foot or two of dirt over the rock? I think the natural depth of sand is 4 feet.
88. You have no doubt about the bottom holding? We have been to the bed rock.
89. But there may be cracks and fissures? From what we know of sandstone it generally lies in horizontal beds. I am pretty well satisfied that we can make it tight.
90. But how would you know where the crack was? In cross-cutting, we lay everything in the way of seams and joinings bare.
91. Yes, but they might go parallel with the dam? Then they would not let the water through the dam.
92. *Mr. Dawson.*] How far are these works from the railway line? In a direct line the reservoir is about 2 miles from where we first come on to the railway.
93. Is there any danger of the pipes interfering with the line? The line is not up that valley—it is in another valley altogether.

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94. Where do you cross the line? We go under the railway bridge.
95. Does the cost cover the whole system of reticulation? Yes.
96. *Mr. Sutton.*] What is the meaning of the letters "T.W.L., 430" on the map? "T.W.L." stands for top water level. The level above datum.
97. What is the datum? We generally take the railway datum. You will have to add it to the top water level to get the height above high water at Sydney.
98. *Mr. Collins.*] Have you been over the whole of the land on which the pipes are to be laid? Yes.
99. What is the country like? The first portion of it up the valley is rocky, rugged country.
100. Is it Government land or private land? Some of it is private land. I understand that the most of the valley is private land.
101. Do you know the value of that land? As land, I should not think it would be worth more than £2 or £3 an acre at the very outside.
102. You have put down £1,500 for compensation? Yes.
103. Will the compensation amount to that? I hope not. We always put down a good round sum.
104. Where will the land be most valuable—near the town? There will be no compensation paid for land in the town, because we follow the road.
105. Where will the compensation commence;—does the private land start from the town? No; but we shall pass through private land a short distance below the dam, about a quarter of a mile below the dam.
106. That land consists principally of rocks? It is rocky, rugged country with ferns growing on it—very hard country to walk up.
107. Are there any buildings upon it? No.
108. *Mr. Ewing.*] What did you say was the difference between the cost of locally-made pipes and of imported pipes? I estimate that pipes should be imported for £6 2s. 6d. a ton, and I have put down £7 15s. a ton for colonial-made pipes.
109. That would make a difference in the cost of the work of how much? £1,080. Of course, we have not got in any tenders yet, but I wish to be on the safe side. In all probability the difference will not be quite so much. I hope it will be less.
110. Your catchment area is 2,560 acres? Yes.
111. Is that ample? Yes.
112. You will have 15,000,000 gallons of water impounded in the reservoir, which you say would be 125 days' supply for 4,000 people if there were no other demand upon it? Yes.
113. Do you know what the railway and manufacturing demand will be? I cannot say. The dam will give 125 days' supply if there is no rain.
114. And if the railway takes nothing and manufactories take nothing? Yes.
115. Suppose the railways and manufacturers do take something, how many days supply do you think there would be? I cannot answer the question, because I do not know how much is likely to be taken. There is not a population of 4,000 people there now, and they are not likely to use 30 gallons per diem each, as estimated, for some time to come.
116. If they get no rain the dam will keep them going for approximately four months. Yes.
117. You do not know what the railways and manufactories will take? I cannot say. The railway authorities put down their consumption at about 60,000 gallons a day, but I do not know what private factories would take.
118. Four thousand people taking 30 gallons a day each would consume 120,000 gallons, and adding to that the 60,000 gallons consumed by the Railway Department, you would get a consumption of 180,000 gallons a day which would bring down the capacity of the reservoir to a seventy days' supply? The water would last a good deal longer than that, because it would keep running in. It is very rarely indeed that there is not that quantity running in. The chances are that we shall rarely lower the water in the reservoir a foot.
119. As far as we can see, there will be an eighty days' supply? Yes; if there is no rainfall, and the country is dry.
120. There seems to be a swamp near the creek? Yes; there is always a run there.
121. You have an ample catchment area and plenty of water? I think there is abundance of water.
122. *Mr. O'Sullivan.*] Will the water supply be ample for the probable increase of Lithgow as a mining town? We could increase the supply by making other reservoirs higher up; but the present supply will do for some time to come.
123. It will be easy to enlarge the supply? Yes.
124. Is a portion of the watershed near the foot of the Zig Zag? No; but the valley comes out quite close to the Zig Zag.
125. There are some coal-mines working there? Yes.
126. They are not likely to pollute the water? They are nearly 2 miles below the site of the dam.
127. By having pipes made locally, you are sure of getting a first-class article, because of the inspection which would be made? We take the same rigid care wherever the pipes are made.
128. Do you take that care if they are made in Great Britain? Yes.
429. *Mr. Humphery.*] How many gallons of water will 1 inch of rain give to the reservoir? Something over 57,000,000 gallons, if all falling on the catchment area reached the reservoir.
130. Less than an inch of rain would fill the reservoir? Yes.
131. *Mr. Neild.*] What pressure do you anticipate you will have per square inch? In the lowest part of the town about 56 lb. to the inch.
132. And in the higher parts of the town considerably less? Yes. The pressure in the main street will be about 56 lb. to the inch.
133. Will that be sufficient to enable fires to be extinguished by the aid of hose without the services of a pumping engine? It is quite enough for the small houses in Lithgow. You could throw the water over the highest house there.
134. Over any two-storeyed building? Yes.
135. About 80 lb. is a common pressure? That is a good working pressure. It is higher than the average pressure. Not many towns have a pressure of 80 lb.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

WATER SUPPLY FOR LITHGOW.

REPORT.

1. Inspection of Site.—On the morning of the 22nd inst., the Sectional Committee appointed with reference to the proposed Water Supply for Lithgow, accompanied by Mr. Keele, Assistant Engineer, Harbours and Rivers Department, and the Mayor and Aldermen of the Borough, inspected the site of the dam and the route of the pipe-line. The dam site appeared to be well situated in a sandstone gorge, which furnishes a good opportunity for cheaply and securely impounding an ample supply of water.

2. Quality of Water.—Situated as the catchment area is, in barren sandstone country, there appears to be no doubt that the quality of the water will be very good, the likelihood of pollution being very remote.

3. Position of Pipe-line.—The route of the pipe-line seems wisely chosen, and appears to have been located with a due regard to the work which the main pipe is intended to serve.

4. Necessity for Water Supply and local opinion generally.—The evidence discloses that the inhabitants are apparently unanimous as to the necessity for a proper water supply. Lithgow is both willing and able to meet the additional charges laid upon its people.

5. Opposition to Scheme.—There is apparently no difference of opinion, as stated in the last paragraph, regarding the need of a water supply; but Mr. Andrew Brown opposes the proposed scheme on the ground that there will not be sufficient water for supplying power for a portion of his tweed manufactory, situated at Bowenfels; but he has sworn that he has no riparian rights. The water-wheel at his factory is about 15 h.p., and it is estimated by Mr. Brown that his probable loss from insufficiency of water, were the scheme carried out, might be £100 per annum. It does not appear to the Sectional Committee that the matter is worthy of special attention, nor can such interest, if any, be considered in antagonism to the interest of the health and comfort of a town with from 3,000 to 4,000 inhabitants. Mr. Chas. Lewis gave evidence as to insufficiency of the supply; but such evidence was completely refuted by Mr. Keele, Assistant Engineer, Harbours and Rivers Department, whose evidence your Committee regard as reliable.

6. Resolution of the Sectional Committee.—Your Sectional Committee are of opinion that the scheme is a good one, and that the Borough of Lithgow may reasonably be expected to meet the obligation thus incurred. Your Committee have unanimously passed the following resolution:—

> "That the Sectional Committee report to the General Committee in favour of the carrying out of the proposed Water Supply Scheme for Lithgow as submitted."

W. H. SUTTOR,
Chairman.

October 24, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

WATER SUPPLY FOR LITHGOW.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

SATURDAY, 22 *OCTOBER*, 1892.

[*The Sectional Committee met at the Court-house, Lithgow, at* 3 *p.m.*]

Present:—

The Hon. WILLIAM HENRY SUTTOR (Chairman).

The Hon. William Joseph Trickett. | William Chandos Wall, Esq.
Thomas Thomson Ewing, Esq. | Henry Dawson, Esq.

The Sectional Committee proceeded to consider the proposed Water Supply for Lithgow.

Mr. Thomas William Keele, M. Inst. C.E., Supervising Engineer, Harbours and Rivers Department, sworn, and examined:—

Mr. T. W. Keele, M. Inst. C.E. 22 Oct., 1892.

1. *Chairman.*] Will you make a statement in reference to this proposed Water Supply for Lithgow? I think you have had a description of the scheme from Mr. Barling, the Under Secretary for Public Works. It consists of a dam at Farmer's Creek, a distance of 3½ miles from the town of Lithgow. The top water-level would be at an elevation of 135 feet above the town. There would be 9-inch pipes from the dam laid along the bed of the creek, and afterwards along the road to the centre of the town, and then reticulation pipes, about 4 miles in length, consisting of 6-inch, 4-inch, and 3-inch pipes, would be laid along the streets. The cost of the scheme is estimated at £15,000.

2. You were the original surveyor of the scheme, were you not? Yes; the scheme was mine. It has been slightly altered. The pipes, instead of being brought along the railway as I originally surveyed the pipe-line, would be brought along the road, and I think very rightly so. At the time I surveyed it there was an uncertainty as to whether certain roads would run through private land—they had not been laid out—and that is the reason why I brought it along the railway. But since then the roads have been properly determined and surveyed, and I think it is right to bring the pipes along these roads. There are houses on each side which would be served more easily than they would be if the pipes were laid along the railway.

3. You think it is a suitable scheme and will answer the purpose for which it is intended? Yes.

4. *Mr. Trickett.*] I suppose this scheme is the best that you think could be devised for the water supply of Lithgow? Yes. I made an exhaustive inquiry. I was here about a month, and examined all the catchment areas, and I fixed on that spot, and am sure that it is the proper place to go to for the water supply.

5. You are satisfied that the site for the dam, which the Sectional Committee visited this morning, is the best for that purpose? I am.

6. As an engineer, you think it could be built there with sufficient solidity, and there need be no fear of its being washed away? I do.

7. Will the pipe-line from the dam to the town be straight or tortuous? Tortuous. It will have to follow the stream.

8. How do you propose to conduct these pipes—underground or overhead? They should be laid in trenches, I think. In my estimate for the pipe-laying I provided for that, and I think it is calculated for in Mr. Darley's estimate.

9. Will the gradient be a regular one, or will there be different grades? The pipe will follow the undulations of the surface of the ground.

10. These 9-inch pipes will be made of cast-iron;—you think there need be no fear of their ever carrying away and being broken? Not if they are laid above the reach of the flood. It does not rise very high in that creek. Having such a steep fall, the water does not rise more than 4 or 5 feet, I think. In any case, the exact flood-level could be ascertained, and the pipes laid out of reach of the flood.

11. Can you give the Committee any idea as to what time it would take in the first instance to construct the dam, and in the second place to bring the pipes from the dam to the town? I should say the scheme ought to be carried out easily within a year.

12. Do you mean bringing it into the town only, or the laying of the whole of the reticulation pipes as well? It would all depend on how the contracts were let. If they were all let about the same time there is no reason why all the work should not be constructed in a year.

13. Could it be done easily within a year? I think so.

14. Even if there were a considerable flush in the creek the work could still be carried on? Yes, certainly; because you would have the pipes carried up there during a dry season, or when there was no rain, and placed somewhere near where they were intended to be laid, and the work might proceed even when there was a flush in the stream.

Mr. T. W. Keele, M. Inst. C.E. 22 Oct., 1892.

15. Independently of the engineering aspect of the case, I believe that you have also made some observations with regard to the water supply itself in dry seasons? Yes.
16. Would you give the Committee the information which you have obtained about that? At the time I made the survey it was the termination of the driest period on record. According to rain-gauge observations which I received from Mr. Brown, of Methven, 12·97 inches of rain had fallen in twelve months, and immediately preceding the gauging which I made only ¾ of an inch had fallen in seven weeks; therefore, the gauge of 750,000 gallons per day, I think, was very satisfactory. 750,000 gallons per day were passing down the stream after the driest period on record, extending over twelve months.
17. That quantity of water if conserved would give sufficient to supply the town? More than sufficient.
18. For present requirements? More than sufficient for present requirements. I do not think that they would be likely to consume more than 250,000 gallons per day at the present time.
19. How many gallons do you say would be conserved in the dam? 15,000,000 gallons.
20. Is the catchment area chiefly Government land? I think there are a few mineral leases upon it, but very few indeed, and all further alienation has been stopped.
21. Along the surveyed pipe-line from the reservoir to the town, is it chiefly Government land? Yes, for some distance below the dam.
22. When you say some distance, do you mean half a mile, or what? I cannot exactly say from memory. I think that about a quarter of a mile of the line of pipes would be through private land belonging to the Oakey Park Colliery Company.
23. Have you considered the question of compensation for land that would be required for the pipe-line? No; I have not done that.
24. In the estimate £1,550 is mentioned for that purpose;—do you think that would be sufficient? I should think it would be ample.
25. I suppose that only a narrow strip would be required? That is all.
26. And that need not interfere with the land being utilised for other purposes? No.
27. As an engineer, you are fully satisfied that it is not necessary to have a reservoir in the town at the present time? Not at present. It was part of the original scheme that I submitted; but they determined to do without it at present, and I think very rightly. The storage reservoir will serve as a service reservoir for some considerable time. The pipes being so large, 9 inches in diameter, would deliver 750,000 gallons per day.
28. There need be no fear of any of the pipes being injured? Not with proper laying.
29. There would be no inconvenience caused to the consumers by reason of the extreme pressure of all this weight of water the whole distance? I think not. At Lismore they have slightly greater pressure than they would have here. The service reservoir there is 150 feet above the town, and the pressure of that height of water is constantly on the pipes.
30. And there is no inconvenience there? None whatever, so far as I have heard.
31. Are they cast-iron pipes? Yes.
32. There has been no breakage there? There were a few breakages at first. They will occur under any contract. There is always a term of maintenance provided for in the conditions of every contract, and these breakages have to be made good by the contractor. After that, it is very seldom that breakages occur. They generally take place at weak places soon after the water has been laid on to the mains, and they can be made good.
33. *Mr. Ewing.*] You say you made a complete investigation with regard to this water supply? Yes.
34. Had you anything to do with Sutherland's Gully? Yes.
35. And you found it unsuitable? Quite unsuitable.
36. Do you know of any rival scheme to this? The townspeople were anxious to have a water supply from Marangaroo, which has a catchment area of about 16 square miles. That was where I was first shown over the ground. They were anxious I should go into that matter, and I did so, and I found that it would have to be a pumping scheme.
37. Not a gravitation scheme? Not a gravitation scheme, and would be very costly, probably costing as much as that of Bathurst.
38. What was the cost of that? I think about £50,000.
39. In other words, three times as much as the cost of this scheme? Yes.
40. And the result would be no better? No.
41. In fact, not as good? Not as good.
42. As you have already said, you think the water supply would be ample, and, from an engineering point of view, you approve of this scheme? Yes.
43. Have you seen Mr. Darley's evidence? Yes.
44. Do you agree with it? Yes.
45. You spoke of the Lismore scheme—that is not a gravitation scheme, is it? No; it is a pumping scheme to the service reservoir, and a gravitation scheme after that.
46. Do you know anything with regard to riparian rights in connection with this creek? I have seen some letters from Mr. Andrew Brown claiming a right to the water.
47. Do you know how the case stands? I do not know how the case stands, other than that this claim is being made.
48. Do you know the basis of the claim? He claims a right to the use of this water. He considers that the water should not be interfered with, and that if it is interfered with some compensation should be paid to him for the loss of the water.
49. Do you know what his operations are? I have never been down there, but I understand that he has a mill which is operated partly by steam and partly by water.
50. Do you know what power the water furnishes? I cannot give you those particulars.
51. It would appear from the evidence with regard to the water supply that there would be enough for both parties, if properly utilised? I am sure of it. We only take half the catchment area—4 square miles above the dam. The catchment area above the Oakey Park Colliery is 8 square miles, consequently there would be 4 square miles of catchment area supplying water to the creek below the dam, and there are large feeders below the dam which would supply ample, I consider, for Mr. Brown's purposes.
52. You, therefore, are of opinion that this scheme will not interfere with any riparian rights that Mr. Brown has, if any? I certainly am of that opinion.

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53. *Mr. Dawson.*] I presume you went carefully into this estimated cost of £15,000? Yes; I have gone into that.
54. Do you think that could be reduced in any way? Well, there is the question of land. I think it is very unlikely that compensation for land will reach the sum of £1,550.
55. How have you arrived at the estimate of £1,550 for land? That is compensation to be paid for the right of laying pipes, and so on.
56. I know that, but how did you arrive at the sum of £1,550? I cannot explain it. That is an estimate which has been prepared in the office.
57. In Mr Darley's report he says that the estimate for land is a rough one? Yes, but he also states in his evidence, I think, that he has left an ample margin for all contingencies, and I have not the least doubt he has, knowing perfectly well how small a quantity of land would be required for laying the pipes.
58. You think that £1,550 for land is rather a large estimate? A very large estimate, and I do not think that the estimate of £1,225 14s. 2d. for engineering and contingencies is likely to be reached.
59. As regards the item £7,024 5s. 10d. for pipes and special castings, are not wrought-iron pipes cheaper now than they were when this estimate was prepared? I have no information about that just now.
60. Have you the number of tons at so much per ton? Yes, but unfortunately I have not my estimate here. I think you had better rely on the information you received from Mr. Darley about that.
61. You say that you have not been to Mr. Brown's mill? No.
62. You say that the power used there is partly steam and partly water? Yes; so I understand.
63. As an engineer, do you say that it would be better to drive it with steam, or partly with steam and partly with water? A great deal would depend upon the price of coal. As a rule, it is cheaper to drive with water.
64. Of course you could not tell without seeing the circumstances under which the mill was working? No; I could not.
65. In reply to Mr. Ewing, you said that you were positive that if this scheme were adopted, and if Mr. Brown were to drive his mill by water power, he would still have sufficient water to drive it? I am quite confident of that.
66. He will suffer no loss? I think not. At the time I made the survey, as I explained just now, 750,000 gallons of water were passing down the stream immediately after the driest period on record, and Mr. Brown was then using the water and it was sufficient for him.
67. Seven hundred thousand gallons per day will be quite sufficient for three times the population at present living in Lithgow? Yes.
68. *Mr. Wall.*] Do you know what the average rainfall here is? It is about 40 inches a year.
69. What was it when you made those tests? Thirteen inches in twelve months.
70. That was less than one-third of the average rainfall? Yes.
71. You tested the volume of water coming down? I did.
72. Where? Just a few hundred yards above the Oakey Park Colliery.
73. You stated just now that there are other sources of supply below the site of the dam? Yes.
74. Did you test the volume of water below this? Yes.
75. And you embraced all the inflows? Yes There is a large tributary running up towards the Zig Zag, and that is a good feeder, and there are one or two other feeders. The gauging took place below all these feeders. The gauging I made was immediately above the Oakey Park Colliery, and below the proposed dam site.
76. *Mr. Dawson.*] In the other scheme did they come in below the dam site? Yes.
77. *Mr. Wall.*] At the time you tested the volume of water there was only one-third of the average rainfall? Less than that.
78. Then, assuming that the water supply was dependent on the rainfall, the actual supply from the creek would be 2,250,000 gallons? You cannot take it in that way. It would probably be very much greater than that.
79. Assuming that the water was simply supplied by the average rainfall, it would give you 2,250,000 gallons? Yes.
80. That would be a discharge of 2,000,000 gallons after supplying the place? Yes.
81. In constructing the proposed dam, what provision have you made for the outflow of water? The dam would impound 15,000,000 gallons at 25 feet elevation.
82. How do you propose to relieve the volume of water when you have the dam full? By having a sluice pipe in the dam, operated by a valve, the water could be drawn off at any time for repairs or for cleaning out the dam.
83. And, taking the average rainfall, your sluice pipe would discharge 2,000,000 gallons a day? Yes, after it was opened up.
84. At the time you tested it, was there sufficient water there to work the machinery owned by Mr. Brown? No doubt about it.
85. What is the pressure these pipes are supposed to sustain? The pressure on these pipes would be 58 lb. to the square inch.
86. What is the altitude of the dam above Lithgow? One hundred and thirty-five feet.
87. Does your estimate for pipes include service pipes? No.
88. Can you give us any idea what the additional expense of service pipes would be, taking into consideration the number of houses to be supplied? I could not give you that information now reliably.
89. Have you any idea what would be the cost of laying the water on to the houses? No. The work is done by the council, as a rule, and not by the Department.
90. But you might have some knowledge of what the actual additional cost would be;—you say the estimated cost of your scheme is £15,000? Yes.
91. You do not know how much that would be increased by the cost of the service pipes? I could not give you any reliable information.
92. Can you state the cost approximately? The information that I could give you would not be likely to be of any value.
93. Do you think it would be an additional £5,000? I do not think it would exceed £5,000.
94. We have had some evidence in connection with the Goulburn water supply, and it appears that in that case the additional cost of £15,000 the Department stated was in connection with an extended system of reticulation? It would probably in that case be the reticulation pipes that would add to the cost, and not the service pipes, with which the Department have nothing to do.

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95. Is it a general custom to use leaden service pipes? It is sometimes.
96. Do you think leaden pipes would stand the pressure from the altitude of that dam? It would depend on the thickness of the pipes. Galvanized-iron pipes are used very largely now.
97. *Mr. Ewing.*] Judging from the plan which you produce, there appears to be a large quantity of water coming into the creek below where you took the gauge? Yes; there are a number of feeders below where I gauged the stream.
98. Very considerable feeders, apparently? Yes; they are. They add very considerably to the discharge.
99. Therefore, the amount of water passing by your gauge did not show the amount of water that would pass the turbine wheel? No.
100. The turbine wheel to which reference has been made is not shown on the plan? No.
101. It is west of where the plan terminates? Yes.
102. *Chairman.*] Do you know where these water-courses fall—below or above Mr. Brown's? There are several tributaries below where I gauged the stream—one coming from the Vale of Clwydd, one from Sutherland's Gully, and one below that again. That might add 2 square miles to the catchment.
103. Do these fall into Farmer's Creek above Mr. Brown's mill? Yes.
104. *Mr. Wall.*] It is not customary for those persons who are supplied with water to pay for the service pipes? The cost is shared, as a rule. The council provide the piping from the main pipe to the kerb line, and from the kerb line into the house the water has to be laid on by the consumer.
105. Therefore, the cost of the service pipes would be about equally divided between the council and the consumer? Yes; that is the usual practice.
106. This site to which you have referred, where the turbine wheel is located, would have the advantage of nearly twice the catchment that the dam has at the present time? I should say that it would have at least 6 square miles of catchment.
107. That is irrespective of 4 miles above the dam? I assume that that is cut off. It would, however, not actually be cut off except in very dry seasons.
108. But, irrespective of that catchment above the dam, what would be the catchment below the dam, between it and the turbine wheel? I should say about 6 square miles.
109. *Mr. Trickett.*] It would not be advisable, would it, to take in that lower catchment, by reason of possible pollution? No, it would not.
110. You fixed the site of the proposed dam having that in view? Yes; being entirely out of reach of pollution.
111. If it were built lower down there would be risk of pollution? Yes.

Mr. Thomas Bennett, Mayor of Lithgow, sworn, and examined:—

Mr. T. Bennett. 22 Oct., 1892.

112. *Chairman.*] You are Mayor of Lithgow? Yes.
113. How long have you held that position? This is the third year.
114. Would you like to make a statement to the Committee with reference to this proposed water supply? I do not know that I can make any further explanation than that which has already been made in writing to the Government and the various Departments.
115. Can you give us some information as to the feeling of the people with reference to the scheme? As far as I know the opinion of the people, I believe they are unanimously in favour of having the water supply for Lithgow, and that they are very willing to accept the scheme proposed by the Government, and to undertake the liabilities attached thereto. The scheme has been discussed here to-day—Mr. Keele's scheme, I mean. There is one item in that scheme, £1,550 for the resumption of land, which I am of opinion could very well be left out altogether. I see no room for anything in that shape. The only possibility there was for anything of that kind occurred with the Oakey Park Colliery Company, and on Monday last, at the Land Board meeting here, we arrived at an agreement mutually between the Oakey Park Colliery Company and the people for an exchange of lands, and it was accepted by both parties. Of course, that depends on the consent of the Government, and the Board seemed to be agreeable to it. It was decided that the pipes should pass through the company's land free, on account of certain exchanges of land proposed. If that is agreed to, I do not see why the £1,550, or any part of that sum would be required for land. This exchange was first proposed at the Council meeting, under the belief that there would be a dam required lower down, but the departmental surveys have shown that it would be unnecessary to construct a dam there as there was sufficient water above for the requirements of the town. Therefore, they have abandoned that for the present. But the Oakey Park Colliery Company was willing to make provision for any future requirements and to exchange at once. That was proposed and considered this week, and one of the conditions of it was that the pipes should be taken through the land free. Therefore, I do not see the necessity for that item. There are no other parties coming between, that I know of. Our public roads go close to the Oakey Park Colliery, so there would be no other parties' land that we should want.
116. Has your Council passed a resolution with reference to this scheme? Oh, yes. Early in the year, after two or three schemes had been considered, we passed a resolution accepting the scheme proposed by Mr. Keele, urging the Government to adopt that scheme and carry it out, and we would accept the obligations under it.
117. Mr. Barling, in his evidence, quotes the following letter signed by you:—

I have the honor to inform you that at a meeting of the Council held on Monday, 4th January, it was decided to accept the Government scheme for a water supply for the town of Lithgow, as provided by the officers of the Harbours and Rivers Department, and that the Department be requested to have it constructed as soon as possible.

What are we to understand from that—that you fully accept the scheme? That is the letter accepting the scheme.
118. I believe your Council is not very heavily in debt, is it? We have a credit at present—in fact, we never have been in debt. We have not tried that yet. I think last night we had a credit balance of between £100 and £200, and have done all the heaviest work. Therefore, I do not see any necessity for running into debt, except for water and gas. For general purposes we are out of debt, and there is no necessity to go into debt that I can see.

Mr. T. Bennett. 22 Oct., 1892.

119. *Mr. Wall.*] What are your present rates? Somewhere about £1,500 or £1,600 a year. They will, I am certain, be £2,000 next year. A good many of the buildings fronting the main street have been recently erected and were not assessed last year, and I think that the last two or three years' assessments have not been so carefully carried out as previous ones were. I feel confident that next year's rates will amount to about £2,000.
120. Have you considered any sources from which any revenue would be derived in connection with this water supply apart from the ordinary rate? We expect to supply the Railway Commissioners.
121. Have you had any communication with the Railway Department in regard to that? Yes; but nothing very definite, for the water supply scheme seemed to be so indefinite and far off that we did not follow up our communication; but the Commissioners have intimated their willingness to buy water from us provided that the rate suits them. They asked us what the rate would be, but I do not think we have communicated any further.
122. Have you any idea what quantity of water they would take? No, I have not. But this is a very important coaling and watering station, and they would, no doubt, take a large quantity of water.
123. What are your rates based on, 5 per cent.? Five per cent. on nine-tenths of the capital value.
124. Of course you know that under the Water and Sewerage Act you are able to impose a rate of 5 per cent. for water supply? We are not, so far, under that Act, of course.
125. Basing your interest on this amount it would be about £600 per annum? I think it would be more.
126. On £15,000 at 4 per cent.? Yes, that is the expense we have to meet—about that. I think we estimated that we should derive from this source something like £1,400 or £1,500 by imposing the maximum rate.
127. Your maximum rate would be equal to double the municipal rate, which is based on 5 per cent. now? Yes, on the capital value.
128. On the annual value? We have a double rate—one on the rental and the other on the capital.
129. You are now receiving £1,400? We are now receiving nearly £1,500, and I am satisfied that next year's rate will be £2,000.
130. And with the water rate based on the same proportion as your municipal rate you would be able to make a profit of £1,000 out of this water scheme or give the benefit of it to the ratepayers? I feel quite convinced we could easily pay the interest, and pay off the debt within a given time; for having no other indebtedness we have a tolerably free hand for the scheme.
131. You think the ratepayers would have no objection to be assessed for this water supply? I have never heard of an objection yet.
132. Have they had any public meetings to protest against it? No.
133. Or to approve of it? We have had some public meetings to urge on the passing of it, but no objectors.
134. *Mr. Dawson.*] Do you know at what rate the water was offered to the Railway Commissioners? So far as I recollect, we did not state a figure. We heard they were going to lay down pipes themselves, and, as we anticipated this scheme, we immediately wrote to them asking them whether it would not be better for them to accept water from one line of pipes, and they wrote to us saying that they intended to do so, and they wanted to know what rate we would charge. We scarcely knew what to ask, and the scheme being so far in the distance, so far as I recollect, we have never quoted any price.
135. I suppose you would sell the water here at so much per room, as is usual in Sydney and other places, or else at so much per 1,000 gallons by meter? I suppose that for the Railway Commissioners, the charge would be at so much per 1,000 gallons. I think they were paying 8d. per 1,000 gallons some time ago in the south.
136. Do you know what quantity of water the Commissioners would use here per month? I do not.
137. Do you know what their present consumption is? Not less than 60,000 or 80,000 gallons per day.
138. Mr. McLachlan has informed Mr. Barling, and Mr. Barling has informed the Committee, that the present consumption here by the Railway Department is 1,200,000 gallons per month, but they expect to get the water at the rate of 6d. per 1,000 gallons, which would be an income of £360 a year;—do you think that 6d. per 1,000 gallons would be a fair charge, considering the large amount of water consumed by them? Yes; I think it would be, considering it will come in by gravitation—that after once laying out the scheme the water will come by itself, and there is an unlimited supply of it.
139. Have you made any calculation or have you any figures to show that if you got this water supply you would not press unduly on the ratepayers by having it—you know that you can pay too much even for a good thing? Oh, yes.
140. Have you gone carefully into this matter as to the amount it will cost you, and the amount which you will have to tax the people for? The figures have been quoted—that the interest will cost us something like £600 a year—and if we can derive an income of £1,400 or £1,500 a year by the tax, there is a margin left for any reasonable allowance.
141. In addition to that £600 a year interest you have to calculate for the working expenses—what have you calculated for them? The working expenses will be merely nominal, I think, excepting there were bursts and breakages, on account of the scheme being a gravitation one.
142. Then you are certain as Mayor of the town, having the interests and welfare of the ratepayers at heart, that this water supply will be of great advantage to them and will not cost them too much? I think so. The town would very gladly accept it, I know.
143. *Mr. Ewing.*] You have already said that there is a great necessity for a water supply for Lithgow—that it is badly wanted for the town? Very badly wanted.
144. Where do you get your water from at present? We catch a great deal from the roofs of the houses. The rest is drawn from Farmer's Creek in large barrels at 1s. or 1s 6d. per barrel, holding about 70 or 80 gallons.
145. Your supply then comes either from wells or is carted from the creek? It comes from the same creek as we are now asking to obtain it from. We get it from Farmer's Creek, but below the polluted points. We wish to get it from above them.
146. Have you many tanks in the town? No public tanks.
147. I presume that each house or hotel has a well or tank? Most of the hotels have tanks or wells, and a good many private houses have 400-gallon tanks for domestic purposes.
148. I suppose you have also cesspits in the town? Yes; there are some.

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149. Regarding the matter from a sanitary standpoint, do you think it is a good thing to have wells and cesspits in the same town? From a sanitary point of view it is important for us to have a water supply.
150. What is your total revenue? At present we have only a lighting rate of 2d., and about £1,800 or £1,900 altogether. Of course we are empowered to strike a 6d. rate if required.
151. I want to get at the total revenue of your borough;—how much do you get from the lighting rate? We may collect to the extent of half of the general rate—up to £800. The lighting rate at present is only £260; but it is a 2d. rate, and we might strike a 6d. one.
152. What is your Government grant? The Government gives nothing on the lighting rate.
153. The Government grant to the borough? The Government grant at present is equal to the general rate.
154. That is £1,600? Yes; I am speaking in round figures.
155. And your rates are £1,600? Yes.
156. Therefore the total income of your borough at present is about £3,400? There are a few extras, small things, but they do not interfere with the general rates.
157. We are speaking of general principles? Three thousand four hundred pounds.
158. And you have no debt? No, a good credit.
159. You have said, with regard to this matter, that you think your total annual expenses in connection with these waterworks will be about £600 for interest, and say another £100 for working expenses? Yes; say £150 for working expenses.
160. You say also that you expect to sell to the Railway Department a certain quantity of water? Yes.
161. They estimate it, I think Mr. Dawson said, at £360; will the factories or the mines take any water? The mines are not likely to do so. The ironworks may, and some small factories in the main streets may take it.
162. You have a pottery works here? Yes.
163. Will they want the water? I am not sure whether they will or not.
164. And you are not sure how much the factories will require? No.
165. But they will require some? We expect that they will require some.
166. If they take nothing at all, and if the Railway Department takes £360 worth, your total liability will be about £400 a year? Yes.
167. And you are sure you will be able to meet that? Yes. It is very likely that the Commissioners will take more than that.
168. *Mr. Trickett.*] When you have had to bring water from the creek by carts, what has been charged per 100 or 1,000 gallons? We buy by the barrel, and I expect the cost will average 2s. 6d. per 100 gallons, or nearly that. We pay 1s. 6d. for a large-sized cask. You may say £1 per 1,000 gallons.
169. This proposed supply, if you get it, will be very much better than having to obtain water in that way? I think that the parties using the water now are paying more than they will have to pay in water rates, and then we have it mixed up after the mines have pumped into it.
170. Do you think that the town is progressing? Oh, yes, very much so in buildings, and so forth, for the last three or four years. We had no chance to build before. I do not see any possibility of its going backwards.
171. Since you have been here and been Mayor have you noticed the place has gone ahead? Oh, yes.
172. Because you said the value is likely to increase? Well, there is a better class of houses being built, and more of them, and the better portion of the land is just being occupied. People did not have the privilege until lately.
173. There is every sign of the place being permanent and progressive? I think so.
174. Is it chiefly freehold land or leasehold? Where all the principal buildings are it is freehold, purchased lately from the estate.
175. What other land is there besides the freehold land? Well, it is all freehold, of course. I meant that parties are building and living on their own freeholds. I thought you meant whether the land was owned by the parties who built the houses.
176. No, I did not mean that? Oh, it is freehold all round.
177. Excepting Mr. Brown, is there any objector to this proposed water supply that you are aware of? I do not know of any.
178. You never heard any one objecting, except Mr. Brown? No, and in reference to Mr. Brown's objection I may remark that the greatest body of water that goes to Mr. Brown's place comes into Farmer's Creek below where our dam is proposed to be. All the way from the Vale of Clwydd up there are some miles of catchment on each side, the water from which comes into Farmer's Creek just beyond the brewery. Then there is Mort's Gully and other places all below the dam—three or four places on either side. I do not believe that if all our water were taken out of the creek Mr. Brown would know that that had been done.
179. It would not affect his water-wheel? It could not possibly do so. If our supply were taken from the creek he would not know it.

Mr. Fritz B. Johnson, Council Clerk, Lithgow, sworn, and examined:—

Mr. F. B. Johnson. 22 Oct., 1892.

180. *Chairman.*] Can you give us any information about the population of the borough? Three thousand five hundred is the population of the borough.
181. The number of houses in the borough? Eight hundred and eighty-three.
182. The number of ratepayers? About 736.
183. Can you give us the actual amount of rates received from various sources? £1,800 would be the total amount received from all sources without the Government endowment.
184. Does that include the lighting rate? Yes, and all other rates and building fees.
185. How do you separate them? We have several accounts.
186. Can you give us the actual amount derived from each source? £1,531 from the general rate; £260 from the lighting rate, and the balance is building fees and other small things, such as fines.
187. *Mr. Ewing.*] You have had considerable experience as a surveyor? I have had a little.
188. You have been an assistant surveyor? Yes, I have.
189. Do you know this country well? I do.
190. In general terms, you approve of the scheme? I do.
191. And you believe the public approve of it? Yes, I do.

192.

Mr. E. B. Johnson. 22 Oct., 1892.

192. The water is good? Yes.
193. *Mr. Trickett.*] Have you estimated what the expense of carrying out this scheme will be? No; I have not done anything in that matter.
194. In the particulars submitted to the Committee it is stated that the working expenses are estimated at about £160 a year—do you think that would be a fair amount? Yes, I think it would.
195. *Mr. Dawson.*] When did you make that estimate of yours as to the number of inhabitants? This year, from my rate-book.
196. Judging from the Mayor's evidence the place has been steadily progressing, and I find that at the last census the inhabitants numbered 3,867? Yes; but that includes outside the municipal boundaries as well as in the town.
197. Have you gone into the matter of a probable expenditure of £15,000—do you think that that is excessive? I do not think it is excessive.
198. You heard what the Mayor said about the £1,550 for land, which item he thinks might be done away with altogether? Yes; I think that might be done away with, because most of the pipes will come along the roads.
199. How long have you been Council Clerk? Nearly three years.
200. And from your practical knowledge you have no doubt that this scheme will not only pay, but will also be of great benefit to the people here? I think it will pay, and also be of benefit to them.
201. *Mr. Wall.*] You know this pipe-line which it is proposed to lay down? Yes.
202–3. Will that come within 150 feet of the various houses in the borough? Yes; within 150 feet, certainly.
204. Then it would make the whole of these houses in the borough ratable? Yes.
205. *Mr. Dawson.*] Have you a fire brigade here? No, we have not.
206. I suppose you are likely to have one? If we had the water that would follow.
207. That is the reason why you have not got it? I expect so.

Mr. William Sandford, iron manufacturer, Lithgow, sworn, and examined:—

Mr W. Sandford. 22 Oct., 1892.

208. *Chairman.*] Would you like to make a statement in reference to this water supply scheme for the town of Lithgow? Yes. We want a water supply.
209. What are you? An iron manufacturer.
210. Is your manufactory in the town of Lithgow? Within the town of Lithgow. It is the Eskbank ironworks. We use a considerable quantity of water, and when our other mills are ready we shall want a still larger quantity. At present we use water from the creek, and also from another source. What I am anxious about is that we shall be supplied during very dry seasons, because if we get our machinery all working and then the water supply stops we shall be in a very bad position.
211. Have you considered the scheme at all, and do you understand it? Oh, yes. What I am anxious about is that we should have sufficient storage. Personally I would have preferred the scheme to get water from the Marangaroo, so that we might make sure of always getting a very large supply of water; but, of course, the expense would be very great, and rather than have no scheme at all carried out, I say have the present one. But I would have preferred the other had it not been for the expense.
212. You have heard that it would cost something like £50,000? That is the difficulty.
213. Do you think that this scheme would meet the requirements? Provided they get a good storage.
214. You have heard that the dam will conserve 15,000,000 gallons? Yes.
215. And that there is a pretty constant running stream up there? Yes. I know that at Mittagong, many years ago, the work had to stop because of the short supply of water. I have been here six years, and we have never been short of water; but I believe, years ago, they were very short.
216. But during those six years, that very dry season to which Mr. Keele referred, occurred? Yes; we have had quite sufficient.
217. Do you recollect when that was? Not the very dry time.
218. Mr. Keele said that in one year only 13 inches of rain fell? I cannot tell. I can only speak of experience during the past six years, but judging from what I have heard from Mr. Brown, they had a very dry time here many years ago, and the water ran short. If the Council will undertake to have good storage, I would let the present scheme be carried out.
219. What do you call good storage? Sufficient for four months.
220. Where do you think that storage ought to be situated—what extra storage would you recommend? Well, they should have a second dam—one this side. If we go in for smelting operations to make the iron and steel from the ore, as we hope to do some day, we shall want a very large quantity of water, and that is what I was looking ahead to. We hope to carry through that scheme.
221. Do you get much Government work to do? It is all Government work. We should be closed now if it were not for the Government work.
222. What do you do for the Government? Bar, angle, and T iron. We are making the iron for the King-street to Ocean-street tramway. We also make a lot of iron for the Railway Department. We have a good connection throughout the country for bar-iron, and are putting up a mill and machinery for making galvanised iron. We do not use any iron ore at present, but simply scrap and partly manufactured, from the old country; but we hope to make it from the ore.
223. How far would you have to go for that? We should have it in this district. It is better to bring the ore to the coal than to take the coal to the ore.
224. Have you any iron ore in the district? Not within 40 or 50 miles; but that is no distance to bring iron ore.
225. Where is it—along the railway line? Yes; we have it in three or four places within 70 or 80 miles radius.
226. Do you think that will develop into a large industry here in the near future? I think it will. It will not be my fault if we do not get it. It is a question of wages. If the Government put a duty on at the port, we shall have that industry. If they do not, we shall not have it.
227. *Mr. Trickett.*] Where is your service—on the edge of the creek? Yes.
228. And you pump the water up? Yes.
229. Does that cost much? No; because we have plenty of steam from waste heat from the furnaces.

Mr. W. Sandford. 22 Oct., 1892.

230. Still, it would be very convenient to have the water laid on? We could not undertake to take much, because we get water right into the works by gravitation, and then pump it up.
231. Then this water supply would not be of much advantage to you? Oh, no; not at the present moment.
232. When would it be? Supposing, for instance, our water supply should run out.
233. Supposing the creek went dry? Yes, we should have to go to the Council then for water. We could not afford at the present time to take the water from them.
234. You could not afford to pay 6d. or 8d. per 1,000 gallons? Oh, no.
235. Then as regards looking for any revenue from that source, they need not expect it? I could not at present hold out anything in that way. But we do not know what the works may develop into, and we may have works further up, nearer the railway station; and under those circumstances, we should no doubt have to go to the Council for water.
236. Do you know Mr. Brown's manufactory? Yes.
237. He has a water-wheel working there, has he not? He has.
238. I suppose a slight pollution of the stream does not affect the motive power in any way? No, not at the present time. Of course there is plenty of sand in the stream.
239. If this dam were constructed, and a supply tapped in this way, do you think it would interfere with his operations? I am not prepared to state anything about that.
240. Do you think it would be for the general good of the district that the town should have this water supply? We want it very badly.
241. Chiefly for private consumption? Yes. There are a good many hotels. It is a disgrace the way they get it in dry seasons, having to take it from streams into which the sewage goes. I think that is a most villainous thing.
242. The people would be served more cheaply than they are now they have to have the water carted? Yes; especially in dry seasons. A great many have merely galvanised iron tanks, and that is not nice.
243. Primitive and old-fashioned? Yes.
244. *Mr. Wall.*] You have heard Mr. Keele's evidence—that this dam would conserve sufficient water and that, testing the volume of the stream in a very dry season, one-third of the stream would be sufficient to supply 250,000 gallons per day for the town? I did not hear that evidence.
245. Mr. Keele in his evidence stated that he tested the volume of water in the stream in a very dry season, when the rainfall was only 13 inches in twelve months, and the supply was then 750,000 gallons, and he estimated that 250,000 gallons would be more than sufficient for the requirements of the town for some time to come, therefore this dam, after supplying the place, would have an overflow of 500,000 gallons per day—do you not think that would be ample storage? Yes.
246. Carrying Mr. Keele's evidence further, he states that the average rainfall is 40 inches; that being so, it would make the volume of the stream, assuming it was dependent on the rainfall, 2,250,000 gallons per day, leaving a discharge from the dam down the stream of 2,000,000 gallons per day after supplying the town; if those figures are correct it would not be necessary to construct any further dams to conserve water, if you can depend on the testing of the volume of water at the site of the proposed dam? If the quantity mentioned by Mr. Keele was gauged at the termination of a dry season during which only 13 inches had fallen in a year, the supply would be sufficient.
247. *Mr. Ewing.*] You say you get your water from the creek and pump it up? Yes.
248. Does that cost you anything? Only the looking after the pumps and keeping them in order. We get our water almost for nothing. We obtain it not only from this stream, but also from another stream that comes down through a gully on the other side.
249. For your present operations you have ample water? Yes.
250. You do not know whether the supply is ample for the future or not? That would depend on the quantity coming down the stream.
251. You cannot tell us? No.
252. Therefore you do not know whether it would be sufficient? Yes.
253. You know that for the present you could not buy any of this water? No, we could not.
254. How far will the service pipe coming from the storage reservoir into the town be from your works? I suppose nearly a quarter of a mile.
255. More than 150 feet? Yes.
256. So they could not rate you? Oh no.

Mr. Andrew Brown, landowner, Bowenfels, sworn, and examined:—

Mr. A. Brown. 22 Oct., 1892.

257. *Chairman.*] Would you like to make a statement to the Committee with regard to this water supply? Yes; my factory is supplied with water from this creek. I have a 20-ft. overshot wheel, which is equal to fifteen-horse power. We have sometimes been very short indeed of water, and I fancy that the people of Lithgow very often find themselves very short of it, too. I can state positively that we were three months at one time without a drop of water running in the creek. That occurred in 1842, below all these sources which it has now been stated will be permanent. That is the longest time, so far as I know, that we have been without water altogether. We are often short of water, but, so far as I know, that was the longest time that we have been totally without it; but often enough we have very little water indeed in the creek, and if the proposed quantity was taken away, we would sometimes have none for many months together.
258. What are your fears in reference to this proposed water supply? That it will stop my factory for many months. I am prepared to show the number of people it employs, and also to show that in 1842 there was no water running in the stream at Eskbank, and the coachman for the late Mr. Lawson was there with horses, and had to dig a hole in the creek in order to get a bucketful of water for them.
259. That is a very long time ago, though? In 1842. The water supply at Marangaroo has never been known to be dry, and a person will give evidence as to the fall that there is in that creek. I believe the sources of the two creeks are at about an equal elevation.
260. Leaving Marangaroo out of the question, and also leaving 1842 out of the question, what has been your experience since 1842, in regard to Farmer's Creek? Very frequently there has been very little water in it—frequently no water running to the wheel—in several years.
261. *Mr. Dawson.*] You have stated that since 1842, and since you have had this mill, you have run short of water? Frequently.

Mr. A. Brown. 22 Oct., 1892.

262. Considering how cheap coal is here, would it not be better for you to use steam? But the water costs nothing after it is once laid on.
263. But this Marangaroo scheme will cost £50,000, and it would not be fair to ask the people of Lithgow to pay interest on £50,000, when works costing £15.000 would do for them quite as well? I hold that the Marangaroo scheme will only cost additionally the cost of extra pipes.
264. Are you aware that the Government have taken every means in their power to ascertain the best way, and the cheapest way, of getting water from the Marangaroo, and that they say it cannot be done under £50,000; and they have sent competent men out to examine it? I should think there would be no difficulty in finding that that is altogether a mistake. I say that the difference in cost between the two schemes would simply be for the extra length of piping, and about twice the length of pipes would be required for the Marangaroo scheme, according to Mr. Keele's evidence.
265. How much farther is it from here to the place where the dam would have to be built for the Marangaroo scheme? About 3 miles, I believe. Mr. Keele says the difference between the two schemes is 3 miles.
265½. That would be a difference of £7,000 for the piping? But I am perfectly sure that Mr. Keele never saw the source of the Marangaroo Creek, or he would not talk as he has done. I wish a person to give evidence in reference to the Marangaroo Creek, if you will hear it.
266. You say that the present source is sometimes unreliable; would it not be better for you to use steam? Not whilst I have the water. Besides, the water is required not merely to turn the machinery; we require it also to wash the wool and scour the cloth. It is absolutely necessary for that.
267. *Mr. Ewing.*] You say the length of piping would be twice as much for the Marangaroo scheme? Yes.
268. Supposing you found that it would cost £10,000 more to lay the pipes twice the distance, would you say it would be justifiable to do it? I think it would be because there would be a more certain supply.
269. Leaving the matter of a certain supply out of the question, do you believe it would be justifiable for the Government or the people here to expend £10,000 extra, in order to keep the water running down to your turbine wheel? It is not to get me water, but to supply themselves.
270. But, supposing the people and the Government are satisfied that there would be an ample supply under this scheme, then the only thing they have to consider is if it is worth while to spend £10,000 more to take the water to your woollen factory? Will it cost £10,000 to lay the pipes 3 miles?
271. If the distance is 3 miles, the pipes, &c., will cost approximately £10,000, and if twice the distance they will cost £10,000 more? Mr. Keele says it is twice the distance.
272. What is your horse-power? The water-wheel is 15 horse-power.
273. And the engine? Twelve horse-power.
274. That would make 15 horse-power worth £10,000, if this estimate be correct? The erection of a wheel does not cost much.
275. If your wheel were stopped to-morrow, and you were forced to use steam, would you believe that you were damaged to the extent of £10.000? No; I should have to erect an engine.
276. What would it cost to place you in the same position as you are in with water power? I should require a 40 horse-power engine to work the whole of the machinery.
277. What damage would the stoppage of your turbine wheel be to you? £100 a year.
278. You consider that it would damage you to that amount? It would.
279. Have you any riparian rights? None, whatever.
280. The Government never granted you any rights? The property is my own. I paid the Government for the land. I have no other rights.
281. But you did not pay the Government for the land that makes the creek? No; I could not make a bargain about that.
282. You have no riparian rights over the water of this creek? Nothing more than that the water goes through my property.
283. How many men do you employ? One of my tenants will tell you.
284. When will he be here? He is waiting.
285. He will give evidence in detail? Yes.
286. But you estimate your injury at £100 a year? Yes; it would be that amount.
287. Therefore your damage would be about £2,000 if money is worth 5 per cent.? Yes.
288. *Mr. Trickett.*] You have said that you think the estimated cost of the Marangaroo scheme is very much over-estimated? Yes.
289. Have you gone into details? No.
290. It is merely conjecture on your part? Yes. I think the cost of pipes is the only extra cost.
291. But you do not know what the cost of a dam would be for that scheme? I presume the cost of a dam would be the same as in this case.
292. The only real objection that you have to this scheme is that it would injure your business? Yes.
293. But in the ordinary course of progress do not you think that water supplies of this kind must be used for the benefit of the populace and not for the benefit of one individual only? Certainly; but that individual if he be injured has a right to compensation.
294. *Mr. Wall.*] You say you have a 20-ft. overshot water-wheel? Yes.
295. Can you tell us what volume of water is required to work that wheel? No, I could not.
296. Taking the estimated flow of that creek, gauged by Mr. Keele at a time of drought, as 750.000 gallons per day, do you not think that one-third of that would be sufficient to work your water-wheel? I have no doubt it would.
297. Then if the people of Lithgow desire the Government to conserve that water now going to waste over your water-wheel do not you think they have a right to do it? I am not questioning their right.
298. You would not suffer any injury, according to your own statement, for you say you cannot work your water-wheel in a dry time? When the creek is very dry we cannot.
299. When the flow of the creek is anything like it is at the present time it would work half a dozen water-wheels? Yes; I have no doubt there is a good deal of water now going to waste.
300. If the Government conserved one-third of the water that there is there the outflow from that dam would, according to Mr. Keele's estimate, made in a very dry time, be equal to 500,000 gallons per day? It could not have been dry with so much water in the creek.
301. Mr. Keele states that the rainfall at that time was only 13 inches, for a year—can you tell us what the average rainfall is here now? No, I cannot.

Mr. Charles Lewis, farmer, Marangaroo, sworn, and examined:—

Mr. C. Lewis. 22 Oct., 1892.

302. *Chairman.*] Can you give us any information with reference to this proposed supply of water from Marangaroo for Lithgow? I only know about the rivers—about the drought.
303. What can you tell us about it? Marangaroo River has never been known to stop running, but I have seen Farmer's Creek very dry.
304. Did you hear Mr. Keele's evidence with reference to a water supply from Marangaroo? No; I was not in the Court.
305. Do you know anything about any place where water could be obtained from the Marangaroo to supply Lithgow—how far back in the mountains could you get a good fall into the town of Lithgow from it? You could get a fall from anywhere on the river. There is a fall where the main supply comes out of the rock into the river—about 20 feet or a little more of water falls down into the river.
306. Would it be sufficiently high to discharge water into the town of Lithgow, could the water be drained from that point to run straight into Lithgow without any pumping-power? You could get the water from there to the river without pumping, but you would have to raise it at the viaduct.
307. How far is that from here? It is 3 miles from Bowenfels Station.
308. How high would that source of supply be above the town of Lithgow? I do not know the level of it. A regular waterfall is the Marangaroo River.
309. Do you know anything as to what would be the cost of bringing the water from the Marangaroo? No; I do not know anything about the cost.
310. Supposing that Mr. Keele has stated in Court that it will cost £50,000 to bring the water from the Marangaroo to Lithgow, can you contradict that? No, I cannot say anything about the cost.
311. Have you seen Farmer's Creek very dry often? I saw it dry in 1839, when I brought wheat from Mudgee to Mr. Brown's mill, when it had to lie there four months before he could work the mill.
312. That is supposed to be the worst drought we ever had in the country—do you know anything about that drought? Yes; I was in the country long before that.
313. You are an old native, I suppose? Yes; I am 74 years of age. I travelled over these mountains with Mr. William Lawson, the explorer, in 1837, and I came here in 1842 as coachman to Mr. Thomas Brown, who lived at Eskbank, and I had to get water out of the river with a bucket.
314. *Mr. Ewing.*] Was the water then running from the Marangaroo? Yes; and it always has been running since I have known it.
315. And there was none running in Farmer's Creek? No.
316. *Mr. Wall.*] Within the last ten years have you known Farmer's Creek to stop running? Yes; once it has. There was water in the holes, but none running.
317. *Mr. Trickett.*] With regard to this Farmer's Creek, do you not think it would be advisable, by erecting a dam about 3 miles up the river, to conserve a large quantity of water, so that it could be there for the benefit of the people of Lithgow when droughts do occur? No doubt, if there should come a very dry time like we had many years ago. I was nine months in this country without a shower of rain.
318. What is the rainfall here? I do not know anything about that. I am a farmer by trade.
319. *Mr. Dawson.*] That is just what you ought to know? But I had not the good luck to get education in that.
320. *Mr. Trickett.*] If it has been sworn that by putting a dam in Farmer's Creek, 15,000,000 gallons of water could be conserved for the benefit of the people of Lithgow, do not you think that that would be a good thing? No doubt, so long as the water stood, it would. I, myself, have seen dams on Mr. Lawson's station on the Castlereagh, in the back blocks, with more water than they would get here, go dry in nine months in hot weather.
321. Nine months' supply is a good stand-by, is it not? Yes. Of course the drought caused it to go dry, as the earth does not stand dry weather, and the water soaks away.
322. Do you know where they are going to put this dam? I know the head of the river; but I do not know where the dam is going to be.
323. Do you know that the creek happens to have a rocky bottom and regular sides where this dam is to be constructed—if that is the case, will the water run away? No; not with a rocky bottom. So long as there is sufficient water to fill the dam there will be a supply.
324. You have made no calculation on that matter? No; I cannot say anything about that; but if there were no rain for a considerable time, the water might run short there, although the creek has a rocky bottom. We do not know what dry seasons we might have.
325. *Mr. Wall.*] You say you have seen Farmer's Creek dry a couple of times in the last ten years? Yes.
326. Not running? Yes.
327. But still there was water in the holes? Yes.
328. For how long did it cease running? I did not take particular notice. It stopped running until heavy rains started the river running again.
329. But it is altogether unusual for the creek to stop running? In good seasons it does not stop running; but in dry times it does not take much to stop it. Six months' dry weather would stop it.

Mr. William Thompson, woollen manufacturer, Bowenfels, sworn, and examined:—

Mr. W. Thompson. 22 Oct., 1892.

330. *Chairman.*] Are you a tenant of Mr. Andrew Brown? Yes.
331. And work in his mill? Yes.
332. Can you give us any information in reference to the body of water required to work the mill and what you do there? I should like to say that we have a lease from Mr. Brown of the mill, mill race, and dam, and I am afraid that if the quantity of water required to supply Lithgow is taken out of Farmer's Creek we shall run short of water every dry summer. We run short now, every dry summer, of water to drive our water-wheel. We depend entirely on the water from the mill race for wool scouring, dyeing, and scouring tweeds, and also for half of our motive power.
333. Does the whole of the water from Farmer's Creek pass through your mill race? Not now; but in dry times it does.
334. How much do you generally require to work the water-wheel? The wheel I have is about twenty horse-power, and we turn on enough to fill the buckets.

335.

Mr. W. Thompson. 22 Oct., 1892.

335. How often are you without a sufficient supply of water to turn the wheel? Since we have been working the wheel we have never been altogether without water, but we have been very short of water. In two or three dry summers we had not enough water to drive the wheel and the shafting.
336. How long have you had the lease from Mr. Brown? The present lease only twelve months, but I have been in the mill thirteen years.*
337. During the whole of that time you have generally had enough water to work the wheel? Every dry summer we are short of water.
338. In how many dry summers have you been short of water? I cannot say, but several times since I have been in the mill—perhaps three or four summers. We have a sluice gate and save water every night, but in dry summers it runs out again before night.
339. What do you do down there? We carry on a tweed manufactory.
340. *Mr. Ewing.*] How many men do you employ? About thirty-eight hands altogether, men, women, and children.
341. How many men? Fifteen or sixteen.
342. That is your total operations? Yes.
343. And half your power comes from water and half from steam? Yes.
344. And every dry summer you have to suspend your operations on account of the shortness of water? We do not suspend our operations, we keep going but are short of water.
345. Does your wheel keep going all through the summer? Yes; but sometimes we have to stop for a quarter of an hour every afternoon to get up steam.
346. What do you consider the value of the turbine wheel annually? As the place stands at present we have a lease of the mill and race, and it is hard to say; but I think that it is worth about £300 a year for water.
347. You made the remark that if the water to supply Lithgow were taken out of the creek there would not be enough for your wheel? In dry summers I think there would not.
348. Do you consider that you have any greater right to the water than the people of Lithgow have? We have no rights at all. We have only the mill and the race leased from Mr. Brown.
349. Where do the people of Lithgow get their water in dry weather now? From the creek—those that have not wells—I think.
350. There is ample water for you both in wet weather? Yes.
351. Do you consider that the water supply for Lithgow is sufficient now? No.
352. Then the question resolves itself into this; either inconveniencing 3,000 or 4,000 people or inconveniencing you, in employing thirty or forty people? Yes, that is it; but we have a lease of the place, and suppose that we have some rights.
353. You consider that you have some private interests that should be considered? Yes.
354. But you must regard the question of the health and convenience of the people of Lithgow as the main thing? Well, so far as the water supply is concerned, I think that Lithgow should have had one years ago.
355. Are you of opinion that for a reasonable sum of money a water supply could be got for Lithgow without inconveniencing you? Not from Farmer's Creek.
356. Could it be got cheaply from any other creek? I do not know anything about that.
357. So that the matter resolves itself into a question of yourself *versus* Lithgow, but one man as against many people generally goes to the wall, does he not; however, you consider you have some rights that ought to be considered? Yes: I should look at once to Mr. Brown if the water were interfered with.
358. *Mr. Wall.*] Are many of the people in Lithgow not supplying themselves with water from wells? I do not know.
359. The evidence given before us to-day has gone to prove that this is actually the source of the water supply of the people of Lithgow at the present time; if they get their water supply from this creek, it would not interfere with you if it were conveyed to their houses by pipes, because they would only use the same quantity of water, or a little more; the evidence shows that they get their water supply from this creek at the present time, and if that is so it is only a question of conveying the water to their houses by reticulation pipes from the main, so that it shall serve them better? Yes, but the majority of the people have tanks and wells, and of course they draw on them as long as the water in them lasts, before they buy.
360. But if the Council were to conserve 15,000,000 gallons of water, that would more than fill the whole of the tanks in Lithgow; that will be the capacity of the proposed dam, and the whole of the tanks in Lithgow would not store 15,000,000 gallons? No.
361. Therefore, if the people of Lithgow get the whole of their supply from Farmer's Creek, and if a dam to conserve 15,000,000 gallons were constructed, so far as you are concerned, the water would not be interfered with to the same degree as at present, inasmuch as they would be husbanding the water instead of allowing it to go to waste? I consider that in very dry summers it would interfere with it, for in several summers a 9-inch pipe would have more than carried off all the water coming down the creek and the mill-race put together.
362. If we can place any reliance on the volume of water in the creek where it was tested at a dry time, the daily discharge, with an average rainfall, would be 2,000,000 gallons, which would be eight times as much as the people of Lithgow would use; if we can base our calculations on that, and if the dam will conserve 15,000,000 gallons, your source of supply, instead of being interfered with would be increased, assuming that the people of Lithgow take their supply from the creek at the present time, and have only a few tanks in which they can conserve water? But they draw on their tanks and wells, and as long as the water in them lasts they do not take their supply from the creek. I have twelve cottages in Lithgow. I have had them about twelve months, and I know that none of their occupants have taken any water from the creek during that time, and I suppose others have done the same.
363. But when this dam is erected it will store 15,000,000 gallons, and that is more than is stored in all the tanks in Lithgow? Yes; I know that.
364. *Mr. Dawson.*] Would it not be better for you to have a steam engine instead of a water-wheel? Well, we have a lease of the premises as they stand now.

365.

* NOTE (*on revision*):—I have been here twenty-three years, but have (with others) leased the premises for the last thirteen years.

Mr. W. Thompson. 22 Oct., 1892.

365. But that is only a personal matter between you and Mr. Brown; I mean generally, no matter whether you or Mr. Brown, or myself, or anybody else has it, would it not be better to do away with the water-wheel and have a proper steam engine? A water-wheel is the cheaper, but I myself would prefer a steam engine if we had one powerful enough; but we could not wash the wool without the water.
366. Which would be the more reliable, a steam engine or a water-wheel? We run them both together now.
367. But which would be the more reliable? A steam engine.
368. Of course you could not wash or scour your wool with a steam engine, but you would have enough water generally to wash wool with? Yes, generally.
369. And when this water is not available, you have to use the steam engine now? We have them connected. We always keep them running together.
370. Both the steam engine and the water-wheel? Yes.
371. *Chairman.*] Is there a large creek coming in at the back of Mr. Brown's house, just below the mill—what creek do you call that? Farmer's Creek goes round the back of Mr. Brown's house.
372. That is Farmer's Creek? Yes; I think so.
373. What becomes of the other creek—where does the Marangaroo go to? That is 3 miles from here; the junction is 5 or 6 miles from here; the Marangaroo Creek flows into the river Cox.
374. *Mr. Trickett.*] Do you know where it is proposed to erect the dam? No, I do not.
375. About 2 miles above the Oakey Park Colliery, higher up the creek;—are there any creeks that flow into Farmer's Creek below where it is proposed to erect the dam? Yes, there are several creeks.
376. What are their names? I cannot name them all.
377. How many are there, do you think? There are three or four, but one or two main ones in the Vale of Clwydd, and one or two on this side. I do not know what they are called.
378. The water that flows into these creeks all helps to swell the quantity of water that goes to your mill? Yes, but in a dry time I have seen all these creeks dry.
379. And the main one running? Yes.
380. But they only get dry in very dry weather, I suppose? Yes, in dry weather—if we have a dry winter and then a dry summer.
381. Then the water that came along from the creek itself would not be sufficient for your water-wheel, would it? It is not sufficient. We shut it off at night and save all we can, and keep the wheel running in that way; if we run short we stop the mill for a few minutes until we get up steam.
382. So independently of this main creek that would be affected by the dam, there are other sources of water supply that come to your water-wheel? Yes.
383. *Mr. Ewing.*] You see this map which we have before us? Yes.
384. Whereabouts is your wheel on that map? It is below Coerwull House.
385. On the creek? On the mill-race.
386. It is not on the creek? We are within a few yards of the creek, but not on it.
387. Near where the railway crosses the creek? About half a mile from where it crosses the creek.
388. Therefore it must be about 5 miles down the creek from this proposed dam? I should think so.
389. Therefore you get 5 miles of water that does not go into the dam? Yes.
390. Five miles of Farmer's Creek and its tributaries? Yes; but those tributaries go dry.
391. But the mill is 5 miles farther down than this dam? Yes, about 5 miles. I do not know where the dam is to be, but the distance is about 5 miles.
392. *Mr. Wall.*] The evidence goes to show that it would take 250,000 gallons per day to supply the town of Lithgow, and that the dam that is to be erected will conserve 15,000,000 gallons, or sixty days' supply; therefore it would not interfere with the flow of the creek if there were rain every sixty days; you understand that the quantity of water to be conserved in the dam would be equal to sixty days' supply, and after the dam was full the flow of the creek would not in the slightest degree be interfered with; that being the case, do you think that it would be likely to prejudicially affect the working of your mill? First of all, I think that in dry times a 9-inch pipe would more than carry all the water that comes down the creek and the mill-race put together, and if that quantity is taken out of it, it must interfere with us.
393. But I presume you are speaking of a time when the whole of the water was allowed to run to waste? No: we have always had a sluice-gate.
394. But you have not dammed any of it or conserved any of it? Only at night.

Mr. Thomas William Keele, M. Inst. C.E., Supervising Engineer, Harbours and Rivers Department, sworn, and further examined:—

Mr. T. W. Keele, M. Inst. C.E. 22 Oct., 1892.

395. *Chairman.*] You have heard the evidence of Mr. Lewis with reference to Marangaroo? Yes.
396. Have you carefully examined that country? Yes.
397. What are the objections to the Marangaroo scheme? I could not get a gravitation supply from there. I went up the creek to the elevation necessary to supply the water by gravitation, and I found that there was no water whatever. The creek was perfectly dry there.
398. What interfered with the gravitation—were there any high hills in the way? No. I considered that the pipe-line was too long, and that the larger amount of water in Farmer's Creek was more suitable for the supply of the town than the catchment of the Marangaroo.
399. Can you point out on the map how far you examined the Marangaroo? The catchment area of the middle river, as shown on the plan in blue tint, is about 16 square miles, and I gauged it where it passes under the railway bridge, and I found it there to be giving about 750,000 gallons a day. In my report I said:—

> I found the middle river to be discharging about three quarters of a million gallons per day at the point where it crosses the railway line, the catchment area above this being 16 square miles, while Farmer's Creek, a little above the Oakey Park Colliery, at the foot of the Zig Zag, was discharging considerably more, with only 8 square miles of catchment.

I examined the middle river as far as it was necessary to arrive at the point to bring in a gravitation scheme for the town, and I found there was no water at all—about 3 miles up from the railway it was perfectly dry. That would be with about 8 square miles of catchment, whereas Farmer's Creek, with the same area, was giving 750,000 gallons, equal to the supply from 16 square miles on the middle river.
400. *Mr. Ewing.*] You have only 4 square miles now? Yes. Although the middle river has 16 miles of catchment it does not supply more water than Farmer's Creek does with 8 square miles of catchment.

401.

401. *Mr. Wall.*] Where you tested the middle river and obtained a discharge of 750,000 gallons a day, it was not sufficiently high to admit of the water being supplied by gravitation? No; it would have to be raised by pumping, at a cost, probably, equal to that of the Bathurst scheme. Mr. T. W. Keele, M. Inst. C.E. 22 Oct., 1892.

402. *Chairman.*] Having examined the middle river and Farmer's Creek, you are quite certain that the Farmer's Creek scheme is by far the best? Yes.

403. *Mr. Wall.*] There is a marked difference between the cost of working a pumping scheme and the cost of working a gravitation scheme? No doubt.

404. And assuming that the original cost of each scheme were equal, do you think it would be better to adopt the gravitation scheme? Certainly.

MONDAY, 24 *OCTOBER*, 1892.

[*The Sectional Committee met at the Court-house, Lithgow, at* 9·45 *a.m.*]

Present:—

The Hon. WILLIAM HENRY SUTTOR (Chairman).

Thomas Thomson Ewing, Esq. | William Chandos Wall, Esq.
Henry Dawson, Esq.

The Sectional Committee further considered the proposed Water Supply for Lithgow.

Morris Asher, Esq., Lithgow, sworn, and examined:—

405. *Chairman.*] You are a duly qualified medical practitioner, residing in Lithgow? Yes. M. Asher, Esq.

406. Have you made any investigation with reference to the water supply for the town? I have not made any definite investigation. 24 Oct., 1892.

407. Can you give us any idea of the quality of the water generally used here? I have no analytical information, but I can speak from general knowledge obtained in connection with my practice. I believe the water in what one would call the lower ends of the town is at times very much polluted.

408. That is the water at present used? The water used by the people residing on the banks of the creek, who all use creek water, and also the people who have to cart water. In my professional capacity I often have to prohibit them from using the creek water, and have to insist on their getting water from the roofs somewhere. When I am called in in any case of contagious trouble, or troubles that may arise from drinking bad water, I have to insist on their using other water or having it boiled and filtered, but if possible I prohibit them from using that particular water if it is possible to procure any other.

409. Do you know anything of the source of the supply which it is proposed to bring into the town? I have never been to the head of the creek.

410. It is proposed to bring water from a spot about 2½ miles from here up Farmer's Creek? I know the creek—I do not know the source; but I know the creek merely from the junction where it joins the main creek.

411. Where does the pollution you spoke of just now principally come from—from the mines in the district? From the mines and the people who throw their refuse into the creek. It comes mostly from what we call the Vale of Clwydd swamp, the swamp up the gully on the northern side of the town—and Oakey Park township. That is where the creek which it is intended to block joins an adjunct from the Zig Zag. In fact, I may say that the water is polluted from the Oakey Park township right down. There are creeks running into it and the people living alongside throw all their refuse into it.

412. *Mr. Wall.*] If the water supply should be obtained from a dam 2½ miles away from the town do you think there will be any pollution—will it be affected by the pollution of which we have spoken? No; it will be more than a mile above the source of pollution.

Mr. Fritz B. Johnson, Council Clerk, Lithgow, sworn, and further examined:—

413. *Chairman.*] We want to get some information with reference to the condition of the borough so far as earth-closets and cesspits are concerned? Yes. Mr. F. B. Johnson.

414. Can you tell us how the cesspits are dealt with by the Council? They are emptied at so much per bucket by three or four men in the town. We have no contract at the present time to empty these things. We had, but we found a difficulty in getting the money in, and so we allow the men to clear out the cesspits and take the stuff away. One man takes it to Marangaroo, and another to the Vale of Clywdd, up a gully. It is also taken to several other places, but we have not yet found out where they deposit it. 24 Oct., 1892.

415. What is done with that taken up the Vale of Clwydd? It is buried in holes.

416. Have you any earth-closets? We have sixty pans. There are 800 cesspits here and sixty pans.

417. What is done with the pans? They are emptied in the same way.

[One plan.]

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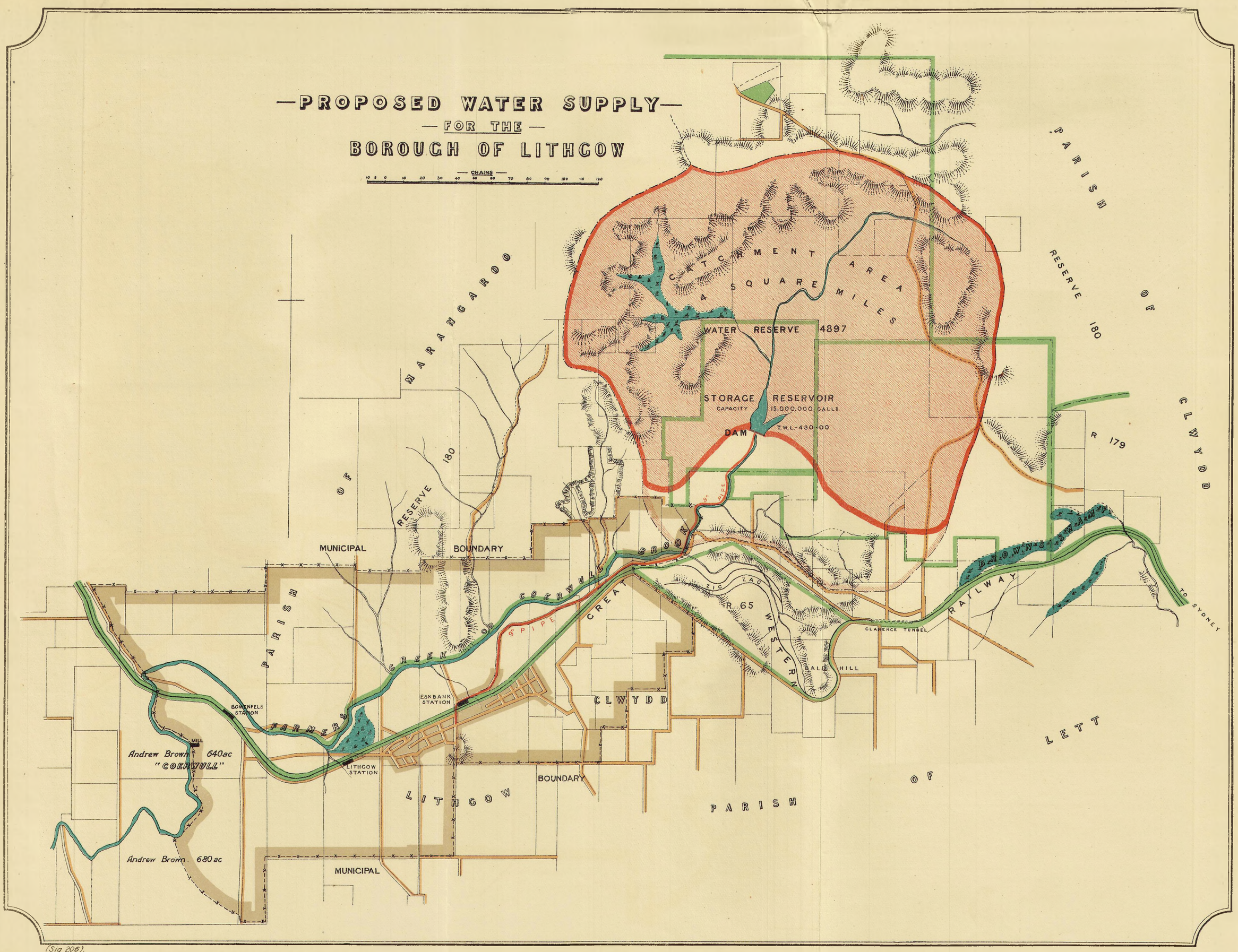

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SYDNEY, NEW SOUTH WALES.

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLAN,

RELATING TO THE

PROPOSED WATER SUPPLY FOR TAMWORTH.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1892.

311—*a*

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MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable William Henry Suttor, Vice-Chairman.
The Honorable James Hoskins.
The Honorable Frederick Thomas Humphery.
The Honorable John Davies, C.M.G.
The Honorable William Joseph Trickett.

LEGISLATIVE ASSEMBLY.

Jacob Garrard, Esquire, Chairman.
Thomas Thomson Ewing, Esquire.
William Chandos Wall, Esquire.
William McCourt, Esquire.
John Cash Neild, Esquire.
Edward William O'Sullivan, Esquire.
Charles Collins, Esquire.
Henry Dawson, Esquire.

MEMBERS OF THE SECTIONAL COMMITTEE.

Jacob Garrard, Esquire, Chairman.
The Honorable John Davies, C.M.G.
William McCourt, Esquire.
John Cash Neild, Esquire.
Edward William O'Sullivan, Esquire.
Charles Collins, Esquire.

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Proposed Water Supply for Tamworth.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

WATER SUPPLY FOR TAMWORTH.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing works of water supply for the town of Tamworth," have, after due inquiry, resolved that it is expedient the proposed works should be constructed; and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

1. The proposed work as placed before the Committee is a pumping scheme, the water to be obtained from a well about 35 feet deep, sunk in the river-drift immediately above the confluence of the Peel and Cockburn Rivers. From this well the water will be pumped through a 9-inch cast-iron rising main, 67 chains in length, into a service reservoir capable of holding 500,000 gallons. The reticulation consisting of 22½ miles of 6, 4, and 3-inch pipes will connect with this main. The pumps used will be of the vertical duplex Worthington type, capable of pumping 300,000 gallons in ten hours, which is sufficient to supply a population of 10,000 at the rate of 30 gallons per head per day. The population of the town of Tamworth at the present time is 4,600, the daily supply for which at 30 gallons per head would be 138,000 gallons. The site of the well is on a reserve, and the pipe-line for the whole of its length will follow roads and streets; there therefore is no necessity for any resumption of land in connection with this part of the scheme. Official description of the proposed work.

2. It is estimated that the scheme will cost £22,500, the estimate comprising the following items:— Estimated cost.

Engine-house and pump-well	£1,000
Pumping machinery	1,000
Service reservoir	2,000
Main and reticulation pipes (made in the Colony)	17,415
Engineering and contingencies...	1,085
Total	£22,500

3. After obtaining from the Under-Secretary a general statement of the proposed work and matters connected with the proposal as it has been before the Department of Public Works, the Committee examined the Engineer-in-Chief for Harbours and Rivers for particulars in relation to the designing and adoption of the scheme, the estimate of cost, the material to be used in the work, the probability or otherwise of the effectiveness of the scheme, and as to his opinions concerning a rival scheme which has been proposed at the instance of the Borough Council of Tamworth, and submitted by them to the Department of Public The Committee's inquiry.

Public Works. A Sectional Committee was then appointed to visit Tamworth for the purposes of inspection and the taking of evidence, and they closely inquired into both the scheme referred to the Committee and that submitted by the Council as preferable. Accompanied by the Departmental engineer and the mayor and several of the aldermen of Tamworth, they visited the localities forming the sites of the works proposed in each scheme, and with the aid of plans, carefully examined the different features of the two proposals. Considerable time was devoted to the work of inspection, and two days were occupied in the taking of evidence, the witnesses comprising among others the mayor and some of the aldermen, some of the Borough Council officials, the district surveyor, the Government medical officer, and an engineer of the Harbours and Rivers Branch of the Department of Public Works accompanying the Committee as the representative of the Department in the inquiry. On the return of the Sectional Committee to Sydney and their submitting their report to the Committee, the Engineer-in-Chief for Harbours and Rivers was further examined, both in regard to the scheme referred to the Committee and the rival scheme. Subsequently, at the instance of the Committee, Mr. W. M. Hamlet, Government Analyst, visited Tamworth, and made an analysis of the water and an inspection of the locality at the proposed source of supply; and on his return he was examined with reference to his visit and its results. There were also before the Committee, as witnesses, Mr. T. Pridham and Mr. E. B. Price, of the Department of Harbours and Rivers, who had visited Tamworth officially in relation to the proposed works; Mr. J. A. McDonald, Engineer for Bridges, and Mr. H. Deane, Engineer-in-Chief for Railway Construction, who were acquainted with the nature of the strata which had been met with in the river-bed at Tamworth in the construction of road and railway bridges; and Mr. F. B. Gipps, civil engineer, who was heard in explanation of his scheme, and in reply to the statements made respecting it by the officers of the Department of Public Works.

The rival scheme.

4. The rival scheme is one designed under instructions from the Tamworth Borough Council by Mr. F. B. Gipps, and is a gravitation scheme. In 1880 the Engineer-in-Chief for Harbours and Rivers, then Assistant Engineer in the Department, visited Tamworth in response to the representations of the Borough Council to the Department as to the necessity for a water supply, and designed the scheme before the Committee. This scheme, inasmuch as the water would have to be pumped into the main, did not at the time meet with the approval of the Council, and they invited tenders from engineers for a scheme which should supply the water by gravitation. Mr. F. B. Gipps was the successful tenderer, and he designed a scheme to supply water by gravitation from the Cockburn River, just below the junction of Swamp Oak Creek and Mulla Creek, about 18 miles from Tamworth. It proposes that a storage reservoir with a capacity of 100,736,000 gallons and at a mean level of 160 feet above the Tamworth railway station should be formed by the construction of a timber and dry stone weir across the Cockburn River at the point indicated, and that the water should flow from this reservoir through an open inclined cutting to a service reservoir, formed by a timber and dry stone weir across a gully 4½ miles from the Tamworth town boundary, the mean water level of which would be 115 feet above the Tamworth railway station. From this service reservoir the water would flow through 11 and 12-inch sheet-iron pipes, 4½ miles in length, to the east town boundary, whence it would be distributed through 5 miles of reticulation pipes. The scheme also provides for irrigation on the route from the storage reservoir to the town. The catchment area of this scheme consists of the watersheds of Swamp Oak Creek, Mulla Creek, and their tributaries, estimated at 300 square miles. Mr. Gipps' estimate of the cost of the scheme submitted by him (and which the Mayor stated was approved by the Borough Council) is £17,650, made up as follows :—

Storage dam	£1,750
13½ miles of conduit, &c.	5,600
Service reservoir dam	1,050
4¼ miles 12 and 11-inch wrought-iron pipes	4,250
5 to 6 miles of reticulation	5,000
	£17,650

5. The position of Tamworth in relation to its ability to meet the financial obligations in connection with the scheme referred to the Committee appears to be satisfactory. According to a statement produced by the Under Secretary for Public Works the figures are as follows:— Financial position of Tamworth in relation to the proposed works.

The annual value of the ratable property within the reticulated area is £32,348 3s. 7d., which, less 10 per cent., gives a sum of £29,114.

A rate of 1s. in the £ on this amount would give	£1,450	0	0
Water supply to Railway Department, say	182	0	0
Total revenue	£1,632	0	0
Amount required to provide for interest on capital sum, viz. (£22,500) and sinking fund, at 4 per cent.	£900	0	0
Estimated working expenses	560	0	0
Total	£1,460	0	0

This statement shows an annual surplus of revenue over expenditure of £172, and nothing has been allowed, it is pointed out, for water which will doubtless be supplied to factories and other places by meter, or for any increase in the future. The Sectional Committee, in an estimate which appears in their report, place the revenue at £2,260, and show the surplus to be £800. They say also that "the Borough Council is in an exceptionally sound financial position, its total indebtedness being £5,000, while its assets, consisting of freehold property, electric lighting plant, and credit balance at the bank, is over £7,000."

6. The evidence given before the Committee in their inquiry raises the important question as to which of the two schemes—a pumping or a gravitation scheme—is the more desirable and the one which should be adopted. The residents of Tamworth favour a gravitation scheme, but the officers of the Department of Public Works assert that the scheme proposed by Mr. Gipps, if carried out, would prove both inefficient and unduly expensive. The Engineer-in-Chief for Harbours and Rivers states that it does not provide for a sufficient head of water to supply the higher parts of the town; and that to give the necessary water to those parts, pumping would have to be resorted to. The dams, canal, flumes, and pipes proposed would not, he says, be durable enough for works of the kind; the absence of pitching on the proposed canal would affect the purity of the water; and the steepness of the slopes in the cuttings, together with the absence of any berms, would make the risk of slips occurring and the water supply ceasing very great. The cost of this gravitation scheme the Engineer-in-Chief estimates at £24,000 as compared with Mr. Gipps' estimate of £17,650, or including the necessary drainage, fencing, &c., at £30,000. A proper gravitation scheme would, in Mr. Darley's opinion, cost not less than £50,000. The Departmental scheme the Engineer-in-Chief considers to be the cheapest and the best that could be adopted; and though he admits that a gravitation scheme always has a great deal to be said in its favour, he would not, he says, recommend the incurring of a much larger expenditure in order to get it. Mr. Gipps, on the other hand, contends that his scheme is not unduly expensive, nor defective in design, nor likely to be ineffectual. Witnesses examined by the Sectional Committee at Tamworth recognise the importance of some of the objections to the scheme of Mr. Gipps, and admit their soundness. Their preference for a gravitation scheme led the local Borough Council to send a deputation to the Minister for Public Works to ask that further investigation be made to ascertain whether an acceptable scheme of the kind could be designed, even after they had intimated their acceptance of the Government scheme; but the surveys already made had convinced the officers of the Department of Public Works that a better scheme than they proposed could not, without going to much greater expense, be obtained, and the local Council are content to accept this decision. They consider it wise to adopt this scheme, but recommend that adequate tests be made to prove the quantity, purity, and permanence of the supply. Other sources of supply could be obtained, but only at much additional expense, and probably of no greater merit. Question as to whether a pumping or a gravitation scheme is the more desirable.

7. The locality in which it is proposed to situate the well whence the supply of water would be obtained is a flat, underneath which it is understood lies the drift of the rivers Peel and Cockburn. This river-drift, it is believed, will prove a never-failing source of supply. Most of the flat is cultivated by farmers and market gardeners, a number of whom, and some in the immediate neighbourhood of the well, are Chinamen. On the farms and gardens quantities of manure Sufficiency and purity of the supply.

are

are used. It is doubted by some persons that the volume of water in the drift, when constantly drawn upon, will prove as lasting as the officers of the Government believe; and some entertain the idea that the presence of Chinamen's gardens in the vicinity of the well will lead to the contamination of the water. There already exists, and has existed for some years in the same drift, a well from which many of the townspeople of Tamworth are supplied with water, and though this is situated in a locality where it may be subject to the effects not only of drainage, percolating through the drift, from the Chinamen's gardens, but of drainage percolating in the same way from a large portion of the town, there is no evidence of any harm having resulted through the use of the water to the health of the residents.

Purity of the water.

8. The doubts entertained with regard to the purity of the water led the Committee to pass a resolution that samples of water should be obtained from the site of the proposed Government well and from the present town well by the Government Analyst for analysis, and that he should be requested to report generally on the site of the proposed well. A letter was also written to the Mayor of Tamworth informing him of the examination which the Government Analyst would make, and asking him to have the well at present on the site cleaned out, for the purpose of enabling the Analyst to make a fair test of the quality of the water. In due time the examination and analysis were made, and the Analyst's report will be found published with the Committee's Report as an Appendix. Samples of water were taken from the proposed well and from three other older wells sunk in the river drift, two of these being wells used by Chinamen in connection with their gardens, and the other the town well; and these samples were subjected in Sydney to chemical analysis. "The results," the report states, "are highly satisfactory, and indicate a water far superior in quality to the water usually found in towns, remarkably free from organic impurity, and quite free from any sewage contamination." It is a hard water, "and ought to be first softened by the Clark-Porter softening process before being allowed to pass into the mains for consumption. When this is done it will prove to be a water second to none in quality in New South Wales." As to the site, the report says: "Having inspected the site and the natural conditions of the gathering grounds for the proposed water supply, I see no valid objection to the site of the proposed well, provided that the land immediately surrounding the well be resumed and kept free from all pollution." While the land in the vicinity of the well or about the valley of the river is in a state of cultivation, the crops, the Government Analyst states, will absorb all the deleterious matter placed on the surface as manure, and there is then the additional safeguard arising from the filtering character of the soil, which in this respect is described as exceedingly good. Further, the well which it is proposed shall be constructed in connection with the permanent works will be sunk to a depth of 35 or 40 feet, the upper part, for a distance of about 20 feet, being made water-tight, and the remainder lined with perforated bricks. By these means any impurity passing from the surface in the vicinity of the well would have to go through 20 feet of soil before it could reach the perforations in the bricks. The Clark-Porter softening process is inexpensive and simple. It is described as the addition of lime to the water, whereby the lime in the water is precipitated.

Permanence of the supply.

9. The officers of the Department of Public Works express themselves as confident that the supply of water obtainable from the drift will prove ample for the requirements of their scheme. They point to the fact that underground river-drift as a source of water supply for towns has been used with success in many cities and towns in the United States of America and on the continent of Europe. A similar method of supply has been adopted in New South Wales, at Cootamundra, and it is proposed to follow the same plan at Parkes and at Dubbo. The Cootamundra scheme has not resulted as satisfactorily as was hoped at the time it was brought into operation, but the water-bearing drift there is different from that at Tamworth, and the local Borough Council are said to have been mainly responsible for using it as the source of the supply of water for the town. At Parkes and Dubbo the works have not yet been completed, but existing wells in the drift, and bores put down by the Department, satisfy the officers that the water supply will be sufficient. In the case of Tamworth only a partial test of the quantity and permanence of the supply has been made; a fuller test will follow. A trial well has been sunk to a depth of 10 or 11 feet, but the Engineer-in-Chief proposes to sink a much

much deeper well and decide the questions of quantity and permanency before proceeding to carry out any of the proposed permanent works. In his opinion, as in that of his officers, the valley of the Peel and Cockburn Rivers, especially at their junction, is a huge reservoir of water practically inexhaustible by reason of the quantity it is believed to impound, and also because of a current flowing through the drift in a manner that would indicate a constant replenishment from the water-sheds of the two rivers, if the quantity usually in the river-drift were drawn upon to meet the wants of Tamworth. Some doubt may be urged as to the value of tests at a time when, in consequence of the excessive rainfall of the present and previous seasons, the drift must be surcharged with water; but in reply to this it is stated to be very rarely that no water is passing down the Peel River, and the fall of the river, and therefore the flow of the stream, is not very rapid. When the water has ceased to be seen on the surface of the river-bed it has still, the Engineer-in-Chief contends, been running underneath. The proposed well, sufficient in size for the full supply of Tamworth, could be constructed, the Committee are informed, for about £300, and £250 would provide an engine and pump capable of delivering more than the quantity of water required. At an expense, therefore, of no more than £550 the supply of water in the drift could be effectually tested, and all doubt as to quantity and permanence removed.

Reticulation.

10. The provision in the scheme for reticulation appears to be excessive, inasmuch as a portion of the pipes will not be required for some time; but it is described as no more than is reasonable for including in an estimate of the cost of a water supply scheme, and the Borough Council considering that the whole of the pipes will be wanted sooner or later recommend the reticulation as proposed.

Most of the proposed works may be used for a gravitation scheme if the pumping scheme should fail.

11. An important feature of the Departmental scheme is that if after the whole of the works have been carried out and brought into operation the results should not prove satisfactory, and the adoption of a gravitation scheme become necessary, the service reservoir and the mains and reticulation pipes will be found as applicable to the new scheme as they are to the one now proposed. Only the engine-house, pumping machinery, and well will be of no use. They are estimated to cost £2,000, but in the event of failure this loss could be reduced by the sale of the pumping machinery.

Decision of the Committee.

12. The Committee are of opinion that the scheme as proposed by the Department should be carried out; but they recommend that before any of the permanent works are commenced a thorough test with temporary pumping machinery be made to prove the quantity of water in the drift, and that should this be found satisfactory sufficient land surrounding the well be resumed as an additional safeguard against any contamination of the water.

Resolution of the Committee.

13. The resolution arrived at by the Committee was passed on Tuesday, 20th December, and is shown in the following extract from their minutes of proceedings:—

"Mr. McCourt moved,—

'That in the opinion of the Committee it is expedient to carry out the Tamworth Water Supply as referred to the Committee by the Legislative Assembly.'

"Mr. Neild, having with consent amended the preliminary portion of the amendment of which he had given notice, moved,—

'That the motion be amended by the insertion of the word 'not' before the word 'expedient,' with a view to afterwards add to the motion the following words: 'for the following reasons:—

'(1.) Because the Department has prepared the scheme without obtaining reliable information respecting it, the evidence showing that the scheme was originally designed in 1879 or 1880 (*vide* Q. 57); that the officer best acquainted with the scheme worked it out twelve years ago (*vide* Q. 104); that no other experiment has been made by the Department to test the supply.'

'(2.) Because the only test made was the sinking of a hole 10 feet deep by the municipal overseer, at the request of the Department, upwards of a week after the proposal was referred by Parliament to the Public Works Committee (*vide* Q. 1233).'

'(3.) Because the reticulation plan has never been laid before the Council (*vide* Q. 1291); there has been no official approval by the Council (*vide* Q. 1252), and because one-fourth of the cost of reticulation, or £4,300, is unnecessary (*vide* Q. 1417).'

'(4.) Because on the alluvial flat, from beneath which it is proposed to draw the water supply, there are thirty to forty Chinese market gardens (*vide* Q. 909), occupied by four to five men each (*vide* Q. 910), using large quantities of stable manure and house refuse (*vide* Qs. 911 to 919), and human excreta (*vide* Q. 1330).'

'(5.)

'(5.) Because, according to the evidence of the Government Medical Officer, "it is desperately dangerous to human life to draw water from under ground which is manured with the rubbish" used (*vide* Qs. 1378 to 1380).'

'(6.) Because, in addition to the Chinese gardeners, a considerable population (several hundreds)—about two persons per acre—is settled on the flat from beneath which the water supply for Tamworth is proposed to be drawn (*vide* Q. 1332). Because many of these persons possess "no sanitary arrangements of any kind" about their houses (*vide* Q. 1397), while others have cesspits (*vide* Q. 1398), the contents of which "must of necessity find their way through the porous alluvial soil, and would necessarily contaminate the water" (*vide* Qs. 1401 and 1402).'

'(7.) Because "the farmers, Chinamen, and others" use their own house refuse and excreta as manure upon the ground overlying the proposed Water Supply (*vide* Qs. 1329 and 1330).'

(8.) Because the proposed site for the well is within 100 feet of a Chinese dwelling and cesspit (*vide* Q. 1381), and within a few hundred feet of other cesspits used by large numbers of people (*vide* Qs. 1383 to 1385).

'(9.) Because no test of the quality of the water would be valuable as affording evidence of safety from future contamination, or from fever microbes, which "will pass through drift for an immense distance" (*vide* Q. 1386).'

'(10.) Because, though excellent opportunities exist for the supply of water to Tamworth and the adjoining districts, by gravitation, from a water-shed having a catchment area of 300 square miles (*vide* Q. 698), already set apart by the Government as a water reserve, no examination of such source of supply has been made by the Department, further than an adverse criticism of the plans prepared by Mr. F. B. Gipps, C.E.'

'(11.) Because in view of the undoubtedly good opportunities for carrying out a gravitation scheme, as desired by all local witnesses, even at a largely enhanced cost, the fullest inquiry into the question of a gravitation supply ought to be made before any pumping scheme is further proceeded with.'"

The amendment was seconded by Mr. Davies, and negatived on the following division upon the question, "That the words proposed to be inserted be so inserted":—

Ayes, 2.	Noes, 11.
Mr. Davies,	Mr. Garrard,
Mr. Neild.	Mr. Suttor,
	Mr. Hoskins,
	Mr. Humphery,
	Mr. Trickett,
	Mr. Ewing,
	Mr. Wall,
	Mr. McCourt,
	Mr. O'Sullivan,
	Mr. Collins,
	Mr. Dawson.

Mr. Neild moved,—"That the motion be amended by the addition of the following words: 'If the official approval of the Municipal Council is obtained, and an area of 40 acres be resumed around the site of the proposed well.'"

The amendment was seconded by Mr. Davies, and negatived on the following division, upon the question, "That the words proposed to be added be so added":—

Ayes, 2.	Noes, 11.
Mr. Davies,	Mr. Garrard,
Mr. Neild.	Mr. Suttor,
	Mr. Hoskins,
	Mr. Humphery,
	Mr. Trickett,
	Mr. Ewing,
	Mr. Wall,
	Mr. McCourt,
	Mr. O'Sullivan,
	Mr. Collins,
	Mr. Dawson.

The resolution was passed on the following division:—

Ayes, 11.	Noes, 2.
Mr. Garrard,	Mr. Davies,
Mr. Suttor,	Mr. Neild.
Mr. Hoskins,	
Mr. Humphery,	
Mr. Trickett,	
Mr. Ewing,	
Mr. Wall,	
Mr. McCourt,	
Mr. O'Sullivan,	
Mr. Collins,	
Mr. Dawson.	

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 21 December, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

WATER SUPPLY FOR TAMWORTH.

WEDNESDAY, 12 *OCTOBER*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
Thomas Thomson Ewing, Esq.	Charles Collins, Esq.

Henry Dawson, Esq.

The Committee proceeded to consider the proposed Water Supply for Tamworth.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 12 Oct., 1892.

1. *Chairman.*] Do you desire to make a statement to the Committee, in connection with the project which we have now before us for our consideration? Yes; it is as follows:—Apparently the earliest record we have in connection with this matter was a minute dated 11th February, 1880, of the late Engineer-in-Chief for Harbours and Rivers, who, it seems, was waited upon by Mr. Hanley Bennett, the then member for the district, with the view of steps being taken in the matter of a water supply for the town. The Hon. John Lackey, who was then Minister, approved of an inquiry being entered upon, and as a result, Mr. Darley, at that time one of the assistant engineers of the Harbours and Rivers Branch, reported on the 4th September, 1880, in favour of a pumping scheme, from a well to be sunk in the gravel drift underlying the banks of the Cockburn River, near the town, to a reservoir situated near the Public School. The estimated cost of this scheme, including a small amount of reticulation, was £8,000. It should be mentioned, however, that this recommendation was only made after the completion of a survey and exhaustive inquiry to ascertain the possibility of obtaining a gravitation supply, by forming a reservoir in a gully between the hills, at the back of the town, this being the scheme first proposed and asked for by Mr. Hanley Bennett; but owing to the disturbed nature of the formation, which is volcanic, a safe dam site could not be obtained; the scheme was therefore impracticable, and abandoned in favour of a pumping scheme, which was then investigated. Another scheme would seem to have been subsequently propounded by Mr. Jarvey, of Tamworth, for bringing water from the Macdonald River, a distance of 35 miles. This, however, was quickly shown to be entirely out of the question on the ground of its great cost, which was variously estimated at from £57,000 to £85,000. Nothing further appears to have been done in the matter until the 24th September, 1890, when Messrs. Levien and Dowel, the members for the district, called at the office to represent to the Minister that the people were in favour of a scheme proposed by Mr. Gipps, and estimated to cost £20,000. They pointed out that the Council were unable to take advantage of the powers conferred by the first part of the Country Towns Water and Sewerage Act, because under that Act they could only raise a loan not exceeding five times the amount of their annual revenue, and this would only give them a capital sum of £13,000. They therefore asked that the works might be carried out under the 5th part of the Act, in the same way as was done in the case of Deniliquin, viz., by the Department accepting the Engineer proposed by the Council, and the works being carried out under the superintendence of the Engineer-in-Chief for Harbours and Rivers. Mr. Bruce Smith approved of the scheme being reported upon as requested, and in due time the report of Mr. Darley was received. It went to show that Mr. Gipps had under-estimated the cost of his proposal. Mr. Gipps had given his estimate at £17,650, but Mr. Darley pointed out that this sum did not include cross-drainage, fencing, purchase of land, maintenance or provision for contingent expenses. Mr. Darley estimated Mr. Gipps' proposal at £24,000, or including the necessary drainage, fencing, &c., at £30,000. Mr. Darley stated that he could not recommend the scheme for adoption. The principal objections may be briefly stated as follows:—1st. There was not sufficient head to supply the higher parts of the town, necessitating pumping to supply these parts. 2nd. The proposed dams, canal, flumes, and pipes were not durable enough for works of this kind, however well they might answer for mining purposes. 3rd. Owing to the absence of pitching on the proposed canal, the purity of the water would be much impaired. 4th. Owing to the steep slopes proposed in the cuttings, and the absence of any berms the risk of slips occurring and stopping the water supply would be very great. 5th. The large cost of the scheme. As this scheme will, no

doubt,

J. Barling, Esq. 12 Oct., 1892.

doubt, be prominently brought under your attention, it may be as well for me to briefly describe it. The scheme is a gravitation one. It contemplates forming a storage reservoir by means of a timber and dry stone weir across the Cockburn River or Swamp Oak Creek, about 18¼ miles from Tamworth. The supply would be brought from this dam by an open, narrow, and unlined cutting, with steep slopes to a service reservoir, formed by another timber and dry stone weir across a gully 4½ miles from the town boundary, the top water level of which would be 127 feet above the railway station. From this reservoir the water would be brought down by 11 and 12-in. sheet-iron pipes, 4½ miles in length, to the east town boundary, and the water distributed from thence by 5 miles of reticulation pipes. The scheme also provides for irrigation on the way. For the reasons, however, which I have already given, this scheme could not be recommended by the Department, and accordingly has not been submitted to Parliament by the Minister, for reference to this Committee. I might here mention that Mr. Engineer Pridham, of the Harbours and Rivers Branch, has pointed out that it is possible to provide a practicable gravitation scheme from the Jamieson River, of the same capacity as proposed by Mr. Gipps, at a cost of about £75,000. To supply Tamworth alone, the cost might be put down at £60,000; but instead of the canal, as proposed by Mr. Gipps, Mr. Pridham would substitute 9-in. cast-iron mains. It is necessary I should explain that a deputation from the Tamworth Council waited upon the Minister in January of this year, to ask him to make further inquiry into the proposed scheme for the town, and in reply to a question by Mr. Lyne, as to whether he was to understand that the Council were in favour of a gravitation scheme, the Mayor said "Yes." At the conclusion of the interview the Minister made, *inter alia*, the following reply:—

Before I can promise you anything with regard to your water supply, I shall have to refer the matter to the Public Works Committee for their report. As the estimate is so near the £20,000, I do not feel inclined to place the burden of the work solely on my own shoulders. A very important question arises, however, in connection with the Committee, and that is whether I can submit alternative schemes to the Committee. It was decided by Mr. Bruce Smith that this could not be done, and I do not think it is a wise law. You may depend, however, that if I send a proposal to the Committee it will be that which my officers approve of; but I will do more, I will let the Committee have all the papers relating to the gravitation scheme. You wish also that I should send an officer to report further on the matter. I will do so, but I should like to explain that it means a considerable delay in your scheme, and will perhaps prevent my submitting the matter to the Committee this session, otherwise the Committee might take evidence during the recess, and report immediately upon the re-assembling of the House.

In pursuance of the promise thus made, I now hand in the papers in connection with Mr. Gipps' proposed scheme. The proposal which is adopted by the Department, and which is now before the Committee, is a pumping scheme, and may be described as follows:—

It is proposed to sink a well about 35 feet deep in the river drift immediately above the confluence of the Peel and Cockburn Rivers, as shown on the plan. The place where the well is to be sunk is on a reserve. The water will be pumped from this well and conveyed by a 9-in. cast-iron rising main, 67 chains in length, delivering into a service reservoir of a capacity of 500,000 gallons. The reticulation, comprising 22½ miles of 6, 4, and 3-in. pipes, will be taken off this main. The pumps are proposed to be vertical duplex pumps of the Worthington type, capable of pumping 300,000 gallons in ten hours, which is sufficient to supply a population of 10,000 at the rate of 30 gallons per head per diem. The population of the town at the present time is given as 4,600. It will thus be seen that ample provision is made for the wants of the town. The estimate is made up as follows:—

Engine-house and pump-well	£1,000
Pumping machinery	1,000
Service reservoir	2,000
Main and reticulation pipes (made in the Colony)	17,415
Engineering and contingencies	1,085
Total	£22,500

There will be no land to resume, as the pipes will follow roads and streets for the whole of their length. On the 10th December, 1891, the Council passed the following resolution:—

That the Council of the Municipal Borough of Tamworth, having taken into their consideration the question of water supply for the town of Tamworth, do hereby request His Excellency the Governor, with the advice of the Executive Council, to take all such steps and cause such works to be executed as may be necessary to provide a water supply for the town of Tamworth, and the said Council, on behalf of the Municipality of Tamworth, hereby agree to do and undertake all the liabilities and obligations mentioned in Section 125 of the Act 44 Victoria, No. 14, and it is hereby expressly agreed that such liability is accepted for the total amount to be expended on such works, provided that such amount does not exceed twenty thousand pounds.

2. What was the date of the resolution of the Council? 10th December, 1891. I might just mention here that the deputation to which I have referred waited upon the Minister on the 27th January, 1892, and the Minister then made these remarks with regard to the matter:—

You wrote a letter accepting the proposal for pumping with a stipulation that the cost should not exceed £20,000. We could not accept such a stipulation as that.

3. You have had no further communication from the Council? We have received no further communication from them. They were told that we simply could not accept such a resolution.

4. I understand that a deputation waited upon the Minister after the passing of the resolution which you have read, and the Minister then said that he could not accept the proviso which the resolution which they had passed contained. What answer did the Council make to that? I have read the extract about the gravitation scheme. The Minister said further, that he could not propose to the Committee a scheme which was not adopted by the Department; but in order to meet their views he would have the papers in connection with the gravitation scheme placed before the Committee. To continue my statement: This resolution was passed after the scheme of the Department had been before the Council, the particulars having been sent to them on the 31st August previously. I now come to the financial aspect of the question, which appears to be as follows:—

The annual value of the ratable property within the reticulated area is £32,348 3s. 7d., which, less 10 per cent., gives a sum of £29,114.

A rate of 1s. in the £ on this amount would give	£1,450	0	0
Water supply to Railway Department, say	182	0	0
Total revenue	£1,632	0	0

With regard to the estimate of revenue for supplying water to the Railway Department, I may say that on looking through these papers with a view of preparing them for the Committee, I noticed that no estimate was prepared providing for the water which the Railway Department might take from the supply. I thereupon telegraphed to the Mayor and asked him whether he had communicated with the

the Railway Department in reference to supplying them with water, and he replied "No." I then wrote to the Secretary to the Railway Commissioners on the subject, and this is his answer— J. Barling, Esq. 12 Oct., 1892.

In reply to your note of yesterday relative to the proposed water supply for Tamworth, I have to inform you that our present consumption of water is estimated at 15,000 gallons per day, and our cost at 8d. per 1,000 gallons. In the event of a water supply for the town being determined upon, the Commissioners would be prepared to consider a proposal to use local supply if rate satisfactory.

Continuing with regard to the financial aspect of the question, I find—

Amount required to provide for interest on capital sum, viz. (£22,500) and sinking fund, at 4 per cent.	£900	0	0
Estimated working expenses	560	0	0
Total	£1,460	0	0

This shows a net profit of £172, but, as will be observed, nothing has been allowed for water to be supplied to factories and other places to be supplied by meter, nor for any future increase. It seems, therefore, that, taking the probable revenue at the very lowest estimate, the scheme, will be self-supporting. In substantiation of the figures I have quoted, I hand in letters I have received from the Council Clerk, dated 30th September, 1892, and from the Secretary to the Railway Commissioners in regard to water likely to be taken by the Railway Department. There is just one other thing I should like to say. Mr. Gipps in his report draws attention to the possibility of the water supply being contaminated by the soakage from the town. I have said in my evidence that it is intended that a well shall be sunk 35 feet deep, and the water obtained from the river drift, which, of course, forms one of the finest filters that could be got. But before coming on to the river drift 16 feet of hard impervious clay has to be penetrated. It must be remembered, too, that the place from which we shall draw our water is above the town, and the flow of water is, of course, from the well. The same course will have to be adopted in the case of the Parkes water supply and the Dubbo water supply, where the water will be taken from the river drift. Thinking that questions might be asked on this point, I asked one of our engineers to look up cases in America and Europe where the same course has been taken, and he has given me a great many similar instances:—He says, "Water is drawn from water bearing drift-beds, as proposed in the case of Tamworth, for the following towns amongst many others:—Perth (Tay), Angers (R. Loire), Toulon (R. Garonne), Genoa, Brooklyn (N.Y.), Long Island City (N.Y.), Elmira (N.Y.), Carden (N.Y.), Lowell, Framington, Brookly, Lawrence, Middleboro', Stoughton, Ware, Canton, Dedham, Franklin, Kingston (Mass), and many other cities and towns in the United States, and on the Continent of Europe."

5. So far as your latest communication with the local Municipal Council has gone, they still keep to their first love—a gravitation scheme? I think so.

6. But the Department are totally opposed to that scheme because it is of an expensive character? Yes, and for other reasons which I have given.

7. Who do you say is the officer primarily responsible for this scheme? Various officers have reported on the scheme, but Mr. Darley is really responsible for it. Mr. Darley has been to Tamworth himself.

8. I suppose, therefore, that Mr. Darley is responsible for choosing the source of supply, namely, the river drift? Undoubtedly.

9. Do you know Tamworth at all? I have been there two or three times, but I do not know very much about the place.

10. Is there not considerable population above the intake of this water? I do not think so.

11. Is there not considerable population all the way up the Peel Valley? I daresay there would be a considerable number of farmers.

12. It is not a town or suburban population? I think not.

13. Do you know if any consideration has been given to the possibility of taking the supply from further up the river, away from the town? Yes; the gravitation scheme provides for that.

14. But in connection with the pumping scheme? No; I think not. At first it was proposed to locate the pump lower down the river. The site of the pumping station was first located between Roderick-street and Murray-street, on the water reserve numbered 10,070.

15. The last you heard from the Council was that they still continue to adhere to a scheme to cost not more than £20,000, although they have been informed that this scheme will cost more than that;—you have not got their consent to the carrying out of this scheme? Quite so; we have not got their consent to it in writing.

16. Is it not reasonable to suppose that the local Council have gone very carefully into this matter and have ascertained what they are able to pay, and they having determined that they are able to meet an expenditure of £20,000, do you not think that it is rather a serious matter to attempt to load them with an increase of responsibility without their consent? The scheme will not be carried out without their consent. The Committee, I imagine, will take good care to find out if they agree to it or not, and when the Act is passed they will have to pay for it.

17. But it would not require the passing of an Act? We should have to get a constructing Act. After that Act was passed the Council would come under the provisions of the Country Towns Water Supply and Sewerage Act. Their consent is really not necessary as far as an Act of Parliament is concerned.

18. There has been no communication from them either directly or through their members since a deputation came down in the early part of the year? Yes; I telegraphed to the Mayor that I presumed he had Mr. Gipps' plans, and that we relied upon him to champion Mr. Gipps' scheme before the Committee.

19. Do you know if Mr. Gipps is available? I think he is out of the Colony.

20. *Mr. O'Sullivan.*] Are we to understand from your statement that this scheme is being forced on the people of Tamworth? Certainly not. We do not force any scheme upon them. The Tamworth people say that they want a water supply, and we say that we will not give them a water supply at the Government expense unless it is such an one as will meet with the approval of the Department. The Minister, however, to be perfectly fair, said, "I will put all the papers with regard to your scheme before the Committee, and if the Committee report in favour of that scheme they will negative our scheme." We by no means wish to force any scheme upon them.

21. From what I can gather, the people of Tamworth still prefer the scheme proposed by Mr. Gipps? I do not know; I cannot say that exactly. When Mr. Lyne asked them, "Are you still in favour of the gravitation scheme?" they said "Yes," and I presume they meant the scheme proposed by Mr. Gipps.

22. Is it not possible that you have taken all this trouble to prepare plans and make surveys only to find your scheme rejected by the Council? I hardly think so. Seeing that they have had our scheme before them

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them and have passed a resolution asking the Government to carry out a scheme of water supply. I think that if they cannot get exactly what they want they will only be too glad to take the departmental scheme.

23. Have they given the Department to understand that? I think it is left in this tentative way pending the inquiry of the Committee. We shall only be too glad for them to put all the arguments they can advance in favour of the gravitation scheme before the Committee.

24 *Mr. Humphery.*] Have you had any report as to whether the water supplied by the pumping scheme would be equal in purity to that which would be supplied by a gravitation scheme? I do not think that an analysis of the water has been made, but I think that if you investigate the technical evidence which is to be put before you, you will find that there can be no question as to the purity of the water which would be supplied by the departmental scheme.

25. *Mr. Hoskins.*] You say that Mr. Darley, himself, approves of the scheme to raise water from a well in the drift at the junction of the Cockburn and Peel Rivers? Yes.

26. Can you say whether any trial-holes have been sunk to ascertain the extent of the supply? Yes; I believe that shafts have been sunk—in fact, they must have been sunk in order to get the information which has been given as to the drift and the superincumbent clay.

27. No water will be pumped into a dam or reservoir close to the well, but some distance from it there is to be a receiving-tank to hold 500,000 gallons? Yes.

28. Do you know whether any person has prepared a return, showing the quantity of water that flows down the Peel River, lower down than the place where it is proposed to sink the well? I am sure that the matter has been looked into, and no doubt Mr. Darley will be able to give the information.

29. What do you say is the estimated cost of the gravitation scheme which the Council prefer? Mr. Gipps estimated the probable cost of his scheme at £17,650.

30. But the Department did not approve of his scheme? No; they said that the cost was underestimated, and they pointed out that to carry it out would require £30,000.

31. Could you tell us where Mr. Gipps proposes to get the water from? I have a plan here which illustrates his scheme.

32. *Mr. Davies.*] What is the name of the officer who has had to deal with the surveys in this case? Several officers, I believe, have been there. Mr. Walsh, I think, went there, and Mr. Pridham certainly did.

33. Are any of these officers available? Yes; Mr. Pridham is in town, and could be called at any moment. He has had a great deal to do with the work.

34. Has he had the most to do with it? He has had a good deal to do with the working up of this scheme in the office. He has not had so much to do with the surveying.

35. Has he had to do with the gravitation scheme also? He has had to deal with the data which have been collected and forwarded to the office.

36. Is there any fear of the watershed becoming polluted by the settlement on the banks of the river? I should hardly think so. Besides, the drift would provide a splendid filter-bed, and overlying it there is the clay. No doubt the drift is the bed of an ancient river.

37. But you have no knowledge of the locality? I have no personal knowledge of it.

38. The officers of the Department would have the necessary knowledge? Yes; they will be able to answer any questions.

39. *Mr. McCourt.*] Have there been any instances where country towns have been allowed to carry out waterworks for themselves? Hay carried out its own water supply, and so did Wilcannia and Forbes, and I think, one or two other places.

40. Are they the most satisfactory schemes? I think that they were carried out at a cheaper rate than the others, but the municipalities were only too glad to come under the provisions of the Country Towns Water Supply Act.

41. That was with regard to paying for these schemes? Yes; and with regard to the advancement of further sums. I believe that a further sum was advanced at Hay.

42. Supposing the Tamworth Council desired to carry out a water supply scheme on their own account, would it be possible to allow them to do so? Under the first part of the Country Towns Water and Sewerage Act they would have power to do it, but they point out that their rates are not large enough. By that Act they are limited in borrowing to a loan not exceeding five times the last annual rate, and such a loan would not give them money enough.

43. Would the Government advance them the money? We have no power to advance them the money. We should have to do the work ourselves. There have been cases where the engineer of the Council has been accepted by the Department as the departmental engineer, but the Department have had to revise those schemes in order to make them of a more permanent character.

44. Has there not been a complaint that the Government schemes are too costly? There have been a great many such complaints; but I pointed out on a former occasion that those complaints were often made without reason. We have had to do a great deal more than was first proposed, and have had to very largely increase the reticulation. I pointed out, with regard to Goulburn, Albury, Wagga Wagga, and Bathurst, that we have put very splendid engines and engine-houses there, and although the expense may be heavy for the present generation, still the works are of such a durable character that they will last pretty well for a century.

45. Where the Council desire that the works shall be carried out under their own engineer, the Department allow it to be done? If the scheme is approved of by the Department, because the Department have to take the responsibility of it in such cases.

46. Do you know what the cost of supervising these works comes to—10 or 12 per cent.? Whatever the cost of supervision may be, it should be charged.

47. It is generally a large item? Yes, pretty large. I do not think that it is unnecessarily large.

48. *Mr. Neild.*] Do you know where Mr. Gipps proposed to locate his dam? It is shown on the plan which I have handed in.

49. You have given particulars of certain towns in different parts of the world, where the water supply comes from wells in a manner similar to that proposed in the scheme submitted by your Department. Have you any data to show what the strata are in those places? I think I could easily get that information.

50. You do not know whether the depth of sinking would be about the same? Of course it would take a lot of trouble to make an absolute comparison; but still I daresay it could be done.

51. Possibly there might not be much of a comparison after all? I think there is. I think the analogy is sufficiently close to enable us to draw a parallel. J. Barling Esq.
52. Still the analogy would depend very largely upon the strata and the general surroundings? Yes; but we should regard the surroundings as very favourable in this case. 12 Oct., 1892.
53. The site for the pumping-station is above the town? Yes; and there are overlying the drift 16 feet of impervious clay.
54. How would it be possible for the water to be contaminated if there are no dwellings in the vicinity? From what I know of the place, I think the fear of contamination is a mere bogey.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, sworn, and examined:—

55. *Chairman.*] You have personally visited Tamworth in connection with this scheme? I have. C. W. Darley, Esq.
56. When were you last there? In 1884. That I think was the last visit I made there in connection with the water supply. 12 Oct., 1892.
57. But we understood from Mr. Barling that the scheme now before us is of a very recent date? Yes; but it is very slightly modified indeed from the scheme which I worked up in 1879 or 1880. It is the scheme which I recommended then, slightly improved and modified, because the town has grown so fast in the interval. Knowing the place so well it was not necessary for me to go up there again.
58. Is the source of obtaining the supply the same as you proposed in 1880? It is just a little further up the stream.
59. You propose to sink into the drift and to draw your supply up through a well? Yes.
60. Where will your pumping-station be—close to the well? Over the well.
61. You are above flood-level there? Yes.
62. You will pump into a reservoir of 500,000 gallons capacity on the hill? Yes.
63. And that reservoir will command the whole of the town and its suburbs? It will be high enough to command the highest house in town.
64. What is the height of your reservoir above the centre of the town? It will give a head of about 234 feet in the business part of Peel-street, which is one of the lowest streets.
65. The main from the pumping-station to the reservoir is to be formed of 9-inch cast-iron pipes? Yes.
66. In view of the difficulties which you have had at Maitland with single cast-iron mains, will it not be necessary to have wrought-iron pipes here? I may change that. We have not used wrought-iron pipes for such small mains yet, but I may change that.
67. It would not materially alter the cost? No; the cost would be as nearly as possible the same.
68. The reticulation pipes are to be of cast-iron, and of 6, 4, and 3 inches in diameter? Yes.
69. How many days' supply are 500,000 gallons equal to with the present population? The reservoir will hold about three and a-half days' supply with the present population, allowing 30 gallons per diem per head.
70. If the scheme were carried out, its proper working would depend first upon your getting a good supply of water at your well, and secondly upon the pumps acting properly? Yes.
71. If the well gave out, or the pumps stopped working, there would be a water famine in Tamworth? The same thing might occur in any city dependent upon a pumping system for its water supply. Sydney is in that position.
72. Except that in Sydney you have a receiving reservoir of a very much larger capacity? The reservoir at Paddington has not got half a day's supply in it. It needs almost continuous pumping to keep up the supply.
73. Of what do you propose to construct the reservoir at Tamworth? Of concrete.
74. Have any steps been taken to ascertain the flow of water down the river close to where you propose to intercept it? We have had a well sunk in the gravel-drift there, and there are a number of other wells in Tamworth in the same drift. A mill there has a well which I went into myself. I found that there was a current passing through it.
75. Have you any idea of the volume of water passing through the drift? It must be very large.
76. Do you think that there is no possibility of your exhausting it? Not the slightest.
77. What about the poor unfortunates below, whose water you will intercept? The same thing might occur in connection with any river. The town is entitled to take what water it requires for domestic supply, but this water is out of the reach of the people down below. It is running through the drift, and to some extent it is running to waste.
78. They do not go so far down for their supply? No. There is a very wide bed of drift just there.
79. If any of them at present are just touching the top of the drift, and you draw away the water higher up, they may have to increase the length of their pipes? I do not think that double the number drawing from it would affect the drift.
80. Is there any possibility of this water becoming contaminated? I do not think so.
81. Is there not a considerable population above where you propose to tap the drift? Nothing to hurt. It is a scattered farming population. I think the water is almost pure enough to be taken from the river, but it is naturally filtered in the drift.
82. Mr. Barling has informed the Committee that the Municipal Council favour a scheme propounded by Mr. Gipps—a gravitation scheme—which has been estimated to cost some £17,000. Have you given any consideration to that scheme? I have.
83. You came to the conclusion that Mr. Gipps' estimate was very much under the mark? I did not think that his scheme could be carried out for double the money.
84. You estimated that it would cost £30,000 as against his estimate of £17,750? Yes.
85. Knowing the district, and having had Mr. Gipps' and other schemes under consideration, you think that the scheme which you now submit is the cheapest that can be obtained to supply the wants of the people of Tamworth? I think it is the cheapest and the best scheme.
86. If it were possible at a little more expense to obtain a gravitation scheme, you would be prepared to propose it? Yes. A gravitation scheme always has a great deal to be said in its favour; but I should not recommend the incurring of a much larger expenditure in order to get it.
87. We have been informed by Mr. Barling that the estimated working expenses of the scheme are £560 per annum. Is not that a very small sum for the working expenses of a pumping scheme? I think it could be worked for that.

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88. That, of course, provides for one shift of ten hours? Yes.
89. You would have to have two men at least in your engine-room? No; only one. We have only one at Bourke and at Wentworth, and about the same quantity is pumped up to supply those towns as would be required in the case of Tamworth.
90. Is the same kind of pump used there as is proposed here? Yes.
91. Is it giving satisfaction? Yes.
92. How long have those pumps been in use? From five to six years.
93. There has been no very serious breakdown? I never heard of any breakdown.
94. Then you will have a man at the reservoir? No.
95. There will be no one at the reservoir? No; there will be no necessity to have a man there. There will be a telegraph wire connecting with the reservoir, or, perhaps, in this case, a floating signal will answer all purposes, and show when the reservoir is full.
96. How many men do you want for turncocks? One turncock and maintenance man to look after the scheme.
97. Then three men will be the full staff? Two men are all that are necessary to work the scheme.
98. You will want coal for your boiler? Yes; but I consider that in the estimate of £560 there is an ample margin for wood and oil, and all working expenses.
99. And you have had experience in connection with the pumping plant at the towns which you have mentioned, where a similar system has been adopted? I think that £560 is a fair estimate.
100. When the municipal authorities were interviewing the Minister on this question, did you have any conversation with them? No.
101. Who was the officer who was sent up to Tamworth to carry out the details of this scheme? Mr. Pridham was the last officer I sent up there.
102. The same gentleman who had to do with the Armidale scheme? No; Mr. Grimshaw went to Armidale. Mr. Pridham has to do with all these schemes. He is my chief draftsman, and he visits the site of every proposed work before going on with the drawings.
103. Who will be the best officer to accompany a Sectional Committee to Armidale and Tamworth? In connection with the Armidale scheme I would send up Mr. Grimshaw, who made the surveys.
104. Who would be the best for Tamworth? Mr. Walsh. He was there in 1880.
105. Have you not had a survey made since? Mr. Pridham has been up there since. Mr. Walsh made a very elaborate survey at the time I speak of, and he has been up there since. Mr. Pridham only goes up so that he may be acquainted with these places in getting out the details of the various schemes. He does not do any survey work.
106. *Mr. Humphery.*] At what depth do you strike the drift? We expect to come upon water at 16 feet.
107. Have you any information as to the quality of the water to be obtained at that depth? I obtained some information years ago. It is very good indeed—river water filtered. The river water is very good, except that it is very often discoloured by freshes. In the drift the water is filtered.
108. *Mr. Hoskins.*] Are you satisfied that in the middle of a dry summer you could pump up (say) 300,000 gallons of water in the twenty-four hours? I am quite satisfied that we could in this case. The drift is very coarse.
109. The receiving reservoir which you propose is to contain 500,000 gallons of water, and that you say is a two and a half days' supply? Yes.
110. Supposing that the engine broke down, what would you do? We always have the pumps in duplicate.
111. Do you not think that in addition to the distributing reservoir you ought to have a storage reservoir to make provision for dry weather? It would be too costly. I could not recommend it. We never have storage reservoirs in connection with small pumping schemes. The town could not afford a storage reservoir.
112. Is there any place in this Colony where, under your supervision and direction, the residents of the town are supplied with water pumped up from a well sunk in the sand-drift of the river? The town of Cootamundra is now being supplied by water pumped up from the drift. The well is similar to that proposed to be made here, except that there is no permanent river. There may be some doubt about the Cootamundra supply holding out, but I think there can be none about the Tamworth supply.
113. Have the Cootamundra people ever been short of water? Those works have only just started. There is no water visible on the surface there. We pump down the well occasionally, but when we have pumped it down as an experiment with both engines working at once, it has always been full again in the morning. Then at Tamworth we tap the drift at the junction of the Peel and the Cockburn, and those rivers have never been quite dry.
114. But I know that the water is very shallow in summer time? When it is not visible in the river it is flowing through the drift. I was there in a very dry summer, and when I went down into a well which had been sunk in the drift, I observed that a cork would float across the top of the water, showing that there was a decided current passing down the valley through the drift. At that time the river was very low indeed, almost dry in places.
115. What is the estimated cost of the engine-house and the engine? I have put down £2,000 for the engine and engine-house and the pump.
116. Did any of the officers under your control ever make an exploration of the head of the Macdonald River or Swamp Oak Creek, with a view to ascertaining if they could not by damming get a sufficient quantity of water down from there? Yes; the matter has been investigated. Plenty of water could be obtained. It is only a matter of cost.
117. What would be the cost of bringing water from Swamp Oak Creek? I do not think that Swamp Oak Creek would give a sufficient head.
118. What about the head of the Macdonald River? The expense puts it out of the question. Mr. Gipps' scheme would cost about £30,000, and the Swamp Oak scheme would be 5 miles longer, and therefore still more costly. I suppose it would cost £40,000 at the least.
119. You are pretty well acquainted with that locality? Yes.
120. You know that the tributaries from the Moonbi Ranges are scarcely ever short of water? Yes.
121. They would give a good fall for a gravitation scheme to supply Tamworth? From Swamp Oak I think you could get a sufficient fall for a water supply scheme; but the cost makes it prohibitory.
122. I suppose you know that besides the farmers on the plains of the Cockburn and Peel Rivers, there are also a good many people on the Peel River and the Hanging Rock Gold-fields, higher up. Would they

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be likely to contaminate the water so as to cause any injury to the health of the inhabitants of Tamworth? I do not think so, because it would be filtered through the drift.
123. You feel satisfied in recommending this pumping scheme, with a well at the junction of the Cockburn and Peel Rivers, instead of a gravitation scheme from Swamp Oak Creek and the Moonbi Ranges? I think it could be more depended upon, and that it would be cheaper than any other.
124. *Mr. Davies.*] You estimate the cost at £22,500? Yes.
125. Can you tell the Committee how that estimate is made up—what proportion goes for pipes, and what goes for the construction of the reservoir? The engines, pumping-well, and pumping machinery, would cost about £2,000.
126. What is the power of your pumps and engines? I have not got it before me run out in horse-power, but the engines are to pump 30,000 gallons per hour into the reservoir, and the maximum lift is 270 feet. The pumps have to lift 30,000 gallons per hour to a maximum head of 270 feet.
127. They are duplicate pumps? Yes.
128. Two thousand pounds goes for pumps and engines? Yes, and the shed over them.
129. Then a reservoir holding 500,000 gallons will cost another £2,000? Yes.
130. What is it to be built of? Concrete. The rising 9-inch main will cost £1,435; the reticulation is to cost £15,979—(say) £16,000. That provides for the pipes, the freight upon them, the cost of laying them down, and everything else. For contingencies, I have put down £1,085.
131. Do you propose to depend upon a single pipe as a main? Yes.
132. Has any provision been made to meet an accident occurring to the service-pipe? The distance is so short—¾ of a mile. It would only take a couple of hours at the outside to take out a pipe. All you want to do is to keep a few spare pipes in the yard.
133. You do not expect any great inconvenience? No.
134. What do you estimate the daily average consumption at? The present population of the town is about 4,600; and I do not suppose they will use more than 20 gallons per head per day. That would be about 92,000 gallons per day.
135. So you would practically have a five days' supply in the reservoir? Very nearly that. At the very least, there will be a three and a half days' supply.
136. The water will be lifted from the drift right into the reservoir, without passing through any filter? Yes.
137. You said that it is of good quality and free from discoloration? It is very good water indeed, from what I have seen of it in the wells there.
138. It is not discoloured at all? No.
139. *Mr. Neild.*] Mr. Gipps' scheme was reported upon by you on the 15th November, 1890? Yes.
140. You described it thus, "The scheme as worked out might answer very well for a temporary mining ditch, or with some improvement for irrigation purposes, but I cannot conceive any more objectionable method of bringing in water for a domestic supply than the proposal in question." Do you still entertain so very extreme a view? I do. I might perhaps show the Committee a drawing which gives a typical section of the Sydney water supply canal and Mr. Gipps' canal. Mr. Gipps has, in strong language, condemned the Sydney canal at various times. He has said that for various reasons it is not safe. In the case of the Sydney water supply canal the slopes are 1 to 1 with a good berm a little above the water level, which a man could walk along and remove any debris which would otherwise fall into the canal. Mr. Gipps proposes a slope of ½ to 1, and no berm. The drainage of the country will all fall into his canal, and if part of the clay falls away it will prevent the water from flowing in the canal. The country through which the canal will pass is decomposed granite or decomposed basalt—friable, loose soil.
141. Are you not aware that the lining of the canal to which you refer was an after-thought, and that it was not in the original proposal? It was in the original proposal—it was not an after-thought at all.
142. What connection is there between the two canals? I am only showing the reason for my objection to Mr. Gipps' scheme. I say that it would not be possible to keep a ditch, such as he proposes to make, open for the supply of running water to the town.
143. Am I to understand that the section you have shown is a section of the canal which Mr. Gipps proposed to carry out? It is the proposal which he submitted to the Tamworth Council with his report.
144. You have increased his estimate of expenditure from £17,000 to £24,000 apart from certain extras? Yes.
145. Those extras include drainage, fencing, and land, and for that you have put down £6,000. Have you included similar items in your estimate of the cost of the departmental scheme? They are not required. No drains will be needed as the water will be carried in pipes, and the pipes will be underground.
146. Will any land be required? No land.
147. And no drainage? No drainage will be required. We do not interfere with the drainage.
148. With reference to the valley of the Cockburn River, what is the ordinary formation above the site of your proposed works? Granite up the Peel, but I could not speak about the Cockburn. I think it is granite there for a considerable distance, but that further on it changes.
149. Is the fall above the well gentle or steep? It is a steady fall for some distance. There is not much fall.
150. But higher up the fall must be much steeper? Not until you get near the Moonbi Ranges, if you go up the Peel. Mr. Gipps goes out as far as 17 miles, but he does not get enough head to command the top of the town.
151. You say in reference to the banks of one of the streams from which you will draw your supply that the formation is granite, and that you are not acquainted with the formation of the banks of the other? I have not been up the Cockburn River. It goes through various formations, but I am not acquainted with the country.
152. Granite country would not hold a large supply of water for any length of time? No.
153. With reference to the other stream, you are not in a position to state whether the strata are of such a character as to retain water or not? I do not know anything about the country. That has nothing to do with it. Our well will be sunk in the drift.
154. How long would it take you to exhaust the drift in the vicinity of the well? There is a current passing through the drift. I do not believe you would lower the water in the drift.
155. But the water would not go on for ever unless the supply had a head, and if the country along one river is granite, and if there is very similar country along the other river, there will not be much water?

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It is very rarely that there is no water passing down the Peel River. If there were no water there, there would be no chance for any scheme.

156. There would be if the water were impounded. The fall is very rapid, is it not? No; Mr. Gipps could only deliver water in the town at a height not exceeding 172 feet above the railway station, and that was after going 17 miles out.

157. Do you dispute his statement, that when there is a depth of 2 feet of water, the Cockburn discharges at the rate of 10,000,000 gallons in twenty-four hours? I do not dispute it.

158. The railway crosses the Cockburn Creek? It crosses the Peel River after the Cockburn has joined it.

159. That river is not unfrequently dry? I do not know whether it has been dry of late years, but when the water has ceased to be seen it has still been running underneath.

160. Are you aware that in the midwinter of 1888 the river had ceased to run? I do not know anything about that particular season. When I was there, although the river was running in certain places, there were waterholes, and the water was still running in the drift. There is a great depth of gravel and boulders, and the water runs underneath.

161. In sinking the trial-wells spoken of, did you bottom on rock? No.

162. You sank about 35 feet? Something like that, and then we put down a rod 20 or 30 feet further; but we were still in the drift.

163. About what time of the year was it that you made the examination of the well to which you referred. Do you remember the month? I could not tell you; it is some years ago.

164. I mean the time when you experimented with the cork? That was in midsummer, in a very dry year.

165. What year? About the year 1878 or 1879, the time when I made my first report.

166. Your recollection is, that it was a time of dry weather? It was. The river was very low then.

167. Have you made any other experiment with a view to establishing the permanency of the water supply? No.

168. *Mr. Collins.*] Where do the people of Tamworth get their present supply of water from? They have wells, and they use roof water.

169. Have they a town pump there? I do not know whether they have now. There are some wells down near the river. I think the chief supply is drawn from the river and from tanks.

170. Do the townspeople get water from the pump belonging to the Municipal Council? I could not say.

171. You do not know whether they get it from there? No; I have not been in Tamworth for some years.

172. Do you know if any of the wells from which they get water go dry? I do not. There were no public town wells when I was there.

173. *Mr. Ewing.*] Your objection to Mr. Gipps' scheme is that you do not see the necessity for putting down pipes to do what the river and the creek are already doing—the water is brought down by the river? Yes. If I could get the head at a reasonable distance with a gravitation scheme, I should undoubtedly adopt such a scheme, but in this case it cannot be done.

174. The question then is—how much water is there in the gravel-bed at the junction of the Peel River and the Cockburn Creek junction? Yes.

175. You say that you have found 50 feet of drift? I could not say the exact number of feet, but when we struck the drift we went some distance into it, and then drove the rod down another 20 feet in it.

176. How far is it from the surface of the ground to the level of the water in the river—the ordinary summer level? Just at that point I suppose you strike the water in the river at about 12 feet from the surface of the ground.

177. You have gone about 40 feet below that? Yes.

178. The river seems to be about 12 chains wide at its junction with the creek? About that.

179. Is it level for any distance to the south-east? Fairly level for some distance.

180. Therefore, you assume that there is a very large gravel-bed indeed there? I believe there is.

181. That, of course, is saturated with water, leaving out of consideration the supply that comes into it from the rivers? Yes.

182. Therefore, it is an ample reservoir? I believe we shall never lower the well by pumping.

183. *Mr. O'Sullivan.*] There seems to be an extraordinary discrepancy between your estimate of the cost of Mr. Gipps' scheme, and the estimate which he placed before the Council? Yes.

184. Mr. Gipps was a skilled engineer, was he not? I do not doubt it.

185. Surely there must be a mistake somewhere when he estimates the cost of the scheme at £17,000 and you put it down at £30,000. What reason had you for believing that the cost would be so large? It is two years since I wrote my report, and I really forget the details. I chiefly referred to certain works for which Mr. Gipps had not provided, and which I considered necessary. His ditch—for I can apply no other term to it—would be a very risky one to let any mine depend upon for its water supply. It would wind about partly through decomposed granite, and partly through decomposed loose basalt, and I do not believe that you would get 1 gallon out of it for 20 gallons that went into it at the top, unless you lined it with masonry, because the country is so porous. Then Mr. Gipps did not provide for fencing, although the canal winds through farms all the way down. It would run parallel with the railway for some distance, and it would be very crooked as it would wind round all the spurs. Mr. Gipps provided for no fencing, for no intercepting drains, which would be very costly, and, I think I am right in saying, he put nothing down for the purchase of land.

186. Your contention is that his scheme is too crude and that to make it of any value it would cost a great deal more to carry out than the scheme which you suggest? It would be a very costly matter to make it anything like a permanent scheme.

187. ¶Would you really want a fine scheme like that you have outlined for rough country such as this? I have not outlined any scheme. I have seen the plan of Mr. Gipps' proposed canal and compared it, not with regard to the size, but with regard to the slopes, with the Sydney canal. Slopes of 1 to 1 are as steep as you can expect material to stand upon, but in loose country such as that in Tamworth to expect earth to stand at ½ to 1 is quite unreasonable. The canal would choke up and perhaps the water would overflow and do an injury to the railway. *TUESDAY,*.

NOTE (*on revision*):—I think it should be pointed out to the Committee that Mr. Gipps in his estimate only put down £5,000 for reticulation. The Government estimate includes £16,000 for reticulation to the extent asked for by the Council, and which appears necessary to embrace the occupied portions of the town. The fact must be borne in mind when comparing the schemes.

TUESDAY, 15 *NOVEMBER*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
The Hon. William Joseph Trickett.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Water Supply for Tamworth.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, sworn, and further examined:—

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188. *Mr. O'Sullivan.*] There seems to be a doubt in the minds of some members of the Sectional Committee who went to Tamworth as to whether sufficient means have been taken to test the permanency and purity of the proposed water supply for that town;—can you tell us what steps have been taken in the matter? We have followed the usual course of sinking a shaft down to the water-bearing stratum—the gravel beds.
189. That was in 1880? No, it was done in April of this year, at the place where we propose to take the water from. Until lately an element of uncertainty existed as to whether the scheme would be carried out, and I did not feel warranted in incurring a large expenditure until something definite was determined. I am perfectly satisfied, however, from what I know of the formation there, that we can get an abundant supply from a large well. I propose to put down a well of 20 feet diameter, properly constructed. We have lately sunk a well at Cootamundra in a much more unpromising place than this, and are getting an abundant supply of water from it.
190. Was the well at the confluence of the Cockburn and the Peel sunk by your instructions? Yes.
191. But the work was really carried out by the municipal overseer? We wrote to the corporation and asked them to have the well sunk.
192. Do you think that the sinking of that well was a sufficient test of the permanency of the water? I think it is quite sufficient.
193. You are aware that they have only gone down 11 feet? Yes, and they have put down a bar 15 feet without reaching the bottom of the gravel bed.
194. Was that test made in dry weather? It was made at the beginning of the year. The weather was not very dry then.
195. As an engineer, you are convinced that the test is an adequate one? I am. Of course as I said before, prior to entering on any work there I would make further investigations to ascertain which is the best position for a well; but I am quite certain that we can get a good site there, and a more promising site than is often adopted in other places. It is a very common thing in America and Europe to sink into drift beds; in fact that is done wherever drift beds can be obtained, in preference to taking the water from the river.
196. Do you think that the nearness of the Chinese gardens to this site will pollute the water in the well? I do not think so. Of course the supply will not depend upon the local water. The stratum is really fed by the percolation through the gravel beds coming down the valley.
197. Is there any danger of soakage from the Chinese gardens? I do not think so. The water would be thoroughly filtered in passing down.
198. You think there is no danger of microbes getting into the well from the Chinese farms? Yes.
199. What steps do you propose to take to fully investigate this matter? I propose to put down two or three wells across the valley, and I shall personally examine the place to ascertain the "lie" of the gravel bed.
200. Would it not be a good thing to sink wells at some distance from this particular place at the confluence of the Cockburn and the Peel? I do not think so—nothing would be gained by it.
201. Do you not think it would be advisable to have the well some distance from the Chinese gardens and the manured farms, if possible? If there were any danger of pollution it would be cheaper to buy up a few acres around the well and reserve them rather than to go further away. I think there is no question as to the water being found there. If you went further away you might come to a place where there is no water.
202. Your idea is to put a belt of unoccupied land between the well and the Chinese gardens? Yes; if the gardens are working too close. I have not been there lately, so that I am not aware how close they are to the well.
203. With the information at your disposal you have no difficully in recommending this situation for the well? None whatever.
204. *Mr. Davies.*] Is it about eight years since you visited Tamworth to report upon this water scheme, and you have not been to the place since? I have not.
205. You know the character of the strata—loose, gravelly soil? Yes.
206. Through which the water will percolate as through a sieve? When you get into the lower surface you come into the gravel beds.
207. What is there to warrant you in saying that there is a permanent supply of water there—is it not a mere matter of conjecture? Well, we know that when the river-bed is dry water is still passing down the valley, and I on one occasion saw a current of water passing through the drift when the river-bed was dry.
208. Is it possible for a person at the present time to form a true estimate of the permanency of the water in the drift from which you propose to take your supply? It is no more certain than the permanency of the drift in many other but less promising places where it has been proved to exist.
209. Has there not been an extraordinary succession of wet seasons during the last few years? No doubt; but I examined the district when there was a drought, and it was demonstrated to me that the water was then passing down the valley throught the drift.
210. That was at Britton's mill, where the cork indicated the current? Yes; the river was very nearly dry then.
211. As the Engineer in charge of Water and Sewerage, do you think it desirable to drain Chinese gardens into a water supply intended for the use of the people at Tamworth? I do not mean to do so.

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212. Are you not aware that this shaft is not 100 feet from a Chinese garden? I was not aware that the Chinese gardens were worked so close up, but it would be very easy to resume the land. In any case I do not think the water will be affected, because it passes through the drift.
213. Are you not aware that where land is tilled and manured with all kinds of filth, as is done by the Chinese, and where the soil underneath is gravelly, the foul matter all finds its way down below, and would reach a water supply such as this? As a rule gardeners take care not to put more manure on the land than the plants require, and consequently the plants absorb all the manure put on.
214. Would you be surprised to learn that the resident Government Medical Officer states that water from the proposed site would be dangerous to the health and lives of the townspeople of Tamworth? I should be surprised at the medical officer saying such a thing. I do not know what ground he has for saying so.
215. Would you be surprised to learn that he would not drink it himself or give it to his patients, and would you, in the face of such evidence, still recommend the scheme? I have no hesitation in recommending it, because I know that medical men occasionally take extreme views.
216. Do you not think that the resident Medical Officer would be better informed as to the quality of the water than you are, seeing that you have not been there for eight years? I have not heard that he has tested it.
217. In view of the evidence of the Medical Officer, you still hold to the opinion that this is the proper site for the work? If the Chinese gardens are worked so close to the well it would be better to resume a few acres just round it. That could be done.
218. After all, you are not certain that a permanent supply is there? I am quite certain that a permanent supply is there.
219. Is it not a mere matter of supposition? Well, if there is no water there, there is no water anywhere to supply Tamworth.
220. If you have to depend upon the drift, there is no certainty that you can draw off 300,000 gallons daily? From the area of the watershed there, I hold that in the dry seasons water must pass down the valley through the drift.
221. You have had your attention drawn to Mr. Gipps' suggested gravitation scheme, which the municipal authorities had drawn up at their own cost, and the expense of which was not to be more than £20,000? Yes.
222. Do you favour a gravitation supply in preference to a pumping supply? I prefer a gravitation scheme where it is cheaper or as cheap as a pumping system.
223. But even supposing it costs more and the people are willing to pay for it—and every witness we examined was willing to pay £45,000 for a gravitation scheme in preference to £22.000 for a pumping scheme? There are certain objections to this scheme. First, you cannot carry it out for the amount estimated; secondly, Mr. Gipps does not propose to bring the water from a site high enough to supply the residential portion of the town. It would be delivered in the town 100 feet lower than the reservoir from which we propose to pump it, so that a pumping system would still be required.
224. The Council have a pump there already which could be used for the work? I am not aware that they have a pump there.
225. They have a pump for supplying water to water the streets, and in dry weather to give to the townspeople, so that there would not be any great expense in doing the pumping if that pump were utilised. What, in your opinion, would be the cost of carrying out Mr. Gipps' proposal, using a pipe service instead of open conduits? Using 10-inch pipes, the scheme would cost at least £58,500.
226. How do you make up that estimate? There would be a storage reservoir with a concrete dam—costing £5,100.
227. As against Mr. Gipps' estimate of £1,750? I have not got Mr. Gipps' estimate by me.
228. What is the next item? Fourteen and a half miles of 10-inch main, £30,352 10s.
229. A wrought-iron main? No; that is the price of a cast-iron main.
230. How many tons of piping would there be in the 14½ miles? Two thousand two hundred and twelve.
231. At how much per ton? Eight pounds per ton.
232. I presume that the pipes used are to be manufactured here;—what is the difference between the cost of imported and locally-manufactured pipes? Between £1 15s. and £2 per ton. The prices vary from day to day.
233. That is for cast-iron 10-inch pipes? Yes. The £30,000 include special casting, railway freight, laying, and so on. The next item is a service reservoir in the town, to hold 500,000 gallons. £2,000.
234. As against Mr. Gipps' estimate of £1,050? There would be 22½ miles of reticulation pipes, costing in round numbers £16,000.
235. Is that for the pipes alone, or does it include the cost of laying? It includes everything.
236. What is the difference in the cost in this case between the locally-manufactured and the imported pipes? About the same as before.
237. How many tons of pipes will there be? About 1,002.
238. So that there will be nearly £2,000 in favour of the imported pipes. Have you mentioned all the items? I have put down for engineering, contingencies, &c., £5,000, making in all £58,500.
239. Is not the estimate for contingencies rather large, compared with what has been required in the case of previous works? No; it is rather less than 10 per cent. of the estimated cost.
240. What officer of your Department prepared the reticulation scheme? The details were worked out by my Chief Assistant for Water Supply, but the scheme was laid down by the corporation.
241. Under what officer? The Tamworth corporation marked the streets where they wanted reticulation.
242. An officer did not visit the town at all? No; we leave it to the municipal councils to say what they wish to have done in these matters.
243. Are you aware that a very large portion of the proposed reticulation is wholly unnecessary, as it is proposed to be laid down in streets running through block after block of vacant land? I was under that impression myself, but the corporation said that they could not see their way to take off a yard of it.
244. Are you aware that the Municipal Council have not approved of the reticulation scheme? No, on the contrary, I am aware that they have approved of it.

215. Are you aware that they have sworn that they have not approved of it? No, I am not. In May, 1891, I wrote to the Minister to this effect :— C. W. Darley, Esq. 15 Nov., 1892.

The estimated cost of reticulating the whole of the streets of Tamworth and West Tamworth, where the plan now furnished by the Council indicates the houses to be sufficiently numerous to apparently warrant reticulation, amounts to £12,000. When I prepared my estimate nine or ten years ago, I put down £5,000 for works, and £3,000 for reticulating the main streets of Tamworth only; but it appears, judging from the plan, that the town has increased very rapidly since that date, and it was not then contemplated to extend the supply to West Tamworth. I have marked on the plan, in blue lines, the extent of reticulation included in the estimate of £12,000. It shows 16 miles of 6-inch, 4-inch, and 3-inch pipes in Tamworth, and 5¾ miles in West Tamworth, or, in all, 22¾ miles of reticulation, namely, 3 miles of 6-inch pipes, 8¼ miles of 4-inch pipes, and 11½ miles of 3-inch pipes. I recommend that the plan be returned to the Council and that they be informed of the cost of carrying out the work shown thereon, and asked to say whether they would suggest a reduction in the amount of reticulation, if so to mark the streets they propose should be omitted. As a guide it might be mentioned that the pipes laid complete will cost, on the average, £600 a mile. It must be borne in mind that reducing the reticulation reduces the possible revenue, it is, however, an easy matter to calculate where the assessment of any street is known whether it will pay to reticulate it or not,—the cost of the work being, on an average, £600 per mile, or £7 10s. per chain. The usual practice is to extend the reticulation through any street where the rates will pay 6 per cent. on the cost. This may generally be worked on as a safe guide. With this information the Council will, no doubt, be able to mark off the streets they wish reticulated at once.

The Council were written to on the 1st June, 1891, in similar terms.

246. Did you get a reply from them? I cannot lay my hand upon their reply. I might say, however, that before I would lay a yard of the pipes I would ascertain for myself whether they would be wanted. We are, however, obliged to base our estimate on what the Council say are their requirements, because as they have to pay for the scheme they have a voice in the matter. I sent Mr. Pridham up to Tamworth with the plan and he reported that:—

On 18th February, 1891, the Council applied that the water supply works should be carried out by the Government under the 5th section of the Act. In accordance with the Engineer-in-Chief's recommendation the Council had the positions of the existing houses marked on a plan about 1st May, 1891. The required reticulation, about 22 miles in length, was laid out on this plan by the undersigned, the estimated cost being £13,050. On the 22nd May the plan was returned to the Council with the proposed lines of reticulation marked on, so that they might note any alteration which they might suggest. On the 22nd June, 1891, the Council applied for an officer to be sent up to select another site for the service reservoir so that some houses which had been lately built on high ground might get a supply, and the original site left for school purposes. In accordance with the Engineer-in-Chief's instructions, the undersigned visited Tamworth on the 27th July, and chose a site on Government land, near the intersection of Murray and Napier Streets, where the top water of the reservoir would be about 198 feet above the railway station (or 72 feet higher than Mr. Gipps' site). In compliance with the wishes of the Council another site was at the same time selected for the proposed pump well, immediately above the confluence of the Cockburn and Peel Rivers—these alterations, as well as the large amount of reticulation necessitated, increasing the estimated cost to £19,900. The undersigned was informed by the Mayor, at the time of his visit, that the Council did not see their way clear to reduce the reticulation proposed by the Department.

They marked the plan in the first instance, and it was sent back to them asking them if they could not reduce the reticulation. I cannot trace their answer, but Mr. Pridham's report shows that he called attention to the matter, and that he was informed that it could not be reduced.

247. In carrying out a system of water supply for towns, would you lay water mains along streets passing for several miles through unoccupied land? Certainly not, and I would not do it in this case; but as I pointed out we must base our estimate upon something, and so we based it upon the application of the Council.

248. Is it worth while to load this scheme with the cost of reticulation which may not be required for years to come? I have no information that it is not required. The scheme would not be loaded, because the work would not be carried out.

249. Would it not have been better to have sent a reliable officer to put down a shaft to test the quality and the permanency of the supply—and also to look into the reticulation rather than depend upon the local people? No; I always make it a rule to depend upon the local people in matters of reticulation.

250. When there is great doubt about the permanence and quality of the water supply, is it not necessary to have a test made by an officer of the Department? I do not think it is necessary in this case. Of course before the work was commenced I should do so, but at this stage I did not feel warranted in advising the Government to incur a heavy expenditure, because it was doubtful whether the Council would not adopt Mr. Gipps' scheme.

251. In April last you wrote to the municipal authorities to put down a shaft to test the drift, and a well 10 or 11 feet deep was sunk? Yes.

252. Your Department simply gave instructions to the municipal body to have that shaft put down? Yes.

253. Is it wise for your Department to recommend a large expenditure of money simply on the report of an officer like the overseer of the Municipal Council of a town such as Tamworth? All I wanted to know was the depth for the drift. I felt perfectly satisfied that the water was there.

254. If you had gone there yourself, do you think you would have had a shaft put down within 100 feet of a Chinaman's garden or a sewage farm? If I had seen the Chinaman's garden there I should have put a sum on the estimate to provide for its resumption.

255. You would not have sunk this shaft next to a Chinaman's garden? It would not matter where it was put down. All I wanted to do was to ascertain the depth of the drift.

256. But you could not tell the quantity or quality of the water? I was not testing the quality.

257. But still you would not spend money on a scheme to supply the town with water unless you had some idea of the quality of the water? Well, it is the same water as higher up.

258. *Mr. Neild.*] Did you supply the Under Secretary for Works with the particulars of this scheme which he has given to us? I supplied him with some information. It is all to be found in the papers.

259. In his evidence he speaks over and over again of the river drift being covered with an impervious clay. In one place he speaks of there being 15 feet of hard, impervious clay. Do you know where he got that idea from? I do not know where he got it.

260. Do you think that it is a correct description of the soil that overlies the drift? Not in that place.

261. Do you think it is a fair description of the soil in any part of the valley? The soil there is alluvial.

262. The term "clay," which is used over and over again in the Under Secretary's evidence, does not fairly describe it? No; it is not clay in the usual sense of the word; it is not a tough clay.

263. In your previous examination you informed Mr. Humphery that you expected to come upon water at 35 feet? That was a mistake. I had in the morning been dealing with the Parkes and Dubbo schemes, and when upon examination I had those figures in my mind. I had no information before me, however, when I gave evidence as to the depth in this case, and I have already asked leave to correct my statement.

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264. You know that water has come up in the well that was sunk by the municipal authorities at your request at a depth of 10 feet? Yes.
265. That well was sunk after the scheme had been referred by Parliament to this Committee? About the time when it was referred.
266. So that the scheme when referred to this Committee was incomplete? It was incomplete in that particular.
267. It was incomplete if no shafts had been sunk to ascertain the nature of the drift;—you might have come upon rock in that particular place for all you knew? The scheme was not complete; but most of these schemes are incomplete in the same way when they are referred to the Committee.
268. You give the level for the site of the well on your plan;—when was that level taken? I could not give the date.
269. Who took it? I am not quite sure now.
270. Had any officer of your Department seen this scheme until Mr. Walsh visited the place the other day? Yes; Mr. Pridham saw it.
271. Mr. Pridham did not see the hole sunk? Either Mr. Walsh or Mr. Pridham was sent up to take levels.
272. Did your Department take the levels for reticulation? No; we seldom do.
273. Then how could you know what the cost would be? It is not necessary to take levels.
274. Are you aware that most of the streets through which you propose to take the water mains have not been formed in any way. The Mayor's evidence is that a great deal of cutting down, and so on, will be necessary before it is possible to lay the mains? That does not affect the scheme at all, because it is not necessary to lay the mains at once, if they are not wanted.
275. You would wait for the corporation to lay out the streets before you would attempt to put down the mains? Not necessarily. Many unformed streets are built on, and water is required by the houses in them, and if the street is afterwards formed, the mains have to be altered. We cannot wait until every street is formed before supplying the people in it with water, and about Sydney now the mains have sometimes to be put down in unformed streets. In designing reticulations we put down an average price, and the contractors do the same in contracting. We know about what we can get the work done for.
276. In answer to the question, "The river seems to be about 12 chains wide at its junction with the creek", you say, "About that";—do you mean that that is the width of the water-channel? No, the width across from one river to the other, I think.
277. In answer to question 182 you say, "I believe we shall never lower the well by pumping";—would you be surprised to learn that the water in a well 100 feet or thereabouts from the site of your proposed well was lowered 2 or 3 feet in a few minutes by means of a bucket and a windlass? You can always lower a well 2 or 3 feet; but afterwards, when the draught comes on, you will not lower it so much. I do not know how the well to which you refer was constructed. Was it a well of 20 feet diameter, and with properly percolated brickwork to allow the water to come in?
278. Are you aware that the town well, which is supplied from Goonoo Goonoo Creek, takes four hours to be pumped out the first time, and that afterwards it can be pumped out in ten minutes. Is that an indication of a good supply of water? I do not know the circumstances. The well might be closely lined with timber so as to be practically water-tight.
279. Do you not think it would be very much better in some of the outlying parts of the town to use smaller pipes than 3-inch with screw connections? No; I think 3-in. pipes are small enough. In Sydney we have given up everything smaller than 4-inch.
280. Do you think it is desirable to lay down 9 chains of cast-iron mains to supply a single cottage? No, I do not.
281. Or to lay down 8 chains to supply a small two-storeyed house? I explained before that these pipes would not be laid down unless there were a sufficient number of houses to warrant it. The reticulation is marked out by the corporation. We always have it marked out in that way, so that we may have something to base our estimate upon.
282. Your plan shows that it is intended to lay 40 chains of 3-inch and 4-inch piping around a recreation reserve; is not that a very wild and extravagant expenditure? I do not know the circumstances; there may be houses fronting that reserve all round. We have pipes all along Macquarie-street in front of the Domain, and all round Hyde Park; but as I said before, I did not lay down the reticulation, it was done by the Council; I sent them up a blank plan. As they have to pay for the work I consider that they ought to know what they want. They were told that the cost was about £600 per mile and that they ought not to lay any pipe which would not bring in a revenue of 6 per cent. on the outlay, and they marked the plan to show what they required. I could not do any more.
283. You said when last before us that the site of the proposed well was above flood-level; are you not aware that this spot has been frequently flooded? What I meant is that the engine-house will be raised above flood-level.
284. You would also have to raise the mouth of the well? Yes, I would raise the well.
285. You were not aware when you ordered the shaft to be sunk that there was a Chinese house and cesspit, together with the stink-holes you generally find about residences of that kind, within 100 feet of it? I was not aware that the facts were as you state.
286. You were not aware that there are twenty market gardens in the valley immediately above your source of supply, with an estimated population of 120 or 130 Chinese? I am not aware of it, but on the other hand I hold that the Chinese gardens, as long as they are kept away from the well by the reservation of a small piece of land, will not affect the water.
287. Are you aware that the refuse of the town—stable manure, house refuse, street sweepings, dead animals, and so forth—is deposited in great heaps on the river banks, and that the Chinese market gardeners help themselves to this filth and spread it over the surface of scores of acres of land immediately above the site from which you propose to supply the town of Tamworth with water. This is some of the evidence of the Government Medical Officer:—

1378. *Mr. Neild.*] You know this kind of municipal gehenna at the back—this pestilential collection of refuse and manure; you are aware that the Chinese gardeners on the flats closely adjacent to the proposed well-hole cart this stuff away and use it for manuring their grounds? Yes.
1379. Do you not think it is desperately dangerous to human life to draw water from under ground which is manured with this rubbish? I do.
1380. Am I using too strong a term when I say "desperately dangerous"? Not a bit.

Were

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Were you aware that such a state of things existed? Not such a state of things as you describe, but the answer I gave before applies here. If you resume a few acres of land immediately around the well the water will be absolutely safe, in spite of all the doctors. They perhaps never saw a sewage farm, but I could take you out to Cook's River and show you, in a hole in the middle of a patch of land irrigated with the drainage of Sydney, water that would pass analysis as pure, sound water.

288. Would you propose to supply a population with water from such a source? Not if I could get other water, but the impurity on the surface does not go down any depth. The underground filtration takes it away.

289. Do you think it is safe to supply the population with water from a supply which is only from 4 to 10 feet below ground periodically covered with the filth of the town? The water would be perfectly safe if you resumed a few acres round the well.

290. Are you not aware that microbes, especially of typhoid fever, travel immense distances underground in water? Through a pipe, possibly.

291. Are you not aware that they have been known to pass, not through pipes, but through underground channels, more than a mile? No, I am not aware of that, and I doubt it.

292. You are not aware that evidence to that effect has been given before this Committee? No.

293. Do you know that the population on the land above this source of water supply is sworn to be about five persons to the acre? I was not aware that there was such a large population.

294. Are you aware that the whole of the people living upon this alluvial flat, if they use any sanitary appliances at all, use ordinary cesspits, although the evidence of the Government Medical Officer is that many of them use no sanitary appliances at all;—do you think that such a state of things is calculated to give an assurance of a pure water supply for the town? I have answered the same question twenty times already. I say that by resuming land ——

295. I have not asked the question twenty times? It is the same question. By resuming land round the well you can get rid of the danger.

296. Is it not a fact that this state of things did not exist when you visited the place eight years ago, and that you are not acquainted with the present state of affairs? I was not aware of what you have stated.

297. Although there has been this great change in the sanitary or rather unsanitary condition of this alluvial flat, you think that if a few acres were resumed in the vicinity it would make a difference? I am satisfied of it.

298. What is a fair head of water for the highest parts of the town;—what would be the minimum head for Sydney and the suburbs;—is there any house with a head of less than 20 feet? There are a few.

299. I suppose in some cases there would be just sufficient head to ensure delivery? Yes, on some of the hill tops.

300. In East Maitland, where I believe the reticulation was carried out under your Department, some of the higher places are not supplied with water at all? Of course you cannot reticulate the top of every hill.

301. Is it necessary to have a head of 58 feet of water for the highest point in the town of Tamworth, that being the head which you provide? I think it would be desirable. I chose a somewhat lower site for the reservoir originally, but the Municipal Council said that the town was spreading up the hill, and at their request the site was moved to its present position.

302. But seeing that in a 10-chain block there is only one house at this point, do you think there is any necessity for going to a great expense to get a 58-feet head of pressure? We are not going to a great expense to get that pressure. The alteration of the site of the reservoir only means a little extra for piping. The pumping is nothing. Of course with Mr. Gipps' scheme it could not be done.

303. Not with the service reservoir, but with the storage reservoir? Our service reservoir is higher than his storage reservoir.

304. This is some of Mr. Walsh's evidence:—

1183. I am leaving the service reservoir out of this question altogether. I say you have stated that there is a difference of 27 feet between the highest point of the town and the mean level of his storage reservoir, and you have alleged that a 20-feet fall will be sufficient to bring the water to a given distance. Therefore, there would be a difference of 7 feet of head between the mean level of his storage reservoir and the highest point of the town? If you brought it direct to that point.

He says that there will be a difference of 7 feet of head between the mean level of Mr. Gipps' storage reservoir and the highest point of the town? That is your information, not Mr. Walsh's. I do not think Mr. Walsh had the plans before him. You supplied the information, and he says that if you brought the water up there it would give the pressure you mention. The fact of the matter is that the top water level for our storage reservoir is 26 feet above the top water level of Mr. Gipps' storage reservoir. You cannot get over that, taking Mr. Gipps' own levels.

305. I am leaving the service reservoir out of the question altogether; I am dealing with the supply of water from the storage reservoir. You say that Mr. Walsh did not understand this matter? No; I say that I do not understand what was meant by his answer.

306. This is the evidence immediately preceding that which I have just read:—

1180. According to the evidence you gave just now the mean level of Mr. Gipps' storage reservoir is 160 feet above the railway station, and the highest point in the town to be served is the corner of Brisbane and Raglan Streets, which is 133 feet above the railway station, so that there is a fall of 27 feet between the mean level of his storage reservoir and the highest point in the town to be served? Yes.

1181. There will be a mean head of 27 feet from the storage reservoir? Yes.

1182. And allowing 20 feet for the passage of the water through the pipes, in accordance with the evidence you gave just now, there would still be a head of 7 feet between the mean level of his storage reservoir and the highest point of the town? No. You must take the mean levels of the service reservoir as well.

It is evident from Mr. Walsh's statement that there is a possibility of there being a 7-feet head at the highest point in the town. Is not that the case? No; you would want a very much bigger pipe to bring the water down 1 foot in the mile—the distance is about 14½ miles.

307. Water will travel with a fall of 9 inches to the mile? It will travel with a fall of an inch to the mile.

308. You do not agree with Mr. Walsh that a fall of 20 feet would be sufficient to bring in water by these pipes? It would not. Such a fall would necessitate the use of large pipes, which would be too costly. You have to regulate the size of the pipes according to the fall. It would take a 10-inch pipe to bring in 300,000 gallons of water a day, with a 3-feet fall per mile.

309. Do you calculate that your service reservoir would supply the unsold Government lots in the eastern part of the town, if they were built upon? I do not suppose that it would supply them all.

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310. Then in the future some further pumping will be required from the service reservoir to higher levels? They could be supplied by extending the mains. The site of the reservoir was chosen by the Council, who are the people chiefly interested in the matter. The site originally chosen was at the back of the Public School; but the Corporation asked to have an officer sent up to select another site, which is that which has since been adopted.

311. With reference to the annual cost of this scheme, I see that at Armidale, where there are 12¾ miles of reticulation, you say that £300 a year will be barely sufficient for maintenance, and that it would be wiser to have a wider margin for the annual cost of oversight, that being a gravitation scheme. Why, then, at Tamworth, with 22½ miles of reticulation, and a pumping scheme, do you consider that the maintenance will only cost £240 a year—£60 less? The reticulation does not require any oversight. One turncock will do the whole of the work.

312. In your estimate you have set down £150 for firewood. How can you do all the overseeing required for £60 less than it will require for a shorter length of piping at Armidale? At Armidale, if I am correct, the reservoir is some miles from the town, and it would be necessary to keep a man up there. There is a long gravitation main which will require close watching. At Tamworth, however, everything is close together, and the overseeing of a reticulation main is a very small matter.

313. Mr. Pridham, in his estimate, puts down £150 for firewood, £150 for engine-tender's wages, and £20 for repairs, oil, rates, &c. Do you think that for £150 you could get a man sufficiently competent to be left in sole charge of the pumping plant? We never pay more in any of these towns.

314. Have you any visiting overseer? No; there is only one man at Bourke and at Wentworth. I am told that the Richmond corporation have appointed a man at about £70 a year to do the work. Ten shillings a day is the usual thing to pay a fitter, and they are very glad to get a constant job for that money.

315. Do you think £20 a year will cover all repairs, valves, &c.? Yes, it is quite sufficient.

316. You say, in answer to question 117, that you do not think Swamp Oak Creek would give you sufficient head; and a little lower down you say, "From Swamp Oak I think you could get a sufficient fall for a water-supply scheme, but the cost makes it prohibitory." Are we to understand that your answer has been somewhat misrepresented? I think there was some mistake about the names of the creeks.

317. This is some of your evidence:—

118. What about the head of the Macdonald River? The expense puts it out of the question. Mr. Gipps' scheme would cost about £30,000, and the Swamp Oak scheme would be 5 miles longer, and therefore still more costly. I suppose it would cost £40,000 at the least.

Will you kindly explain that answer, seeing that Mr. Gipps' scheme is the Swamp Oak scheme? I think there has been some confusion in this matter, unless you call the whole river there the Swamp Oak. On the plan before me there are two different creeks called Swamp Oak Creek.

318. *Chairman.*] You are not referring to Mr. Pridham's scheme? I have a plan here with two creeks marked Swamp Oak Creek. Mr. Gipps' dam is on the main Cockburn River, and 5 miles above that is a Swamp Oak Creek branching off at right angles.

319-20. *Mr. Neild.*] This is a question asked by Mr. Hoskins:—

116. Did any of the officers under your control ever make an exploration of the head of the Macdonald River or Swamp Oak Creek, with a view to ascertaining if they could not by damming get a sufficient quantity of water down from there? Yes; the matter has been investigated. Plenty of water could be obtained. It is only a matter of cost.

Which of your officers made the investigation? I daresay the matter has been investigated, but I do not think anybody was sent up there. Of course it would be very costly indeed to bring water from the Macdonald River.

321. You said this afternoon that it would cost about £58,000 to bring water from the Cockburn River at the site selected by Mr. Gipps for a storage reservoir by means of pipes;—did any of your officers visit the place to enable you to make that estimate? It was not necessary. I had Mr. Gipps' plans, and his levels. I have gone into the matter fully since I was here last.

322. There is a difference of £3,000 or £4,000 between his and your estimate of the cost of the storage reservoir;—how did you arrive at your estimate without an examination? I have taken his levels.

323. I am speaking now of the dam;—how is it that you estimate the cost at £5,000, while Mr. Gipps estimates that it could be made for £1,700? I think he spoke of a timber crib dam.

324. What dam do you propose? A concrete dam. I would not think of a timber crib dam for a permanent water supply.

325. Do you propose to use cement or lime concrete? Cement.

326. You would use cement all through? Yes.

327. Mr. Walsh suggests lime concrete faced with cement. You do not consider that substantial enough? No; I should not recommend an experiment of that kind.

328. *Chairman.*] Supposing, instead of bringing the water to Mr. Gipps' storage reservoir by conduit, flume-syphon, &c., as he proposed, pipes were used, what size pipes would be required, the difference in elevation being 45 feet? It would give a fall of about 3 feet to the mile, and we should want 10-inch pipes to bring down 300,000 gallons a day.

329. What size pipe would you require if you had a fall of about a foot to the mile. Would the size increase very much? Yes, considerably. A 10-inch pipe would cost £30,352; and a 12-inch pipe £38,850, or £8,500 more. A 9-inch pipe, which would require a fall of 6 feet to the mile to bring down the same quantity of water, would cost £24,800. If you take an inch off the diameter of the pipe you have to double the fall per mile. As you decrease the head, the size of the pipes must be increased.

330. What size pipes would be required to deliver the same quantity of water with a fall of 2 feet to the mile? I have not worked it out, but about a 12-inch pipe would be required.

331. What would be the difference in cost for a main like this between wrought-iron and cast-iron pipes—would it be appreciable? With that size of pipe it would be very nearly the same.

332. The larger cost of wrought-iron pipes would be set off by the lower cost of freight and handling? Yes, and of course they would be so much thinner. Wrought-iron pipes would be about three times as dear, but about one-third as thick. They would cost about £25 a ton, but they could be one-third the thickness of cast-iron pipes.

333. Wrought-iron pipes cost three times as much per ton as cast-iron pipes, but they would weigh less, and the cost of freight and handling would be less, so that on the whole there would not be much difference? I generally find them run about the same.

334.

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334. Can you give us the life of a wrought-iron main, say 12 inches, as compared with that of a cast-iron main? Wrought-iron mains, well protected with asphalt, have been in use for many years in America. We are only commencing to use them in this country.
335. And there has been no time to judge what their life really is? Yes.
336. What would be the life of a 12-inch cast-iron pipe with a fall of 2 feet to the mile? It would last a long time if it did not choke by corrosion; but if there is much vegetable matter coming down in the water it accumulates with the rust in the pipe, and I have seen 9-inch pipes through which Botany water has been running where there was not a 2-inch bore. The old Botany main was about 33 inches thick with deposit. Any peaty substance in the water adheres to the rust, but if the pipes did not choke they would be good for quite 100 years.
337. What was the life of the Botany pipes? There are some about the city that have been laid forty years? We have taken them up and cleaned them. A pipe will last eighty or 100 years, but it generally chokes up before that.
338. Taking Mr. Gipps' scheme, as you estimated it, to cost £58,000;—would it not require a supplementary pumping scheme to reach the higher levels? If the town required water on the higher levels we would have to pump it up.
339. It has been suggested that it might be possible to get a greater head of water pressure by that scheme if, instead of impounding the water at the place proposed, at the site of the storage reservoir, it was taken from Mulla Creek. Your officers have not been up there at all? No; I have not had levels taken up there.
340. Supposing that an additional 20 feet of head could be got by going up Mulla Creek, say 3 miles from the site of Mr. Gipps' storage reservoir, what would be the increased cost of the scheme—only the cost of 3 miles of additional piping? Approximately, if there is a sufficient catchment area.
341. We were told that the catchment area of Mr. Gipps' scheme was about 300 square miles, and that at Mulla Creek the catchment area would be about 100 square miles, but that the Mulla water was better than that coming down Swamp Oak, and it was thought that it would be ample to supply Tamworth. If there were the same facilities for constructing a dam at Mulla Creek as there are in the Swamp Oak Creek the increased cost of the scheme would only be the cost of the additional piping? That is all.
342. And a 12-inch pipe would cost what per mile? About £2,700 a mile.
343. Which would be cheaper—an open conduit or a pipe-line? I think a pipe-line—it would need less maintenance.
344. You would not sanction Mr. Gipps' proposed conduit? I should not like it at all.
345. Did I understand from your answer to Mr. O'Sullivan that to further test the capacity of the drift in the Peel Valley you would sink several wells. Do you think that such a test would be a fair one considering the number of wet seasons we have had? Well, it would not be so fair a test as one made in a dry season.
346. If such a test were made it had better be postponed until the middle of the summer, when the water would probably be low? Yes.
247. Is there anything of value in Mr. Riley's suggestion to tap the Moonbi drift and bring the water to the town by some patent syphon? I do not think there is anything in the scheme.
348. His contention is that the Moonbi River is a very deep one, and that an enormous amount of water is conserved there by the coming together of the hills, and he thinks that by his patent syphon he could supply Tamworth by gravitation. You do not think there is very much in that? No; I do not.
349. If his contention that there is sufficient water in the Moonbi Valley drift is correct, you will get the surplus from that supply? We selected our site because the Cockburn and Peel Rivers come together there. There seems to be a concentration of the water.
350. Do you merely propose to put a well down, or would you drive galleries out into the drift? I would only put down the well at first. Galleries could be driven out afterwards, but I do not think they are likely to be required.
351. You know that at one time, during a very dry season, the Botany water supply was thought to be giving out, and they adopted the method of sinking wells into the sand? That was proposed, but I do not think it was actually done. They cut trenches to bring in the water above the lagoons.
352. Those trenches enabled the water in the sand to be drawn out by pumping? They drew the water out of the sand.
353. Then if your well gave out, it would be quite possible by driving galleries into the drift to bring the water to it again? It is really a matter of increasing the collecting area, and has been done in Germany, at Cologne, and in some other places where the water supply is obtained from the drift-beds.
354. A number of towns have been mentioned by Mr. Barling as drawing their supplies from drifts of this kind. Do you know the areas of the valleys in each case—would they correspond with the areas in this valley? I could not give the particulars off-hand.
355. With reference to the Cootamundra scheme, which you say is similar to this, is it not a fact that the water is getting very scarce there? I said that the Cootamundra scheme was a very much less promising one than this, and I have always had great misgivings about it, so much so indeed that some years ago I reported against it, and stopped its being proceeded with; but the Council seemed to have made up their mind that water is to be obtained there.
356. There is no comparison between the water-bearing drift of the two places? None at all.
357. You have recently tried your pumps at Cootamundra? Yes.
358. They were supposed to pump so much water in a given time. Is it a fact that the water was not there to pump? We pumped the reservoir full, and then we could not pump any more.
359. But did not your supply give out during the trial? We lowered the water in the well, but then we were pumping with both pumps at full speed.
360. The trial was instituted for the purpose of proving the capacity of the pumps? Yes. In the morning the well was full again.
361. So far as the supply of the pumps was concerned the well did give out, but it was ample for the supply of the town? So far the supply has been sufficient, but I have always had misgivings about it. I do not think the two schemes will bear comparison.
362. In spite of your misgivings the local councillors believe that there is an adequate supply, and they urge the adoption of the scheme? That is so.

C. W. Darley, Esq., 15 Nov., 1892.

363. But the water-bearing drift there is not to be compared with the water-bearing drift at Tamworth? No.

364. In what other places in this country are you pumping from the river drift? There are two other towns where we are going to do somewhat the same thing—Parkes and Dubbo.

365. Have you any misgivings as to the quantity of water available there? No; because in each case we are close to the river, and simply use the drift as a filter instead of pumping from the river direct.

366. You have not the slightest misgiving as to the quantity of water available at Tamworth? I think you will get all that is required.

367. Is there anything in the Country Towns Water Supply Act which will enable you to stop any contamination of the watershed? Yes.

368. Supposing manure of a very objectionable character is being used on the land in the Peel Valley, will you be able to step in and say "You shall only use such and such a manure"? The Act says that people are not to pollute "any river or stream." I do not know that we could stop them from manuring their land.

369. I think you gave the opinion that however objectionable the manure used on the surface might be, it would have no ill effects upon the water supply because of the ground filtration? Yes, and you could keep the objectionable farms away from the well by resuming the land immediately around it.

370. If the people of Tamworth have to wait until they can afford £45,000 or £50,000 for a water supply they will be a long while without one? The town cannot afford to go in for an expensive gravitation scheme at present.

371. *Mr. Humphery.*] In providing a water supply for Tamworth are you limited in your choice to either Mr. Gipps' gravitation scheme, or the departmental pumping scheme? We are limited to a choice between a gravitation and a pumping scheme, but the gravitation scheme need not necessarily be that of Mr. Gipps'. I think that his scheme is out of the question.

372. In your opinion would the cost of the gravitation scheme be less than £50,000? It could not be carried out for less than that.

373. Could the departmental pumping scheme be carried out for your estimate of £22,500? It could.

374. *Mr. Hoskins.*] Are the Committee to understand that if they approve of this pumping scheme, and Parliament authorises it to be carried out, the work will not actually be commenced, or no large sum of money will be expended until further and complete tests have been made to ascertain whether there is a sufficient quantity of water in the drift to supply Tamworth? Yes, I think the Minister would have to be thoroughly satisfied before the work is entered upon.

375. You do not think the Department would be justified in expending the money proposed to be expended on this scheme on the information they have obtained by sinking a hole 11 feet deep? No, I would not enter upon any heavy work without a further test.

376. How much land would you propose to resume in the vicinity of the well? It depends upon the position of the gardens. I have no plan at present, but I should think that land within a radius of 5 or 6 chains from the mouth of the well would be sufficient.

377. That would entail the expenditure of a good deal of money. Is not the land very valuable? I do not know.

378. If a considerable quantity of land were resumed and paid for at the rate of say £40 an acre, would not the resumption so increase the cost of the scheme as to unfavourably contrast it with the gravitation scheme? You would not have to resume more than 20 or 30 acres at the outside. If you put down £1,000 for land that would not affect the cost very seriously.

379. *Mr. Ewing.*] How deep is the soil on the top of the gravel? I think there are 16 feet of alluvial soil.

380. How far was the well put down? Ten or 11 feet.

381. Does it go below the soil? The water rose in the well at that depth and the officer in charge bored another 5 or 6 feet through the soil before he struck the gravel.

382. How far through the gravel did he go? Fifteen feet altogether.

383. How do you intend to construct the well;—will it be watertight until you get through the soil? The upper part, going through the soil, would be watertight, the lower part would be constructed of perforated bricks.

384. How deep will the well be? Judging by the section before me, I would go down 35 or 40 feet.

385. How much of that 40 feet would be watertight? About 20 feet at the top.

386. To get into the well any impurity would have to go through 16 feet of soil and 4 feet of gravel? Yes, before it could get through the perforations.

387. What would be the difference in yearly working cost between your scheme and Mr. Gipps'? The pumping scheme would cost a little more than the gravitation scheme, though not much more than the cost of fuel and waste, because with the gravitation scheme you will have to have a man at the head of the works who would practically correspond to the engineer.

388. Do you regard the maintenance of these two schemes as practically the same? The pumping scheme would cost perhaps £100 a year more.

389. That might be capitalised at, say, £2,000, which does not make a great difference in the total cost? Yes.

390. The reticulation is estimated to cost £17,415 out of the total of £22,500? That includes £1,400 for the rising main. In round numbers the reticulation will cost about £16,000.

391. If this scheme were carried out and found to be a failure the Government would lose about £4,000, because, I presume, the reticulation would do for any scheme? The reservoir and the pipes would do for any scheme. The only loss would be the engine-house and pumping machinery, which could be used elsewhere.

392. There would be a loss of about £2,000? No, the pumping machinery could be used again.

393. Then the total loss would be about £1,000? Yes, all we should lose would be the well and the buildings around it, which would not be a total loss.

TUESDAY,

TUESDAY, 13 *DECEMBER*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM McCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. JOHN DAVIES, C.M.G.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	CHARLES COLLINS, Esq.

HENRY DAWSON, Esq.

The Committee further considered the proposed Water Supply for Tamworth.

William Mogford Hamlet, Esq., Government Analyst, sworn, and examined:—

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394. *Chairman.*] You are the Government Analyst? Yes.
395. You have held that position for some years? Yes.
396. Recently, at the request of the Committee, you visited Tamworth and took certain samples of water from various wells there? I did.
397. You had plenty of time to examine the locality? Yes.
398. How long were you in the district? I arrived at 4 o'clock in the morning, and left Tamworth at 1·15 p.m. the same day.
399. You think you had ample time to do all that was required? Quite enough time.
400. Did you visit the Peel Valley immediately above what is known as the departmental well site? Yes.
401. How far up the valley did you go from the site of the well? To a place where there is a cross creek which joins the Cockburn and the Peel Rivers.
402. You have furnished a report of the analysis of the water taken from several wells in and above the locality? Yes.
403. And in this report you say that you are clearly of opinion that the water is an excellent water for household purposes? A water of extraordinary purity.
404. From each and every one of the wells which you took it from? They differ in quality, but they are all good waters.
405. Which would you say is the best;—do you put them in the order in which they are labelled—A, B, and C? No; the water labelled D, taken from the town well, is the best. This is exactly as I took it from the well.
406. None of these samples on the table have been treated in any way, but are exactly as they were taken from the various wells? They are exactly in the same condition as when I took them from the wells.
407. The apparent difference in colour is owing to the colour of the glass of the various bottles? Yes.
408. In reference to the departmental well sample, marked A, you yourself took the water from the well? I did.
409. Had the water that had been in it been baled out? Yes; the well had been cleared out.
410. This water you saw percolating there through the gravel bed at the bottom? Yes. They had baled out the water as far as they could bale it out, and what I saw was the new water that had percolated into the well.
411. Had the water in the well near the Chinaman's hut been baled out? This water is as the Chinese had left it.
412. Then, so far as the purity of the water is concerned in any of these samples, you have no hesitation in saying that it is perfectly fit for human consumption? Quite fit.
413. You have no fear of contamination if the supply of water were taken from the site where the sample marked A was obtained, so long as there was a sufficient surface resumed immediately around? None whatever.
414. Was your attention drawn to the kind of manures that had been used on the Peel Valley, immediately above the site of the departmental well? Yes.
415. Do you think it is likely that any bad effect on the water supply will arise from the use of manures on that land? I do not, so long as vegetation is maintained on the surface.
416. The surface of the valley is very highly cultivated, is it not? Highly cultivated.
417. And, from what you saw, not likely to go out of cultivation? No.
418. You think, therefore, that while it is highly cultivated, it will absorb all the deleterious matter which may be placed on the top as a manure? Yes; I consider it is nature's own method of purification—cultivation.
419. After nature has done its work in that respect, so far as crops are concerned, would the intervening strata make the residue go through a filtering process before it reaches the shingle bed? Its filtering power is in a very marked degree.
420. Is it likely soon to become overcharged with this manurial matter? No, so long as there is sufficient vegetation to take up the manure that is put upon it.
421. Then you think that the great bulk of the manurial ingredients would be absorbed by the crops, and that very little would go down to the soil, say, 4 or 6 feet below? It would be taken up by the growing crops.
422. Supposing that some did go down to the presumed shingle bed underneath the soil, do you think that it would be likely to affect the water to any extent? If it did go down; but I do not think it could go down unless there were a channel made for it. If there were a hole dug down, then there might be contamination.
423. Then if there was any appreciable distance between the hole you suppose to be sunk and the source of the supply, it would have to filter through the intervening strata before reaching there? It would.
424. And that would have a filtering effect? Yes.
425. At all events, from your analysis of the water, and your knowledge of the surroundings, you do not think there is any likelihood of any contamination of the water arising there, because of the site of that well? No, I do not.

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426. Of course you have not formed any idea, or would not like to express any idea as to the quantity of water available? No; I cannot speak about that.
427. Merely as to the question of the purity of the water there? Yes.
428. Can you tell the Committee whether the water seemed to be coming in freely at the bottom of the departmental well? I believe that as fast as they bailed it out the water came in.
429. *Mr. Humphery.*] In your report you speak of the Clark-Porter softening process being necessary in this case;—will it be costly to apply that process? Not at all. It simply means the addition of lime to the water, whereby the lime in the water is precipitated.
430. It is a cheap process, and would not add to any appreciable extent to the annual cost? No. It is well worth doing, because the cost is little, and the advantage to be derived is great.
431. Not much labour? No.
432. You say it is necessary that the land immediately surrounding the well should be resumed in order to keep it free from pollution—about what area should be resumed in order to secure the well from the possibility of pollution? I should say an area of 50 or 60 acres.
433. Would it be necessary to resume so much as that? No, it would not be absolutely necessary, but it would go far to reassure people living in the neighbourhood—people would be liable to be prejudiced against any cultivation in the immediate vicinity.
434. But leaving out of the question the feeling of the people resident in the town, what is your opinion as to the maximum area that should be resumed for the purpose of securing that water supply from pollution? I should say not less than 40 acres.
435. You think it would be necessary to resume 40 acres? Yes.
436. *Mr. Davies.*] Do you make either a weekly or monthly analysis of the water at Shea's Creek? Quarterly.
437. And at Shea's Creek you have fairly as good a sample as you have here? By no means.
438. What is the difference? As I say in my report, and as I maintain, there is no other water in New South Wales like this water. Shea's Creek is an effluent from filtering beds, and it contains perhaps 1 part of ammonia in a million, whereas in this water you go into the second place of decimals.
439. But you said that vegetation takes from the portions of land that are cultivated all vegetable and animal matter? Yes, it does.
440. Does not the same rule apply to Shea's Creek? Yes; but the soil is not of such great filtering power as the soil of Tamworth.
441. Is it a pure sand filter? Merely sand at Shea's Creek—peaty sand.
442. Is there any better filter than sand? Yes.
443. What is it? Porous earth.
444. This gravelly formation earth? Yes.
445. Is that as safe a means of filtration as good sharp sand? Sand in some cases is very good, but here we have sand and gravel and soil alternating at Tamworth.
446. When you visited the locality where it was proposed to put the pumping-shaft, were you not struck with the character of the place—the filth of the Chinese gardens? Yes, I was.
447. Chinese gardens reeking with filth and manure, and things of that kind? I was particularly struck with that.
448. Notwithstanding the character of the place, you say you think it is desirable to have a pumping-shaft at that spot? Yes; I think it is perfectly permissible to have a pumping-shaft there.
449. And the whole of the drainage of that cultivated land, extending over a long distance, when the surface is broken must percolate through the soil, and the water will find its way to the filtering beds? Yes.
450. And any animal matter in the water will go with it? No.
451. No portion? No; that will simply be absorbed by the roots of the growing crops. It would be impossible for that to travel.
452. Would not the roots form a conduit for carrying all kinds of microbes to the bed of the water-shed? They would be taken up as fast as supplied.
453. Would you be surprised to learn that a medical gentleman representing the Government says that microbes would follow these long roots of lucerne and find their way into the water-supply source? I do not think that would be possible.
454. Would you be surprised to hear that he has sworn that? I would be surprised, indeed.
455. You doubt it? I doubt it very much indeed.
456. Are you aware that microbes travel for a long distance in gravelly soil, such as you have indicated? Yes; generally where there are fissures or cracks, or spaces through which they can travel.
457. Can there be any better means of travelling than through a loamy or gravelly soil? Yes; but the soil is penetrated by a mass of roots in every direction.
458. Will not the roots form conduits for the microbes and animal and vegetable matter to find their way into the source of the water supply? No. The tendrils of the roots would take up any organic matter that would come to them.
459. Your theory is that the whole of the animal and vegetable matter will be taken up? I think it is proved by my analysis.
460. When you visited this district and saw the town pump in a thickly-populated part of the town, and the wretchedly filthy place in which it is proposed to put the well shaft to supply the town, surrounded by Chinamen's gardens and all kinds of filth, would you have partaken of the water? I was prejudiced against it when I saw the filth and the rubbish heaps, but after seeing that the water from the town pump was beautifully clear I drank two glasses of it.
461. You drank two glasses when you saw the water drawn from the pump? Yes.
462. That was before the analysis, of course? Yes.
463. Was the water coming fast into the well-hole when you were there? Not very fast.
464. What depth of water was in the shaft when you were present? I do not think more than 2 feet 6 inches or 3 feet.
465. Did it strike you that the water was coming in at a rate that would permit of 300,000 gallons a day being pumped from that shaft? I should imagine that the shaft should be sunk much deeper to get any such quantity as that.

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466. Do you think it is possible from what you yourself saw that there is anything like a quantity of water equal to 300,000 gallons a day? I can judge generally. I apprehend that the town of Tamworth is situated on a flat surrounded by hills, and that there must be a huge basin of drift, and the water collected on the area above must find its way somewhere, and I imagine that that basin is quite full of water underneath, so that if you went deep enough you would find an inexhaustible supply.
467. That, of course, was at a time when we had had a series of wet seasons—I mean, when you saw the district? Yes.
468. Supposing we had three years' drought, what in your opinion would be the probable supply of water to be got from that source? I would judge by analogy. The old Sydney water supply, the Botany supply, was simply the soakage water that remained, permeating the sand at Botany, and there was quite sufficient for Sydney during any time of drought.
469. But it is a very different kind of supply from the Sydney supply? Well, it is a hard water charged with lime—it is quite a different water.
470. *Mr. Trickett.*] The water in the bottle labelled A looks to me not so good a quality as the other? The water in the bottle labelled A contains clay in suspension.
471. Is that owing to the water having recently been disturbed? Yes. Had this well been in existence as long as B it would be equally clear.
472. The slightly thick appearance is merely caused by the water having recently been disturbed? Yes—suspended clay.
473. You said a little while ago that if the vegetation ceased injury might accrue by reason of this manure and filth, but if vegetation ceased, I suppose, the manuring would cease? I suppose so, unless rubbish were periodically tipped there.
474. With regard to this area which you say would have to be resumed, would you recommend that a trench should be cut round the edge of that resumed area a certain distance from the well so as to prevent any possibility of surface injury to the water? I do not think that would be necessary.
475. Do you consider that this water labelled A, which is the chief subject of our inquiry, is as good water as the Prospect water, which we are drinking in Sydney at the present time? Barring that amount of clay in it.
476. Otherwise, it is equally as good water? Yes.
477. Do you think it is better, by reason of this lime? Yes; even better.
478. In the natural course of affairs that clayey appearance would disappear? Yes.
479. Do you know of any other water supply in the Colony similiar to the one which it is proposed to use for Tamworth? I have had similar waters for analysis, but I cannot remember details of the locality.
480. But I mean as regards the locality, do you know where there is a well and then a pumping system from the well? No.
481. You cannot point to anything that would guide the Committee in that respect? No. I do not often get so many details as I have in this case.
482. Is this soil around the well a good filtering soil? It is a splendid filtering material.
483. With regard to this theory of microbes travelling to the well, is there any particular reason in your experience why they should particularly make for this town well if it is constructed? I do not think they can, because the soil increases in density as you go down and the efficiency of the filtering is improved with the depth.
484. And, of course, you think the well would have to be much deeper than it is at present? Yes; it ought to be much deeper.
485. Did you hear any objection to the water which is now being used from the town well while you were there? No personal objections.
486. No objection with regard to its being unhealthy? Oh, no.
487. Or anything of that kind? No. I read some minutes of evidence in which I saw that people are prejudiced against it, and I am not surprised at their being prejudiced against it, simply from the contiguity of the Chinese gardens. But that is removed by my analysis of the water actually in the Chinaman's garden, within a few feet of his rubbish heap.
488. Analysis B is of water from the well actually in the midst of his manure, filth, and everything of that kind, and yet there is no objectionable feature in that water? None whatever.
489. This Clark-Porter process—is that the construction of a bed or tank? Tanks.
490. Filtering tanks? Depositing tanks. The principle is that if you take a certain volume of water and add a certain quantity of lime to it the lime will unite with the carbonic acid contained in the water, and will fall to the bottom as a deposit and drag down with it the lime previously contained in the water, thereby rendering the water much softer and freer from lime than it was before. It is a paradox—adding lime to remove lime.
491. Then I suppose this tank would be almost the first receptacle this water would be pumped into? Yes.
492. And that, as you say, need not involve much extra expense? Merely the construction of the necessary tanks and the pipes.
493. *Mr. McCourt.*] Is the trial well situated on a reserve? I do not know. It was pointed out to me that in the event of the scheme being adopted certain land will be resumed.
494. But are you aware that the trial well you speak of is on a reserve? I think it is, but I am not quite sure about that.
495. Do you mean that 40 acres, in addition to that reserve, would be required to be resumed? No. I should say an area of 40 acres of which the well was the centre.
496. And if there were 40 acres in the reserve it would not be necessary to resume anything from the Chinese garden? Oh, no; but there is a Chinaman's garden quite close to the well, and I think that should be abolished.
497. Could not the well be made further down towards Tamworth? Yes; I think it might. But then there is the increase of the town of Tamworth to be taken into consideration, in which you have less and less vegetation. I consider that a broad distinction should be made between land covered with vegetation and unoccupied land which would allow impurity to soak into it, and which must eventually clog the land up; but in the case of garden crops, as fast as you put organic matter into the soil it is transformed into growing grass or lucerne.

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498. Therefore a total area of 40 acres with a well in the centre would be all the land that would be required? I think so.
499. Could that land be grazed over? Yes.
500. All that you would prohibit would be cultivation and manuring? All that I would prohibit would be human excrement.
501. It could be let for grazing purposes? Yes.
502. *Mr. Wall.*] You have said that this well had been bailed out before you got there? Yes.
503. Do you know if the water had reached its normal level when you were there? I do not think they told me if it had.
504. If it had, of course you could not tell what the inflow was? No.
505. It might have been able to supply millions of gallons a day after reaching its level? It might.
506. It is only in order to dispel local prejudice that you ask for the resumption of this area? Not merely that—to avoid contamination by houses, cesspits, and privies.
507. That contamination could not take place unless there were some transit of microbes to the well? Exactly; but if you take away cultivation you favour the entrance of polluting matter into the well.
508. Of course if the cultivation were taken away grass would grow on the land? I mean there should be some sort of cultivation.
509. *Mr. Neild.*] Were you made aware of the fact that immediately before your visit to Tamworth there had been very heavy floods there? Yes.
510. I suppose within a fortnight of your visit? Yes, it may have been within a fortnight.
511. And those floods put the whole of these flats under water pretty well? Yes.
512. And also flooded the town to some extent? Yes.
513. And yet, notwithstanding those floods, you noticed a large accumulation of filth on this watershed, or rather on the flat from underneath which it is proposed to draw the water supply? It was a heap of rubbish near the Chinaman's hut which I particularly saw.
514. Did you make any inquiries as to the nature of the material used for manuring purposes on that flat? No, I did not; but I saw that it was miscellaneous stuff—what an English farmer would call "muck."
515. Did you see any quantity of town refuse used for manuring? No; I did not. I saw some town refuse nearer the town.
516. On the river bank, near the site of the town well, did you see a very extensive collection of house and town refuse? Yes; I did.
517. During your visit were you made aware that it was customary for the Chinamen and others to carry away that rubbish for use as manure upon this flat? No; I did not hear that.
518. If you had learnt from the evidence taken that such was the case would you have thought that such material as that was suitable to be used as manure in the locality from which it was proposed to draw water for the town? I should not recommend it to be used in the locality from whence you would draw the water supply.
519. Your visit must necessarily have been a very hurried one? Yes.
520. I suppose that practically you had not more than from two to three hours for your investigation? Yes; from 10 o'clock until 1.
521. And during that time you obtained samples from four wells? Yes. One sample was from a tank over the town well and the other samples from wells.
522. Had you any time to devote to an examination of the soil that overlay the river drift said to contain this water? Yes; I noticed it. I walked over the Chinamen's gardens myself.
523. Did you notice that as you proceeded higher up the valley the alluvial deposit overlying the water gradually thinned? Yes.
524. That the wells were shallower as you proceeded? Yes; I should imagine that that would be the case.
525. Did you notice that the water was, at the outside, within about 6 feet of the surface in some of the wells? It is probable it would be.
526. You said just now that if a hole were sunk contamination might arise by reason of filth passing through this hole into the water—I think you gave evidence just now to that effect? Yes.
527. I suppose you noticed the presence of many cesspits in the locality? I should not call them cesspits—they were simply heaps of rubbish which I saw.
528. But I mean cesspits about the houses? No; I did not see any cesspits.
529. I suppose you had not time to visit the houses and see what the sanitary arrangements were? I saw the Chinamen's huts.
530. I mean the Europeans' dwellings? No; I did not see them.
531. Did you visit the Paradise Gardens, where there are large cesspits? No; I did not.
532. Did you notice those gardens a little to the north-east of the well site? To the left, looking up the valley?
533. Did you visit those? No; I did not.
534 Would you be surprised to learn that a very large number of persons congregate in those gardens on public holidays, and necessarily use the cesspits that are there—that would probably follow would it not? Yes.
535. Seeing that it is abundantly sworn in evidence that there are cesspits for human use on this flat, and that your own evidence given to me just now is to the effect that the water in some of the wells comes from the surface of this flat, does it not necessarily follow that the danger of contamination of the water by the contents of these cesspits, situated, according to your own evidence, within 2 feet of the surface of the water—for the cesspits would be at least 4 feet deep, and that would bring the contents of the cesspits within 2 feet of the water—would be very great? It would if the cesspits were near the well, but there would be a deeper stratum of soil between any cesspit and the source of the intake of the water.
536. You have had a copy of the evidence, I think? Yes.
537. If you have had time to peruse it you will have noticed that the whole theory of this supply is water running through the river drift below the soil? Yes.
538. Running through shingle, I think it is described? Yes.

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539. Well, if the water in the shingle were once contaminated by the contents of cesspits, the superincumbent alluvial deposits could have no influence in purification or filtration? I think that as regards these cesspits you speak of, the water would find a different channel—a nearer channel to the river—and would be drained away.
540. Is not the river within a very short distance of the proposed well? Yes, it is—the two rivers.
541. Well, are we to understand from your evidence that you think it is possible that in this river drift that underlies the whole flat, or that is supposed to do so, there are a variety of water channels? No; I think not.
542. Well, what guarantee is there that the water being contaminated at one point, the contamination may not spread to another point or any number of points if the water is, as alleged, flowing through this river drift? I maintain that as the water passes through immense thicknesses of soil it becomes self-purified.
543. You have admitted that where a cesspit exists, and the well is only 6 feet deep, there will be not more than 2 feet between the bottom of the cesspit and the water? Yes.
544. Well, there is no immense thickness of soil there for the purpose of purification? No.
545. No garden crops for the purpose of purification? No.
546. And any deleterious matter would pass unchecked into the water except for, say, 2 feet of soil? Yes.
547. That 2 feet of soil would very soon become permeated with filth, and cease to be a filter? Yes.
548. Well, what is to check the contamination of the water at some future time—I do not say now—when, this little couple of feet of soil at the bottom of the cesspit being no longer useful as a filter, the sewage matter, the night-soil, and so forth, would be absolutely discharged directly into the water that is said to be travelling underneath the whole surface? If you contemplate cesspits all round the points of supply, I should say by no means have such a dangerous sort of water supply; but provided that the land in a given area around the well be resumed, and that the cesspits are some considerable distance from the point from which the water is taken, I do not think that there is any fear of contamination.
549. Your visit was not long enough, I suppose, for you to gauge the extent of the population in the valley above the well? It was a scattered population. I could see various huts and farms.
550. Are you aware that the population is sworn to as being two persons to the acre, proceeding up the valley to the extent of about 9 miles? Probably it might be.
551. That would represent a fairly large population? Yes.
552. And you would recognise from what you saw of the geographical formation of the country that any objectionable matter coming from that population must necessarily be confined to the watershed, the hills on either side preventing any escape? That is, assuming that there is no vegetation on the land; but I say that as fast as you pour in this organic matter the plants themselves absorb it.
553. I am not speaking at the present time about manuring, but of human occupation, and the contents of the cesspits which you have already admitted would not be intercepted either by great depth of soil or by vegetation? But it would ultimately be taken up by the vegetation.
554. If in the water underneath the soil, if in the shingle, how is the vegetation to take it up there? The soil will act as a filter, and arrest this organic matter. If a certain point becomes saturated with organic filth, the nearest vegetation would appropriate that filth.
555. But do you not recognise that this water is supposed to be travelling water? Yes.
556. Well, then, if the water is contaminated at any one spot how can any vegetation above the contaminated water affect the contamination? It is the water which is travelling over the organic filth in the water.
557. Are we to understand, then, that filth does not travel in water? It does travel if it has the opportunity, but where it has to pass through great thicknesses of soil, whether vertical or horizontal, it matters little.
558. For the purposes of your argument, do you characterise this coarse gravelly shingle as soil? I do, certainly—filtering material.
559. You consider that the pebbles and gravel would be sufficient to act as a filter? In conjunction with all the other portions of the soil. It is all stratified together.
560. But that does not deal with the question of cesspits—your argument about the alluvial soil does not affect the question of cesspit deposits? Yes, it does. If you have a cesspit here, and you come and take water from the immediate vicinity, the probability is that you will have the impurity of the cesspit in the water, but if you have a large tract of vegetation, growing crops, or gardens, or anything of that kind, it will abstract from the soil all the impurity, and very pure water will pass through.
561. It is evident this is merely "beating the air," because you are speaking of the soil and I am speaking about the quality of the water under the soil; I will not pursue the matter. With reference now to the question of manuring the soil, are you not aware that it frequently happens that soil is prepared for cultivation and manured, and that the crops intended to be planted are delayed or even destroyed after being planted, in which cases the land would lie manured with no crop upon it, and open to the influence of any thunderstorms that might arise? Yes.
562. There might be a danger of the contamination of the water underneath in these circumstances, there being no growing crop to absorb the manure? You have the influence of the sunlight on the soil counteracting the possibility of impurity.
563. You speak of the possibility of contamination by means of holes that are sunk;—would it not be possible for a flood to carry a lot of objectionable matter into the wells on this flat? Oh, yes.
564. And by that means the water might be contaminated? Certainly.
565. Supposing we assume, according to the evidence, that the water is travelling underneath this flat, would you be able to guarantee that the sample of water drawn by you between 10 and 1 o'clock in the morning, on a given day, would be absolutely identical with the water that would be there during the same hours on the day following? Practically the same.
566. Notwithstanding the possibility of contamination higher up? Notwithstanding that.
567. With reference to the question of microbes, your analysis, I think, was a chemical analysis? Yes.
568. Can you detect microbes by chemical analysis? No; we employ the method of cultivation—that is to say, we take a small quantity of the water and put it into a sterilised gelatine medium, and form, as it were, nutritious matter upon which microbes can develop.
569. Did you take any such course with reference to this water? No; I made a microscopic examination.

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570. You did not mention that, I think? Yes: I have. There were no pathogenic organisms.
571. In which section of your report is that? That is in the last column but two, and is headed, "Examination for organisms." There are organisms in this water and indeed in all waters, but they are not of a pathogenic character—that is, those that would induce diseases such as cholera or typhoid fever.
572. Did you notice that a Government officer, giving evidence upon this point, described it as desperately dangerous to human life to draw water from under ground that was manured with this rubbish—that is, town rubbish? Yes; I noticed that.
573. You do not agree with that? Not at all. He should state more precisely the conditions under which he draws the inference.
574. You disagree with his statement that the water used from the corporation well has caused a tremendous lot of sickness—I suppose you deny that? I should doubt that very much indeed.
575. Then, from a three hours' examination of this locality, and after an examination of water taken from wells after a very heavy flood, you would be prepared to contradict the experience of medical men in the district—is that so? I do not wish to contradict the experience of medical men. I am simply stating what I believe on my own analyses.
576. You said just now that you doubt the correctness of the statement of medical men that the water has caused a tremendous lot of sickness? Yes, I do; because I asked medical men in the town, and they also denied it.
577. They denied their own sworn evidence? Not the same man—certainly not.
578. Supposing this water is travelling water, what about microbes passing through it—would the river drift, this gravelly drift, be sufficient to prevent the transit of microbes? I do not think they could travel. It is simply the water travelling. The impurity would be lodged in the soil.
579. Are microbes sufficiently large to be absolutely retained by coarse gravel? They always like a place where there is something to feed upon, and the further you go down into the soil the purer will be the water, saving in the case where there is an excessive amount of salts, such as in the dry country, where the water is brackish. Wherever it is possible for microbes to get hold of vegetation, organic matter of all descriptions, there they will congregate.
580. Did you ever hear of a pump in London, known as the Broad-street pump, in Golden-square? Yes; but that is quite a different case.
581. That was a well of some depth, was it not? Yes.
582. And of reputed great purity of water? Yes, undoubtedly.
583. And yet it was supposed to have disseminated cholera in a very high degree? Yes; I quite agree with that.
584. So much so that the late Dr. Snow recommended that the handle of the pump should be removed? Yes.
585. And after its removal, so that people could no longer obtain the water, there was a very rapid falling off in the number of cholera victims? Yes.
586. Until at the end of a few days there was no continuation of the cholera epidemic in the locality? Quite so.
587. Can we not learn a lesson from that incident of the danger of contamination of water? No, we cannot; it is not a parallel case at all.
588. Would you kindly explain why? Yes. I say that if the surface of land be naked, or if it be covered with houses, streets, and back yards, such as you find in the centre of the city of London, then all impurities—stormwater, street-sweepings, urine of horses, human excreta, and all the rest of it—must go somewhere. Some of it will be evaporated, some will go into the soil, and must inevitably find its way into the water.
589. Are those not precisely the same conditions as occur in connection with this flat containing many hundreds of inhabitants? No.
590. Do you know of a case in the Crimean war, where a very large number of French troops were attacked with cholera through drinking water out of infected wells; perhaps I had better read this little extract from the *Medical Gazette*:—

> On August 7th, 1854, out of a body of French troops, 4,000 in number, camped at Baljik, in European Turkey, 400 were attacked by cholera, and before the next morning sixty were dead. In a few days, out of 11,000 men in that neighbourhood, not less than 5,000 are said to have perished. The outbreak of the disease was attributed to their having drunk the water from infected wells which had been poisoned by having putrid carcases thrown into them. The soldiers from the infected troops, were seen to wash themselves and their clothes in a stream from which English and French fleets obtained their water. Cholera soon broke out in these ships, and at noon on August 14th H.M.S. "Britannia" was attacked suddenly, and in twenty hours upwards of fifty of her crew had expired; by the evening of the 16th eighty had died, and more than 200 remained in greater or less danger. It also broke out in the French Admiral's ship, the "Montebello." During the first night 200 were attacked, of whom forty were dead by the morning.

Do not you think that that extract is some warning against the possibility of water contamination even with the water travelling a considerable distance from the source of infection? I gather from that that it was an open channel. It would be quite possible to decimate the whole population of Tamworth by infecting this well with typhoid fever or with cholera; but these diseases must first of all have a bad water to live upon. I will guarantee to say that the amount of organic impurity in the Tamworth water is so small as to be not sufficient for microbes to subsist upon—that microbes placed in such a water would simply, in plain words, die of starvation. You must first of all have an impure water for microbes to generate in. So long as the area around the well is kept free from pollution I do not think the people need have any fear.
591. Then you are of opinion that filtration, coupled with clear water, will destroy microbes? I am certain of it.
592. Is it not customary for medical men and for boards of health to insist upon the boiling of water as well as its filtration in times of epidemic? Yes.
593. Well, surely, loose gravel would not be as useful a filter as the ordinary charcoal bricks which are used in filters? But if you have the land around your well fenced in and resumed you cannot possibly have an epidemic unless some one maliciously infects the water.
594. Not even if persons suffering from typhoid fever use those cesspits a few chains away from the well? No, I do not think it would reach the well.
595. *Mr. Collins.*] Have you had any experience with wells in any other towns in the Colony? Well, I get a large number of samples sent to me, and I do not know where they come from.
596. You have not visited the localities yourself? No, I never do. This is quite an exceptional thing for me to do.

597. *Mr. O'Sullivan.*] How far could microbes travel through that soil near the departmental well at Tamworth? It would be simply hazarding an answer to tell you with any exactitude. Some of M. Pasteur's assistants have shown that they have travelled 40 or 50 feet in loose soil. W. M. Hamlet, Esq. 13 Dec., 1892.
598. Do you think it would be correct to say that they have been known to travel 160 feet? I should think that that was a very extreme distance.

Theodore Pridham, Esq., A.M. Inst. C.E., Principal Assistant Engineer for Water Supply, Department of Harbours and Rivers, sworn, and examined:—

599. *Chairman.*] You are Principal Assistant Engineer for Water Supply in connection with the Public Works Department, are you not? Yes. T. Pridham, Esq., A.M. Inst. C.E. 13 Dec., 1892.
600. How long have you occupied that position? I have been Assistant Engineer for Water Supply for about three years.
601. How long have you been connected with the Department? About fourteen years.
602. Has your engineering experience been gained in the colonies or in England? In India, before I came here.
603. Were you principally engaged in water works there? Not at all in water works, but before I went to India I was engaged in water works in London.
604. How long were you so engaged? Only a short time.
605. What was the nature of your professional labours in India? I was engineer for a company there—the Assam Company.
606. You are now, and have been for some time, employed in connection with the water supplies which the Department carry out? Yes, nearly fourteen years.
607. You visited Tamworth some time since, I understand, for the purpose of getting a general idea of the proposed scheme with a view of working out the details? Yes.
608. When did you first visit Tamworth? In July, 1891.
609. That was the first time you visited Tamworth at all? Yes; that was the first time.
610. What were your instructions on that occasion? I went up to select a new site for a service reservoir.
611. And a new pumping station? No; I did not go up for that purpose; but when I was there the Council suggested another site, and I examined it, and recommended that it should be adopted.
612. Mr. Darley and Mr. Keele had, some ten years before, resolved upon a site for a reservoir and a well, had they not? Mr. Darley—yes.
613. And, owing to the growth of the town, it was thought desirable to choose another site for the reservoir, commanding a larger area? Yes.
614. And that was the purpose for which you visited Tamworth in 1891? Yes.
614½. Have the mapping-out of the site, the pumping station, and the reticulation been under your immediate control? Yes
615. Can you inform the Committee as to whether the Department is responsible for the reticulation area proposed here, or whether the local Council are responsible? We sent up a plan and asked them to mark on the houses, and after that was sent back I designed the reticulation on that plan, and it was sent to them again to look over it and see if they could cut out anything. They decided they could not cut out anything, but that all the reticulation that I had marked was necessary.
616. Did you suggest, when sending up that plan for reticulation, that it might be curtailed with advantage? No. Mr. Darley sent the plan up. I submitted the plan, because I considered that that was the proper amount of reticulation.
617. According to the houses shown on the plan furnished by the Council? Yes.
618. And they sent back the plan without any alteration and with an expression of opinion that no reduction would be desirable? Yes.
619. As an officer who has had considerable experience in reticulation for our country towns, do you or do you not think that there is an excessive amount of reticulation in this scheme? I think that the amount of pipes shown on the plan should be provided; but I do not think that they should all be laid at once. For the purpose of an estimate it is not an excessive amount of reticulation to provide for.
620. You think that as a scheme of reticulation it is right, and that in the meantime it should be only gradually extended to its full length? Yes. Within the next two or three years. Our experience has been that as soon as the works are completed the people want more reticulation.
621. Your experience is that if you give them a limited amount of reticulation, as soon as the works are in operation there is a demand for more? Yes; in the case of Wagga Wagga, Orange, Wentworth, Balranald, Lismore, Bourke, Hay, Moama, and Cootamundra.
622. Then if there is an impression generally abroad that the Harbours and Rivers Department have always under-estimated the cost of water schemes you do not think it is true? It has been done in the past—the cost has been under-estimated in the past; but, I think, not lately.
623. Where it has occurred of late years, it has been owing to the demand for a greater amount of reticulation than was provided for in the original scheme;—is that your contention? Almost always.
624. And so as to prevent any charge of that kind in the future you have provided for a maximum amount of reticulation here? Yes, which I think will be required within the next two or three years, if not exactly where shown, in other parts. That quantity will certainly be required, I think.
625. Are you aware that West Tamworth, which is very extensively reticulated in your scheme, is very sparsely built upon? I have marked the positions of the houses on the plan, and you will find that Mr. Darley and I came to the conclusion that it is not too much reticulation. I have marked the positions of the houses in blue on that plan.
626. At all events, looking at the requirements perhaps during the next two years, and also at the decision of the local Council, you are of opinion that it would not be wise to curtail the proposed reticulation? I think not. I think that that amount of pipes should be ordered and provided.
627. Did you give any very great consideration to the source of supply, or did you merely on your visits carry out the scheme, irrespective of what the supply is likely to be? No, I have given consideration as I have elsewhere, in the case of Dubbo and Parkes.
628. Do you think that the source of supply is likely to be of a sufficiently permanent character for the requirements of Tamworth? Yes, I think so.

629.

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629. Would it not be a very serious matter for Tamworth if, after carrying out the scheme, it was found that the source of supply gave out? I do not think it is possible that it would give out. It is simply a matter of filtration area.
630. You consider that the Peel Valley is a huge basin in which a large quantity of water is conserved? I am quite sure of it.
631. Do you know of any similar catching or holding ground which supplies any large towns with water? Well, I have read of a good many. I do not know personally of any. In America there are 270 towns supplied with water in that way.
632. You have no personal knowledge as to the natural contour of the ground or anything else at those places? No personal knowledge.
633. Is there any town which you have already supplied with a water system anything similar to this in its catchment area? Cootamundra is a little like it, but not very much, because there is not a good creek there; but Dubbo and Parkes are very much like it. We are carrying out water supplies for those two places.
634. What steps did you take to satisfy yourself as to the quantity of water likely to be available in the case of Parkes and Dubbo? By existing wells.
635. Did you put any bores down in the drift supposed to underlie? Yes, we put bores down in each case.
636. Not merely relying on the existing local wells, you also put bores down? At Parkes we put down several bores, but at Dubbo only one, because there were existing wells all around which proved the immense area of water-bearing drift.
637. In view of the expense attending this, do you think it would be desirable to take some further steps with a view of testing the permanency or quantity of the water to be drawn from this Peel Valley? I do not think it would be necessary, because when the road bridge was built trial shafts were put down, and they proved that the drift is something like 300 feet, at least, in width.
638. Who put the trial holes down for that bridge? I could not say. They were put down by the Roads and Bridges Department.
639. How did you get at the data then? I got the plan from the Roads and Bridges Department.
640. Who was in charge of the Bridges Department? Mr. McDonald.
641. Has he the sections? There are only a few sections. It is just a mile below the site.
642. You do not think there would be any serious alteration in the drift bed? I do not think so.
643. Do you know if Mr. McDonald was frequently at Tamworth when bores were put down for the purpose of testing the Peel-street bridge? I do not think he was there.
644. At all events, from what you have seen of the plans, and from data you have obtained from the Roads and Bridges Department, and the local wells, you are of opinion that it is not necessary to take any further steps to test the quantity of the supply? Yes. It is very seldom done, if ever.
645. Do you not think that the expenditure of £100 for the purpose of further tests would be safer and more economical in the end? I should put down a well large enough at first to supply the town for a long time. If necessary another well could be sunk further away. The two could be connected together, as is generally done, or else tube wells could be driven, as is sometimes done.
646. *Mr. Hoskins.*] Are you aware that it has been stated in evidence that the well where the town pump is has been emptied, and seeing that this well was most probably sunk in the most eligible locality, and that the water does give out there after baling, do you think that the data you have obtained already is sufficient to justify you and the Department in saying that you can sink a well at the place indicated which will supply 300,000 gallons of water for the use of Tamworth in twenty-four hours? Yes; I think it is a matter of area. I arrived at the necessary diameter of the well from the town well. I got particulars of the town well when I was there, and knowing what the town well supplies in a dry season, from that data I arrived at the diameter necessary for the new well. Twenty feet in diameter, I think, would be necessary.
647. But you are aware they pump this well dry frequently in dry weather? Because it is a small well—4 ft. 9 in. in diameter.
648. Do you not think that before the Department enter upon any expensive works with a view of commencing this proposed water scheme, they ought to make sure by extensive pumping, with the view of ascertaining whether the water supply will suffice for the purposes required? It would be too expensive to do so. To do that you would require the full sized pumps that we are going to provide. You would require to sink a well 20 feet in diameter to do it. I do not think it is ever done.
649. You mean to say it would be better to sink £30,000 or £40,000 on this scheme on the chance of getting water—to judge by the area of the flat and what you conceive to be the natural soakage, rather than to ascertain from reliable data whether sufficient water would be available or not? I think it might be as well to sink a few borings to ascertain the width of the drift—it would not cost much to do that.
650. But, supposing you sink borings and water comes, unless you can ascertain the quantity of water obtainable, say, in twenty-four hours, how can you tell whether that supply will not give out when extensive pumping is resorted to in order to supply the town of Tamworth? We can only tell by experience in other cases. I have notes here of several cases in America where they have supplied more than that—in some cases over 1,000,000 gallons a day, from a not much larger well. I have the notes here and I could read them.
651. Mr. Darley has stated, in evidence, that he intended before any large expenditure should be incurred for this water supply that the most elaborate experiments should be made with a view of ascertaining whether there is sufficient water or not? I do not see what could be done except sink a few shafts to ascertain the width of the drift.
652. *Mr. Davies.*] When were you last at Tamworth? July, 1891.
653. When did you make a survey or make any inquiries as to the permanency of the water supply at Tamworth? I did not make any survey.
654. When did you make any departmental inquiry or test as to the quantity of water to be got from the drift you speak of? That was done before by Mr. Darley when he proposed the scheme.
655. What was the nature of that inquiry? I could not say. It was a long time ago.
656. Is it according to the practice of your Department to enter into a large expenditure before you make

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make any trial or test as to the capacity of this drift to give you a permanent supply of water for Tamworth? We are in the habit of judging from existing wells. I do not think anything else is ever done in a case of that sort.
657. You have a supply for Cootamundra similar to this proposal? Yes.
658. Is that not a failure? Not exactly; but we did not get as much water as we anticipated. We never expected to get much water there.
659. Is it not almost a failure? It is quite sufficient for many years to come.
660. Is it anything like what the Department expected to get for the supply of Cootamundra? It is less than we expected
661. What guarantee have you that you have a permanent supply in this drift for Tamworth any more than you had at Cootamundra? It is simply a matter of sinking another well when they want more water at Tamworth. It is a matter of area. The water rises directly.
662. Did you proceed on the same basis to provide a water supply for Cootamundra as you propose in connection with Tamworth? There were a few trial shafts sunk.
663. In this case you have made no trials at all? One trial shaft was sunk.
664. By your Department? By the Council, at the instance of our Department.
665. What officer of the Department attended and inspected that trial? Mr. Walsh.
666. Are you sure that he was present when the shaft was sunk? I do not say he was present. It was put into his hands.
667. Was he present there any portion of the time? I could not say; but latterly Mr. Price has been up and inspected it—within the last week or so.
668. Is it not purely a matter of surmise as to the quantity of supply—there is no absolute proof that there is a quantity equal to the supply of 300,000 gallons a day? We can only judge from existing wells.
669. Is it not purely a matter of theory that it exists at all? I do not think it is a matter of theory.
670. What evidence had your Department that there were 300,000 gallons a day to be got? It was chiefly from the town and other wells that Mr. Darley satisfied himself about that.
671. What other wells have been tested which give you a guarantee that there is a supply equal to 300,000 gallons a day—just name the wells? The only well that I have any particulars of is the town well. I did not make any investigation. I had not instructions to do so. That was done by Mr. Darley before.
672. When did he make an investigation? About ten years ago, I think.
673. There was something done ten years ago with reference to the town well—that is to say, it was pumped out and a test was made as to the volume of water that was flowing into the well? Yes; the particulars that I got about that I have here.
674. Will you let us have the particulars? 26 feet deep, 19 feet 6 inches to water level in dry seasons, diameter 5 feet 9 inches; 2,500 gallons pumped in half an hour. Then they had to wait twenty minutes for the well to fill. Those were the particulars that I got.
675. That was eight years ago? That was in July, 1891.
676. Who made the test? The particulars were given to me by the Council.
677. Your Department has not made any inquiry? No.
678. Simply relied on statements received by you from other sources? Yes.
679. You visited the district yourself about sixteen months ago? Yes. That was simply with the object of fixing the site for the service reservoir.
680. You changed the site of the service reservoir? Yes.
681. What was your object in changing that site? Because the Council asked that it should be changed to a higher site, and I went up on purpose to select a higher site.
682. At the instance of the Council? Yes.
683. What is the difference between the height of the site which has been chosen and the original site? I think it is about 70 feet.
684. Higher? Yes; something like that.
685. Have you any facts as to the surface and the heights and the levels? Yes; they are marked on the plan.
686. Then you can tell by reference to the plan what is the difference? It is about 100 feet.
687. Will that new site supply the highest point in the town? With the exception of a very small portion.
688. What portion is that? At the corner of Raglan and Murray Streets.
689. That is the highest point in the whole of the town? Yes.
690. And this new site will not supply that point? Not quite.
691. How many houses would the site originally chosen fall short of supplying? A great many. I did not count the number of houses, but it would be a great many. I have a plan here which shows roughly the amount that would be cut off.
692. Up near Raglan-street and near the public school? Yes, the whole of Napier-street would be cut off, and all Raglan-street and part of Upper-street.
693. How many tenements are there in that portion which you have just mentioned? I suppose about thirty.
694. How many houses altogether in that upper portion that you speak of—Napier-street, Raglan-street, and Murray-street,—there are not many houses there, are there? I reckon about thirty houses.
695. Are you aware that a very large portion of that land is wholly unoccupied—10-acre blocks? Yes, I know there is a good bit of it unoccupied.
696. Are you aware that you provide for reticulation around the whole of this unoccupied land? I have provided for what I thought would be required in a year or two—not immediately, but in a very short time, as I have always done in the past.
697. Is it the practice of your Department to provide reticulation for properties which will give no return? The pipes would not be laid to those places just at present, but later on; but we would provide the pipes.
698. Is it the practice of your Department to load a project for the supply of water to a country town with a large additional expense which is not necessary in the first instance? It is not the practice to do that.
699. You named a certain number of country towns that have already been supplied with water, and in every case you provided, you said, for an increased reticulation which might not be required at the first

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inception but a very short time afterwards? In the cases which I named the extra reticulation was not provided, but I think it ought to be provided in this case. At Orange 4¾ miles extra was required.
700. Are you aware that these country towns have not paid the interest on the expenditure? Yes.
701. In view of that fact do you think it is prudent to load the water supply for a town like Tamworth with an expenditure of at least £4,000 for reticulation that will not be required for the next four years? I think that as they are in a financial position to pay for the scheme there should be an ample amount of reticulation provided. In the case of a town in a very bad financial state I would not do it in the same way; I should provide only the exact amount required; but in this case the town being in a very good position financially, I should provide for an extra quantity.
702. Because of its good financial position you punish it by having extra reticulation? It should be mentioned that without reticulation you cannot get rates.
703. But it would not be a prudent thing to expend £4,000 to take a water main round blocks of property without a house on it? It must be remembered that it is sometimes necessary to take a pipe where it is not really required so as to connect with other pipes, so that the water shall not stagnate in the pipes.
704. You know what the whole of the scheme is, and the cost? Yes.
705. What is the capacity of the reservoir? Five hundred thousand gallons.
706 You regard that as sufficiently large for all purposes for many years to come? Yes, I think so.
707. What size would the well hole be from which it is proposed to pump the supply? I should propose 20 feet in diameter for the present.
708. Has there been any decision as to what size it shall be? Mr. Darley would have to decide that point, but that is what I should propose.
709. It has not been decided up to the present time? Not yet; but I would recommend 20 feet in diameter.
710. And how deep? I should say we would come to the rock at about 32 feet.
711. Have you any idea what the cost of that pumping shaft would be? Yes: I have made an estimate. I put down the engine-house and pumping well at £1,000—I think they can be done for that. We are putting down a well of 20 feet diameter at Dubbo.
712. That is £1,000 to be added to the estimated cost of this proposal? Oh, no. It is included in the estimate.
713. Twenty feet wide? Yes.
714. And it can be done for £1,000? Yes; I think so, because we are only going to put up a wooden engine-house, and that will not cost much.
715. But it is to be bricked half the way down—for 25 feet? Yes.
716. With 9-inch brickwork? Thirteen and a half-inch.
717. Puddled or set in cement? Set in cement.
718. How many cubic yards of brickwork would there be in a well 30 feet in diameter and 25 feet deep? I think there would be about 70 cubic yards.
719. At how much per yard? For about £2 10s., I think, it should be done.
720. Including material? Well, £3 at the very outside.
721. It will cost £300 or £400 any way? Yes.
722. Did you, during your visits to Tamworth in connection with this water scheme, pay any attention to a proposal emanating from Mr. Gipps with reference to a gravitation scheme? No
723. Have you ever been over that proposal? No.
724. Were you not asked by the Council authorities there as to preference for a gravitation scheme as against a pumping scheme? No. I was not instructed to make any examination
725. But have you not expressed an opinion in favour of the gravitation scheme? I was not asked anything about that.
726. You have not expressed yourself to the local authorities as being in favour of gravitation? No. At that time I only saw Mr. Smith. He was Mayor at that time.
727. Did you express to him that you favoured a gravitation scheme? No I should favour a gravitation scheme, certainly—but not that scheme—if there could be got a sufficient head; but it would be too expensive in this case.
728. How do you know it would be too expensive if you have not paid attention to it or made inquiries? In the office I have examined Mr. Gipps' scheme.
729. You have examined the papers, the levels, and surveys? Yes. Mr. Gipps' scheme I do not think would do at all. If a gravitation scheme were carried out it should be higher up than Mr. Gipps' scheme, so as to provide a sufficient height to supply the service reservoir shown on the plan.
730. When you were on a visit to Tamworth about eighteen months ago, did you take any notice at all of the surroundings of the proposed pumping shaft? Yes, I saw there were some farms about it.
731. Did you see any Chinese gardens? I saw one.
732. Are you not aware there are a number of them? I did not go up the flat; but I have heard since that there are a great many.
733. Do you think it is desirable to have a shaft close to a Chinaman's garden? I would not myself be afraid of doing so.
734. You think the water would be pure and good from a source of that kind? I do not think there is any fear of any contamination of that sort getting into the drift through the bed of soil and clay that there is above. In the case of Parkes the supply will be from under a Chinese garden, but the Chinamen, of course, will be sent away from it.
735. That is to say, you resume the land? Yes; but even while the Chinamen were there cultivating the garden I got a sample of water from a well in the garden and it was analysed by Mr. Hamlet and pronounced perfectly good.
736. As in this case? As in this case.
737. You think it unnecessary to resume a portion of these Chinamen's gardens for the purpose of preventing contamination? I think the one close to the well should be resumed, but I should not resume any more.
738. Have you any idea of the price of land in that locality? No; I do not know what the price is. Even if that garden were not resumed I should not be afraid of any contamination, because the Council have power to prevent any pollution whatever in the shape of cesspits.

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739. Where is the special power that they have under the Act;—it is not that the Chinamen are coming to you—you are going to them? But I think the Act says that the Council have power to proclaim a water district.

740. It means a matter of compensation to the people whose property you close up—whose property you take away from them? No; I do not mean to close up the property, but simply to prevent contamination from cesspits and that sort of thing.

741. That, of course, would apply to any populous part? I think it would apply in this case, too.

742. *Mr. Trickett.*] You said a little while ago that the reticulation area might be reduced, you thought, for the present? I think the whole number of pipes shown on the plan need not be laid at present; but I think that that amount of pipes should be provided in view of the future.

743. Can you state what quantity should be laid at the present time—have you gone into that? No; I have not gone into that.

744. Is there anybody in the Department who has gone into that question? I think not. I think the amount of pipes shown on the plan should be provided. They need not be laid all at once. The laying only costs £120 a mile.

745. You think the whole of the pipes should be provided? Yes; in view of the future, and in view of what we have had to do in other cases. We have always had to increase the reticulation provided—almost always.

746. *Mr. Neild.*] What clause in the Country Towns Water and Sewerage Act do you refer to as giving power to the Council to prevent contamination? Section 54, which says:

> Where any owner or occupier of any land within a water district to be proclaimed as hereinbefore provided, or any reservoir or source of supply belonging to the Council, does or permits to be done on his land any act, or permits to remain thereon any matter or thing which in the opinion of the Council is likely to injure the water supply, if notice to discontinue or remove the same be given to him in writing by the Council, and if he neglect or refuse to discontinue such act or to remove such matter or thing, he shall for each such offence forfeit a sum not exceeding ten pounds, and a further sum of forty shillings for each day (if more than one) that such offence continues.

747. Do you maintain that that section of the Act is preventive of persons manuring the ground? I think not.

748. When you went up to Tamworth to deal with this matter, did you go up for the purpose of designing a water supply for Tamworth? Certainly not.

749. You went up for the purpose of making some small alterations in the scheme which had been previously designed? Yes.

750. Do you know how long ago that was designed? About ten years ago.

751. Is it not more than that; was it not in 1879—about thirteen years ago; assuming that Mr. Darley mentioned it as 1879, I suppose that would be correct? In September, 1882, Mr. Darley reported to the Engineer-in-Chief.

752. Listen to this extract from Mr. Darley's evidence, question 57—

> Yes; but it is very slightly modified indeed from the scheme which I worked up in 1879 or 1880. It is the scheme which I recommended then, slightly improved and modified, because the town has grown so fast in the interval.

—? Mr. Darley's report was dated 4th September, 1882.

753. Is that Mr. Darley's first report? First report about this scheme.

754. Then apparently Mr. Darley was two or three years out in his evidence? I think he made a slight mistake there. You will find from the papers that his first report was dated 4th September, 1882.

755. Then you were sent up not to design a scheme but to confirm, with alterations, the one that already existed? Not so. I made the alterations myself. I was sent up to make alterations.

756. You have marked on the plan the positions of various houses;—are you aware that it is proposed to lay down as many as 9 chains of 3-inch pipe to supply a single cottage? I was not aware of that.

757. Are you aware that there is a proposal here for 8 chains of 3-inch main to supply a small two-storey house? No; I was not aware. It may be to connect other mains. It is sometimes necessary in that case.

758. If you look at the plan you will see that they are mains that are carried up to one house only; I will take the case of Brisbane-street; a main runs from Napier-street almost to Raglan-street for one house? It is not only to provide for that house.

759. Are you aware that the particular block on which that house is built is one gentleman's property, which he is farming? I was not aware of that. I did not examine that point.

760. A great many of the houses to which the reticulation is carried are very small wooden shanties, are they not? A good many of them are.

761. I suppose that taking the houses in the upper part of the town, above Upper-street, they would not average more than four rooms each, would they? No; I should not think so. They are small houses.

762. Do you think it is desirable, for instance, to carry two 4-inch mains and two 3-inch mains all round the recreation reserve—that is, half a mile of main? Not unless there are some houses there.

763. Well, take the next block, the one the public school stands upon; there is nearly a quarter of a mile of 4-inch and a quarter of a mile of 3-inch mains for a block that contains the public school buildings and the teacher's residence only; is it necessary to have as much reticulation as that? I do not think it will be necessary to lay all this at present, but I think that amount should be provided for in view of the future.

764. Do you think it is necessary to not only lay down mains in every street, but to lay them down in the intervening lanes also? I think you will find that there are a good many houses bordering on the lanes, and the pipes are to be laid down for that reason.

765. Have you seen the evidence given by the Mayor, the Council Clerk, and the overseer? Yes; I have read the evidence.

766. Do you mean the evidence as reported in the press? No; I have a copy of the evidence here.

767. You say that you have been in communication with the Council in reference to the reticulation? Yes.

768. And you have had the plan sent back by the Council? Yes.

769. Is the plan so sent back under seal? I forget now. It was sent to the office.

770. You do not know whether it is under the seal of the Council or not? It is not usual to seal plans.

771. But this would amount practically to a contract or some agreement between the Council and the Government? I do not think so.

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772. Not some kind of bargain as to the amount of money to be expended—surely it would amount to that? I think it was simply a corroboration of our estimate of the amount of reticulation required.
773. You were under the impression that this reticulation had been submitted to the Council? I was.
774. If you have read the evidence you have probably seen that, in reply to question 1252, it is stated that "there has been no official approval" of the pipe line? The Mayor told me that the Council had approved of it.
775. But if the Mayor, on oath, alleges that "there has been no official approval," you have been under a misapprehension apparently? We generally look to the Mayor in cases of this sort. We do everything through the Mayor.
776. Who was the Mayor? Mr. Smith.
777. What was your reason for securing so high a pressure as 58 feet head of water to the corner of Napier and Raglan Streets, where there are no houses? In view of the future.
778. Is it customary for you to work out a scheme that gives so great a pressure as 58 feet in the highest corner of the town? It is not customary, but this is a special kind of town—it rises so high, and the tendency is to build high up in all cases.
779. Where you make a provision for extension would apply beyond the limits of the town? No, not beyond the limits of the town.
780. Well, is not 58 feet too much to have for an extreme point? I do not think so. It would give an insignificant pressure in case of fire—58 feet at that distance from the service reservoir.
781. You say that in the corporation well the sinking was 19 feet to reach the water; I think that was the evidence you gave just now? Nineteen feet 6 inches to water level.
782. What was the depth to water level in the shaft from which you propose to pump the future supply for that locality? About 10 feet.
783. Have you examined the flat further up? No.
784. You do not know anything of the circumstances affecting the watershed above the site of this well? No, I did not go further up than that.
785. If it is in evidence on the part of Mr. Hamlet and other witnesses, that the soil gradually shallows as you go up the flat, that would necessarily mean that the filtration of the water would be less perfect? I think so, but my opinion is that 6 feet is sufficient.
786. But supposing it is only 4 feet? Well, then, that is rather shallow, I think.
787. We will take the depth at 6 feet near the well site, where you say it is 10 feet to the water? Yes.
788. Well, assuming that the same depth of soil exists for some distance up the flat, and that cesspits are sunk 4 or 5 feet into that soil, do you not think there would be a danger of contamination between the bottom of the cesspits and the water? Yes, I think there would, but I think they ought to be closed, according to the Act.
789. You would not agree with Mr. Hamlet that it was quite safe that they should remain there? It depends on the distance entirely. I do not know what the distance would be.
790. It is in evidence given before the Committee that the water from the corporation well—that is, the well in the town—is the purest—where the overlying soil was the deepest the water was the purest; that was mentioned to show that the shallower the soil the greater the risk of contamination of the water? Yes.
791. And therefore, that going up the valley for water may not in the long run give as pure a supply as is now obtained from the greater depth of the corporation pump well? But I think that the well should be sunk above the town. That was one reason for shifting the site.
792. But you say you have not investigated as to the number of people occupying the valley above this well? No.
793. Did you notice the very large bar of rock in the Cockburn River as you cross over from the town to reach the well site? Yes, that is below the site. That is another reason for shifting the site to that point.
794. Do you think that that bar of rock would probably extend some distance and act as a natural dam? I think it might divert the water from the old site, which was a little below; I think it might divert the water in the drift from that site.
795. Therefore you get a better supply above that bar at a new site than below the bar at the old site? I think so.
796. Would not a bar of that sort if it retains the water have the effect of retaining the microbes or other objectionable matter that might make its way into the water? I do not think it retains the water. The drift is spread over the left bank of the river. The trial holes on the site of the road bridge show that the drift is more on the left bank than on the right; on the left it is 18 feet deep.
797. The left bank is looking down the stream? Yes. The trial shafts on the site of the proposed bridge show that the drift is more on the left bank than on the right bank.
798. Has there been any effort on the part of your Department to design a gravitation scheme for Tamworth? There was before Mr. Darley proposed this scheme.
799. That was some time in the seventies, I suppose? Yes, some time in 1879.
800. Where was it then proposed to get the water from? From the hill at the back of Tamworth.
801. That was just a local catchment affair? Yes.
802. That would not be sufficient for the present circumstances of the town? It would be sufficient, but the ground does not hold well enough. It is bad holding ground.
803. Have you been up the Cockburn River to look for a site for a dam? No.
804. But you assume that the site selected by Mr. Gipps was not sufficiently high up to give a good gravitation in a proper form? I am sure it is not, from the levels.
805. What fall would you require for 14 miles of 10-inch pipes? Six feet per mile. That would only deliver the water to about the public school.
806. I want to know what fall would be necessary for the water to pass through the pipes for delivering the water for a distance of 14 miles? It depends entirely on the height to which it is delivered.
807. I merely want to know what fall is necessary to enable water to run through pipes properly? Almost any fall will do. It depends on the quantity of water. To deliver 300,000 gallons a day through a 10-inch pipe would require a fall of 6 feet per mile.
808. Well, then, if Mr. Walsh of your Department stated in evidence that a 20 feet fall for the 14 miles was

was sufficient you would not agree to that proposition—that would only be 14 or 16 inches per mile; I draw your attention to Mr. Walsh's evidence "It would not have as much as 2 feet in the mile"—20 feet for 16 miles of piping; you think that it would not be sufficient to bring in the water supply? Certainly 20 feet for 16 miles would be insufficient if the fall were calculated to the service reservoir—everything depends on that. T. Pridham, Esq., A.M. Inst. C.E. 13 Dec., 1892.

809. What can it matter where the reservoir is or the height of the reservoir if the calculation is based at so much per mile—that is all I am wanting to get at? With a fall of 16 feet per mile it would not require anything like a 10-inch pipe.

810. Sixteen inches, I said? Oh, 16 inches. It would not be sufficient.

WEDNESDAY 14 *DECEMBER*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM McCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. JOHN DAVIES, C.M.G.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	CHARLES COLLINS, Esq.

HENRY DAWSON, Esq.

The Committee further considered the proposed Water Supply for Tamworth.

Edward Bellingham Price, Esq., Supervising Engineer, Department of Harbours and Rivers, sworn, and examined:—

811. *Chairman.*] You are Supervising Engineer in connection with the Harbours and Rivers Department? Yes. E. B. Price, Esq.

812. How long have you been in the Department? This is my eighth year.

813. You have been more intimately connected with the question of water supplies than with anything else whilst in the Department? Yes; nearly altogether. 14 Dec., 1892.

814. You recently paid a visit to Tamworth in connection with Mr. Hamlet's visit? Yes; that was the first time I was there except in connection with the railway scheme, when I was acting as Examiner of Public Works.

815. How long were you in Tamworth on this occasion? Four days.

816. *Mr. Hoskins.*] What did you do during those four days? The first day I went out to see the trial shaft and arrange to have it cleared out. I found the Council's foreman was there and was going to do the work for me. He asked me to supervise the work. I said I would, and I watched them clear the hole properly out. On Saturday I took a walk round the place. The next day, Sunday, I did nothing. The following day Mr. Hamlet came down and I went with him and took the samples of water and drove up the flat above the proposed well a few miles to Cross Creek, and went off by train.

817. Did you form any opinion, from what you saw in the shaft that was cleared out, of the flow of water in the shaft, and also any opinion as to the configuration of the country in the vicinity;—did you form any opinion as to whether, if a shaft were sunk there by the Department to any reasonable depth, 300,000 gallons of water could be pumped out in twenty-four hours for the use of the people of Tamworth? Yes; I think it would not only be possible to get the water but impossible not to get it, if you sunk a well somewhere there—I do not say the exact site.

818. I am not disputing you could get water, but on your responsibility as an official do you say from what you saw that if a shaft were sunk, say, 30 or 40 feet, 300,000 gallons of water could be pumped up in twenty-four hours for the use of the residents of Tamworth? It certainly could. It depends on the size of the shaft which you sink. With a shaft like the town well, which is only 4 feet 11 inches in diameter, you would not get it. There would not be sufficient surface exposed to the drift for soakage, but I suppose this well will be 20 feet in diameter, and will have sixteen times the area of the town well. You might get sixteen times as much water as from the town well, and they told me that they got 40,000 gallons out of the town well.

819. Are you aware that evidence has been given to the effect that the town well has been pumped dry and they have had to abstain from pumping further until it got full again? For half an hour, but I can understand that. The well is too small—only what a man would sink for his own garden.

820. In your opinion is there sufficient catchment area there to ensure that during a dry season water could be pumped from a shaft to meet the requirements of the residents of Tamworth—say, 300,000 gallons in twenty-four hours? There is plenty of water there. It only means putting a well in large enough to get the water. I believe there is provision made for putting in drives in the well, as is done in England. The well that supplies Hull with water is a deep well, and when the water fails, the town getting larger, they extend the drives further, and that taps a large area of chalk, and exposes a larger surface for the water to soak in from. That is all that is necessary.

821. Your estimate of the quantity of water that could be obtained from a shaft sunk to any depth you think necessary, is based on the quantity of water which is observable after sinking in the present year? Not at all. The present water in the well is nothing at all—it comes from a half-inch seam of sand. They have not touched the drift at all.

822. But your estimate of the quantity of water available for Tamworth is based on the quantity of water that it has been ascertained can be gained during the present year? No, it is not. It is simply based on experience in other places. I have seen trial holes sunk, and have sunk a good many myself. Take the flats at Wagga Wagga. I sank a good many holes there in connection with Junee water supply, and we could not bottom in any of them; and the railway people, when constructing a viaduct there, sank twenty or thirty shafts. I got particulars of every one, and they invariably struck sand at 28 feet from the surface, and nobody could ever bottom the sand yet. You could hear the water running through the sand. This shaft at Tamworth is only 11 feet deep, and there is so much water coming in from soakage from the layer of sand that no one could deepen it except by using a large pump which would cost a large amount of money.

823.

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823. I suppose the railway authorities could not get sufficient water for their purposes at Wagga Wagga and had to get it at other places for the railway? You could get enough water at Wagga Wagga to supply all the railways, but to bring it to Junee we would have had to raise it 700 feet by pumping, and to drive it 18 miles; but by going to the hills on the north side I got a gravitation scheme with a head of 500 feet, so I gave up the other scheme.

824. Your estimate of the probabilities of this locality being provided with sufficient water by sinking in these sands is based on the experience you have acquired at Wagga Wagga? And other places besides.

825. Where else? Wentworth, Balranald, Jerilderie, and the Murray River flats.

826. In those places did you sink in drift sand as at Tamworth? No, we pumped from the river, but we sank trial shafts to find what foundations we had, and we always found sand. On the Murrumbidgee, at Yanko, we cut a canal which was a partial failure on account of the sand. Invariably the sand underlies all these river flats. I do not know any river flat that I have opened out in which sand was not found. It must be there.

827. Do you know any instance where a shaft has been sunk in these flats for the water supply of any town and where, during the drought, the water has failed? No, I do not.

828. In your opinion, at all events, sufficient water could be pumped out of the locality you inspected near where this well was to supply the requirements of the residents of Tamworth, even if they wanted 500,000 gallons in twenty-four hours? Yes, I believe there is plenty of water there. It is only a question of finding the best position to sink the well in.

829. That would necessitate the sinking of a number of trial shafts? No; about a week's work with a gang of four men to sink tubes, ordinary sludge tubes, would do the whole thing.

830. *Mr. Davies.*] You stated in answer to Mr. Hoskins that you believe there is an ample supply of water near the town of Tamworth for the proposed scheme? Yes.

831. Will you tell me how you arrive at that conclusion? From experience in other places.

832. What experience have you had of this locality and of the district of Tamworth? Not of this locality or of Tamworth either. I never was in Tamworth except on this one occasion, except in connection with the railways.

833. What portion of the country do you state is similar to that in connection with the proposed scheme which we have now before us? Many of the flats of the Murrumbidgee are exactly the same as the flats of Tamworth.

834. Composed of shingle? I have sunk and seen a great many shafts there and you generally find a good soil for 3 feet and then possibly a gravelly soil making a little water, and then impervious brick clay, and then a seam of sand, and after 25 or 30 feet you will strike coarse gritty sand. If you go deeper you will find gravel. That is the experience I have had in about twenty shafts sunk in different places on the Murrumbidgee.

835. Are you aware that the beds of these rivers, the Cockburn and the Peel, are quite of a different character compared with what you have just described? No, I am not aware. I do not think any one is aware of it, because I do not think they have been bottomed yet.

836. In putting down the shaft known as the town pump shaft, the deepest well in the whole of the district, would they not have a fair opportunity to form an opinion as to the character of the strata through which they would have to go in connection with this proposed scheme? No; it is a mile lower down, and of quite a different character. The town well is on the very edge of the flat, where the town slopes down to the river. If you sunk a well 100 yards from the edge of the flat you would possibly get down 25 or 30 feet deeper. The town well is very probably in gravel—I should say it is.

837. It is all a supposition with you; you do not know anything of your own knowledge? It is entirely supposition.

838. And it is purely supposition as to the quality and volume of water that is to be got in this drift, so far as you are concerned? Yes; but the whole flat is covered with wells at present, and there are Californian pumps in use, and they cannot reduce the water in the wells.

839. But are you aware that in the last few years we have had three of the wettest seasons possibly known in the Colony? That does not affect the matter. The flat is a large reservoir which must remain full of water. This well will probably be 20 feet below the bed of the river, which winds for about 3 miles in the flat, which is a mile wide. There is, in fact, a reservoir of gravel full of interstices, and the interstices are full of water, and that flat will probably contain sufficient to supply Sydney with water for a couple of years. The lower drift may be down 50 feet for all we know.

840. You are speaking of the beds of the two rivers—the Cockburn, and the Peel? Yes; the bottom of the drift extends at least 20 feet below the beds of these rivers. We have proved that.

841. Where did you prove that? They drove a bar down, and in clearing out the well we got the bar again. That bar had been driven 20 feet into the bottom, and the well was 11 feet deep, and that proved that there was a total depth of 31 feet.

842. That proves you go through gravel or loose formation, but nothing beyond that? You cannot have gravel there without water in it. You cannot have a vacuum. Air will not run down there. There is one third of its volume of water contained in gravel, and if you reckon the cubic space of that flat you will see that it will probably hold as much water as Prospect Reservoir.

843. Are you aware that your Department has already carried out a water supply for Cootamundra on a similar principle to this? I reported on the proposed Cootamundra well that I thought that they would get sufficient water there.

844. Are you aware that it is almost a failure? No; I am not.

845. Would you be surprised to learn that we have it on the sworn testimony of your Chief that it was not a success? I beg your pardon. I have his evidence here, and he does not say any such thing. The only time that Mr. Darley visited Cootamundra I was with him, and we put the two engines on, and after pumping several hours, they reduced the water a few feet.

846. They afterwards exhausted the supply? They pumped with two pumps, the auxiliary engine being put on to help the other. They got out 200,000 gallons before they bottomed, and it filled to the surface again in two or three hours.

847. They did reduce it? They did; but they probably got enough water out of it to supply Cootamundra for a week before they reduced it.

848. Is the Cootamundra supply equal to the representations made at the time it was authorised? Yes; it is rather better than what I thought it would be. I was rather surprised. It was on my recommendation

recommendation that the scheme was carried out. I was sent to report on it. The Chief was a little bit doubtful, and said, "You had better go and investigate the whole thing." I examined all the trial shafts, and calculated the drift in the flat. It is not a hundredth part of what is in the other place. I calculated the area of drift, and took out the amount that there would be of sand, and how much water the sand would hold, and I found it would supply Cootamundra for several years if there was no flood in the creek. E. B. Price, Esq. 14 Dec., 1892.

849. When was this examination made? About two and a half years ago, I think; just before the contracts were let.

850. Was not that a very wet season? I did not base it on that at all. We had shafts all over the place. I ascertained how much water a cubic foot of sand would absorb, and I calculated the number of cubic feet in the flat. That gave me the amount of water in the flat.

851. And you think there is abundance of water in the watershed near Tamworth to supply that town? I hardly call it a watershed. I call it an underground storage reservoir—drift-beds.

852. No living man can tell what is underground, can he? Well, there are trial shafts all over the flat from end to end.

853. Who put them down? Every farmer there has a well or two wells.

854. Just a few feet from the surface? Well, they get water.

855. Hard water? It is very good water, as far as I see from Mr. Hamlet's report in the paper this morning. He says there are 10 grains of carbonate of lime per gallon. We call that standard water.

856. Have the Department put any shafts down? No; the Council have put just one down.

857. That is a very crude kind of test? It is a very good test in one way, but it would be better to put tubes down. I should do that.

858. Would you think the Department justified in incurring a large expenditure in providing a supply of water for Tamworth, simply on tests such as have been made? I would provide it without any further test at all. I see the flat and a number of wells, and I know there must be water under it. What formed the river flat in the first instance was the river bringing down drift and banking it up, and quantities of alluvial deposit going over that. There would not be any flat there if there was no water there.

859. Have you ever seen the beds of the rivers absolutely dry? No, I have never been in Tamworth except when there was a fair flow in the river.

860. Have you been informed that it was dry in dry seasons? No. One man told me that he saw it not flowing over the surface of the drift, but through the stones. That was the information that I got.

861. You do not know much about the district yourself? No, I was simply sent to take the samples.

862. Did the water seem to be coming at any great rate into the well shaft? It came in so fast that two men baling could not keep it down. I suppose you could deepen it.

863. Did you go to the other wells? Yes, and I suggested that a sample should be taken. There is a Chinaman's well with a cesspit within 18 yards of it, and a manure heap within 3 yards of it. He was manuring the surface of the ground all round the well except for a space of 3 yards. I showed it to Mr. Hamlet and said, "You had better test that water. If that water is pure the other water cannot be contaminated." I remember going to the Chinese garden higher up, where they have two wells—a California pump on one and the other used only for domestic purposes. We took water out of the latter well—a mere stagnant well, and that water is pure too, I think.

864. Do you think it is desirable to supply the people of Tamworth with water from a well shaft just on the fringe of a Chinese garden as is proposed in this case? I would certainly resume that land. I would not let the Chinamen come within 300 yards of the well. There is a cross-fence that goes up about 300 yards away. I would resume that land and grow lucerne on it, but not allow it to be manured, lucerne is about the greatest purifier you can have on ground. If the land were not used it would be far more injurious to the water supply than if it were kept cultivated. If you keep it cultivated and exposed to light and air it is a purifier.

865. Are you aware that lucerne is already grown on it? Yes, the best thing that could be grown on it.

866. You think that that would be the means of purifying the soil and taking up the animal and vegetable matter? There is nothing so good for purifying land as vegetation, light, and air. The Council could use the land for cultivation—they need not manure it unless they like.

867. It will be necessary to resume a certain portion of the Chinese garden? I do not think it will be necessary, but it would be advisable for the name of the thing. It does not sound well to say you draw water from near a Chinese garden, but I do not think it would do the slightest harm except in time of flood, which might wash some of the manure off the Chinaman's garden and deposit some dirty stuff on the surface of the ground near the well.

868. Assuming that the soil is, as you have described it, of a very porous character, would it not be possible for the contents of these cesspits within a short distance of the well to find their way through this drift into the water? I do not think that I described it as a porous soil. I think I contradicted that in the report to the Chief. It has been described as a porous soil, but that is not the case. I do not think you could get anything better than that soil as it stands to make a puddle wall. It is a yellow soil, very good for making bricks with after you go down six feet from the surface. The proof of it is that while the well has been standing there since April last, and there have been two floods, you can see the pick marks on the side of the well.

869. You do not think that the fœcal matter would find its way into the water supply in the well hole? No. When we baled out the water there was a large standing pool near it, and if the soil had been porous that water would have gone into the well. We baled it out three days, and no water came into it from the surface.

870. But the soil is not broken; where the land is broken and cultivated would it not have that effect? It is broken by Chinamen's carts going across it.

871. But is there not a wide distinction between cultivated soil and broken soil? Yes. If you plough up the surface of the soil, that exposes the surface and lets the water sink in a little way. But after it soaks 6 inches, it meets exactly the same resistance. Some of the wells near Cross Creek are different, the soil there being of a sandy nature, but what we took out here was in hard cubical blocks.

872. You had nothing to do with the reticulation? Nothing at all.

873. The only visit you made was with reference to this test? Simply to see the well cleared and a test properly made.

E. B. Price, Esq. 14 Dec., 1892.

874. *Mr. McCourt.*] This trial well is on a reserve? Not exactly. It is on a road adjoining a reserve. There is a reserve on one side of it and a Chinese farm on the other. It is a lucerne patch, I think.
875. Could not a proper well be put in the middle of the reserve? Yes.
876. And if that were done you would not want to resume any land? I do not think you would want to resume anything at all, but for the look of the thing I would resume.
877. Could you not put it far enough away from the Chinamen's garden in this reserve? I think possibly the present site is not the best you can get. I should like to sink the well in the Chinese garden for I think you could get more water there, but that could be proved by borings.
878. Have you talked this matter over with Mr. Darley before giving evidence? I saw Mr. Darley when I came back with Mr. Hamlet and told him what had been done, and he asked me to put it in writing for the purposes of record. I also saw him passing through the passage just now. He asked me if I was going to be examined and I said "Yes."
879. You had a conversation with him about it? Yes.
880. You knew the evidence he gave? He gave me this paper the other day when I was going down with Mr. Hamlet and he said "There is something for you to read in the train."
881. So you knew the nature of the evidence given by Mr. Darley? Yes, but not the last evidence he gave.
882. I suppose that knowing the nature of the evidence given by him you would not like to contradict him? Well, I do not know. I very frequently contradict him in my reports.
883. *Mr. Wall.*] Have you formed any idea of what would probably be the cost of this well? I have had nothing whatever to say to the scheme, estimate, or anything else. I could not tell you what the estimate is, but I could make it out if required.
884. The sinking of this well would be a preliminary part of this work if this scheme were approved of? Yes.
885. In reply to Mr. Davies you stated that, judging from the surface features of the ground, you thought that the Government would be justified in constructing a reservoir and carrying out a water service at Tamworth? Yes.
886. The Government would not carry out the scheme, or go to any further expense, if the preliminary part of the work, that is the sinking of the well, were found to be defective? No; they would not carry it out, certainly.
887. And that would be the only charge entailed; supposing the water supply were found to be not sufficient when the well was sunk, of course the work would not be constructed? It would simply be the cost of the well, for the engines could be used somewhere else.
888. The first thing to be ascertained would be if the supply was sufficient? The first thing would be to send men with boring apparatus to be there about a week and find where the deepest drift is.
889. What is the character of the drift? We never saw the drift. The Council had no appliance to drive into it.
890. What is the character of the soil at and above the upper drift? There is a hard yellow clay below it, and brown clay above it, and then a gravelly clay, and on the top of that some surface soil.
891. What is the general character of the country about Tamworth? It seems to be granite, from what I saw. I have not been much about there. The hills looked like granite hills.
892. Do you know that in the vicinity of Tamworth, on the Liverpool Plains, it is very usual to get a different character of water in different places? Yes; you nearly always find that in different rocks.
893. It is just possible that you would come on another vein of water entirely different in character from that of which samples have been tested? I think you would probably get softer water—more of the nature of the river down below.
894. Have you had any experience in sinking wells in flat country? I have seen a few sunk in different places.
895. Is it not a general feature in connection with wells that the surface water is alway the purest? I find the reverse generally. It is the surface water you have to puddle out to get good water below.
896. In flat country is it not a characteristic feature that they get salt water? Yes, in some cases. I sunk trial shafts near Bethungra for the Junee water supply. We got brackish water in one well, and 9 feet away on the same level we got perfectly sweet spring water.
897. The rock is limestone? No; decomposed granite entirely.
898. You are quite clear that there is a drift and a vein of water would be tapped? I cannot say it is there, but I never knew a similar flat where it did not exist.
899. Do you know the Macdonald River? The only part of that river that I know has a rocky bottom. The river twists about and drift has been deposited there.
900. *Mr. Neild.*] Did I understand you to say that the rock about here was granite? Well, as far as I could judge of it at a distance. I do not know what it is.
901. Did you see any granite? Yes; a good deal lying about the roads in country.
902. Are you aware that the granite only comes in about 9 miles up? It may be so, but I have never been on the hills outside Tamworth. There is slate rock near the bridge.
903. I understood you to say in reply to Mr. Hoskins that the water in the departmental well which you had baled out comes through half an inch of sand? It is not exactly sand, but sandy loam.
904. Then, you really are not acquainted with what lies below the bottom of that well, namely a depth of about 11 feet, beyond such information as you gained from the fact that a rod had been driven through it? The only information that I got was from the overseer who drove that rod, who told me that it drove pretty stiffly as through clay, and then went down with a run as if in something open and porous.
905. You judge of the whole of the present scheme by the experience you have had in connection with other water supplies? Yes.
906. But did you not also say that in connection with other schemes you had pumped from rivers? Yes; we never proposed to pump from any drift except at Cootamundra, and from Bowman's Lagoon, for one of the supplies for Junee.
907. Have you pumped from Bowman's Lagoon? No; because I found a better scheme and I never finished the plans of that.
908. Practically it amounts to this: You base the prospective success of the Tamworth scheme upon results that have followed the establishment of a scheme of pumping from drift at Cootamundra? No; I do not. I have read of a good many other schemes besides that.
909. But I am speaking of your personal experience; we can all read books? I never saw a case of a similar river flat without drift under it. If you show me one without drift under it, it is something new.

910.

910. I asked you, and you answered me in the affirmative, if you had given evidence this afternoon to the effect that you based your expectation of success in connection with this scheme upon the result of water schemes connected with drifts in other parts of the Colony? No; I did not say that at all. I said I based it on my experience of drifts in other parts of the Colony. If I said water schemes I made a mistake. E. B. Price, Esq. 14 Dec., 1892.

911. Can you name any drift, except at Cootamundra, from which you have pumped? No. I have sunk in many and found gravel under them all.

912. Then as far as your Department is concerned your only practical knowledge as regards pumping is connected with the Cootamundra affair? Pumping from drifts. I think that is the only one which has been carried out. Parkes is in course of construction.

913. That is the only one of which you have had practical experience? That is the only one in work, but we have sunk many shafts and found drift in every case. At Dubbo we sank 60 feet and never got to the bottom of the drift. We had to go through 40 feet of surface soil before we struck the drift.

914. The result you would obtain in connection with a water supply under 40 feet of earth might be very different from what you would meet with under 6 feet of earth, as sworn to in the evidence before the Committee? I do not see how it could be different at all; I do not see any difference in the case at all. You are far more likely to get it under 6 feet than under 60 feet of earth.

915. Are you likely to get a permanency? Just the same—it does not make the slightest difference.

916. Do you not find in pumping for artesian water that you get a better supply from greater depths? This is not artesian, but soakage. Water obtained by means of artesian wells comes from porous strata of rock, and not from drift at all.

917. Do not some of the artesian wells go through large beds of drift? Yes, and they stop them out with tubes. The water is generally brackish in those places.

918. In the same manner, I suppose, it is quite possible for some of those drifts you are talking about to be brackish? Well, if that water were brackish the river would be brackish, too. I have never heard of this becoming a brackish river.

919. I think you gave evidence that the water to some extent is dammed up by the bar that crosses the river? Yes, it is always filling the drift beds and overflowing into the river below the bar.

920. After all, these are matters of conjecture on your part? They are matters of conjecture. Almost everything we do in ordinary everyday life is based on conjecture.

921. In answer to Mr. Davies you stated that it was proposed to draw the water in this well from about 20 to 25 feet deep? No, 35 feet, I think. It is proposed to brick and cement it at that depth and draw from the bottom.

922. You gave an account of the solid nature of the soil through which you passed to get to the water? It becomes solid about 8 feet from the surface—good enough to make bricks with.

923. Could lucerne roots pass through this soil to the water? They could hardly go through that solid soil. I have seen lucerne roots go down 12 feet.

924. Did you examine the banks of the Cockburn and the Peel Rivers where the lucerne fields are on this flat? The soil we found in this sinking is totally different from that on the banks. That is of a much more friable nature, a very rich soil; but this is cold dead soil, such as occurs on the black box flats of the western rivers.

925. Then by some happy accident the corporation selected a kind of phenomenal site where the conditions are superior to those anywhere else? Yes, I think it is very likely the rock bar has something to say to it.

926. Do you know that it has been sworn that lucerne roots go through the soil to the water? There has been no lucerne grown there at all. It is a reserve and has never been broken up.

927. But that is only a space of a few acres—the fenced and cultivated land comes within less than 100 feet of the well? Yes; further up the flat the soil is not so deep, and there is only 6 feet between the surface and the water, and lucerne roots would go down to the water.

928. You said that the land had not been cultivated near the well, and I asked you whether the fence of the Chinese gardens does not come within 100 feet of the well? I think it comes within 33 feet of the well.

929. Well, is it worth while making a song about the quality of the soil and what has been cultivated, when the distance involved is only a matter of 33 feet;—is there any appreciable difference in the soil 33 feet away? There may be a difference; but who could prove that the roots in the Chinamen's plot ever went down to the water;—how could they prove it, and who proved it;—they could only prove it on the river banks, and they are a long way off. Paradise Gardens intervenes between that bank and that plot, so that if anyone swore to that, they swore to what they knew nothing about.

930. I think you said you were there four days, including Sunday? Yes; I went up by Thursday night's train, and came away on Monday.

931. And you consider that having been there that length of time—3½ days— you are a better authority on that flat and on the circumstances generally than are people who have lived there twenty years? Yes. People who lived there 100 years and did not sink a trial shaft would know nothing about it.

932. Do you think you would have a better knowledge than people who have sunk many wells, and used water from that flat for many years? Certainly not. A man who had sunk wells would know more than I do about it.

933. Well, if I say that I am referring to the evidence of men who have sunk wells there, probably you would have a little more reticence in condemning their testimony? Nobody sank a well on this particular site—I mean no white man. They are both Chinese wells which are alongside of it. Whilst I was clearing out this well a farmer said to me, "You have a totally different soil from what we have." He lived farther up. I do not know his name.

934. That soil is very much more porous? What he had, he said, was sandy, porous loam, and he was surprised to see this cold dead soil which would not grow anything.

935. You do not think that manure and domestic filth and so on, which is used by the Chinamen for manuring purposes, will pass through into the water? Well, experiments have been tried in connection with the London water for small microbes, and they have found that when passed through 3 feet of sand only 1 per cent. of the microbes came through. That was trying for the very vicious microbes of which everyone is afraid.

936. How long ago was that tried? There have been several papers read before the Institute of Civil Engineers of London, and about a fortnight ago I was reading a book on it.

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937. Is the experiment a recent one? The paper was read about 1885 or 1886.
938. Are you aware that recent experiments show that microbes have passed successfully through upwards of 6 feet of very heavy close clay? I am not aware of it. They may have done so.
939. I am referring to very recent experiments and investigations? What kind of microbes?
940. Fever microbes? Yes; they might do so. But there was a long inquiry held on the subject. The Institute of Civil Engineers discussed the matter on two evenings, and Sir James Mansergh said that within the last eighteen months he had drunk so many glasses of water every day—hot water, under the hydropathic system—and he calculated that he had drunk 23,198,400 microbes within the last eighteen months, but was no worse.
941. Water that had been boiled? No; warm he said, but not boiled.
942. Do you know anything of the strata passed through for sinking the cylinders for the road bridge? No; I do not.
943. How far do you think the roots of lucerne will penetrate through ordinary soil? In light rich soil they will go down 12 feet. I have seen them down myself 12 feet on one of the rich sandy flats.
944. You think, then, that to resume land around the well would be merely a sacrifice to prejudice on the subject of Chinese gardens? Not entirely. I would resume some of it. I should like to resume 10 acres at any rate.
945. While there did you make any investigation as to the value of the land? No; but I expect it is worth £70 an acre, and £100 an acre for some parts of it.
946. Did you make any effort in ascertaining the number of Chinese cultivating this valley above the well site? I did. I was talking to the Mayor and said, "You seem to have a great many Chinese there." "Somebody, I think it was Dr. Harris, said there were 130 Chinese living on that flat." The Mayor said, "That is all nonsense, we have only 110 in the whole district." I should say that there are not forty Chinese on the flat.
947. Do you know that the statement about the number of Chinese was sworn to by a considerable number of witnesses? It may have been, but they may have all been wrong.
948. You prefer to be guided by the *ipse dixit* of the Mayor in private conversation as compared with the sworn evidence of the Government Medical Officer, the overseer for the district, and other witnesses on the subject? Certainly. They may know nothing about it. The Mayor is the man who knows, for he has to do with all the rate collecting, and he says there are only 110 Chinese in the whole municipality.
949. But do not you know that this valley extends for some miles beyond the limits of the municipality, which extends but a very short distance up the flat? Yes; but there are no Chinese, except for about a mile up. I was up as far as Cross Creek.
950. Is that 2 miles? I should say it is more than 2 miles.
951. Would you like to say it is more than a mile and a half? I would not like to say so.
952. *Mr. Collins.*] Do you know anything about the cost of this scheme? I have heard the estimate is £22,000.
953. If a gravitation scheme could be carried out for Tamworth at a cost of £50,000, would you recommend that in preference to a pumping scheme? Certainly not. Why I arrive at that conclusion is, that the engine-driver's wages would be about £150 a year, fuel might cost £200 a year, and repairs £50. That would make a total of £400 a year to work that scheme. And if you capitalise that, it will not make up the difference in cost.
954. You would recommend a pumping scheme in preference to gravitation even if it cost you £50,000 for the latter? Yes.
955. *Mr. O'Sullivan.*] You said in your evidence that the departmental well on the reserve would be sixteen times as large as the town well? When I say as large, I mean the bottom surface it exposes.
956. You implied that it would give sixteen times the quantity of water now being given by the town well? If it is 20 feet in diameter at the bottom. The present well is between 4 feet and 5 feet. Taking it at 5 feet, the area of the bottom of the new well would be as 16 is to 1.
957. In making that statement, did you bear in mind the fact that the town well takes the drainage of the two rivers as well as the creek that is near it? Well, the town well, as I said before, is not sunk in the middle of the flat as this well will be, but close to one edge adjoining the town, and the creek comes in a quarter of a mile away. This well is between the two rivers, and would draw on both sides.
958. You think that from its position the departmental well would be likely to draw more water than the town well can? Yes; I do. The water would come more quickly to the well. What we want in these schemes is to get the water quickly.
959. If it is sixteen times as large as the town well, there can be no doubt about the necessary quantity of water being supplied by the departmental well? I do not think there is the slightest doubt about it.
960. In your opinion, if these works should be carried out as proposed and afterwards were found to be a failure, could they be utilised in connection with a gravitation scheme? I believe one of the objections to the gravitation scheme is that it does not deliver to sufficient elevation; so I think that if this scheme should fail you should use the pumping scheme for the higher levels, and gravitation for the lower levels.
961. I would like your opinion as to a possible result;—supposing this scheme as proposed should fail, could the work as carried out form a portion of a gravitation scheme, even if you had to go to a greater altitude? Yes; all except the well, the engine-house, and the engine.
962. Therefore the money would not be thrown away if this pumping scheme should fail? I think that £3,000 at the outside would be thrown away. All the rest of the cost of the scheme is for reticulation and elevated reservoir and they would all stand for a gravitation scheme.
963. *Mr. Humphery.*] You said that the water came in at a depth of about 11 feet, and just above the gravel? No; we did not strike the gravel at all. We only got on to a hard clay.
964. It is above the gravel bed? I presume it is.
965. And you said that the bar was thrust through 15 feet without going entirely through the gravel? They put in two bars—the first 15 feet and a larger one 20 feet.
966. Is your contention that if you get water before reaching the gravel bed, and if you go down 35 feet, you must have at least 20 feet of water? That is my contention.
967. And if you have 20 feet diameter for the well you will supply sixteen times the quantity in the present well? Yes.

968. We have been told that a well 20 feet in diameter will cost something like £300? Yes. E. B. Price, Esq.
969. Is it the intention to construct that well before erecting the engine-house and the pumps? Yes; it is always done first.
970. Having constructed the well, will you be able to ascertain if the supply will be ample for the service of the town? Yes; they could put the engine on without building the house. 14 Dec., 1892.
971. What will be the total outlay necessary in order to ascertain whether there will be an ample supply of water? If we put the cost of the well at £300, there would be the carriage of the engine and boiler from Sydney and back again, or you might hire an engine. About £550 would be the total cost.
972. Approximately, £550 would be the total cost of proving whether the water supply would be sufficient under this proposed scheme? You could prove it very well. You could put an ordinary agricultural engine on top and fix a centrifugal pump half-way down the well, and that would deliver ten times the quantity of water that Tamworth wants.
973. To ascertain whether the supply would be ample would not cost more than £550 by way of experiment, and that expenditure could be utilised in connection with the scheme subsequently if it should be decided to adopt it? That would be plenty to allow for it.
974. *Chairman.*] I think you said, in answer to Mr. Neild, that you would recommend the resumption of some 10 acres of land? Yes; I think 10 acres would be enough.
975. I think you also said that the 10 acres could be let, and crops taken off it? It would be far better to take crops off it. If it were left idle it would grow such weeds as what they call "Stinking Roger."
976. You could prohibit the use of objectionable manures? You do not require to manure lucerne, unless you want very great crops.
977. If it were found necessary to resume this land, the money obtained by letting it could go towards paying the interest on the expenditure? You would probably get about £2 per acre for it.
978. So there would not be any waste on account of that money lying idle? It would not be wasted at all. The Council could grow crops for their horses.
979. *Mr. Neild.*] Do you affirm that Dr. Harris, the Government Medical Officer, gave any evidence with reference to the number of Chinese cultivating land on the flat? I think it was Dr. Harris, or somebody said there were 130 Chinamen and the Mayor pointed out the difference to me.
980. Was it not the Council Clerk? It may have been. I really do not know.

John Alexander McDonald, Esq., M.I.C.E., Engineer for Bridges, Department of Roads and Bridges, sworn, and examined:—

981. *Chairman.*] You are Engineer for Bridges? Yes. J. A. McDonald, Esq., M.I.C.E.
982. Was it under your supervision that the road or vehicular bridge at Tamworth was erected some years ago? Yes; I superintended the sinking of cylinders for that bridge.
983. That bridge is close to what is known as the town pump? Yes; the town pump well was sunk about a month after the cylinders were sunk. 14 Dec., 1892.
984. Your cylinders were sunk prior to the town pump well being sunk? Yes.
985. Have you the sections through which you passed in sinking your cylinders? Yes, I have them here.
986. Will you kindly give us the strata you passed through? In the centre of the river we passed through 18 feet of coarse shingle—something like the Emu gravel—and then came on to rock.
987. What distance was there between the level of the river banks and the surface where you commenced to sink in the shingle? One river bank is very much higher than the other, but the depth which I gave just now is the depth from the bed of the river to the rock at the bottom of the shingle.
988. I want the distance from the bed of the river to the level of the bank of the river? About 16 feet—that is practically the depth of the channel.
989. Was there any difference in the other cylinders you sank—any variations from that? That is on the two banks. We passed through alluvial earth and then shingle.
990. How much alluvial? On the town side we had about 11 feet of alluvial and 9 feet of shingle, and then stopped on very compact gravel and did not go any further.
991. A sufficiently good bed to answer your purpose? Yes, very compact gravel.
992. They were iron cylinders, of course? Yes.
993. How did you sink them—did you have any great difficulty? We had to use the air-lock to keep the water out. We sank some of them with a diver working inside and the others with the air-lock, but it was impossible to keep the water down by pumping with the pumps that they had up there.
994. So you had to use the air-lock? Yes.
995. Does that apply both to the cylinders sunk in the alluvial bed as well as to those that were sunk in the river itself? Well, as regards the one put down on the town side, we went through, as I say, about 9 feet of shingle and then stopped on very compact gravel. Still we got the water in. The other two piers we stopped on rock, but in each case we went through the shingle.
996. I want to know whether you had as much difficulty with the water in the pumps when you were sinking through the alluvial as you had in the centre of the river? We had not so much difficulty on the banks, because in the river we went deeper, and it was all through loose shingle in the river, so that the water could easily get in.
997. But there was a considerable quantity of water oozing through in the cylinders sunk in the banks? We had no trouble in going through the alluvial, because the alluvial stopped above the then level of the water in the river.
998. But you got into the shingle? As soon as we got into shingle we began to get the water.
999. That is in the bed proper? Yes.
1000. Do you know anything about the valley above the bridge? No; it is eleven years since I was there about this matter.
1001. *Mr. Davies.*] What was the size of your cylinders? Three feet six inches.
1002. What appliances had you for pumping out the water whilst sinking your cylinders? They only had small hand pumps.
1003. That appliance was not sufficient to keep the water down; No; and the contractor did not think it worth while to get better appliances up. He put the diver on first, and then used the air-lock.

J. A. McDonald, Esq., M.I.C.E. 14 Dec., 1892.

1004. In what year did you sink your cylinders? From April, 1881, up to about July.
1005. It was a dry season? Yes, the river was very low.
1006. No water to be seen on the surface? Oh, yes. At the site of the bridge there was about 2 or 3 feet of water.
1007. Do you know the proposed site for the well shaft for this water scheme? I only just know it from having been in Tamworth eleven years ago. I know the location of it—that is all.
1008. What is the difference between the head of the proposed shaft and the bed of the river at that spot—either the Cockburn or the Peel? I cannot say. I was only in Tamworth long enough to get those cylinders down. As soon as we got them down I returned to Sydney.
1009. Are you aware that the river bank is shallow just about where this well hole is proposed to be put down? I really cannot say. It is so long ago since I was there, I do not remember the place accurately.
1010. But you said you came on to the rock at 18 feet? Yes; 18 feet from the bed of the river, and on the side opposite to the town we came on rock about 2 feet higher up, 16 feet from the bed of the river.
1011. The material you passed through was shingle? On the banks we passed through stiff alluvial.
1012. A few feet of alluvial? Well, on the town side we had as much as 11 feet of alluvial, and on the opposite side we had 16 feet of alluvial.
1013. Was that of a gravelly kind? No; it was a stiff alluvial soil—no gravel in it at all. Then we came on to the coarse shingle.
1014. You went through the shingle on to the rock? Yes; except the pier on the town side, and there we stopped on compact gravel.
1015. But the bed of most of the river seems to be shingle? My only experience is at this particular site.
1016. You know very little of any other part? Yes.
1017. It was only that to which your attention was particularly directed? Yes.
1018. *Mr. Wall.*] In answer to the Chairman you said that on the town side you sank through 11 feet of alluvial and 9 feet of shingle? Yes.
1019. You stated that on that side the bank was some 17 feet above the river-bed? No; not on that side.
1020. What is the height on that side? Where the bridge is the bank is much higher on one side than on the other. There is a difference of 7 feet. The height which I gave before was the maximum—that is, on the opposite side to the town.
1021. What would be the maximum height, approximately, on the river bank as compared with the bed of the river where you sank the cylinders? Sixteen feet. That is the higher bank of the two.
1022. Then the bottom of your cylinder on the river bank was only 4 feet below the surface of the river—that is, your cylinder was sunk 20 feet on the river bank, and the height above the river-bed would be 16 feet, and that would leave the bottom of your cylinder on the river bank only 4 feet above the surface of the river? You are taking a different side of the river. The bank on the other side that I gave you the depth for is only 8 feet above the bed of the river.
1023. What is it on the town side? That is the town side. The depth that I gave you just now was 11 feet alluvial, and 9 feet shingle.
1024. That is 20 feet on the river bank? Yes; on the town side.
1025. Where you started the cylinder it was 8 feet above the edge of the river? Yes.
1026. You got through the shingle in that case? Yes; and stopped on compact gravel.
1027. That would show considerably less shingle on the river side than in the bed of the river? Oh, yes, decidedly. The depth of shingle in the bed of the river is 18 feet.
1028. Did you sink any shafts on the side opposite to the town? On the side opposite to the town we had 16 feet of alluvial and 16 feet of shingle, that is 32 feet down to rock.
1029. The proposed site of the well is on the town side of the river? Yes. They were sinking the shaft on the town side, but further up the bank than we were, considerably.
1030. From your experience in sinking those cylinders you say that the deepest part of the drift would be in the river bed? It would be very difficult to give any idea from the small shafts we have sunk, and which were so close together. The dip of the rock is towards the centre of the river, but I do not know where the rock crops out on the town side.
1031. Did you form any opinion as to whether the shingle drift you went through on the town side was the same bed of shingle drift which exists in the bed of the river? It must be so, because the cylinders were only 90 feet apart.
1032. If that is so, that will give the dip of the drift away from the town? Well, you see that in the river the shingle is so exposed and that compact gravel-bed on the town side may be a part of the shingle-bed.
1033. That is what I wanted to ascertain—whether the subterranean channel would be likely to be on the town side or on the other side? From the data that I have before me I do not think I can express an opinion as to which way it would go.

Henry Deane, Esq., Engineer-in-Chief, Railway Construction Branch, Department of Public Works, sworn, and examined:—

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1034. *Chairman.*] You are Engineer-in-Chief for Railway Construction? Yes.
1035. Have you the sections of the land through which you passed in sinking the cylinders for the Tamworth railway bridge? Yes; I have the section here.
1036. Do you know what is called the vehicular or road bridge connecting the two Tamworths? Yes.
1037. Your railway bridge is below that, is it not? Yes.
1038. How far? I do not remember.
1039. What were your cylinders—cast-iron? Yes, cast-iron.
1040. Are any of them driven into the river? No, they are on the banks—they are below the flood-level, but on the banks of the river.
1041. Each side of the ordinary stream? Yes. The span is 159 feet from centre to centre of the piers; that is, giving 150 feet clear.
1042. And the ordinary summer run of the river would be about equidistant between the two? Yes; that is about it.

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1043. Would you kindly give the Committee the depths through which you passed, and the nature of the soil; take the town side first, if you like? I should like to state that on this plan, which is one of the contract drawings of the section Tamworth to Uralla, the original borings were shown. I have the papers here and the report of the surveyor, which was made at the time. I also have the reports here of the sinking of the cylinders, so that the Committee will be able to see to what extent the information given in the borings was carried out. They appear to me to be approximately correct, though not exactly on the same spot, although, longitudinally, they are at the same distance along the line.
1044. The borings which you had in order to ascertain how far you would have to go for your cylinders for the railway bridge are accurate and show the strata? Yes.
1045. Will you give us the strata through which you passed, and the depth—can you give us any idea of the depth between your surface level of the ordinary banks and your river-bed level? The south-western bank is a little lower than the north-eastern bank.
1046. Let us start on the town side; that is, the north-eastern side? The bed of the river, according to this plan, is shown to be 17 feet below the bank,
1047. Now state the strata you passed through? Just where the cylinders occur is not the highest point of the bank, it is a foot below that. I will start giving you the depths from that foot below. First of all, you get 9 feet of black soil, then 4 feet of hard clay, three feet of blue clay and gravel, 6 feet 2½ inches of loose gravel, and then you come on to slaty rock.
1048. You went no further—that was sufficient for your purpose? Yes.
1049. Now give us particulars of your cylinder on the other side? The bank where the cylinders are sunk is 18 feet above the bed of the river, that is to say, about 2 feet higher than the spot where the other cylinders are sunk. First of all you get 15 feet of black soil, then 3 feet of hard clay, 8 feet of blue clay and gravel, 4 feet of hard blue clay and gravel, 1 foot 8 inches of loose gravel, and then you come on to slaty rock.
1050. The next series of cylinders on that same side—these are the two centre ones, of course? That is all.
1051. There are a large number of them—there is the viaduct? It is a timber viaduct.
1052. You have only two sets of cylinders in that railway bridge? That is all.
1053. The rest of it is a timber viaduct? Yes.
1054. *Mr. Trickett.*] Can you give us any information of a similar character with regard to the borings put in nearer the proposed well site? No; there does not appear to be any information further on—no borings have been taken.
1055. No borings were taken up towards this proposed well? No; apparently not. I have not any information on that subject. I do not think any were taken.
1056. You are not aware that there is any information available that would help us to see whether there is a similar depth of soil near this well? No; I am not.
1057. *Mr. Wall.*] What is the total depth on each side that you have sunk your cylinders through from the surface? On the north-eastern side 22 feet 2½ inches, and on the south-western side 31 feet 8 inches.
1058. And the difference in the level would be about 2 feet? About 2 feet.
1059. That would leave a dip of 7 feet in the rock on the town side towards the opposite side? Yes.
1060. That being the case, the original river channel, if on that bed rock, would be further to the north-west and away from the town; I understand from your figures you have a dip of 7 feet in the rock from the town side to the opposite side? Yes, the rock is low on the near side.
1061. Then, inferentially, the river channel would be further in on the opposite bank? You mean the old river channel, assuming the rock had been worn away originally by the river. It dips away towards the south.
1062. Dips away from the town? Yes, at that spot, apparently.
1063. If you were sinking for the centre of the river-bed it would be away from the town? If I were looking for the greatest depth of rock I should look further away on the side opposite to the town.
1064. How far is the railway bridge above the other bridge? In a direct line it is just half a mile.
1065. Do you know whether there was much water in the gravel drifts that you passed through? In sinking the cylinder on the north-eastern side water, according to the report, was reached at 15 feet 6 inches from the surface.
1066. Did they have any means of keeping the water out and were they able to sink the cylinders in the ordinary way? That I cannot tell without further inquiry. It is possible they sank below the water, and did not pump the water out, but excavated with grabs.
1067. At what distance did you say they got the water? Fifteen feet six inches from the surface.
1068. That would be in the alluvial? That would be in the blue clay and gravel stratum.
1069. You have 17 feet of it? Yes.
1070. You cannot say whether there was a greater inflow of water as they went down with the cylinder? These borings were taken on the centre line, and laterally with beds of clay and gravel mixed you could expect to find a little variation. The report of the engineer during the sinking of the cylinders was that there were 14 feet of soil. He has evidently taken the black soil and hard clay together, which on the centre line show about 13 feet. Then he says "Two feet of clay and gravel and 3 feet 6 inches of coarse gravel with large stones and a little clay."
1071. That would be what they term shingle—coarse gravel? Yes, coarse gravel with large stones.
1072. You have no report showing what body of water there was or the means they had of combating the water in sinking the cylinders? No; probably there was no difficulty. If there had been much water there would have been no great difficulty.
1073. They sank inside the cylinder, I presume? Yes.
1074. Were the cylinders sunk by contract? Yes, by the contractor for the line.
1075. At what time of the year—summer or winter? This report is dated 14th March, 1881.
1076. *Mr. Neild.*] Do you know the site of the well from which it is proposed to supply the town of Tamworth with water? No, I do not.
1077. Do you know the junction of the Cockburn and Peel Rivers? Yes.
1078. Your bridge would be from 1¼ mile to 1⅓ mile below the junction of those two rivers? Yes, it looks like that on the plan.
1079. So that the natural conditions existing at the bridge site might, or might not, be indicative of the condition of affairs above the junction of the rivers in question? It is impossible to say that without observed data, for this reason: At the site of the railway bridge the rock dips away from the town, and the suggestion, of course, is that the old bed of the river, where the surface of the rock was originally

scoured

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scoured away, lay further to the south-west. There is that Goonoo Goonoo Creek which lies to the south-west which may have been more or less at one time in the position of the true river-bed, but I infer from the plan that that closes up to the river higher up.
1080. Your Department obtain water for railway purposes at West Tamworth, I think? Yes, at the river, I think. I remember there was a pumping-station there. I am pretty well certain.
1081. That would have been at the river, though not at any distance from it? I am not quite sure at the present moment, but I can easily obtain the information.*
1082. *Mr. Davies.*] What was the depth you sank before you struck the rock on the town side? Twenty-two feet 2½ inches.
1083. What was the depth on the West Tamworth side? Thirty-one feet 8 inches.
1084. So the dip is in the opposite direction? Yes, it is in the opposite direction. You have to allow for a difference of level—2 feet. The rock is 7 feet lower down according to actual level on the south-western side.
1085. Your piers stand on rock on the south-western side as well as on the town side? Yes, on both sides.
1086. What is the depth of the centre of the bed of the river, before you reach the rock? That I could only give by guess. No borings have been taken in the middle of the river.
1087. Well, the nearest portion to the centre of the river? If you draw a line from the rock on each side of the river, and measure down to that line from the bed of the river you get about 10 feet.
1088. There would be a difference of 10 feet? Well, there may be if the rock goes evenly between those two points.
1089. But from the level you have given of the south-western side as compared with the town side it would be very much greater than that, would it not? It is lower on the south-western side.
1090. You do not actually know anything of this proposed scheme? No, I have not considered it.

TUESDAY, 20 DECEMBER, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
The Hon. William Joseph Trickett.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Water Supply for Tamworth.

Frederick B. Gipps, Esq., Civil and Hydraulic Engineer, sworn and examined:—

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1091. *Chairman.*] You are a civil engineer? I am.
1092. How long have you been engaged, especially in hydraulic engineering? For the last sixteen years, ever since my return from California, I have made a distinct speciality of it.
1093. Have you ever constructed any works similar to those that you proposed to construct for the Tamworth Water Supply? I have—those on the Turon River and at Kiandra.
1094. What is the length and character of the Turon River works? The length of the Turon River conduit was between 9 and 10 miles. It was for hydraulic sluicing works.
1095. That was for gold-mining purposes and not the water supply of a town? For gold-mining purposes; but it was of a similar character.
1096. What was the cost of those works? The country was an extremely difficult one to get through. I had to place the conduits at times through solid rock, and at other times to build it up. In one instance I had to cross the river by means of a large wrought iron pipe, and I had to cross several creeks by fluming; so the character of the work is very similar to what I propose for the Tamworth supply.
1097. What was the cost of those works? The cost, including the work at the head, was about £2,600.
1098. Have you constructed any works for supplying water for household purposes to any town, similar to those proposed for Tamworth? Not distinctly for household supply.
1099. In your comparison of the Kenny Hill and the Prospect schemes for the Sydney water supply, you made a special objection to the open conduit of the Prospect scheme, but in the Tamworth scheme you recommend such a work; can you explain the apparent discrepancy? In the Prospect scheme the canal is very largely cut in outlying shales, more especially the lower part between the Prospect reservoir and the pipe head reservoir has only a fall of 6 inches to the mile, making it almost dead water, which is just a condition which would favour the growth of aquatic vegetation, which in itself would cause more or less impurity, in fact, it has been found so. In my late travels through Italy, I inspected irrigation works very largely, and I found they had had considerable difficulty in keeping some of the canals clean, owing to that very cause, whereas the water conduit of the Tamworth scheme has a fall of 2 feet to the mile and has a good rapid flow—flows through clean granite country, and is totally dissimilar in almost every particular.
1100. But would not your more rapid flow lead to the disintegration of the banks? No; the granite country there is hard and at the same time retentive; and, if there were any fear of that, by simply coating it with hydraulic mortar, the same as they have done under similar circumstances in similar country in America, it would completely preserve the banks, and, at the same time, prevent any leakage or soakage.
1101. Have you not very much less batter in your Tamworth conduit than they had in the Prospect conduit? The same batter, owing to the dissimilar character of the country, is not required. I have got a batter which is perfectly safe, considering the conditions of the country. It is a good solid granite country.
1102. Do you know of any municipality or town whose water supply has been somewhat similar to what you propose for Tamworth? Before you close your last question, might I draw attention to the supply of Sydney from the Botany swamps. 1103.

* Note *(on revision)*:—The water is obtained from the river.

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1103. What has that to do with a canal—there is no canal there? There was the Botany stream that supplied the pumping reservoir. That was only a narrow stream, and very shallow. My stream would always be over a foot, whereas I have known that Botany stream sometimes not more than 5 or 6 inches deep.
1104. Would not a greater volume of water tend to break down your sides? No. Of course in Botany you have a sandy soil to deal with. At Tamworth I had a hard granite. But I am only just pointing out that there is no danger as to the deterioration of the water at Tamworth such as you had from the watershed for the Botany supply, which was more or less liable to contamination from the buildings all round, and from deposits of material from houses, and other things, and yet it has never been known, as far as I have heard of, to interfere with the healthiness or salubrity of the water.
1105. Can you instance any case where a similar work has been carried out by any municipality? I might instance the case of the Marseilles canal. It has been carried out by the Municipal Council of Marseilles, and for similar purposes as proposed by me.
1106. Had that a conduit of the same form, and passing through the same character of country, and with the same height? Of course not with the same conditions, but equally open to the same objections. I deliver my water into a deep pipe head reservoir.
1107. Do you know anything about water supplies for towns drawn from wells? I might also mention, besides that there is another place, Villa Ressa, in Northern Milan, where a similar work has been constructed by the provincial council, and it has helped to restore the silk industry completely.
1108. Was that a gravitation scheme conducted by open conduit? Yes, open conduit. It was also of immense benefit to the agricultural resources of the country.
1109. Will you answer my other question, as to whether you know anything of water supplies for towns drawn from wells? I do not not know any particular instance of wells supplies for towns; but I know that they have been condemned by authorities at Home.
1110. For what reason? Condemned on account of the percolation from the superficial strata.
1111. But you have had no connection yourself with such a supply? I have had no connection with supplying them.
1112. Do you know where the Department propose to sink the well for their supply at Tamworth? I have heard that it is at the junction of the Peel and the Cockburn rivers.
1113. Do you know that part of the Peel valley? I know that locality.
1114. Do you think that a supply drawn from that source is likely to be contaminated? Undoubtedly.
1115. From what? From the percolation from the superficial strata.
1116. Do you know the land immediately above, which is used for agricultural purposes? Chinese gardens.
1117. Do you think that the manure used in the Chinese gardens and the lucerne paddocks would be injurious to the water supply? Undoubtedly it would, because it is not like ordinary infiltration. This is a shallow well, I understand, 36 feet deep. When you sink a well it acts more or less like a syphon, and you are continually drawing water down from the top. According to the soil itself, if it is sandy or if it is gravelly, especially if there is any gravel in it ——
1118. Do you know anything of the soil of the valley? I do.
1119. Do you know whether it is or is not alluvial soil for several feet? It is, undoubtedly, for several feet, and then sometimes beds of gravel.
1120. Do you think there is any likelihood or any danger of contaminating a water supply that has first to be dealt with by growing crops on the surface, and then has to go through several feet of alluvial soil, and then through a gravel bed? The very gravest danger, I say, because it is drawn down. It is not as if it were confined to the one area just around the pumping-well, but the influence of the suction increases till it comes to the top, and no one can tell where it will end.
1121. If the Committee have taken the evidence of witnesses who have told us that there is not the slightest danger whatever if crops are grown upon it, do you still hold to your opinion? Undoubtedly. Such was the opinion of some eminent chemist given before the water supply in London; but after that was done it was examined by two celebrated chemists, Dr. Lankester and Dr. Berry, I think, and they most distinctly showed, by microscopical examination, that wrong conclusions had been arrived at.
1122. Do you know whether after their report that supply was discontinued, or whether it is still in use? I do not know whether it is discontinued or in use; but I know that that was the evidence they gave.
1123. Have you seen the analysis of the water taken from this particular well, and also from wells in the immediate vicinity? I have not.
1124. You know the position of what is called the town well? Yes.
1125. That is below a considerable portion of the town, is it not? Yes.
1126. And whatever soakage there was from the town would naturally gravitate towards it? Undoubtedly.
1127. If, therefore, an analysis has been made from a sample of water taken from that well, and the analytical chemist pronounces it to be one of the best waters he has ever seen or tasted, would not that go somewhat towards removing your objection to it? It would depend a great deal on whether it was being drawn upon at the time. If the water had remained quiescent for some time, and there was no suction going on, it certainly would not prove it. I should have to get proof that there had been no suction whatever.
1128. If we are told that this pump is used daily, and that this sample was taken from the well when the water was being pumped up for household purposes, what then? I say again that I distinctly object to it, because there would always be a danger, and wherever there is a danger, and a danger as there would be in this instance, I think it would, anyhow, prejudice the health of the people.
1129. Then, if you were called upon to devise a water scheme for supplying the town of Tamworth, you would think it extremely dangerous to take the supply from where the Department propose to take it? Undoubtedly.
1130. Are you aware that for a number of years a number of the people of Tamworth have been daily taking their water from this town well? I am not aware; but I have heard that Tamworth has suffered considerably from typhoid fever and other diseases, which might have arisen from that supply.
1131. But whatever ill effects there were from the surface manuring of the valley, to that would be added the possible drainage from the town, the water taken from the town well being lower down the river—below the town to some extent? Yes.

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1132. And at the site where the Department propose to have their well it would be outside the range of the town drainage at all events? For the present.
1133. Do you think the town is likely to spread up that valley? It might.
1134. Are you aware that the valley is very frequently flooded, making it, therefore, an undesirable place for residential purposes? But those floods could be easily prevented.
1135. But if there is plenty of higher land available, out of the reach of floods, would not people prefer it rather than settle down on a flat liable to be flooded? Undoubtedly.
1136. You spent some time in the district when designing this scheme known by your name? I did.
1137. Do you know any source of supply other than the one you propose to tap? None that I could recommend.
1138. Your source of supply would not by gravitation command the highest portion of the town, would it? The whole of it.
1139. What do you call the highest portion of the town? The highest portion of the town, I suppose, is where the hospital is.
1140. The hospital is in the highest portion? I do not exactly know. I have not the sections here. I could not say for certain.
1141. I will read an answer given by Mr. Darley with reference to this matter, in answer to question 223, put by Mr. Davies:—

> But even supposing it costs more, and the people are willing to pay for it—and every witness we examined was willing to pay £45,000 for a gravitation scheme in preference to £22,000 for a pumping scheme? There are certain objections to this scheme. First, you cannot carry it out for the amount estimated; secondly, Mr. Gipps does not propose to bring the water from a site high enough to supply the residential portion of the town. It would be delivered in the town 100 feet lower than the reservoir from which we propose to pump it, so that a pumping system would still be required.

I think Mr. Darley has been misinformed as to the site of my supply reservoir; otherwise, I do not understand his answer.
1142. Have you had an opportunity to look up your data before coming before the Committee this afternoon? No; but I know perfectly well that I have shown the highest part of the town.
1143. You are of opinion that the hospital site is the highest? Either the hospital site or the school site. My sections, I believe, show the highest part.
1144. Will you tell the Committee the highest point to which your service could have delivered the water by gravitation? The corner of Brisbane and Raglan Streets.
1145. Do you know how high that is above the railway station? One hundred and thirty feet.
1146. What is the mean level of your service reservoir above the railway station? One hundred and eighteen feet; but, of course, in all that very highest part of the town there are no buildings whatever now, and it will be a long time before there are many there.
1147. If the main level of your service reservoir is 118 feet above the railway station, and if the point to which you deliver—the corner of Brisbane and Raglan Streets—is 130 feet above the railway station, how are you going to get the water up that extra 12 feet? When that is wanted I could use the motive power to be derived from the water itself to pump it up, but that is not likely to be wanted-—
1148. I asked you a question as to which is the highest point at which you could deliver by gravitation, and you said it was the corner of Brisbane and Raglan Streets, which you say is 130 feet above the railway station? I thought you asked which was the higest point.
1149. The highest point by gravitation? Well, the top of the reservoir would deliver by gravitation.
1150. Do you always take the top of your reservoir for your delivery? In a case of that sort you would.
1151. What is the use, then, of all the water below it? Well, the supply at present is so limited, and the proposed amount of water delivering into the reservoir would be so very much greater, that you could always keep it at a surface level.
1152. Where is a need of a reservoir at all, then, if you are going always to draw the water from the top level? On account of the security of the purity of the water, and in case of flood, when you might have to cut it off for a week or two.
1153. Is you had to cut it off for a week or two you could not have the top level of the reservoir for cutting the water off? It would be so little for a week or two that it would not make much difference to the service reservoir.
1154. The capacity of your reservoir is 2,400,000 gallons? Yes.
1155. Do you not think it would be fair to take the mean level instead of the top level of the reservoir? Not under the circumstances.
1156. Do you know of any impounding dam, for supplying a town with water, built in the same way as you propose to build your impounding dam? Not distinctly for water supply purposes, but for headworks for canals—yes. For instance, I may mention the headwork of the Cavour canal in N. Italy, which is used for irrigation.
1157. That is for irrigation? Still you were talking about constructive works, and I was going to give that as an example. The Po River there is over 1,000 feet across there is a diagonal headwork of 1,517 feet. That is for the supply of one of the principal canals in Italy. The cost of that work was a little over £1,000.
1158. And it is standing all right? It is standing now.
1158½. How long has it been in use? Over twenty years.
1159. Do you think that by going higher up a valley (say) a couple of miles you would have been able to get a very much larger supply of water for your impounding dam? I do not, and it would have thrown me into very difficult country.
1160. Did you go up the Mulla Creek? I did not go up it. I went to the head of it, where it debouched into the Swamp Oak.
1161. You do not think that by going a mile or a mile and a quarter above the junction of the Mulla with the Swamp Oak you could have increased your head of water very materially? Undoubtedly I could, but I should have had to increase the cost of the works.
1162. Why? Because the works would have been more expensive. That is very difficult country.
1163. Not such a good site for your impounding reservoir or dam? Not such a good site. Still, I would not have any hesitation in constructing the headworks there.
1164. If we have been informed that although the Mulla watershed is only one-third the extent of the Swamp Oak watershed there is more permanent water in the Mulla, you would not be prepared to dispute that?

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that? I have not examined the Mulla River. I would not be prepared to give an opinion on it one way or the other.
1165. But you say you would have more difficulty, and would require a more expensive impounding dam, if you went higher up? Yes.
1166. The site which you chose seemed to be formed naturally for an impounding dam? Yes.
1167. And you consider, from what you know of works of a similar character, that the mode of construction was reliable enough? Undoubtedly. I could give instances in California of even slighter construction.
1168. But there it is only a question of irrigation and not of town supply? Yes; but, it is not a rule of thumb business. When those works were laid out, all the quantities were gone into, and they were especially laid out to resist any pressure that could be put on them by flood or anything else.
1169. But where dams are made for the purpose of conserving water for the supply of towns, are they not made more substantially than those for irrigation and manufacturing purposes? There is no reason for it.
1170. But, as a matter of fact, are they not? As a general rule.
1171. Your dam has been designed in such a way that it would be fit for conserving water for manufacturing or irrigation purposes rather than for supplying a town? It would answer both. Similar dams in America have stood since 1800—that is, going on for 100 years,—and there is the work of the Cavour Canal which is in as good condition now as when it was put in. I suppose it would cost us £90,000 to put that in here.
1172. Are you aware that Mr. Darley estimated that to carry out your scheme as you proposed, which he would not recommend, would cost more than you estimated? I am.
1173. And that to carry it out in a way which he would think would be reliable would cost £40,000 or £50,000? I have not seen the evidence.
1174. Supposing you had been a contractor for the work, would you have had any hesitation in taking a contract at the price of your estimate of the cost of carrying it out? Undoubtedly not. After my travels to Italy I am perfectly convinced by the inspection of those canals that that work could have been carried out and would have lasted as those canals have for centuries, and served all the purposes required of it.
1175. Well, in view of the doubt expressed by some engineering authorities as to whether your design could have been carried out for less than £40,000, do you not think that the Municipal Council of Tamworth had better go in for a cheaper one until the population justifies their going into the larger scheme? I do not see what justification there is for increasing my estimate, especially after my inspections in Italy. I have seen the works even in those big canals without side lining, except in syphons, and then it has been coarse rubble and hydraulic mortar.
1176. With your most recent experience, if you were criticising the Prospect canal, you would ease down your criticism? Not on account of the healthiness of the water.
1177. Were not your objections to the Prospect canal not only that the water came in contact with the Wianamatta shale, but also to the open conduit making the water liable to pollution from outside sources? Owing, as I said, to the alkaline action of the shales.
1178. But was not another objection of yours to the open conduit that the water was liable to be contaminated by dust-storms and all sorts of things? Especially that part between the Prospect reservoir and the pipe head reservoir. That was my chief objection. It has hardly a perceptible flow—you can hardly see the flow.
1179. Your objection, therefore, to the open conduit was more to that portion between Prospect reservoir and the pipe head reservoir than to the other portion? Yes. You will see that in my report.
1180. Are you aware that Mr. Darley in his criticism on your scheme said that you had not provided for side drains, fencing, &c.? Well, as to the matter of fencing, of course if that were necessary that could easily be provided for; but the supply at Los Angeles, in California, is very similar to that proposed for Tamworth. That is also used for irrigation, and that has an open canal and is not fenced.
1181. But that is for irrigation only? No; water supply for the town as well.
1182. *Mr. Neild.*] Does this description by Mr. Darley properly describe your conduit line; speaking of the country through which the conduit would pass, he says—

> It would wind about partly through decomposed granite and partly through decomposed basalt, and I do not believe that you would get 1 gallon out of it for 20 gallons that went into it at the top unless you lined it with masonary, because the country is so porous.

Is that an accurate description of the country? No; undoubtedly not.
1183. You have been over every chain of this country? Yes; over every chain of it. I laid it out. As I said, there may be some difficulties with the granite. There is a cultivation field that might perhaps allow of the percolation of water, but that could easily be prevented by spreading hydraulic mortar over the sides of the canal, or by fluming if it were necessary. I might mention that by following the railway drains up the line you can see that the granite is very retentive—that the small streams that come down from the cuttings follow the granite course right down until they can get an escape.
1184. In your estimate for the reticulation of the town you place it at about £5,000 I think? Yes.
1185. And the Government scheme places it at £17,415; speaking from your knowledge of water supply to country towns, do you think there is any necessity for so large an expenditure as £17,000 odd for reticulating Tamworth? Undoubtedly not. That would reticulate almost the whole of the town.
1186. Will you look at the plan behind you on which you will see the pipes marked in red along the streets, and along the intervening lanes in West Tamworth as well as in Tamworth proper, and the crosses on the plan show the positions of cottages and other buildings; from your knowledge of the town of Tamworth, and from the information disclosed by those pipe-lines representing buildings, is it usual to reticulate a country town to anything like the extent shown? I never heard of an instance.
1187. Is it customary in laying down water-pipes to put half a mile of piping round a reserve, as shown on the plan? I do not know of an instance.
1188. Is it customary to carry 8 or 9 chains of water main to supply a single house, as shown on the plan? Undoubtedly not.
1189. Do you remember to what streets you proposed to supply water? I think I have mentioned them in my report; they are Peel-street, Marius-street, a portion of Carthage-street, the Hospital, Bligh-street, Piper-street, a portion of Johnston-street, and, then returning, Marius-street, Lower-street, Peel-street.

F. B. Gipps, Esq. 20 Dec., 1892.

1190. Any of the cross-streets? Darling-street, a portion of Macquarie-street, a portion of Brisbane-street, a portion of Fitzroy-street, and Bourke-street.
1191. Do you take any of the pipes to West Tamworth? I cross to West Tamworth, and supply Peel-street, a portion of Belmore-street, a portion of Johnston-street, a portion of Deane-street, a portion of Church-street. There were several large spaces that I did not consider were sufficiently populated to supply.
1192. You have examined the river flat above the junction of the Cockburn and Peel Rivers? I have.
1193. What is the nature of the soil overlying the water? As far as I could see, it was granite near the bottom, with sand and silt at the top.
1194. Making an alluvial deposit? Yes.
1195. Would it be proper to characterise it as "impenetrable clay"? Undoubtedly not.
1196. Is it soil through which the roots of vegetation would readily find their way? Yes.
1197. Is it soil which, when the surface was broken with ploughing, would allow manure to pass through? Yes, undoubtedly.
1198. At what depth in the wells on the flat is the water reached? It varies.
1199. Can you give me about the maximum? No, I could not; I never tried the depths of the wells.
1200. Apart from the question of manuring the ground, have you any knowledge of the effect of sinking cesspits in such light soil as you have described, overlying water from which it is proposed to supply a town? I have had experience in wells for private houses. For instance, at Burwood, there are tanks sunk only 14 feet deep. The water was brought to me as being perfectly pure, and it looked perfectly pure, but I found something suspicious about the taste. I examined the water with a microscope, and I asked the owner to come and see it next day, and I showed him scolicida and one or two other organisms which I consider highly prejudicial to human health.
1201. Have you devoted any attention to the question of microbes in sources of water supply? I have. I have used the microscope a good deal in the examination of water supply.
1202. Have you made any researches into the discoveries of scientific men in connection with this matter? I have drawn a series of the wells in England, and I supplied a section of the water in those wells, and a hydrographical map showing the well system in this country was prepared in my office more or less under my instruction; so I have devoted a good deal of attention to wells.
1203. Is it a fact that fever microbes cannot live in pure water? Undoubtedly not; they can live if they receive a certain amount of warmth; they require a certain temperature of water.
1204. Will a gravel drift answer the purpose of filtering microbes out of water? No.
1205. Then you would not agree with the evidence given here by Mr. Hamlet that microbes would not live in pure water or that they could be filtered out by the water passing through gravel beds? Not under these circumstances, of water being drawn from a well. Of course supposing the water were flowing through and they were lying dormant it would destroy them; the oxygen in the water would destroy the germs; but when you get them in a well and keep on drawing from that well it is a very different matter from the water flowing constantly through clean drift.
1206. Would an analysis made of water passing through a drift to-day be reliable as proving the purity of the water in the future? No, it would not. As regards the purity of the water, I might add that what would be perfectly pure, of course without the microbes, with the alkaline salts, would if any microbes got into it encourage the growth of microbes, so though you might have pure water without them it would be impure directly they got into it, and would encourage their growth very much.
1207. If it is sworn that the alluvial soil overlaying this drift containing the water varies from 4 feet to 10 feet in depth, would it be dangerous to life to use that water if above the well from which it was drawn there are a considerable number of cesspits sunk in the soil? I think so.
1208. Leaving only, say, from 5 feet to 2 feet of soil between the bottom of the cesspit and the top of the water, would you consider that dangerous? I should, undoubtedly.
1209. You think there would be a risk of the water becoming contaminated and of the contaminated water eventually finding its way to the well from which the water was pumped? Yes. I might perhaps give an instance to show that, from my experience of the cholera in India. We kept the cantonments scrupulously clean, but the men suffered through the cholera germs getting into the wells that supplied them with water. However, directly, we cleared out of the barracks and got into encampments, the cholera left us.
1210. How would the water in the wells become contaminated? From three sources—percolation, surface drainage, and from being carried by the air.
1211. But you say the cholera disappeared when you got into encampment? Yes. We got a different water supply.
1212. The ground surrounding had not been used long enough to cause contamination—is that it? Near the cantonments we continually buried cholera patients, and of course it was the decomposition of their bodies that encouraged the microbes. These were brought to the surface by the damp directly the rain set in, and were carried over by surface drainage or by percolation, or by the air into the water supply.
1213. One question more with reference to the water supply to the higher level from the top, and not the main level of your reservoir about which the Chairman has asked you;—did I understand that you proposed erecting a small reservoir, and filling it when their was an abundance of pressure in the main reservoir? It would always be kept full. The water would always be flowing into it.
1214. From the upper level? Yes.
1215. But whenever the reservoir was full there would be a supply running to your small service reservoir in addition? The supply reservoir would be about 4 miles from the town. It would not require any other reservoir.
1216. Then I am to understand that you would depend on your service reservoir 4 miles out of town to supply water to the highest points of the town? Yes.
1217. Using the water from the top level rather than from the mean level? Yes.
1218. In the case of the town of Armidale, having an exactly similar case to deal with, the Government proposal is for a small reservoir—iron, I think—of some 5,000 gallons capacity, to be erected at the highest point, and to be filled at night-time when the draught would be off the main and there would be a heavy pressure;—would not a plan of that kind be better? I think not, not for years to come. It might be better when there is a sufficient habitation on the higher levels to warrant it; but I think it would be an unnecessary expenditure at the present time.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Water Supply for Tamworth.

APPENDIX.

A.

REPORT AND ANALYSIS BY THE GOVERNMENT ANALYST.

Sir, Board of Health Offices, 127 Macquarie-street, Sydney, 2 December, 1892.

With reference to your letter of the 17th ultimo, I have now the honor to inform you that in accordance with your request the Government Analyst proceeded to Tamworth, and to enclose his report on, and analysis of, the Tamworth Water Supply.

I have, &c.,
EDMUND SAGER,
Secretary.

The Secretary, Parliamentary Standing Committee on Public Works.

Sir, Government Laboratory, Sydney, 2 December, 1892.

I have the honor to report that on the 28th ultimo, accompanied by the Mayor of Tamworth (R. Bourne, Esq.), Mr. Price, engineer from the Harbours and Rivers Department, and the overseer (Mr. W. Wood), I proceeded to the new well pointed out to me, situated near the junction of the Peel and Cockburn Rivers, Tamworth.

I personally collected samples from the said well and from three other older wells all sunk in the river drift, through which the above-named rivers run. The particulars of the localities are as follows:—

Sample A was taken from the trial well which had recently been cleaned out.

Sample B was taken out of a well in a Chinaman's garden close to a hut occupied by Chinamen, and 18 yards from a rubbish and manure heap.

Sample C was taken from some Chinese gardens situate some 40 yards from the Peel River. This water was alleged to be very hard and unsuitable for washing; it was spoken of by some of the bystanders as being "mineralised." Chinese huts, hay-ricks, and manure heaps were not far from the well.

Sample D was drawn from the cock at the tank placed near the town well in the midst of the town of Tamworth. The water was being served out to travellers, teamsters, and to the residents of Tamworth.

Sample E was obtained from the town well itself by means of a bucket lowered down into the well.

Upon my return to Sydney each of these waters was submitted to chemical analysis with the results recorded on the accompanying tabulated form.

The results are highly satisfactory, and indicate a water far superior in quality to the waters usually found in towns, remarkably free from organic impurity, and quite free from any sewage contamination.

It is, however, a hard water, and ought to be first softened by the Clark-Porter softening process before being allowed to pass into the mains for consumption. When this is done it will prove to be a water second to none in quality in New South Wales.

Each of the samples contain very nearly 10 grains of lime (as carbonate) to the imperial gallon, and this fact should, I think, meet the demands of those who complain of the absence of lime as a bone and teeth forming material in so many of the Australian potable waters.

Having inspected the site and the natural conditions of the gathering grounds for the proposed water supply, I see no valid objection to the site of the proposed well, provided that the land immediately surrounding the well be resumed and kept free from all pollution.

I have, &c.,
WILLIAM M. HAMLET, F.I.C.,
Government Analyst.

The Medical Adviser to the Government.

TAMWORTH WATER SUPPLY.

RESULTS of Analysis of Potable and Polluted Waters.

Mark or Number of Sample.	Description.	Expressed in Grains per Gallon.				Expressed in Parts per Million.				Hardness.		Examination for Organisms.	Appearance in the standard 2-foot Tube.	Poisonous Metals.
		Total Solid Residue, dried at 220°.	Chlorine as Chlorides.	Nitrogen as Nitrates and Nitrites.	Phosphates from animal impurity.	Free Ammonia.	Albuminoid Ammonia.	Oxygen absorbed in 15 min.	Oxygen absorbed in 3 hours.	Before Boiling.	After Boiling.			
A	The new well	17·92	0·9	None	None	None	·04	None	·20	11	6	No pathogenic organisms.	Clear	None
B	Well near Chinese hut	24·08	1·6	,,	,,	,,	·03	·16	·40	12	6		,,	,,
C	Old well in Chinese garden	30·66	1·9	,,	,,	·04	·08	·35	·80	15	6		,,	,,
D	Town well from tap	30·24	3·1	,,	,,	None	None	None	None	15	7		Clear & bright	,,
E	Town well by lowering bucket	30·01	3·1	,,	,,	,,	·01	,,	,,	15	7		,,	,,

General observation on the character of the above waters—Excellent drinking waters. (*See* Report attached.)

WILLIAM M. HAMLET,
Government Analyst.

2 December, 1892.

B,

B.

[To Evidence of C. W. Darley, Esq.]

PROPOSED WATER SUPPLY FOR TAMWORTH.

Department of Public Works, Harbours and Rivers Branch,
Sydney, 13th December, 1892.

Sir,

I forward herewith for the information of your Committee a report from my officer (Mr. Price) showing the condition the trial shaft at Tamworth was found in by the Mayor when it was cleaned out recently before drawing samples for analysis. I wish to emphasize the fact that this shaft was not sunk for the purpose of testing the water, for I never had the least doubt as to the quality of water that would be found in the drift at the depth we propose drawing it from, but simply for the purpose of ascertaining the thickness of strata overlaying the drift beds.

I find the Council Clerk erroneously described the formation passed through when he called it "rich alluvial soil," for it is in reality a stiff impervious clay overlain with alluvial deposit, as the Committee were first informed. As a proof that the clay is of a strong nature, I have but to mention that the sides of the well are still standing sound, showing the original pick marks, notwithstanding the fact that a flood or floods have since passed over it. The bottom two feet especially is a very stiff clay, hard to pick. No one could wish for a better class of material to overlay drift from which to pump water.

I have, &c.,
C. W. DARLEY,
Engineer-in-Chief for Harbours and Rivers.

To the Chairman of the
Parliamentary Standing Committee on Public Works.

Tamworth Water Supply.

Sir,

Sydney, 2nd December, 1892.

I beg to report that, in accordance with your verbal instructions, I visited Tamworth on the 25th of November in order to have the trial shaft cleared out previous to Mr. Hamlet's visit for the purpose of taking samples for analysis. I found the Mayor had already made all arrangements, so I only had to superintend the work.

The shaft, which was sunk last April, was about 4 feet in diameter and 11 feet deep, untimbered, and covered with a few loose slabs. Before cleaning it out on the 26th ultimo the water was thick and muddy, and contained numerous living and a few decaying frogs. At the bottom we found about 2 feet of surface soil, gravel, refuse, bones, &c., which had no doubt been washed in by the recent floods which covered the lower wire of the adjoining fence. After removing this rubbish the water came in clear and bright from a seam of sand about half an inch thick 11 feet below the surface. The bottom and lower few feet were of a stiff clayey nature. I had the well again baled on the morning of the 28th, when Mr. Hamlet arrived to take the samples.

I have little doubt that the water will prove fairly good on analysis, but nevertheless it is not the same water which it is proposed to use. This comes from a seam only 11 feet below the surface, while the proposed supply will be drawn from a depth of 35 feet at least, so that surface water will be subjected to three times as great a depth of filtration. The proposed supply also will be from the gravel bed of the old river, while that in the trial shaft is merely from a narrow seam of sand.

I also got Mr. Hamlet to take samples from the two Chinese wells on the land which it is proposed to resume. These were close to manure heaps, and surrounded with patches of irrigated vegetables. He also took samples from the town drinking-place and well. This well is 4 feet 11 inches in diameter, and about 28 feet deep, and is surrounded by houses on the town side.

Having carefully examined all the surroundings of the proposed source of supply, I am of opinion that with a brick in cement well, 35 feet deep, it would be absolutely impossible to contaminate the water by cultivation on the flat, and also that an almost unlimited supply can be obtained from the drift bed below the flat, a few bores being all that is necessary to determine the best position for the well.

I have, &c.,
EDWARD B. PRICE.

The Engineer-in-Chief for Harbours and Rivers.

C.

[To evidence of T. Pridham, Esq.]

ON THE QUESTION OF THE POLLUTION OF TAMWORTH WATER SUPPLY.

Sir,

Public Works Department, Harbours and Rivers Branch, 16 December, 1892.

I have the honor to transmit to you the accompanying notes, which I prepared in view of giving evidence before the Committee *re* Tamworth Water Supply, but which there was not sufficient time for me to read when I was examined.

Should you consider them to be of sufficient interest as bearing on the subject of inquiry, perhaps you will kindly allow them to be printed as a note to my evidence.

I have, &c.,
T. PRIDHAM.

The Chairman, Parliamentary Standing Committee on Public Works.

WITH reference to the supposed danger of the source of supply being polluted by the manure used in the cultivation of the alluvial flat overlying the drift, the following extracts, which include the opinions of two of the greatest English sanitary authorities, namely, Sir Robert Rawlinson and Mr. Bailey Denton, will show that there is no cause for alarm.

In a paper read before the Institution of Civil Engineers this year on the Berlin sewage farms the author, Mr. Rocchling, stated that the average depths of under-drains is 3 to 4 feet, and that in the streams containing the effluent from the farms there was absolutely no trace of contamination.

Mr. Bailey Denton, however, considered that a depth of 6 feet is required for a perfectly pure effluent. On the same occasion Sir Robert Rawlinson said that he had special experiments made with regard to the Craigentiney Meadows near Edinburgh; some of these meadows, which were common sea-sand, had received sewage for more than a century, and at 6 inches in depth below the surface they showed no taint or stain; the effect got from sewage will always be from the surface and not from any great depth that the sewage might be supposed to penetrate.

In a paper read at the same Institution last year on the Dudley sewage farms, the author, Mr. Marten, stated that the soil absorbs all the effluent, and that it is impossible to detect, either in the river, which traverses the farm, or in any other neighbouring water-course, a trace of the proximity of sewage farming operations; it has never been suggested that there is any contamination of the local wells. These farms have been in operation about seven years.

The valuable experiments on sewage filtration made last year by the Massachusetts Board of Health conclusively prove that a depth of 5 feet is sufficient to filter sewage in large quantities so that the effluent may be safely used for drinking.

It will be noticed that the above remarks refer to sewage farms, not to ordinary cultivating areas, as at Tamworth.

It is impossible to over-estimate the value for domestic water supply of the drift-beds which underlie, at an average depth of about 20 feet, most of the existing river channels in the interior of the Colony.

The immense quantity of water which they contain, about a third of their volume, being preserved from the action of light, heat, and air, is free from animal and vegetable growths, and, being naturally filtered, is also free from other impurities.

Where the drift is found underlying the banks of an existing perennial river and in communication with its bed, as on the Murray, Murrumbidgee, Lachlan, Macquarie, Cockburn, &c., the water contained in it is necessarily much purer than that in the existing streams, which, in wet weather, is generally charged with very fine clay held in suspension, and in very dry seasons more or less polluted by the decaying remains of animals and fish, as well as by impure refuse swept from watersheds, which are almost bare after a drought or bush fire.

These drift deposits have sometimes been referred to as the beds of ancient rivers, but the usually unstratified formation of both the drift and the superimposed clay would rather lead one to the supposition that they were caused by a single flood of phenomenal violence and depth. By such a flood the gravel and sand washed off the high ground would be first deposited in the natural drainage channels and form the existing drift. Subsequently, during the subsidence of the water, the suspended clay and soil would settle in a nearly homogeneous bed, as it is now found over the drift.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

WATER SUPPLY FOR TAMWORTH.

REPORT.

THE Sectional Committee appointed on the 12th of October, 1892, to whom was referred the duty of examining the local witnesses and inspecting the proposed works in connection with a water supply for Tamworth, have the honor to report to the Parliamentary Standing Committee on Public Works as follows:—

The Committee, consisting of Mr. J. Garrard, M.L.A. (Chairman), Hon. J. Davies, M.L.C., Mr. E. W. O'Sullivan, M.L.A. Mr. W. McCourt, M.L.A., Mr. J. C. Neild, M.L.A., and Mr. C. Collins, M.L.A., arrived at Tamworth shortly after noon on Thursday, 20th October, 1892. At 2·30 p m. the Committee met in the Council Chambers and, with Mr. Engineer Walsh, of the Harbours and Rivers Branch, Department of Public Works, examined the plans and sections of Mr. F. B. Gipps' scheme for supplying water to Tamworth and district. Subsequently in company with Mr. Walsh, Mr. R. Bourne, Mayor of Tamworth, and several of the aldermen, they inspected the town well and pumping plant at the west corner of Brisbane and Lower Streets, and also the site of the well proposed to be used for the Departmental scheme situated near the junction of the Cockburn and Peel Rivers, two wells on adjoining land, the site of the proposed reservoir on the town common east of the junction of Murray and Napier Streets, and the proposed reticulation area.

At 9 a.m. on Friday, 21st October, the Committee, accompanied by the Mayor, several aldermen, and Mr. Walsh, left Tamworth in vehicles to inspect the pipe route, the site of the service reservoir, the canal route, and the storage reservoir in connection with Mr. Gipps' scheme. Passing through New Moonbi, the Committee arrived at 11·30 a.m. at the site of the proposed dam, where due consideration was given to this part of the scheme, including the storage reservoir and the catchment area (300 square miles) in connection therewith. The Committee then returned to Tamworth, arriving there at 5·30 p.m.

At 10 a.m. on Saturday, 22nd October, the Committee continued their inquiry at the Court-house, Tamworth, examining the Mayor (Alderman R. Bourne), Alderman W. J. Smith, Alderman C. J. Britten, Mr. F. Poate, C.E., District Surveyor; Mr. J. C. Reilly, miner and journalist; Mr. W. Wood, Municipal Overseer; Mr. G. M. Jarvey, miner; Mr. C. Laverty, Council Clerk; and Mr. H. D. Walsh, Engineer of the Harbours and Rivers Branch of the Public Works Department. The Committee adjourned at 6·15 p.m. On Monday, 24th October, at 9·30 a.m., the Committee again met at the Court-house, where they examined Dr. H. L. Harris, Government Medical Officer, and Alderman J. Piper, and re-examined the Mayor, Alderman Britten, Mr. Poate, and Mr. Wood. The inquiry was concluded at 11·45 a.m., and the Committee left Tamworth shortly after 1 p.m., arriving in Sydney at 11 p.m. the same day.

From the papers laid before the Committee in Sydney and the evidence taken at Tamworth, it will be seen that the question of supplying Tamworth with water, either by pumping or by gravitation, is one upon which much diversity of opinion exists. Your Committee, therefore, deem it desirable to briefly set forth the principal features in connection with what is known as the Departmental (pumping) scheme and Mr. F. B. Gipps' (gravitation) scheme,

Departmental (Pumping) Scheme.—It is proposed to sink a well about 35 feet deep in the river drift immediately above the confluence of the Peel and Cockburn Rivers and on a reserve. From this well the water will be pumped by two Worthington vertical duplex pumps capable of delivering 300,000 gallons in ten hours, which is equal to 30 gallons per head per day for 10,000 persons. The present population of Tamworth is 4,600. From the pumping station the water will be conveyed by a 9-inch cast-iron rising-main 67 chains in length along certain streets to a concrete service reservoir of 500,000 gallons capacity (about three and a half days' supply for the present population), situated on the temporary common a little to the east of the junction of Napier-street with Murray-street. The mean level of the reservoir is given as 229 feet above the level of the pumping station, 130 feet above the highest point in West Tamworth (Mathew and Denison Streets), 234 feet above Peel-street at its intersection with Brisbane-street, 191 feet above the railway station, 113 feet above Brisbane-street near its intersection with Napier-street, and 58 feet above Brisbane-street at its intersection with Raglan-street, near the site of the most elevated house in the town. The reticulation comprises 22½ miles of 6-inch, 4-inch, and 3-inch cast-iron pipes. The estimated cost of the scheme is as follows :—

Engine-house and pump-well	£1,000
Pumping machinery	1,000
Service reservoir	2,000
Main and reticulation pipes, made in the Colony ...	17,415
Engineering and contingencies	1,085
Total	£22,500

Mr. Gipps' (Gravitation) Scheme.—It is proposed to use the water-sheds of the Swamp Oak Creek, the Mulla Creek, and their tributaries, as a catchment area, estimated at 300 square miles; to erect on the Cockburn River, in the vicinity of the railway line, and about 18 miles from Tamworth, an impounding dam 26 feet high, 335 feet in length, and storing in the reservoir so formed 38 acres or 100,736,000 gallons of water, running back up river 7,230 feet, thus providing not only sufficient water for Tamworth but a supply for irrigating land *en route*. The mean level of the water in the storage reservoir would be 160 feet above Tamworth railway station. From this reservoir the water would be conveyed 13½ miles by an open unlined conduit, tunnel, flume, and inverted syphon to a service reservoir situated about 4½ miles from Tamworth, having a dam 25 feet high and 198 feet long, and a capacity of 2,400,000 gallons. Its mean level is below the mean level of the storage reservoir to the extent of 45 feet, and the mean level above Tamworth railway station is 115 feet. From the service reservoir, the water would flow, by 4¼ miles of 12 and 11 inch wrought-iron pipes, to near the south-east boundary of the town, from which point the reticulation would commence, and be carried out by means of from 5 to 6 miles of cast-iron pipes. Mr. Gipps estimates the cost of his scheme as under :—

Storage dam	£1,750
13½ miles of conduit, &c.	5,600
Service reservoir dam	1,050
4¼ miles 12 and 11 inch wrought-iron pipes	4,250
5 to 6 miles of reticulation	5,000
	£17,650

Mr. Darley estimates that to carry out Mr. Gipps' scheme as designed by him would cost—

Instead of £17,600...	£24,000
Add for drains, fencing, &c.	6,000
	£30,000
To provide increased reticulation service, as per Departmental scheme, say.	11,000
Total	£41,000

A perusal of the evidence will show that there is a difference of opinion among the local witnesses as to the purity of the water and the quantity likely to be obtained from the proposed source of supply at the junction of the Cockburn and Peel Rivers. On the one hand it was urged that the present time is not opportune to judge of the quantity of water stored in the old river drifts, inasmuch as only recently a very large fall of rain had taken place, and the last three years' rainfall had been exceptionally good; and further, that even if the supply was sufficient in quantity its purity would be impaired by soakage from cess-pits and the manured surface of the farms and market gardens, some of which are occupied by Chinese, immediately above the site of the well. In opposition to this view it was asserted that in none of the wells on the flat above the proposed pumping station had the water ever been exhausted or become impure; that the rocky bar, immediately below the proposed well, formed a natural barrier impounding the surplus water as in a basin, from which a sufficient supply could be drawn to serve the town for many years to come, and that possible contamination from the use of the surface by farmers was very remote, as in addition to the power under the Act to prevent the use of any dangerous fertilising agent there were the crops, and about 11 feet of alluvial soil to absorb the surface soakage, besides many feet of river drift underlying the same. In confirmation of the filtering character of the river drift it was pointed out that for many years past large and daily supplies of water for household purposes had been drawn from the Corporation well, which is situated at the intersection of Brisbane and Lower Streets, about 1 mile 12 chains lower down the river than the well in connection with the proposed scheme, and consequently subject to the drainage from the most thickly populated portion of the town. Every witness examined was in favour of a gravitation scheme if it could be obtained at a reasonable cost. It was also admitted that the watershed in connection with Mr. Gipps' scheme was ample for all present and future requirements, and further that the proposed site of the storage dam was well chosen; but all condemned the proposal to convey the water by the canal as designed, and urged that, if this scheme were carried out, pipes should be used, and that to reduce the expense of resumption of land these pipes might be placed on the lower side of the Railway Reserve, close to the fence. It was also suggested that if a greater head of water were required, so as to deliver into a service reservoir to command the highest part of the town, this might be obtained by having the storage reservoir on the Mulla Creek, say about 1 mile above its junction with Swamp Oak Creek. This would also do away with any possibility of pollution from the drainage of Swamp Oak township and goldfield.

The question of the revenue to be derived if an efficient water supply could be obtained was duly considered, and it appears to your Sectional Committee that a more favourable result would be given than that shown by the figures submitted to your Committee in Sydney, which were as under:—

A rate of 1s. in the £ on properties within the reticulation area	£1,450
Water supplied to railway locomotives	182
	£1,632

To this your Sectional Committee think might be reasonably added:

For properties outside of outer line of pipes (not included in Council's estimates but liable to rate), say an addition of 10 per cent. on £1,450	145
Government buildings, ...	116
Street watering rate	167
Gardens, stables, factories, &c., by meter	200
	2,260
Interest on capital (£22,500), sinking fund, and working expenses	1,460
Surplus	800

From

From this it will be seen that there is a reasonable prospect of the town being able to meet the expenditure upon an efficient water supply, even if it cost £45,000. The Borough Council are in an exceptionally sound financial position, their total indebtedness being £5,000, while their assets, consisting of freehold property, electric lighting plant, and credit balance at the bank, are over £7,000. The present rates charged are 1s in the £ municipal rate, 5d. in the £ for lighting rate, and a street watering rate of 4d. in the £ over a limited area.

In conclusion, your Sectional Committee are of opinion that though it may be necessary in the future to go further afield for a water supply for the town and district, they think that if, after due investigation, it is reasonably proved that a supply of water sufficiently pure can be obtained from the place proposed by Mr. Darley, then the pumping scheme before the Committee should be carried out.

Your Committee are also of the opinion that the area proposed to be reticulated should be carefully reconsidered, to see if it may not be reduced without any very serious lessening of revenue.

The Committee considered the evidence taken by them in their inquiry on 24 October, and passed the resolution which is shown in the following extract from their minutes of proceedings :—

Mr. McCourt moved,—

"That the Government scheme be carried out provided that further investigation proves the permanency and purity of the proposed supply."

Mr. O'Sullivan seconded the motion.

Mr. Neild moved,—

"That the motion be amended by the omission of all the words after the word 'That' with a view to the insertion of the following words in lieu thereof:—'1. The Committee consider that the proposed reticulation is unnecessarily extended and should be largely curtailed, and be submitted to and revised by the local Council. 2. That the Committee decline to approve of a scheme to supply a large town with water drawn from land occupied by farms and Chinese market gardens, and populated to the extent of about two persons to the acre, such population numbering several hundreds, and using ordinary cesspits or being unprovided with any description of sanitary accommodation. 3. The Committee further consider that such excellent natural opportunities exist for the supply of water to Tamworth by gravitation, that no pumping scheme should be adopted without the fullest investigation. 4. The Committee also draw attention to the expressed wish of a majority of the witnesses for a gravitation scheme even at a largely enhanced cost.'"

Mr. Davies seconded the amendment.

The question—"That the words proposed to be omitted stand part of the question"—was put, and the Committee divided as follows :—

Ayes, 3.	Noes, 3.
Mr. Garrard,	Mr. Neild,
Mr. McCourt,	Mr. Davies,
Mr. O'Sullivan.	Mr. Collins.

The numbers being equal, the Chairman gave his casting vote with the Ayes, and the amendment was consequently negatived.

The Committee then divided on the question, "That the motion be agreed to."

Ayes, 3.	Noes, 3.
Mr. Garrard,	Mr. Neild,
Mr. McCourt,	Mr. Davies,
Mr. O'Sullivan.	Mr. Collins.

The numbers being equal, the Chairman gave his casting vote with the Ayes, and the motion was consequently carried.

On Tuesday, 15 November, the Committee proceeded to consider their Report.

The Report was read and amended; and passed on the following division :—

Ayes, 3.	Noes, 3.
Mr. Garrard,	Mr. Neild,
Mr. McCourt,	Mr. Davies,
Mr. O'Sullivan.	Mr. Collins.

The division being equal, the Chairman gave his casting vote with the Ayes.

J. GARRARD,
Chairman.

Sydney, 15 November, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

WATER SUPPLY FOR TAMWORTH.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

SATURDAY, 22 *OCTOBER*, 1892.

[*The Sectional Committee met at the Court-house, Tamworth, at* 10 *a.m.*]

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The HON. JOHN DAVIES, C.M.G. | JOHN CASH NEILD, Esq.
WILLIAM McCOURT, Esq. | EDWARD WILLIAM O'SULLIVAN, Esq.
CHARLES COLLINS, Esq.

The Sectional Committee proceeded to consider the proposed Water Supply for Tamworth.

Mr. Richard Bourne, Mayor of Tamworth, sworn, and examined :—

Mr. R. Bourne. 22 Oct., 1892.

1. *Chairman.*] You are Mayor of Tamworth? I have been Mayor since February last.
2. How long have you been connected with the Borough Council? Over seven years.
3. From time to time your Council has had under its consideration the desirability of supplying the town with a more efficient water supply than it has at present? Yes.
4. We understand from some papers which have been furnished to the Committee, and from information which has been given by the Under Secretary of Public Works, that you have approached the Government on that question on several occasions? Yes.
5. We understand that in 1880, Mr. Darley, then Assistant Engineer-in-Chief for Harbours and Rivers, visited the district and propounded what is known as the pumping scheme? Yes.
6. And that subsequently, your Council, being desirous of obtaining a supply by gravitation, if possible, invited tenders for the detailed work? Yes.
7. And that Mr. Gipps, C.E., was the successful tenderer, and formulated a plan to supply the town from what is known as the Cockburn River, just below the junction of Swamp Oak Creek and Mulla Creek? Yes.
8. That scheme received the approbation of your Council? Yes.
9. Subsequently, on reference to Mr. Darley, it was condemned? Yes.
10. The Department has since formulated a pumping scheme to draw the water from near the junction of the Peel with the Cockburn? Yes.
11. And to pump the water into a reservoir of 500,000 gallons capacity at the junction of Murray and Napier Streets? Yes.
12. Which we are informed will command the highest portion of the town? I believe that is so.
13. The Department also, in conference with your Council, has decided upon a system of reticulation for Tamworth and West Tamworth, embracing 22½ miles? Yes.
14. You have given your adherence to that plan, and we understand that your Council has unanimously approved of the plan, and given up all idea of the gravitation scheme of Mr. Gipps? I cannot say that is so. We have a fresh Council this year. It consisted of only nine aldermen last year, whereas it consists of twelve aldermen this year, and the question of water supply has never been submitted.
15. Was it in the present municipal year that a deputation waited on the Minister with reference to the question? No, at the end of the last municipal year, I think in January last.
16. Then no vote or discussion has taken place in your Council on the question of giving its adherence to the proposal of Mr. Darley? No.
17. When was the extent of this reticulation system decided on by your Council? Last year, during the mayoralty of Alderman Smith.
18. So that the Council which was elected in February last has not had the question definitely under its consideration? No.
19. But as regards what had been done by the previous Council I presume it was within the power of any alderman to table a motion to rescind the previous resolution? Certainly.
20. And that has not been done? No.
21. We may take it therefore that silence gives consent? Yes. I take it that the Council is almost unanimously of opinion that a gravitation scheme would be acceptable, provided that we do not pay too dearly for our whistle.
22. Have any public meetings been held to consider this proposal to provide a water supply for Tamworth? No.
23. Was any outcry made by the ratepayers against the scheme propounded by Mr. Darley, or the scheme propounded by Mr. Gipps? No.
24. Do you think that the aldermen represent the opinions of the ratepayers generally? I do.

Mr. R. Bourne. 22 Oct., 1892.

25. And if the ratepayers were to differ with the aldermen on any public question, they would take steps to make known their opposition? They would, decidedly.
26. It is not an uncommon thing here to have a public meeting called? I cannot say that it is done very often.
27. But on a matter of so much importance they would, if they differed with the Council? We are in the fortunate position of being able to please the ratepayers as a general rule.
28. Then we might take it from the silence of the present Council, and the silence of the ratepayers, that the people are favourable to this scheme to which the previous Council seems to have given its adherence by suggesting and countenancing an extensive system of reticulation? Yes.
29. Have you given any very close attention to the question of a gravitation scheme, as against a pumping scheme? I have not. I may say that it was the fact of a responsible officer of the Government condemning the gravitation scheme, which led us to apply to the Government to supply us with a scheme.
30. Otherwise you were prepared to paddle your own canoe to some extent? The Government would not support us, though.
31. The proposal of the Department is to sink a well at the junction of the Peel with the Cockburn, into what is supposed to be an ancient river drift. From your knowledge of Tamworth and its water supply, do you think it is reasonable to suppose that sufficient water will be obtained from that drift at that particular point to supply the town? I do.
32. You base your belief on your experience of the wells that have been sunk in similar drift, in and about the town? Yes.
33. Is it a fact that you have a town well from which you supply the necessities of the people? We have.
34. How long has it been in operation? I cannot say exactly. It was started some years before I entered the Council. I think it is about eleven years old.
35. Is the pumping plant at the town well only used during very dry weather, or is it used continually, more or less? Continually. There is a man kept constantly there.
36. He has something else to do besides sitting down? He has to look after the pump, and keep the engine in order, and cut his wood.
37. There is a steady demand for his services in connection with the delivery of water? Yes.
38. Is the supply good? Not altogether. In very dry seasons the well has been pumped almost dry, and he has had to wait for an hour or so before starting again to pump.
39. This well is situated about a mile below the point where the Department propose to sink their well—at the intersection of Brisbane-street with Lower-street, close to the bridge? That is about the distance.
40. So that being 1 mile lower down it would have a better chance of supplying the necessities of the people, as far as quantity is concerned, than if the stream were tapped 1 mile higher up? If we had a well in proportion. The town well is not very large.
41. What I mean is that you will have 1 mile more of this ancient river bed presumably to operate upon, than the departmental scheme will have? Certainly.
42. So that while your well may not give out, owing to the larger area from which it will draw its supply, that is no guarantee that a well situated a mile higher up may not give out? No.
43. At what price do you supply water to the ratepayers? Fourpence for 400 gallons.
44. From your experience of the district and the wells which have been sunk, you have no hesitation in saying that a sufficient supply will be obtained from the point proposed to be tapped by the Department to meet the necessities of Tamworth? I think it would.
45. Their proposal includes the pumping of the water from that well up to a reservoir situated at the junction of Murray and Napier Streets? Yes.
46. Will that reservoir, which we are informed is 191 feet above the level of the railway station, command the whole of the habitable portions of Tamworth? I believe it will command all the present buildings.
47. The plan of the reticulation scheme shows that the highest point is in Brisbane-street, near Raglan-street. Are there any houses situated above Raglan-street? Not at present, I think.
48. Are there likely to be any there? Raglan-street is the top street of all. It is hardly likely that there will be any there for a considerable time.
49. There is no obligation, I presume, to follow the people up into the clouds, if they go there, with a water supply? I suppose not.
50. For all practical purposes this scheme would serve the whole of the present and prospective population of Tamworth? Yes.
51. And of West Tamworth, too, I presume? Yes.
52. Your highest level is on the Tamworth side, and not on the West Tamworth side? Yes.
53. Is West Tamworth included in your municipality? Yes.
54. What is the extent of your municipality? Seven square miles.
55. Do you think that there has been an unnecessary amount of reticulation service laid down in the plan? No.
56. West Tamworth is only very sparsely built upon? That is all.
57. Does not the plan show that nearly every street is to be reticulated? Yes.
58. Is it not rather expensive to reticulate a thinly built place like that? That part of the borough requires water very badly. There is no chance of getting water there unless you catch it from your roof.
59. Does not that hold good also with reference to Tamworth proper? Yes; but there are larger and better residences in Tamworth proper than in West Tamworth; the people have underground tanks and so on.
60. The aristocrats live on the Tamworth side, and the people on the West Tamworth side? That is so.
61. Studying the interests of the ratepayers generally, and knowing their wants, you do not think that the proposed reticulation could be diminished in any way? I think not.
62. We have been informed that the reticulation will cost £17,415; if you go in for an unnecessary amount of reticulation you will load yourselves with an expense which you will not be able to meet, owing to the sparsely populated portions of the town which you propose to tap—at all events, as Mayor, you believe that the proposed reticulation cannot be diminished in justice to the people of the borough? I do.
63. Your municipality is divided into wards, I suppose? Yes.
64. And the aldermen of each ward look after the interests of that ward? Yes.

65.

65. Then I presume that the aldermen of every ward saw that it got a fair share of the reticulation? I think they were fairly satisfied. Mr. R. Bourne. 22 Oct., 1892.
66. Irrespective of whether it would pay in the future or not? No; I do not think that matter was lost sight of.
67. In the paper which you furnished to the Under Secretary for Public Works, you estimated that a rate of one shilling in the pound on the area to be reticulated would yield £1,450 per annum? Yes.
68. You estimated also that you would receive an income of £182 per annum from the Railway Commissioners? That information we did not give.
69. It was obtained by the Under Secretary himself? Yes.
70. How is it that you only put down this shilling rate. Do you not expect to get any revenue from watering the streets, and for supplying water for motive power, and many other purposes to which it may be used? We do expect it, but we simply gave the information which was asked for.
71. You water your streets? Yes.
72. Do you strike a rate for that service? Yes.
73. Does the rate just pay the expense of the service, or do you make a profit? It has always been worked at a loss. It is only a small portion of the main street which is watered.
74. Why should it be worked at a loss? We are prepared to put up with a small loss in order to give these people the benefit of a water supply.
75. You think the general body of the ratepayers should bear a portion of the cost of watering the main street? We do in a certain sense. It has never paid the actual expense.
76. What rate do you charge? Fourpence in the pound.
77. What does it realise? It realised £167 9s. 11d. last year.
78. Then to the sum of £1,450 to be derived from levying a shilling rate on the reticulation area, there must be added a sum of at least £167 as a source of income? Yes; we should be able to water the streets from the main.
79. No matter whether you put the water on the street with a cart or with hydrant, those people would still be prepared to pay a sum of £167 for the service? Undoubtedly.
80. As a matter of fact, it costs you that amount to render the service? A little more.
81. Some labour will be dispensed with, I presume, if you water the streets from the main? Yes. We could do away with the horse and cart, for instance.
82. Is there likely to be any quantity of water supplied by meter to gardens or factories, independent of the ordinary supply? I think not.
83. To stables and so on? The stables would take the water, of course.
84. And to breweries? I do not know about breweries. We have only one brewery, and I believe Mr. Britten will give evidence himself on that point.
85. Except in the cases of gardens, if you supply the water by meter you could not charge by assessment—you could not charge both ways? No.
86. Do you know how the railway station is supplied? They have a pump of their own at the river.
87. That is at West Tamworth, for locomotive purposes—at the station proper? I think they have an underground tank.
88. In your estimate of revenue, you have not made any allowance for the Government buildings which will be supplied with water? No.
89. They are not included at present in the municipal rate? No.
90. Therefore, if they take the water, it would be an extra source of revenue? Undoubtedly.
91. What public buildings have you in the town? We have a Post and Telegraph Office.
92. I suppose your Council Clerk acts as one of your valuators? Yes; he will be able to state the value of these buildings.
93. In addition to the Post and Telegraph Office, you have a Lands Office, a Roads Office, a palatial Court-house, a lock-up, police barracks, and a gaol? Yes.
94. Is the Lands Office exempt from the payment of rates? Yes.
95. Is it a rented building? Yes.
96. In all probability there will be an additional income from public buildings which are not assessed, but which would be assessed if supplied by water? Yes.
97. What is the indebtedness of your borough? £5,000.
98. Is that the whole of you indebtedness? Yes.
99. Does that debt include the purchase money of the electric light plant? Yes; £5,000 was the total cost of the plant.
100. Have you an overdraft at the bank? No; we have a sum of £2,000 on fixed deposit.
101. Have you exhausted your right to receive an endowment from the Government? Yes.
102. And you are only £3,000 in debt? That is all.
103. You have an electric lighting plant as an asset? Yes, and municipal saleyards.
104. How much is your town hall property worth? We have not a town hall.
105. You have the land; does it belong to the Crown or to the Council? To the municipality.
106. Have you an idea of its value? We paid £100 for the land many years ago.
107. You have a debt of only £3,000 bearing interest at 5½ per cent., and against that you have your council chambers' property, and your electric lighting plant? Yes.
108. How much did your electric lighting plant cost? £3,000.
109. Is that the total cost right up to date? About £3,200, I think, was the actual cost.
110. I suppose there has been some depreciation? Yes.
111. You have no intention of taking that electric lighting plant and throwing it into the river? Not in the slightest.
112. It is a good asset? Yes.
113. And you have your saleyards? Yes.
114. What are the saleyards worth? About £1,100 or £1,200.
115. Do you think the people would be prepared to pay a shilling rate for water? Yes.
116. You think that the people who have heard of this agitation for a water supply and so on, know that they will have to pay the piper? I do.
117. And you think that they will willingly pay a rate of one shilling in the pound on the assessed value for the service? I do.
118. You know, generally, Mr. Gipps' scheme? Yes.

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119. Do you consider that he has under-estimated the cost of his scheme? I do.
120. Do you know anything about the upper portions of the Cockburn River and Mulla Creek;—do you think that it is possible to get an increased head by going a little higher up? I have never been any higher up.
121. Looking at the question all round, you think that the supply proposed by the Department will be sufficient for the purposes of Tamworth? Yes.
122. Do you think it is likely to be subjected to pollution? No.
123. Do you think it is the cheapest and best in view of the present population of the town, and that it will serve the town for many years? Yes; according to the estimate. It is estimated to supply a population of 10,000, which is more than double the present population.
124. It would be very awkward if this scheme were carried out and it were found that there was not a supply of water in the pumping well? It all depends on the supply of water.
125. Would it not be better to make some searching and extensive inquiries or explorations as to the river drift before the Council assents to the whole of the scheme? I think so, decidedly.
126. Supposing the works were completed, and this well gave out, what would have to be done then? I cannot say.
127. Supposing you were pretty well sure that there was not a supply in the well, and the Government reservoir were kept at its proposed elevation, the water from Mr. Gipps' storage reservoir would not flow down to it by gravitation; but if the Government reservoir were constructed 45 feet or 50 feet lower down for the purpose of getting the water from his storage reservoir, how much of the present reticulation area would be left out in the cold? Well, I can hardly say.
128. We are told that the Government reservoir will command the highest part of the town, which is in Brisbane-street, near its junction with Raglan-street, but if that reservoir were kept down 45 or 50 feet the highest portion of the town which would be served by gravitation would be the junction of Brisbane and Napier Streets. Are there very many houses situated above that point, or would not the corner of those streets be the highest point in the greater part, perhaps seven-eighths, of the town? It would.
129. And if necessary, the small population living outside could be served by a small pumping scheme? I daresay it could.
130. For fear a mistake might be made as to the amount of water in the river bed, do you not think it would be well to keep the service reservoir down, so that if an accident happened the water from the Cockburn River higher up could be brought down to it by gravitation? I do not think so. I think it would be well to ascertain beyond all reasonable doubt whether there is any chance of the water giving out. We want the reservoir built at as high an elevation as is proposed. There are not many houses built there at present, but there are a number of houses in course of construction.
131. Supposing that in about ten years the whole of the flat above the town should become town sites, and consequently pollute your well, you would have to cast about for another source of supply, and this reservoir would be no good? No.
132. What you would urge is, that before you are committed to any expenditure, more extensive inquiries and explorations should be made as to the permanent character of the water supply at the proposed site? Yes.
133. You have very little fear yourself that it would give out, but you think it would be wise to take the precaution? That is so.
134. *Mr. O'Sullivan.*] I gather from your evidence that you give a preference to the pumping scheme? No.
135. A preference to the pumping scheme as compared with Mr. Gipps' scheme? No. I favour a gravitation scheme before a pumping scheme; but I have no fear personally that we shall get plenty of water from the pumping scheme.
136. If you favour Mr. Gipps' scheme, why are you prepared to run the risk of a failure, of which there seems to be a possibility, in constructing a pumping scheme? I am not prepared to run that risk.
137. Did I not hear you say that you thought that there would be a supply of water in the pumping well, and that it would be free from pollution? Yes.
138. Is there not very good evidence to show that there is an uncertainty about the supply in the drift? Yes; and I have also said that a further investigation should be made to ascertain that we shall have an ample supply before going in for a pumping scheme.
139. You are prepared to wait for the investigation to take place before you recommend any scheme? I think it would be better. Personally, I favour a gravitation scheme.
140. You said just now that you give the preference to Mr. Gipps' scheme;—are you aware of the objections made by the Department to that scheme? Yes.
141. The objections are five in number. The first objection is that there is not sufficient head to supply the highest portion of Tamworth;—would not that in itself be a serious objection to any water scheme? Yes.
142. The second objection is that the dams and canals proposed are not likely to prove durable? I do not favour that portion of his scheme.
143. You would take his scheme with variations? Yes.
144. You would prefer pipes to canals? Yes.
145. You consider the probable large cost of his scheme an objection? Yes.
146. I think you said that you do not believe that it could be constructed for £17,000? I do not think so; but I am not an authority on this matter.
147. Supposing it would cost between £35,000 and £40,000, would you recommend it then? I think we could afford to pay that.
148. If Armidale can afford to pay £43,000 for a large scheme, considering that your borough is in such a good state financially, it can better afford to pay for a large scheme? Certainly we ought.
149. You appear to have lost sight of the revenue from public buildings and other sources which you are fairly entitled to claim? Yes.
150. And if this were added to your estimate you would have ample funds at your disposal to meet the interest on the capital expenditure? I think so.
151. I think you admitted to the Chairman that you are satisfied with the estimate of the pumping scheme; did you not make some such admission? I do not think so.

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152. Do you think that £24,000 will cover the cost of the pumping scheme? The estimated cost is £22,500.
153. Do you consider that that amount would cover the cost of the scheme? I am not qualified to give an opinion. I know that it is considerably more than the first estimate which was shown to the Council. Mr. Pridham's estimate was £19,500, and the one we got recently was £22,500.
154. What caused the increase in the estimated cost? The increase in the reticulation.
155. Mr. Gipps proposes that his scheme should be used for irrigation purposes? Yes.
156. He estimates that the Council would receive £1,250 a year from a rate of 10s. per acre? Mr. Gipps does.
157. But your municipality would have no control over the land which is outside its boundary? A good deal of it is outside.
158. The area of your municipality is 7 square miles—that would give you only 5½ miles of country towards the head of the scheme? We have about 2½ miles from here.
159. That would leave the remainder outside your borough? Yes.
160. So that the irrigation receipts would be a matter of no moment? I do not look upon that proposal as likely to be a very valuable source of income.
161. At all events you would have no power over that land unless the occupiers agreed to pay the rate? Certainly.
162. What do the people of Tamworth pay now per 100 gallons? From 9d. to 1s., according to the distance which the water has to be carted.
163. That is a pretty stiff price throughout the year? Yes; it runs up considerably in summer time.
164. It would come to about £2 for a family of four or five persons? I daresay it would. They want two or three casks very often in dry weather. They cannot do with less, and then they have not sufficient water.
165. The people would be likely to pay a fair rate to be relieved of this liability? I think they ought, if they are wise.
166. At the same time they would be in receipt of good water? Yes.
167. You do not anticipate therefore any objections to the levying of a water rate as far as the people are concerned? I think not.
168. There have been no meetings held to protest against the scheme? None.
169. Have any aldermen lately been elected? In February last there was an election of aldermen.
170. *Mr. Collins.*] Does the estimated revenue of £1,450 include your lighting rate? No.
171. You have had no communication with the Railway Department in respect to their water supply? None.
172. If it has been stated to the Under Secretary for Public Works that a sum of £182 would be received from the Railway Department, your receipts would be about £1,700, irrespective of the amount from the public buildings? Yes.
173. And with the amount from the public buildings, your receipts would be about £1,900 a year? I daresay they would.
174. What is the cost of maintaining the municipality—what do the officials cost? I cannot say; the Council Clerk can give that information.
175. Do you levy a rate on convents or churches? The Council Clerk will give that information.
176. If a scheme were propounded, and the interest on the capital expenditure at 4 per cent. would exceed £1,900, your Council could not afford the expense? I do not say that, because within the reticulation area, I understand fourteen or fifteen houses are now going up. We get an increase year by year. The town keeps growing every year, and what we cannot do this year we shall be able to do next year, or the year following.
177. Supposing a water supply were brought into the town, either as Mr. Gipps suggests, or as the Government suggest, do you think it would reduce the insurance rates? Undoubtedly; for we have no water supply in the case of a fire.
178. A water supply would be a great advantage to the town in that respect? Yes.
179. You have a fire brigade? Yes.
180. Consequently, if in addition to the fire brigade you had a permanent water supply, you think the rates of insurance would be greatly decreased? I have not the slightest doubt they would.
181. That would be an advantage to the town? Yes.
182. *Mr. Davies.*] Twelve years ago a pumping scheme was proposed for the town by the Department of Harbours and Rivers? I know it was, but I was not in the Council at the time.
183. Do you know where it was proposed to put down the pump-shaft? Yes.
184. How far was it situated from the well-hole we saw on the reserve? About half a mile this way,—at the foot of Roderick-street.
185. I presume that the well shaft was taken further away because of the growth of the town? I think so. The site is considered more suitable.
186. I presume that there must have been some apprehension on the part of the Department, that the original well shaft would become polluted or surrounded by population? There is no more population about the original site now than there was at that time.
187. No drainage of any kind making its way to that site? There is a certain amount, of course, on all the flats. It is at the foot of the ridge.
188. Are you aware of the reason why the Department went half a mile further to put down their shaft? I cannot say. I think it was because they thought it was a more suitable site. It is in a reserve.
189. What is the depth of the trial-shaft that has been put down? Eleven feet.
190. What is the nature of the soil? It is a sort of clay soil. They did not come to the gravel, I believe.
191. All the land around this well-hole is under cultituation? Yes, farms.
192. Chinamen's gardens, principally? Yes.
193. The ground is always in a broken state? Yes.
194. Any drainage would find its way through the broken surface and possibly into your well-hole? I do not know; that is a matter of opinion.
195. You think that the drainage would be so far filtered that it would be free from any imperfections? I do not think much could drain into the water.
196. Have you ever had the water in the well-hole analysed? No.

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197. You tasted the water the other day, I presume;—did it not have a very metallic taste? I think it is fairly good water.
198. Have you a health officer in connection with the Council? No.
199. Is there a medical man in the town who could make an analysis of this water? There is Dr. Harris, the Government medical officer.
200. Can one of your officers get a bottle of the water in the shaft and hand it to Dr. Harris to-day? I will send an officer down with a bottle.
201. Have you any misgivings with reference to the permanency of the supply in the well? No; I have already said that I think that there would be plenty of water.
202. Plenty of water for all time? I think so.
203. And still you have a shaft much lower down here which you say is frequently pumped dry? I say it has been pumped dry in a dry season, but that there has always been plenty of water in the well in the course of half an hour or an hour.
204. For the growing population of this very beautiful district, do you think that the supply from this well would be sufficient for all purposes? I think it would, perhaps, be sufficient for many years to come.
205. What was the population in the municipality twelve years ago? I cannot say, as I was not in the Council then.
206. Do you know the income of the municipality twelve years ago? The Council Clerk will give that information.
207. What has been the growth of the population in the municipality within the last twelve years? I only know the population when the last census was taken.
208. Your borough is growing very rapidly? It is steadily increasing.
209. Your total income from all sources last year? £2,580 5s. 11d.
210. Is that an increase on the revenue for the previous year? Yes. In 1890 it was £2,559 19s. 10d., while in 1889 it was £2,511 11s. 6d.
211. Not a very great difference? A gradual increase.
212. Your Council has spent a considerable sum in taking levels and sections for a scheme of water supply from the Cockburn River which is estimated, by Mr. Gipps, to cost about £17,000? Yes.
213. Did you have any officer to check his levels or quantities? No; we employed no one.
214. You are not aware whether they were subjected to any test? They were sent to the Public Works Department.
215. As a practical man, do you think that his scheme could be carried out for anything like that sum? I have already said that I do not think it could, but I do not profess to be an authority on the matter.
216. But if the scheme could be carried out and a permanent supply provided involving no expense for pumping and other things, which would you prefer? A gravitation scheme.
217. Supposing that you could get a supply by gravitation for £30,000, as estimated by Mr. Darley, from the source which you visited yesterday, which scheme would you prefer—a gravitation scheme at a cost of £30,000 or a pumping scheme at a cost of £22,500? I should prefer a gravitation scheme, most decidedly.
218. Your municipality will be in a position to pay the difference in the cost—nearly £7,000—so as to have a gravitation scheme? Yes.
219. You stated that your Council would not have control over the water outside your borough;—are you not aware that if a gravitation scheme is adopted that power will be given to the Council in the Bill if it is desired? Certainly.
220. Would it not largely increase your income if you could supply water by meter for the purpose of irrigation in dry seasons? Undoubtedly it would.
221. Has any estimate been made of the probable revenue which would be derived from farmers and others along the line of pipe service? No.
222. With reference to the open conduits for carrying the water to the service reservoir, would you not prefer pipe flumes to open cuttings, which would be always silting up? I think that is one of the most objectionable features in Mr. Gipps' scheme.
223. If it would cost nearly £8,000, as Mr. Darley estimates, to provide iron flumes, you do not think it would be an excessive price to pay for a service of that kind? No.
224. I presume the people of the district would favour a gravitation scheme as against a pumping scheme? I think almost anybody would prefer a gravitation scheme to a pumping scheme.
225. There can be no question as to the sufficiency of the supply which Mr. Gipps proposes to tap? I think not.
226. In his first estimate he said 200,000,000 gallons of water could be stored at the head of his supply? One million seven hundred and thirty-six thousand gallons.
227. That would place the permanency of the water supply of this town beyond any reasonable doubt? Yes.
228. In the interests of this growing district, which seems to be in a good financial position, would it not be to your advantage to incur the first cost of providing a permanent supply beyond all reasonable doubt, and to bring the water by gravitation into the town? I should be in favour of it.
229. What is the general feeling of the people whom you represent with reference to the two schemes? I have not heard any expression of opinion.
230. Do you think, as regards the quality, the water in the Cockburn River would be as good as the water in the pump shaft? I think it would be better.
231. Very much better? Yes.
232. In consequence of these several reasons, you would favour a gravitation scheme if it is practicable? Yes.
233. Although it may cost more money? Yes.
234. You would favour the water being conveyed, not in open cuttings, but in pipes? Yes.
235. *Mr. McCourt.*] Has your Council passed the usual resolution agreeing to the scheme proposed by the Government? Yes.
236. Was there any reservation in the resolution? Yes, "provided that the cost do not exceed £20,000."
237. Therefore you have not passed the proper resolution to take over the water scheme, in accordance with the Act? No.

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238. Do you think that your Council, as it is now constituted, would pass a resolution to take it over at the proposed cost? I cannot say.
239. You are aware that your Council must agree to take over the scheme before the Government will incur the expenditure? Yes.
240. Do you not know whether your Council will pass that resolution? As far as my opinion goes, I think the Council would agree to the extra cost—that is to a total cost of £22,500.
241. And give up Mr. Gipps' scheme? I do not know. It depends altogether on the cost of his scheme.
242. Supposing the Committee were to recommend the Government scheme, do you think your Council would pass a resolution to take it over? I fancy it would.
243. And then give up Mr. Gipps' scheme? Of course they would have to do so.
244. *Mr. Neild.*] Your Council passed a resolution in favour of a pumping scheme, provided the expenditure were limited to £20,000, on the 10th December last year? It was passed in the last municipal year.
245. Is it not a fact that about two months after passing that resolution, the Mayor, in company with several aldermen and the Members for the electorate, waited on the Minister for Works, as a deputation, to urge that the pumping scheme should not be further proceeded with, but that an officer of the Department should be sent up to report on Mr. Gipps' gravitation scheme? I do not think Mr. Gipps' scheme was mentioned. I think "a" gravitation scheme was mentioned in the resolution.
246. Were you on the deputation? No.
247. Was it appointed by resolution of the Council? Yes.
248. Supposing two newspaper reports of the proceedings of the deputation show that it was Mr. Gipps' proposal to construct a storage reservoir at Swamp Oak Creek, 15 miles from Tamworth, which was brought under the notice of the Minister for Works, would you be disposed to say that the reporters made a mistake, and that it was not the Swamp Oak Creek scheme which was brought under his notice? No; I believe it was.
249. You stated just now that it was "a" gravitation scheme and not Mr. Gipps' scheme? You misunderstood me. I said that the resolution was passed in reference to a gravitation scheme.
250. Will you read the resolution from the minute book? The resolution reads as follows:—"That a deputation of all the Council, or as many alderman as can go, conjointly with the Members for the district, wait on the Minister for Works to urge on him to send an officer to report on the advisability of supplying Tamworth with a water scheme by gravitation."
251. But you do not doubt that it was the Swamp Oak Creek scheme which the deputation did put before the Minister? I believe it was. I was not amongst them.
252. Therefore, after passing this resolution of apparent agreement with the pumping scheme, the Council went back on itself to the extent of seeking a Government examination of a gravitation scheme in opposition to the one which had been apparently approved of? Yes.
253. Since the date of that deputation you say that three new aldermen have been elected? Yes.
254. And no action has been taken by the present Council to express any opinion, *pro* or *con*, on the merits of the two schemes? No.
255. When was the well which the Committee saw the other day—I mean the well with all the frogs in it—sunk? I think it was sunk in March or April last.
256. Was not that site selected about a year ago? I think it was. It was pointed out as a more suitable site.
257. It was the site selected by the Council and recommended to the Government, and by the Department apparently approved of, but no well was sunk until six or nine months afterwards? The well was sunk when we got a letter from the Department asking us to sink a trial shaft in that particular spot.
258. The site was selected in July of last year? I cannot say.
259. Supposing the Engineer-in-Chief for Harbours and Rivers has stated that it was selected in July of last year, you will agree to that? Yes.
260. So that the well was sunk about nine months after the site was selected and approved of? According to that it was.
261. Are we to understand that the Council selected and recommended to the Government a site for a well to supply the town, without so much as putting a shovel into the ground? I do not think the Council selected the site at all. They merely suggested the site as being a more suitable one.
262. I suppose if they recommended the site they must have selected it before they recommended it? We had nothing to do with selecting it.
263. How did you come to recommend it? Because we thought that it was a more desirable one than the site recommended in Mr. Darley's first scheme, twelve or thirteen years ago.
264. How far did you sink before you struck water? Ten feet.
265. Did you come across a good body of water? They struck water at a depth of 10 feet, and they sunk another foot afterwards. The overseer can give you better information on this matter than I can.
266. About 50 or 70 yards away from the site which the Council recommended, there is a well sunk by the Chinese? Yes.
267. Do the Chinese get a good supply of water from that well? I believe they do.
268. They use the water for their gardens? Yes.
269. Do they use manure in their gardens? I cannot say. Most of the Chinamen do, and I presume that these particular Chinamen do.
270. Do they take any night-soil from the town for manuring purposes? No.
271. What do you do with the night-soil of the town? We have a depôt where it is deposited. It is situated at the top end of the town.
272. Below the water as regards the course of the river? No, it is above the town.
273. But having regard to the flow of the river it is below the town? Certainly.
274. How would you describe the soil in the Chinese gardens? It is good black soil.
275. Would you be disposed to describe it as clayey? No.
276. It is an alluvial deposit? Yes.
277. Such as is to be found in similar river valleys? Yes.
278. In the Hunter Valley, for instance? Yes.
279. It is very good for growing lucerne? Yes.

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280. How many crops of lucerne do they get from this soil? I do not know, I am not a farmer.
281. Does the water lie on the flooded ground in this valley above the site of the well? Not for a very lengthy period.
282. Does it lie at all where the ground has been opened up with a plough? Not for any length of time.
283. It will lie for some little time on grass sward? Yes.
284. But where it is opened up the water very soon sinks through? Yes.
285. How many Chinese are gardening along the course of this valley? I do not know.
286. Are there twenty? More.
287. Fifty? Possibly.
288. If I have been informed in the town that there are a couple of hundred Chinamen gardening along the course of the valley, would you be inclined to think that I have been misinformed, or that I am correctly informed? I doubt if there are as many as that. There may be.
289. Approaching that number, probably? I do not think there are as many.
290. Will your overseer be able to give any particulars of the other wells in this river bed? Yes.
291. With reference to your rates, I think you stated that 1s. in the £ rate would yield £1,400? Yes, within the reticulation area.
292. Have you not, under the signature of your Council Clerk, sent in a statement which shows that your general revenue was £1,800 last year, and which contains these words: "The estimated annual revenue of ratable property within the proposed reticulation area is £32,348. This does not include the rates which might be collected from the opposite sides of the streets surrounding this area";—did not your Council Clerk write that letter to your instruction on the 30th of last month? I have not the information with me.
293. Is the letter which I have just handed to you in the handwriting of your Council Clerk? It is.
294. A shilling in the £ on the annual value of the ratable property would yield £1,600, and not £1,400? I think it would.
295. How long ago is it since the gravitation scheme was undertaken by your Council? Over two years ago.
296. Up to the time of your Council causing inquiries to be made into the gravitation scheme, had it taken any special notice of what is now known as the pumping scheme? We had a scheme before us previous to that.
297. You had this pumping scheme before you? Yes.
298. Did you approve of it? No.
299. You disapproved of it? Yes.
300. You determined to go on your own hook, and see if you could not have a gravitation scheme which would be satisfactory? Yes.
301. *Chairman.*] Is there anything else which you would like to state to the Committee? Only with regard to the estimated annual value of the ratable property within the proposed reticulation area. The Government have taken not the gross, but the net annual value. A rate of 1s. in the £ on nine-tenths of £32,000 would give a revenue of £1,440.

Mr. William Joseph Smith, Alderman, Borough of Tamworth, sworn, and examined:—

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302. *Chairman.*] How long have you been an alderman of the borough of Tamworth? Six and a half years.
303. You have been Mayor once or twice? Twice.
304. You were Mayor when Mr. Gipps was engaged upon his surveys for a water scheme by gravitation? Yes.
305. *Mr. O'Sullivan.*] To which of these schemes do you give the preference? To the pumping scheme.
306. Why? Because I do not think his scheme can be carried out for the estimated cost, and because for a considerable distance the water is to be brought in an open conduit. I do not believe in that.
307. Are you quite convinced that the pumping scheme will be a certainty? I am not positive.
308. Do you think you are justified in giving the preference to that scheme if you are not positive? I think we should put down trial shafts before we undertake an expenditure of £20,000.
309. You prefer the tests to be made before the scheme is adopted? Certainly.
310. Supposing the scheme were adopted, do you think there is any chance of soakage from the manure in the farms or Chinese gardens, or from the cesspits? Not at present.
311. I suppose you have heard of the soakage of water from cesspits into wells? Yes.
312. Is it possible that it may occur in this well? It is possible. We have the experience of our town well for eleven years. We have never suffered any ill effects, and it is very much nearer the town.
313. You have not heard of any epidemics which might be traced to the impurity of the water in the wells at Tamworth? No.
314. Do you think that such a pumping scheme would give you sufficient protection against fire? Yes.
315. Do you think you would get pressure enough on the hill to put out a fire? Certainly.
316. I suppose you are pretty well convinced that your rates will bear the strain of the annual interest on an outlay of £22,500? Certainly.
317. How comes it that your Council was so modest in estimating the probable water rates? We told what we thought would be the truth.
318. Are you not aware that you are entitled to charge for the water which is supplied to Government buildings? I was not aware of that.
319. That places you in a stronger position than you imagined you were in? Certainly.
320. If Mr. Gipps' scheme can be carried out with iron pipes instead of an open channel, and it would only cost about £30,000, do you think the municipality would be prepared to bear that liability? Certainly.
321. Do you think they would give the preference to his scheme under those circumstances? I am sure of it.
322. Do you not think that it would be advisable to have a report made by an expert on his scheme before you adopt the pumping scheme? That is what we asked for.
323. You asked for a report of that kind from the Department? Yes.

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324. You are not likely to get a report which would imply a condemnation of their own proposal. With regard to Mr. Gipps' scheme, I find by his report that he anticipates to receive £1,250 for the use of the water for irrigation purposes, £300 for the use of the water as motive power, and £800 from the town service. Do you think that his estimated revenue of £2,350 would be realised? Not at present.
325. Still, even if his expectations were not realised the revenue would be ample to meet the charge on the scheme? I think so.
326. What portion of his estimate do you object to? To the portion which refers to irrigation. I certainly think that that estimate could not be realised. I am sure that the revenue which he estimates to derive from the use of the water as motive power will not be realised.
327. Do you think that his estimated revenue of £800 from the town service would be realised? Certainly.
328. Why do you think that his estimate as regards irrigation will not be realised? Because I do not think that the farmers are educated up to that point. If we have good seasons like we have had lately they will not take the water. There is too much rain.
329. I suppose you are well aware of the objections of the Department to Mr. Gipps' scheme? I am.
330. Do you hold that they are fatal to his scheme as it is at present proposed? I do.
331. But still if it could be carried out for a sum of £30,000, and with iron pipes instead of open conduits, you think that the town would prefer to adopt this scheme rather than have an uncertain pumping scheme? Certainly; but may I be allowed to say that in the estimate of £30,000 the extra £10,000 for reticulation has never been considered. That has always been left out of consideration.
332. Has the purchase of the land been considered? No.
333. The possibility is that the cost would be more like £40,000 or £45,000? I think so.
334. Supposing it were to cost £45,000, do you think that the town could bear that strain on its resources? I think I should be willing to go to the extent of £40,000.
335. Tamworth apparently is very much stronger than Armidale, which is quite prepared to run the risk of a £43,000 scheme. Do you not think that you could do the same? We do not want to get into debt.
336. Supposing the pumping scheme were carried out, and found to be a failure or a partial failure—do you think it will be wise to see if the pumping scheme could be made a success? I have said that I think that before a pumping scheme is undertaken the source of water supply should be proved.
337. The very best test which you can have may not possibly settle that question. With the possibility of a failure of the pumping scheme will it not be well to so fix the service reservoir, and the piping, that they may afterwards be fitted into Mr. Gipps' scheme—do you think it will be wise for us to adopt such a scheme with a view to the future requirements of the town? I think so. I always did think that it would be wise to have a pumping scheme where the reticulation could be utilised afterwards in a gravitation scheme, so that we should only sacrifice the pump and the well.
338. You think that even if the pumping scheme were adopted it would prove sufficient for the requirements of the town say fifteen or twenty years hence? I do. The population is now 4,600.
339. *Mr. Collins.*] Were you one of the deputation which went to Sydney? I was.
340. To interview the Minister for Works? To ask him to send an engineer to report on a gravitation scheme.
341. Is that all? Yes.
342. What reply was made to you? Mr. Lyne pointed out that if he acceded to our request it would entail very considerable delay, and he said that if we were willing to submit the present scheme to the Public Works Committee it would expedite matters very much. In answer to his suggestion I said "Well, Mr. Lyne, we are sent here by a special resolution of our Council, and we are here to ask you to send an engineer to report on a gravitation scheme." That has not been carried out.
343. Consequently the only scheme which is before you is the pumping scheme, and certainly Mr. Gipps' scheme is only before you on account of his tender being accepted to provide plans and specifications? That was it.
344. Do you know if there is any opposition in the town to a water supply being brought in? I do know that there is some.
345. What is the principal objection? Some persons have tanks which they do not like to sacrifice.
346. Many persons? Not very many, I think.
347. I suppose the properties of these persons would be rated under any water scheme? Certainly.
348. You are aware that the reticulation pipes in Mr. Gipps' scheme would only cost £5,000? Yes.
349. Which would only supply a certain portion of Tamworth? Just the centre of the town.
350. The ratepayers in the other portions of the town would not care to pay to supply the ratepayers in the centre of the town? They would not be called upon to pay.
351. It would only supply most of the business houses? Yes, from Macquarie-street to East-street.
352. You, as an alderman, would not consider that sufficient for the town? Certainly not.
353. Consequently it would be an inefficient scheme? Yes.
354. It could not supply the whole of the people? No.
355. Do you know the country above where Mr. Gipps' water supply comes from? Very well.
356. Are there any sheep farms or cattle stations there? There is a sheep station immediately above.
357. Are there many sheep? Not many per acre.
358. There is a drought up there sometimes? Yes.
359. A great many sheep die in the drought? Sheep have died there.
360. What is done with the dead sheep; are they thrown into the river? They lie about.
361. Would not that contaminate the water? Very likely.
362. Dead stock would also contaminate the water? Yes.
363. You do not believe that that would be a good thing? I should not like it if I knew of it.
364. At the top of Swamp Oak Creek there are some gold-fields? Yes.
365. Sluicing operations are carried on there on an extensive scale? No. I think it is mere quartz reefing.
366. There are some sluicing operations, too? Not what you would call sluicing works—not heavy works.
367. There is a mining population? Yes.
368. Consequently if any sluicing operations or anything like that were carried on the water would be carried into the reservoir? Certainly.
369. It would contaminate the water? Very much so.
370. *Mr. Davies.*] You said that you favour a pumping scheme in preference to a gravitation scheme? I did not say that.

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371. I understood you to say that in reply to a question by Mr. O'Sullivan? I said that I favoured the carrying out of a gravitation scheme at a cost of £40,000.
372. Mr. O'Sullivan asked you this question: "To which of these schemes do you give the preference?" and you replied, "To the pumping scheme"? I meant as it was laid before us.
373. Your primary objection to Mr. Gipps' scheme is on account of the open conduit? Yes.
374. But if the water is conveyed in flumes you will give the preference to the gravitation scheme? I confounded the schemes—I referred to Mr. Gipps' scheme.
375. You have no doubt that the pumping scheme, as proposed by the Department, would be satisfactory? I think so.
376. For all time—in dry seasons? Yes.
377. You think there will be an abundant supply of water for all time for the town? I think so.
378. Holding that view, would you prefer to carry out the departmental scheme as against a gravitation scheme from the source which is suggested by Mr Gipps? It depends on the cost.
379. Mr. Darley says the cost of Mr. Gipps' gravitation scheme will be £30,000 as against a cost of £17,000 for the departmental scheme? I should be in favour of it.
380. *Chairman.*] Plus the extra reticulation of £10,000?* Yes.
381. *Mr. Davies.*] Mr. Darley conveyed to my mind that Mr. Gipps' scheme would cost double his estimate;—suppose it would cost £40,000, do you think you would be able to bear the strain of the annual interest on that expenditure as against the annual interest on an expenditure of £22,500? Yes.
382. You know the advantages that are to be obtained from a gravitation scheme as against a pumping system? Yes.
383. You think that a gravitation scheme would be most profitable in the end to the borough? Certainly.
384. *Mr. Neild.*] You are the Mayor who headed the deputation which waited on the Minister for Works on the 27th January last? Yes.
385. That was six weeks subsequent to the passing of a resolution by the Council conditionally approving of the pumping scheme—that is, conditional on the cost of the scheme not being more than £20,000? I forget the date on which the resolution was passed.
386. It was passed before the deputation waited on the Minister? Certainly.
387. It was passed before the three new aldermen were elected in February last? Yes.
388. Do you know whether the question of water supply was one to which those three gentlemen pledged themselves prior to their election? I remember that one of them did.
389. Did he pledge himself to a pumping scheme or a gravitation scheme? I do not remember.
390. There has been no alteration in the position of affairs in connection with the Council since the deputation waited on the Minister? None.
391. You have been expecting, I suppose, that an engineer would be sent up to report on the Swamp Oak scheme? We have not been expecting it for a very long time, because I read an intimation in the press that the Minister intended to put the matter before the Public Works Committee.
392. Instead of getting a report from an engineer, you have been expecting to get a report from the Public Works Committee? Yes.
393. It was since this deputation waited on the Government, asking for an investigation into the Swamp Oak scheme, that the well was sunk which is now the central feature of the pumping scheme? Yes.
394. So that instead of getting an engineer, you got an instruction to put down a shaft? Yes.
395. Had you anything to do with the sinking of that hole? No.
396. Have you any idea of the different beds of soil and gravel in the valley where it has been sunk? Only from the Chinamen's wells, which I have seen. They do not dig wells, but immense holes where they put down Californian pumps.
397. How deep do they go to strike water? About 15 feet.
398. Are you down 15 feet in the Council well-hole? No. They go to that depth; but they generally strike water in that spot at a depth of 10 or 12 feet.
399. It is alluvial soil? Yes.
400. It is very good for market gardening? Splendid.
401. Would it be soil which you would describe as 16 feet of impervious clay? Certainly not.
402. Supposing the Under Secretary for Public Works has described the soil as 16 feet of impervious clay, you would think that he knew very little about the matter? I should certainly think that he had made a mistake.
403. Is the soil manured? I think so. They take the droppings from the stables.
404. Do the farmers further up the valley use manure? I never see one carting it.
405. The soil is rich enough to grow heavy crops without manure? Yes.
406. It must be light, friable soil? Yes.
407. There is no trace of clay about it? Not about the top.
408. It is soil through which water percolates very quickly? Yes.
409. For instance, where manure is used by the Chinamen, the rain would very speedily take the manure into the soil? Yes.
410. Do you not think it would pass through the soil into the water which you say is only 10 feet below the surface? I think the vegetation would absorb some of the manure.
411. I suppose the manure is laid on the ground after it has been opened up with a plough? Yes.
412. It is ploughed in, perhaps? Yes.
413. The surface is all open? Yes.
414. Do you not think that a heavy fall of rain would be likely to take the manure right through light, friable soil into the water which lies underneath? I do not think so.
415. Do you know how many Chinese gardeners are in occupation of the valley? I do not know.
416. Have you any idea of the total population of the valley, say, for a distance of a couple of miles? No.
417. Is the whole of the valley occupied by farmers? Yes. It carries a large population for that sort of land.
418. Will the Council Clerk be able to give us information as to the number of the population? Possibly he will be able to give a better estimate than I can.
419. Do you think that the locality will be very largely populated as years go on? I do not think so.
420. Are any people taking to orchards more than to wheat-fields? Yes; to lucerne growing and orchards.

421.

* NOTE (*on revision*): £8,000.

421. A man requires a larger area for wheat than lucerne or orchards? Yes.
422. If wheat-growing is given up, and lucerne-growing and orchards take its place, there are likely to be smaller farms and a larger number of families? There has not been any wheat grown there for many years.
423. Is it not a fact that there are more people living in the valley than were living there five years ago? Not excepting Chinamen.
424. Have no more homesteads been established during the last five years? There might be one or two within the last five years. I know one which has been taken away.
425. Is it not a fact, that in introducing the business of the deputation to the Minister for Works, you stated, as reported in the *Daily Telegraph*, "that fuller inquiry into the gravitation scheme had convinced the Council that it would be preferable to the pumping scheme"? I do not remember using those words.
426. Did you convey that impression? Very likely I did; the wish of the Council was that further inquiry should be made.
427. Is it not a fact that the deputation, or some members of the deputation, represented to the Minister that the population of the town generally preferred a gravitation scheme to a pumping scheme? I forget the remarks which were made. There have not been any public meetings held to gauge public opinion, except by the aldermen.
428. I suppose that was because the aldermen have fairly represented public opinion? Certainly.
429. And the people being satisfied with the action of the Council, did not take any steps to hold a public meeting? That is it.
430. Then I suppose we are to understand that the Council in sending the deputation to the Minister favoured a gravitation scheme in preference to a pumping scheme? Yes; if it could be carried out.
431. Why did you prefer to pay more for one scheme than for the other? The great reason for the gravitation scheme being propounded, was that there would be an unlimited supply of water for all purposes, whereas, with a pumping scheme, every gallon of water would cost a certain sum to pump.
432. In the case of a gravitation scheme you feel sure of getting a large supply? Yes.
433. Another reason was that the annual cost of maintenance would be much lower? Yes.
434. And a third reason, I suppose, was a feeling that the purity of the water could be more depended on? I think so.
435. *Chairman.*] You took a great deal of interest in the question of obtaining a water supply by gravitation during the time Mr. Gipps was employed in making the surveys? I did.
436. As Mayor, you went over the country when he was surveying and exploring? I did.
437. He had under consideration drawing a supply from the Peel River alone? I do not remember that.
438. Did he not furnish your Council with a report that he considered the Peel River as a source of supply, and put it on one side on the ground that for 20 miles above Tamworth the fall is so small that he could not get a supply by gravitation, and that the water is polluted by sluicing operations at Nundle and other places higher up? I do not remember any reference to the Peel River at all.
439. Did he not furnish a general statement to the Council when he put in his plans? He did.
440. Did that report ever go before the Council? Yes.
441. Did you ever send on his report to the Public Works Department? I think we sent all the papers bearing on the question.
442. When? When we submitted the papers to the Government.
443. You recognise this report as being in the handwriting of Mr. Gipps? I do.
444. You do not remember that Mr. Gipps stated that he considered the question of drawing his supply from Peel River, but that he dismissed it for the reasons which I have stated? I do not remember that.
445. Also that he considered the question of drawing a supply from the Goonoo Goonoo, and that he dismissed it because of the limited fall? Yes.
446. Also that he considered the question of drawing a supply from Moore and Moonbi Creeks, and dismissed them because they frequently ran dry, and no suitable place for a dam or reservoir could be found? I took him to both those places.
447. Every possible source of supply in and about Tamworth was closely examined by Mr. Gipps? Yes.
448. And he came to the conclusion that the only place suitable for a dam was across the Cockburn River, just below the junction of Swamp Oak Creek and Mulla Creek? Yes.
449. You believe that every likely place for a catchment area has been exhausted? I do, certainly.
450. That is within a reasonable distance of the place where Mr. Gipps put his dam? Yes.
451. You know that his catchment area embraces a large tract of country? Yes.
452. Dismissing that catchment area from your consideration altogether, do you know of any other catchment area within a reasonable distance? None.
453. You are tied up either to the catchment area of which the Cockburn is the outcome, or to this pumping scheme further down where you have the catchment area of the Peel as well? Yes.
454. Do you know the difference between the level of Tamworth railway station, and the level of Mr. Gipps' storage dam? It is 172 feet from the top of his storage dam to Peel-street.
455. Do you remember the difference between the level of his storage dam and the level of his service dam? He allowed for a 30 feet fall; that would be the difference between the bottom of the service dam and the top of the storage dam.
456. What was his idea in taking the top of his storage dam as his starting point? I do not know.
457. Does it not seem more like common sense to take either the mean or bottom level of his water;—do you know the height of the departmental reservoir above the railway station? It is 190 feet rise, I think
458. Then, after mature consideration, if you can obtain a reliable gravitation scheme at a cost not exceeding £40,000, you think, from your intimate knowledge of the revenue to be obtained, that Tamworth can bear the burden of a scheme of that kind? I do.
459. If the request of the deputation was to send a Government officer up to report on a gravitation scheme, and you had exhausted all known sources of supply, where was the necessity for an officer coming up;—why did the Council ask for such a thing? The opinion of the Council was that we were bound, in fairness to the ratepayers, to make every effort to get a reliable and abundant supply. I think I may say that the Council thought that the officers of the Department were somewhat biassed against Mr. Gipps.
460–1. Did you agree with the Department that it is not feasible or right to expect that the scheme will be carried out for his estimate? Yes.

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462.

Mr. W. J. Smith. 22 Oct., 1892.

462. But if his scheme will not allow you to command the whole of the town that is rather an imperfection? It is.
463. Would you say that your gravitation service which would supply the railway station would supply at least two-thirds of the town? A great deal more than half the town in point of superficial area.
464. Supposing a gravitation scheme—Mr. Gipps' or anybody else's—would command the highest portion of Napier-street, how much of the town would be unserved? A very small part—not very many houses.
462. I understood you to say that you believe that the supply from the well would be certain, and sufficient to serve Tamworth for some years to come? Yes.
466. Therefore you would advocate losing no head by bringing the departmental reservoir further down? I think not.
467. If in the future it were found necessary to dispense with the well-pump and bring water in from Mr. Gipps' storage dam, you would build another reservoir below the departmental reservoir to receive that supply? Yes.
468. The estimated cost of that reservoir is £2,000? There would not be any necessity for a reservoir here if we had a reservoir up there, and put down pipes all the way.
469. Would it not be rather too risky to trust to 15 miles of piping. Do you know a system where they bring their water such a distance without an intermediate service reservoir. If the engineers are of an opinion that it would be dangerous, you would not put your opinion against theirs? It is desirable to have two or three days' supply stored near the town? Yes.
470. Supposing the departmental scheme were carried out at the levels and on the lines as suggested, and the water gave out in the well, and it became desirable to bring water from Mr. Gipps' storage reservoir, it would only mean the building of another reservoir 40 or 50 feet below the service reservoir? Water could be pumped up into the departmental reservoir to serve the higher zone.
471. Is it possible by going a little higher up the Cockburn River, to obtain an additional 50 feet of head? By going far enough.
472. That would diminish your watershed? Not very much. If you kept to the Swamp Oak Creek, of course you would lose the Mulla Creek, and if you went to the Mulla Creek you would lose the Swamp Oak Creek.
473. Is not the Mulla Creek only a mile above where Mr. Gipps proposes to put his storage dam? About a mile.
474. Do you remember how far he said his dam would back up the water? About a mile.
475. If it is absolutely necessary to get 50 feet more head to supply the whole of the town by gravitation, you would have to go above either your Swamp Oak Creek supply or your Mulla Creek supply? Yes.
476. Which stream would give the better supply? Mulla Creek would give a very much greater supply in summer time.
477. Which has the least catchment area? I should think Mulla Creek.
478–9. Therefore you would have to take off one of the best supplies if you went above the junction to get the increased head? Yes.
480. Do you think there is sufficient water coming down the Mulla alone to supply Tamworth? I do.
481. How far do you think you would have to go up Mulla Creek, above its junction with Swamp Oak Creek, to get an additional 50 feet of head? Not very far; it rises very rapidly.
482. Half a mile? I have not been up the Mulla very far. The place for a reservoir is not so spacious; the hills are more enclosed.
483. It is a question of building a higher dam? Yes.
484. You think that if it is absolutely necessary to get 50 feet more head, it will be better to place the reservoir on Mulla Creek than on Swamp Oak Creek? Yes.
485. Mulla Creek would not only give a better supply, but be less liable to contamination? Certainly.
486. At the head of Swamp Oak Creek there is a township? Yes. There are very few people on the Mulla.
487. What steps would you suggest should be taken to prove the supply of water in the old river drift? I would suggest that an engine and pump should be got, and that the well be sunk down very deep.
488. Would you sink one well, or two or three wells? It would depend on what the water in the first one was like.
489. Would you continue to sink the well at the present site with a pump similar to what you would use in working the system? Yes.
490. It would be hardly fair to judge by the flow of water in the well at present? No.
491. You would suggest that the trial should be made in the middle of summer? Yes.
492. And even that, in view of all the great rainfall we have had recently, would not be quite reliable? No; it would not be as reliable as if it had been made during the dry seasons we have had.
493. It would be the best trial which we could make within a reasonable period? Yes.
494. Do you think that any of this reticulation area could be dispensed with? I do not think so.
495. Do you represent the aristocratic or the democratic portion of the borough? I live alongside the gaol.
496. The population within the walls of that institution is rather limited? Yes; the hospital is next to the gaol.
497. Looking at the question all round, you do not think that the reticulation service could, or ought to be diminished in any way? I think not. I do not say that it should be done right at once.
498. How was this reticulation area agreed upon;—did the Department submit a plan to you and did you enlarge it? As far as I remember the Department asked the Council to mark the houses down on the sections—that work I did myself—a plan was drawn showing the pipe-line, and it was sent back to the Council with a request as to whether it would be reduced. I went into the matter with the Council Clerk, and we said that we could not reduce the area. I do not think that it went before the Council.
499. Virtually, the Council left you to map out what you considered a fair reticulation service, and it has taken no exception to your action? No.
500. Twenty-two and a half miles seems to be a very large amount of reticulation? It does.
501. West Tamworth is rather sparsely populated? It is.
502 It is proposed to carry the pipe-line across the vehicular bridge, is it not? Yes.

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503. How long has the bridge been erected? Seven or eight years.
504. Is it likely to be interfered with by floods? No. It is not a very firm bridge. I know they have trouble with the gas pipes.
505. There will be trouble with the water pipes? I think so.
506. Is it safe to trust the supply of water for West Tamworth to the bridge? It would be with bolted joints, but not with lead joints.
507. How do you arrive at the belief that the river drift would be sufficient to supply Tamworth with water? By my experience of our own well, and by the examinations I have made of other wells distributed about the flat. I think there is an abundant supply. I know of a well which was put down across the river some five or six years ago. A 6-inch M'Comas pump was put in and they could pump all day and could not lower it. It was situated between the Peel and the Goonoo Goonoo Creek. It was only a temporary well.
508. Would that be in the same valley? Yes.
509. Supposing this scheme were constructed at a cost of £22,500 and it were handed over to your Council and the whole financial responsibility of the scheme placed on your shoulders, you feel so certain of the sufficiency of the supply that you would accept the risk of taking it over? Not without further trials being made.
510. You want the Department to do all the work, and run the thing for several months, and prove that the supply is there, before you take it over? I do not think it is fair to say that I want them to run it. We want them to sink the well and see what supply it gives.
511. You think that the test should be made in the middle of summer with a pump which would throw as much water as would be needed to supply the wants of the town? Yes.
512. Is there anything else which you would like to say? No.

Mr. Charles Jeffries Britten, Alderman, Borough of Tamworth, sworn, and examined:—

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513. *Chairman.*] You are an alderman of the Borough of Tamworth? Yes.
514. How long have you been in the Borough Council? Two and a half years.
515. Have you been a resident of Tamworth for many years? Twenty-two years.
516. *Mr. Collins.*] You have taken great interest in the question of a water supply for Tamworth? I have.
517. What steps have you taken to obtain a water supply as a private individual and as an alderman? As an alderman I have taken every possible means I can. As a private individual I have had a great deal to do with pumps and wells in Tamworth. I am certain in my own mind that there is not an underground supply of anything like 300,000 gallons a day.
518. Why are you certain of that? I am one of the trustees of the oval, and five years ago we decided to put down a little water scheme on the oval. We sank a well at the corner of White-street and Lower-street; and put down a pump which would throw between 3,000 and 4,000 gallons an hour. We sank to a depth of 6 feet and we got as much water as a man could get—3 feet. We pumped away for about a day and it supplied us all right; but the next day when we went to pump it went dry very quickly, and we sank another 3 feet. With a day's pumping, that supply went dry; in an hour it would fill up again, and we could pump it down in no time. The last time we sank we had 9 feet of water, and we could pump it out a great deal faster than it came in. It proved that the water was contained in a sponge or basin.
519. How do you account for the town pump holding out? I maintain that it does not hold out. The most it ever pumps is about 20,000 gallons a day. I have seen it pumped dry in ten minutes.
520. And fill again in ten minutes? Yes.
521. You do not think it is possible for any well in the vicinity of Tamworth to supply the town with 300,000 gallons of water a day? No.
522. Or with 150,000 gallons? You could get it now, but you could not get it in 1885, or in the years when we would want water.
523. I am speaking of the time when the river is not running. You have a very good well at your brewery? Yes.
524. Does it ever run dry? No.
525. Did you ever try to pump it dry? Yes. I have a different supply of water altogether to them.
525½. Can you supply 150,000 gallons a day? No.
526. How much? I fancy I could supply 30,000 gallons. I am 33 feet below the bed of the river.
527. You do not think there is a place in the borough where a better supply could be obtained than yours? My water would be no good at all to the town. It is hard water.
528. The water lower down on the flat is better for the town? Yes.
529. You do not think the quantity can be obtained? I am certain that it cannot be obtained.
530. You do not approve of supplying the town from the pump? Certainly not.
531. What scheme do you approve of? I approve of a gravitation scheme.
532. From where? From somewhere up Swamp Oak Creek.
533. About what place? I cannot see a better place than the site which we visited yesterday. There is a natural bar across the creek where Mr. Gipps has selected his site.
534. You approve of the scheme propounded by Mr. Gipps? I cannot say that I do. I would sooner see the water brought in in iron pipes.
535. You approve of the plan of gravitation and of the water being brought in in pipes? Yes.
536. Do you know what it would cost? It would cost twice as much as he estimated.
537. As a practical man, what do you think it would cost to bring in the water? For a distance of 14 miles the pipes would cost, I should think, £28,000.
538. That would only include the pipe-line, without the reservoir and dam? Yes, it would bring the water down to East-street.
539. You know the district pretty well? Yes.
540. Do you think the supply would be contaminated with dead sheep in times of drought? I do not think so.
541. Or by the persons at Swamp Oak? No; that population is very small. It runs all through granite. Last year Swamp Oak Creek was not running at all.

542.

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542. Do you think that if the well were used the supply would become contaminated by drainage? I feel confident it would.
543–4. Why? Because it is a loamy, gritty kind of soil. That can be easily proved by the lucerne roots, for they go right down into the gravel drift. If it were clayey soil the roots could not go down. I maintain that manure would go down, too.
545. What would contaminate the water? The manure and things which the Chinamen put on the ground.
546. From that small piece of ground now occupied by the Chinese? From all that flat.
547. Are they manuring that land now? Always.
548. Would not vegetation prevent manure draining into the drift? Not a bit of it. What is to prevent anybody taking a large amount of artificial manure and using it on the farms? You cannot stop them from using guano, bones, nitrate of soda, and other things.
549. Have you heard any opposition in the town to the departmental scheme? I cannot say that I have heard any direct opposition.
550. Are you the only opponent of the scheme? Oh, no.
551. Are there any persons in the town opposed to it? I believe a majority of the people of Tamworth are.
552. Are they in favour of Mr. Gipps' scheme? I cannot say that they are in favour of his scheme. They are in favour of a gravitation scheme.
553. Are they in favour of any scheme at all? Yes.
554. You do not think they would object to a water rate of 1s. in the £? I do not think they would.
555. *Mr. Neild.*] You say that the source of supply at your brewery is entirely different from the source where that little hole is sunk on the reserve? Yes.
556. What is the nature of your supply—does it come from the hills? It comes from the limestone.
557. Is there any stream there, or is it merely soakage? It is a well, which will throw 4,000 gallons an hour.
558. Have you any knowledge, or do you know anyone who has any knowledge of the strata which was passed through in sinking the cylinders for the bridge? Yes.
559. Who has that knowledge? I know something myself, as I saw them all put down.
560. I refer to the railway bridge? I do not know anything about the railway bridge.
561. Do you know anything of the road bridge? Yes.
562. What was the nature of the strata which was passed through? You go down through a pretty course gravel for 5 or 6 feet; then you come on a band of clay and sand; then it would change again, and you would come on some fine sand; then you would come on some bands of clay; then you would come on more bands of clay; and then you would come on the rock itself. The bottom was a kind of fine drift sand.
563. Did you find water all the way down? Yes.
564 Did you find water below the clay-bands? It was not so great. The greatest force of water was found at a depth of from 6 to 8 feet.
565. Do you consider that the formation there is analagous to the formation in the vicinity of the proposed well on the reserve? That I cannot tell.
566. Are the surface indications similar? Yes. I think I should say that the soil where our proposed well is to be sunk is of a more loamy character. It is stiffer clay down here.
567. Can you use the term "clay" as referring to the soil in the vicinity of the proposed well? Certainly not. There is no clay there.
568. Can you use the term "impervious clay"? Certainly not. Lucerne roots will not penetrate through clay.
569. Is the drift overlying the water in the vicinity of the proposed well 16 feet in depth? You mean alluvial soil?
570. What is the sinking for the water? You can get water more quickly now than you could in four or six months time.
571. From your knowledge of the wells in the locality, how far would you take to be the sinking in ordinary weather to get water? About 14 or 15 feet. In wet weather we should have to go only 3 or 4 feet? No; as much as 10 feet.
572. Do lucerne roots penetrate 10 feet? If you go along the river bank you will see the roots down 12 and 15 feet.
573 Do you know anything of the well in Paradise Gardens, close to the proposed well? I saw that well sunk.
574. What does it go through? Through the same sort of stuff. They do not get their water in the drift at all, but in some clayey, mullocky stuff.
575. About how far did they sink? About 15 feet.
576. They sank the same depth but did not reach drift? No.
577. Do you think the bulk of the water is to be found above the drift or below it? I think that water is to be found in the first 6 or 8 feet of coarse gravel. I think you will get most of your water at 8 feet.
578. Do you strike as much water at 8 feet as you do at 18 feet? I cannot say as much. You would not get as much in proportion in the last 8 feet as in the first 8 feet.
579. You say you have seen the municipal well pumped dry in an hour, and fill again in ten minutes. On the second occasion when it was pumped dry, how long did it take to fill again? Not half an hour.
580. Did you not say that you had seen the well fill again in ten minutes? It will fill as quickly as you like. It runs in quickly. It does not hold much water.
581. Does it take as long to pump the well dry the second or the third time? No.
582. Do you feel absolutely convinced that it would not be possible to pump 150,000 gallons from a well in the locality referred to? You could pump that quantity now, but in a dry season you could not pump it day after day.
583. That is the result of your experience? Yes.
584. Do you know how many acres of Chinese gardens there are above the site of the proposed well? I could not say.
585. Would there be 5 acres? Yes; 50 I should think
585½. More than 50 acres? I could not say.

586.

586. Have you any idea how many Chinamen are engaged there? I think there are 130 Chinamen on the flat now. Mr. C. J. Britten.
587. They all use manure for their gardens? Every Chinaman uses manure in his garden up there.
588. These gardens would be above the site of the proposed well? I do not think there is as much water up where we get our supply as there is down here. We have the catchment from Goonoo Goonoo Creek which we have not up yonder. 22 Oct., 1892.
589. Does it affect the municipal well? The town well is below that creek.
590. So that it may draw some of its supply from Goonoo Goonoo Creek? It has a better chance of drawing water.
591. Do you know anything of the farmers' wells higher up? No.
592. Have you in the course of your transactions with them heard of wells running dry up there? Yes. In dry seasons you have to go and deepen them.
593. The wells on the farmers' homesteads above the site of the proposed well often go dry? Yes.
594. Frequently? In dry seasons they do.
595. About how far up the valley does you knowledge of the farmers' wells extend? Right up to the top.
596. And the higher you go up the valley the more precarious becomes the water supply? I cannot say that. All I can say is that when you come to Bowling Alley Point there is a flat about the same as we have here—Anderson's Flat. That had a pulsometer with a 14-horse power engine driving it. They bottomed and worked for gold and drove underneath; but the ground was so treacherous that they had to knock off.
597. There was a good supply of water there? Yes; but you could keep it down and they were not pumping 300,000 gallons a day.
598. Were they pumping 150,000 gallons a day? When they first started they were.
599. What horse power did they require to keep it down? I think they had a 14-horse power boiler.
600. What was the depth of the sinking? I cannot say.
601-2. Was the strata the same—alluvial on the top and gravel underneath? Yes.
603. Your house is one of the highest in the town? I think Mr. Patterson's house is the highest. There is only one house higher than mine.
604. Is there only one house up higher than yours? I do not think there are any more.
605. In what street is it situated? It is situated on the middle allotment in Napier-street, between Brisbane-street and Fitzroy-street, facing the reserve.
606. Did you accompany Mr. Gipps when he took the levels for his scheme? Yes.
607. Did he give you to understand that your house would be outside the reach of his water supply? No. He gave me to understand that his service reservoir would give me a pressure of from 6 to 8 feet.
608. Did you understand from him that Mr. Patterson's house would be outside his scheme? I understood, if I remember aright, that Mr. Patterson's house would be just about on a level with his scheme.
609. Have you had any cases of sickness under your notice which were supposed to be connected with the water supply from the town pump? I have never used the water from the town pump. I can only speak from hearsay. I have heard a doctor say that more typhoid fever came from the town pump than from all the other supplies put together.
610. Is he alive? No
611. Who was he? It was Dr. A. T. O'Reilly.
612. Was he a well-known medical man? Yes.
613. Did he occupy any public position as a Government medical officer or anything of that sort? I cannot say.
614. You are aware that it is proposed to use the proposed water supply for the railway engines? Yes.
615. Do you think the water is suitable for that purpose? From my experience I should say distinctly not. They have multitubular boilers, and the corrosion which is known to exist in all the wells of Tamworth sticks on to all the boilers and pipes. It forms not only a thick crust over the boiler, but eats away and deteriorates the iron.
616. So that the well water of Tamworth is unfit for the supply of boilers for some purposes? If you use, say, tubular boilers, or any boilers which are complicated in the least degree, it is certainly unfit. It is as much as you can do to use the water in an ordinary Cornish boiler.
617. Has well water ever been used for the electric lighting plant? I do not think it has ever been used, but it was used in the adjoining engineer's shop. He used for a long time the water which we use for the electric light.
618. He has given up the well water and is using river water? He gave it up and used our water. We would not allow him to use it any longer, and he had to go back to the other.
619. For the purpose of protecting his boiler from injury? Yes, from corrosion.
620. As an alderman, do you know whether the Council has ever had an analysis made of the water in the municipal well? Not since I have been here.
621. Did the Council sink the well-hole, where the frogs are, by the Chinamen's gardens? Yes.
622. Has the water in the well-hole ever been analysed? Not to my knowledge.
623. *Mr. O'Sullivan.*] You appear to be a very strong supporter of Mr. Gipps' idea, although not bound to the details of his scheme? I am a very strong supporter of a gravitation scheme.
624. That gravitation scheme depends on the permanency of the water in Swamp Oak Creek or Cockburn River? Yes.
625. Are you aware that in 1868 it was actually dry for over two months? I was aware that in 1868 the Peel was actually dry.
626. Would you not be in a somewhat precarious position if it went dry again, and you were dependent on it for the filling of your reservoir? No, because the reservoir which is proposed by Mr. Gipps, and which is designed to contain nearly 200,000,000 gallons, will give a three years' supply for Tamworth
627. You think it will carry you over all the dry seasons which may happen? If we went that time without water we might just as well bury Tamworth. If we have no water for three years we should not want any.
628. You appear to think that the well-water is not to be relied upon? Certainly.
629. How do you account for the fact that the municipal well has never failed? I maintain that it has failed. I maintain that in the busiest time we do not supply 20,000 gallons a day.

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630. Would you not have 300,000 gallons in the service reservoir, the same as in the storage reservoir? The storage reservoir you have is only supposed to hold less than 500,000 gallons. That would not be equal to two days supply for Tamworth.
631. In the meantime you would keep on pumping? You would; but if you use 300,000 gallons a day, and the well only makes 100,000 gallons you will be minus 200,000 gallons a day.
632. You are aware that 300,000 gallons would be a more than ample supply for the present population? Yes.
633. It is equal to 30 gallons per head for 10,000 persons? Yes.
634. So that you would have more than a two days' supply? Yes.
635. Do you not think that the evidence points to the fact that, without regard to the quality of the water, there is a probability of having an ample supply for the town? I am convinced in my own mind, and I would almost stake my existence that you would never get that supply in a dry season such as we had in 1885 and 1877. In those years we had real dry seasons, and we had dry seasons for four or five years previously.
636. In real dry seasons, did the municipal well or the other wells go dry? In 1877 the municipal well was not sunk or thought of.
637. What about 1885? It went dry in that year.
638. Absolutely dry? They could pump it absolutely dry.
639. I suppose the well will fill again if it is pumped out? Yes; very quickly. Say it takes you two hours to pump it out at first, it does not take you twenty minutes the second time, and it takes ten minutes the third time.
640. On the whole, as a progressive man, you contend that it will be better for the town, as it has the necessary means, to go in for a good scheme at once, even if it costs £40,000? I am sure that the largest reservoir in Tamworth would be of very little use to me. I have a water supply which has cost me some hundreds of pounds; but for the benefit of the town, and the benefit of everybody connected with the town, I think we should go in for an unlimited supply. That is the thing we require. There would be no fear of a failure then.
641. In reply to Mr. Neild, you stated that your house is the second highest house in the town;—do you mean your brewery as well? No; my brewery is on the same level as this Court-house.
642. It only applies to your private residence? Yes.
643. *Chairman.*] Is your house situated at the south-west corner of Brisbane and Napier Streets? Yes.
644. You are no higher than the top of Raglan-street? Not so high. I do not think there is a foot between the level of my house and the level of Mr. Cousens'.
645. If the mean level of Mr. Gipps' service reservoir is 115 feet above Tamworth railway station, and the corner of Raglan-street and Brisbane-street is 132 feet above the railway station, it would not supply that? No.
646. But it would supply the corner of Napier-street and Brisbane-street, which is only 78 feet above the railway station? Yes.
647. How much do you think you would be above the corner of Brisbane-street and Napier-street? I am pretty nearly on it.
648. Twenty feet higher? No. It may be a rise of 3 feet.
649. Where is Mr. Patterson's house? It is on the allotment at the corner of Brisbane and Raglan Streets—the top street of all.
650. We are informed that it is 132 feet above the level of the railway station? I have never taken any figures.
651. If the mean level of Mr. Gipps' service reservoir is only 115 feet above the railway station, of course there is a difference of 15 feet; in other words, the mean level of his reservoir is 18 feet below Mr. Patterson's residence? I should not say that it is 18 feet above my residence.
652. The Department say that the corner of Napier-street and Brisbane-street is 78 feet above the railway station, and that the corner of Raglan-street and Brisbane-street, is 113 feet above the railway station? Never.
653. Have you measured it? No, but I will stake my existence that there is not that difference. I will swear that there is not a rise of 55 feet in 10 chains.
654. If these are the departmental figures you say they are incorrect? I should certainly say that they are incorrect. If it rises that much it seems to me that it rises a terrific lot.
655. You think they must be incorrect although you never had any levels taken? I never knew that the Government had yet.
656. Do I understand that Mr. Gipps gave you to understand that Mr. Patterson's house would be outside the range of his scheme? I fancy he told me at the time that Mr. Patterson's house would be just about outside his radius, but that I should have a head of from 6 to 8 feet. His levels are here.
657. You spoke just now of the quality of the water in the well being different from the quality of the water in the river. How do you account for that? The only reason that I can assign is that there is more mineral. In the well we do not get the river current at all. It is a well-known fact that river-water is softer. If you ask any old washerwoman what water she will take, she will say, river-water.
658. Is it true that in 1880, when Mr. Darley first came here to inquire into the proposed water supply, you were the owner or occupier of the flour-mill in Peel-street? I was the owner of the mill.
659. Is it true that you allowed Mr. Darley to experiment in the well on that property? I believe that I did.
660. Is it true that on that occasion you ventured the assertion that an ample supply of water would be obtained from an underground source? I believe I did. But since then I have experimented with a pump myself not 100 yards from that very well and found out that there was not an ample supply.
661. Do you remember whether Mr. Darley actually went down the well himself? I cannot say. I do not think he did.
662. He said that he actually went down the well himself—I presume it was your well—and detected a current passing from the drift? I never did.
663. At that time you thought there was an ample supply, but experience has made you modify that opinion? Yes, because I have sunk a well to a greater depth in the gravel and not 70 yards away from it.

664.

664. What steps do you think should be taken to satisfy the Department and the people of Tamworth as to the permanency or otherwise of that water basin below before these works are commenced? I maintain that it is very unfair to make a test at the present time. We have just gone through, I suppose, the three wettest seasons we have had for the last twenty years. There are more springs and creeks running now than have been running, I should say, for fifteen or twenty years. There is a good deal more water in the bed now than there was in 1885 or 1877. I am pretty well convinced that there was a greater body of water in the Peel in 1877 than there was in 1885. Mr. C. J. Britton. 22 Oct., 1892.

665. You think that it would be unfair to make a test unless at the end or in the middle of a rather severe drought? I certainly think so. I think that in a country like this we want plenty of water. If you had 60 gallons a day per head it would be none too large for the town.

666. Do you know that 30 gallons per head has always been found to be the largest quantity which has been required for the population of any country or town in the world? I do not know about that.

667. What is the average consumption of water by the people of Tamworth just now? It is very hard to say.

668. Do you think it is 10 gallons per head? No, because they are dirty devils; they do not wash themselves.

669. If the Department has based the supply of Tamworth on the experience of other countries do you not think that 30 gallons per head is quite enough for the requirements of the people who, according to you, do not seem to indulge in baths? Take my own establishment, I do not want water, but there is no reason why if I want water I should not be allowed to use it. I use now on an average over 30,000 gallons of water a day.

670. But if this supply has been found ample in other cities where there are as many factories and breweries as are to be found in Tamworth, do you not think it will be sufficient for Tamworth? It is, certainly, at the present day, but I consider that Tamworth is not going to be the same ten years hence. The population has very nearly doubled during the last ten years.

671. How far do you think the people of Tamworth ought to go, with a reasonable prospect of paying the interest, to obtain a gravitation scheme? That question takes some consideration. I should certainly say that we could afford to go as far as £40,000 If I were the Mayor and had to give a casting vote as to whether we could get a better supply for £50,000, I should give it.

672. You think that if it is not possible to get a satisfactory gravitation scheme for less than £50,000 you would be perfectly justified in giving your casting vote? Decidedly, because you would have a scheme which would be everlasting.

673. With reference to the gravitation scheme, you know the country from which the water is to be drawn? Yes.

674. Do you think there is any other watershed from which you could get a permanent supply? I do not think there is.

675. Within a reasonable distance? I do not think there is one nearer than the Macdonald River.

676. Do you think that by going higher up the river, say a mile or a couple of miles, we should be able to get an increased head of 50 feet, or how much should we get? I have never run any levels. I certainly think that by going up the Mulla we could get a great deal heavier fall.

677. You think that of the two tributaries which empty themselves into the storage reservoir the Mulla is the superior? I certainly say that the Mulla has the purest and the best water, and has the largest quantity. I do not think that the Mulla has the greatest catchment area, but my experience is that it is a better flowing river.

678. If, in order to get this additional head, it was necessary to go higher up, you would prefer to go up Mulla Creek rather than go up Swamp Oak Creek? Certainly. If we go up the Mulla we have an uncontaminated source. We have no gold diggings. So far as I know very few people live on the Mulla.

679. You know the two watersheds pretty well? Yes.

680. Would you say that the Mulla watershed is equal to the Swamp Oak watershed, or that it is a third of the Swamp Oak watershed? I have never been right up the head of the Mulla.

681. Supposing the area drained by these two rivers is 300 square miles, do you think there would be 100 square miles in the Mulla catchment area? Certainly.

682. With your knowledge of the quantity and purity of the water in the Mulla, do you think that catchment would be sufficient to supply the wants of Tamworth? I should think that if you made dams it would be sufficient for the supply of Sydney.

683. It is possible by going another mile or two higher up to get a supply which will give an additional 40 or 50 feet of head, and which will not be subject to the sludge and contamination which may come from Swamp Oak? I do not think a purer or better water could be got in the world.

684. *Mr. Neild.*] You have heard some questions asked about diseased sheep contaminating the watershed of Swamp Oak Creek. Are sheep in the habit of going up there to die? They are not in the habit of going up there to die. I think sheep live up there pretty well. It is a better place in dry weather than the plains. It is a dry-weather run.

685. Sheep are taken there to live in dry weather? Yes.

686. They are not taken there to get into the water and to die? No.

687. You have stated that you have a considerable knowledge of this district. Are sheep less likely or more likely to die there than in any other part of the district? Well, according to the number, I should say that they are less likely to die.

688. Is the corner of Raglan-street and Brisbane-street about the highest point in the town? That is the highest point which is now built upon.

689. In taking these levels did Mr. Gipps superintend the work? He took them all himself.

690. With care? Yes.

691. If he shows that his service reservoir, not his storage reservoir, will supply water to the corner of Brisbane-street and Raglan-street, you would believe his figures to be correct? I should say his figures are correct. I see no just reason why they should be thought incorrect.

Mr. Frederick Poate, District Surveyor, Tamworth, sworn, and examined :—

Mr. F. Poate. 22 Oct., 1892.

692. *Chairman.*] You are the District Surveyor? Yes.
693. How long have you resided in the Tamworth district? I was here from 1877 until the beginning of 1880; I came back in June, 1889, and I have been here ever since.
694. You know the country about Tamworth well? Fairly well.
695. You are familiar with what are known as Swamp Oak Creek and Mulla Creek watersheds? Yes.
696. You have prepared a plan showing the watershed which will drain down to what is known as Cockburn River? I have had a plan prepared.
697. You hand in a plan in which the watershed is shown by a broad blue edging? Yes.
698. What do you estimate the catchment area of that watershed to be? Three hundred square miles.
699. Can you give the Committee any idea of what proportion the Mulla Creek watershed and its tributaries would bear to the Swamp Oak Creek watershed and its tributaries—would it be a third, approximately? About a third.
700. Are you aware whether the watershed of Mulla Creek is less liable to contamination than the watershed of Swamp Oak Creek? It is less likely to be contaminated at the present time.
701. There is no town situated on Mulla Creek watershed? Not at the present time.
702. Do you anticipate something of that kind in the near future? Niangala is possibly within the watershed of Mulla Creek.
703. Is that a mining township? There may be thirty or forty persons there.
704. But there is a very much larger population at Swamp Oak? Yes.
705. As things are at present there is very much less cause for fearing contamination at Mulla Creek than there is in the case of the other watershed? Yes.
706. Do you know whether Mulla Creek watershed gives a better and purer supply than the Swamp Oak Creek watershed? I can hardly say that it gives a better supply, but under present circumstances I should think it gives a purer supply.
707. You do not go all the way with some witnesses who have expressed the opinion that although the watershed of Mulla Creek is less than the watershed of Swamp Oak Creek, yet its supply is always larger and purer? Its surface supply, but then with Swamp Oak Creek my opinion is that a great portion of the supply runs under the surface.
708. Coming to the surface wherever a rock protrudes? Exactly.
709. You know the rocky bar which Mr. Gipps proposes to use as a site for his dam? Yes.
710. You are of opinion that the whole of the water comes up over that bar? I have never examined it closely enough to express an opinion.
711. You would not like to say whether it has not a false bottom, and that some of the water gets away underneath? I do not think any one can express an opinion on that matter without careful examination.
712. How much further up Mulla Creek than the site of the proposed reservoir should we have to go to get an additional head of 40 or 50 feet? Unless levels are taken, it can only be a question of opinion.
713. Can you give us any idea. Does the Mulla Creek rise somewhat suddenly after its junction with Swamp Oak Creek? I think not? For some little way they both rise about the same height. Certainly when you are about 20 miles up the Mulla Creek it is some 200 feet higher than Swamp Oak Creek. I judge that from some aneroid readings which I took at one time.
714. If it is a matter of going up one or other of the creeks to get that additional head, you think it would be got more quickly by going up Mulla Creek than by going up Swamp Oak Creek—that is not tying you down to any distance? I could not give an opinion, because either of them may run level, rise quickly for awhile, and then run level.
715. Suppose we had to go 5 miles up Mulla Creek from the site of Mr. Gipps' dam to obtain a sufficient head, should we lose any very great watershed or contributory creeks? Just scaling the plan roughly, I should say it would be over 2 miles to get up to the junction of the Mulla to begin with. It would make very little difference to the watershed.
716. Would it cut out 50,000 acres? It might cut out 9 or 10 square miles.
717. It would not to any material extent diminish the quantity of water to be derived from the catchment area? By that proportion, and rather more because that is nearer where the dam would be.
718. Has much of the land in the general catchment area—Swamp Oak Creek and Mulla Creek— been alienated? I should think there are about thirty selectors there.
719. Is the balance open to selection? No. What I have shown by red edging is reserved.
720. It was reserved by you, looking ahead to the probable use of the land as a watershed? The whole of the watershed was reserved in looking ahead, but when it was decided to go on with the pumping scheme, I could no longer recommend the retention of the reserve. At the beginning of the year I saw Mr. Collins, and he mentioned that there was some talk of the Public Works Committee coming here, and thereupon I recommended the reservation of this area, so as to preserve the immediate vicinity of the dam from pollution.
721. Is the reserved area situated mostly within the Mulla Creek catchment or is it situated in both catchments? It is mostly in the Swamp Oak Creek and Jamieson Creek catchments.
722. Taking the Mulla Creek area by itself, are there any selections on that area? I think there are rather more on Mulla Creek than on Swamp Oak Creek.
723. But selections, as a rule, are not looked upon as likely to contaminate the water supply? No; it is simply grazing country up there.
724. There is more to expect in the way of pollution from a number of persons, such as a mining township, for instance? Far more.
725. Have you given any close thought to this question of supplying Tamworth with water? I have considered it.
726. Which scheme do you think would be the preferable one? I most certainly think a gravitation scheme, if it is possible to get one. I believe it is far better than a pumping scheme.
727. But in a gravitation scheme would you run your water down in an open channel or in a pipe? I would have pipes, certainly.
728. If in order to construct a gravitation scheme with a pipe main, instead of an open conduit, it would increase the cost to £50,000 or £60,000, it is a question as to whether the town could bear that strain or not on its revenue? Exactly.
729. From your knowledge of Tamworth and these places, do you think there is a reasonable prospect of the

the anticipation of the Department being realised, that is to say, to obtain sufficient water, say, 150,000 gallons per day, from the river drift at the junction of the Peel and Cockburn? I could not form any opinion about that. I have no data to go on. Mr. F. Poate. 22 Oct., 1892.

730. You know that the people have been drawing their water from wells for many years? Yes; and the water in places is very hard.

731. Is it harder than the water running down the channel? Yes.

732. How do you account for that hardness? I fancy it is lime.

733. There is a stratum of lime below? Yes, in parts of the town the water comes in contact with it—whether the hardness is due to lime can be told by analysis.

734. Have you ever heard of the town well going dry? No. I have never heard anything of the town pump. I know very little about it. I know that there is a town pump.

735. Do you know that people daily obtain water from the town pump? I was not aware of that.

736. You cannot give any opinion as to whether you think the departmental idea is well-founded, that there is a sufficient underground supply to be drawn from that well? I do not know the data on which the Department have formed their opinion. If you give me some data on which to work, I will soon tell you what I think.

737. The only data which the Department have at present is that they sank a well at the junction of the Peel and Cockburn to a depth of 15 feet; that they struck water at that depth, and that they then drove a rod for 20 odd feet through what they considered was a coarse river gravel? But there is a bar of rock which comes across the Cockburn River.

738. They think it will help them to secure the water which is impounded? I do not think you can pick up that bar in the Peel. It may have caused a drift of gravel, but when you get further back there may be no depth of gravel.

739. In view of the uncertainty of that, what steps do you think should be taken to prove whether the anticipation of the Department is likely to be correct or not? Do you think that is a fair question to ask me without notice? A reply can only be furnished after careful investigation and consideration.

740. It is just what we want to know;—can you give us any idea? I should say wait until we have a dry season before making any experiments or tests. At the present time the drift-bed must be charged with water.

741. It would be unfair to do it just now? Most decidedly. What we want to know is how much water would be there in a time of drought. Another thing is the town is not going to remain in its present state. It seems to me that before a scheme of this sort is undertaken it ought to be known whether it will be sufficient in the future, as Tamworth from its situation must become a large city.

742. But if it is within the reach of Tamworth to get this supply, whatever it may be, from the river bed, in a few years when it grows to that state it will be in a better position to go further afield—is it not better to have the small blessing now? I say wait and have the big one.

743. You would sooner put up with wells which may be contaminated by cesspits and drainage for a number of years? If the wells are going to be contaminated, how about this well which is to be sunk on the flat? It will get all the drainage of the flats.

744. But the population is all below that? That is farming land, and always will be farming land, and as time goes on they must get manure, and how long will it take the manure, bone-dust, and other stuff they put on to work through the few feet of soil and get into the gravel bed?

745. You think that will go on and get worse and worse until it becomes nothing but a muck heap? Yes.

746. Is it your experience that manure applied to land reaches to a depth of 10 or 15 feet, or is not the greater portion of the manure absorbed by the crops, and the remainder falls off on the surface into whatever creek may be nearest to it? I have read of microbes travelling as much as 60 or 70 chains through the ground. What does it matter if 99 per cent. of the manure is absorbed if 1 per cent. gets through to the water.

747. So far as the two schemes are concerned, you think that if Tamworth is not prepared to go further afield to get this very large supply owing to its cost, it will be far better to do without the temporary scheme? I do.

748. Can you suggest any place nearer here where a full supply can be obtained? That is the best watershed I know of in the vicinity of Tamworth.

749. Have you any other suggestion to make? The only suggestion I can make is, let the Department send up an engineer to examine the country, let him make a totally different scheme if he chooses, but let him come up with the object of seeing what can be done with a gravitation scheme.

750. *Mr. Neild.*] You are a civil engineer by profession? Yes.

751. Have you had any acquaintance with water supplies? I have had a great deal to do in China with the water supply for Hong Kong.

752. What is the nature of the supply there? Gravitation.

753. Was it a scheme which was accepted on its own merits, or was it put in competition with other schemes? It was all done by the Government there.

754. The question of a pumping scheme was not considered? No.

755. Have you had anything to do with pumping schemes? No.

756. Have you any practical knowledge of supplying cities from river drifts, as has been suggested in the case of Tamworth? No.

757. Do you know anything about the conditions under which water is drawn from drift-beds to supply English or American towns? No practical knowledge.

758. From your reading are you acquainted with any scheme to supply a town from a river drift occupied by farms and Chinese forcing gardens, as in the present case? No; I have not read of any similar scheme.

759. You have never read or heard of anything like this scheme? I cannot say that I have in which the circumstances are alike.

760. Have you ever read of a scheme to obtain water for a town at so shallow a depth as is suggested in the present case? I do not remember that I have read of such a scheme.

761. It is in evidence that the roots of lucerne, growing on the river flats above the site of the proposed well, make their way through the soil to the underlying water,—in your opinion is it likely that manure applied to such soil would pass into the subterranean water in the same manner as the roots of lucerne do? I should say that very probably it would follow the roots, especially so after the roots are dead or decayed.

Mr. F. Poate. 22 Oct., 1892.

762. And where ground was broken up with a plough, and manure applied a heavy fall of rain would be very likely to carry some portion of the manure through the crust of the earth into the underlying water? I look at it in this way. It is an alluvial drift, there is no clay to stop anything from going through to the water, and being alluvial drift, which contains a large amount of sand, almost anything of a liquid nature will percolate through it.
763. Then the rainfall liquifying the manure which had been applied to the ground would pass through, in all probability to the water? I should think it would. It could be easily seen whether it would.
764. Is it customary to see water lying on these flats in ordinary seasons? I think not.
765. I am excepting the case of heavy rains? The day after heavy rain I have seen a plough at work on the flats.
766. Have you had any experience of any sickness arising from the use of well water here? I am not a doctor.
767. What would be the requisite fall per mile to bring water through the pipes by gravitation? If you will ask me a question of that sort as an engineer, and pay the necessary fees, I shall be most happy to answer.
768. You are here as a witness in the public interest, and I think I am entitled to an answer to that question? You have your engineer here who can reply to all those questions.
769. I think you, as a public officer, can fairly answer that question? Surveyors are not employed on that sort of work.
770. *Mr. O'Sullivan.*] You appear to think that the water in the well would be polluted? Yes, as time goes on; I do not say it will at present.
771. I presume you know the watershed of Mr. Gipps' scheme fairly well? Yes.
772. Is it a fact that sheep die up there in a droughty season? No doubt they do.
773. Is there not also a chance of the water in that reservoir being polluted in the same way? Hardly in the same way. A sheep dying here or there is not in direct contact with the water which will be used. It may or it may not, but the chances are that it will not be used.
774. But sheep die in numbers in time of drought and generally die near water? The country up there was originally a cattle country, and has been used heretofore as a refuge in time of drought. The lower part is used now for sheep and the top part is used for cattle, and I understand that the sheep up there have done very well.
775. But you know that in times of drought all stock make for water, and that it is owing to their extreme weakness that they generally die near water, and sheep in droughty time would probably die near the rivulets which would drain into the water reserve? It is very probable.
776. Is it not a fact that during the last drought some thousands of sheep died up there? That I do not know.
777. If we have been informed to that effect, is there any possibility that if they die near the water-course the matter from their bodies will pollute the supply? There will be so little of them left when they die from starvation that it will not make much difference.
778. Do not you think that the decayed matter from a starved sheep is quite as dangerous as the decayed matter from a full-bodied sheep? I know that on the plains I have very often pulled two or three starved sheep out of a tank before we have camped alongside it, and used the water without suffering any ill effects.
779. You have known of sheep dying up there? Yes, I saw one die there.
780. Have you heard of many sheep dying up there? I have not.
781. If it be a resort for sheep from the dry country——? I understand that it is mostly cattle that go up there.
782. The deleterious matter is the same? The sun dries it clean out at once.
783. If a thunderstorm comes on in a dry season, the decayed matter from the bodies of the animals will be brought down to the reservoir? It will carry part of the way, no doubt, if there is any left.
784. You have the same danger of pollution up there as you have down here? I do not think so, because the pollution here would be from all sorts of manure. The town refuse would probably be used on the flats, and that is very different.
785. Do you think they would allow the town refuse to be deposited near the source of supply? How can they stop it?
786. I presume they can very easily pass a by-law to prohibit any one from depositing town refuse near the well site? If all work is to be stopped on the flats, of course that will secure it.
787. I am talking of the immediate vicinity of the well. It appears that there is danger of pollution of the water in both places? I hardly call that pollution near the reservoir; the few sheep that would die, in my opinion, would make very little difference.
788. *Mr. Neild.*] Do you know what kind of closets are used on the flats.—do they use ordinary cesspits or earth-closets? I do not know. I should say that they use cesspits.
789. Which would be the worse, cesspits in the vicinity of the proposed well, or starved sheep on the mountains—as affecting the water supply? Cesspits, most decidedly.

Mr. John Charles Riley, miner, Tamworth, sworn, and examined:—

Mr. J. C. Riley. 22 Oct., 1892.

790. *Chairman.*] Do you desire to give any evidence pertinent to the inquiry on which this Committee is engaged? Yes.
791. What is your occupation? Sometimes I mine and sometimes I work as a journalist.
792. How long have you resided in the district of Tamworth? About fifteen or sixteen years, I think.
793. Do you know the proposal before the Committee? I do.
794. Do you know the proposal made by Mr. Gipps? Well.
795. Which proposal do you favour? Strictly speaking, neither.
796. Why? Because they are both faulty in certain principles. As regards the Government scheme, economically it is right enough; but I think the gentlemen who have surveyed the district for water schemes have only made a casual survey.
797. In the first place, what is the matter with the site of the Government scheme? It is too near the high rock. It is not far enough in the old river beds. The ancient river beds of the Cockburn and Peel lie further over to the south and east.
798. If you are going to get a supply from the old river beds where would you sink your well? Right near where the railway supply is derived from at Moonbi.
799. Why do you go as far as that? To obtain sufficient altitude for gravitation.
800. But you would have to pump it then? No.

Mr. J. C. Riley. 22 Oct., 1892.

801. Do you know the difference between the level of the river at Moonbi and Tamworth? The railway station at Moonbi is supposed to be 135 feet higher than the railway station at Tamworth.
802. But is not your railway station at Moonbi nearer to the river than the railway station at Tamworth? Yes, it is.
803. How high up in Tamworth would you be able to supply if you intercept your water at Moonbi? About 120 feet.
804. You think that 15 feet would give you sufficient fall? Plenty.
805. How would you bring it in? I would bring it in on the gravitation principle.
806. In pipes or open conduits? Pipes.
807. Where would you put your reservoir? There is no reservoir needed.
808. You would depend on the running river? No; I would depend upon a cylinder sunk in the river to a depth of 20 feet and sufficiently high to be protected from floods. A portion of the Cockburn River near Moonbi has never been dry. It would be on the same principle as the old Jewish waterworks. The supply would be perennial in this instance; but in case of drought intermittent. Lyell in his geology said, "this flow was natural." There is a similar phenomenon up here in Duncan's Creek.
809. Is it not a fact that the Cockburn is dry very frequently? The place I am speaking of has never been dry. There has always been drift water there.
810. Is not the drift at Moonbi confined to a very small channel, comparatively? No.
811. What is the extent of the drift at Moonbi? It is very wide.
812. What do you call very wide. I should call three-quarters of a mile.
813. A mile square? Fully that. In some places it is nearly a mile wide, and it is nearly 3 or 4 miles in length.
814. But suppose it were a dry season and you were taking water from that source would it not soon be exhausted? No; you could not exhaust it.
815. How deep do you think the old river bed is? From 90 to 120 feet in places
816. If you had to go down to a depth of 90 feet, because of the dry weather, how would you get the water into Tamworth by gravitation? We would have some in Tamworth, but the outlying streets would have to go without, most certainly. I do not think such a contingency is possible for this reason, that these lengthy streams—the Swamp Oak, the Mulla, and the Jamieson—drain a vast area of country; but they are very steep. I have been up every one of them. There is no old gravel formation; it has been swept and re-swept. You can get the rock at almost any place. Just above Moonbi is where the drift begins to make. There is an amphitheatre of hills there, and coming down nearer to Tamworth, about 3 miles from Moonbi, you will notice that the ranges come together, and form a retaining bar. It forms a natural reservoir.
817. Your theory is that the hills falling into the watershed of the Moonbi and Mulla have been swept of their drift down into this basin of which Moonbi is about the centre? Exactly.
818. And it has been prevented from coming down on to the Peel River flats by the coming together of the hills and a rocky bar? Exactly.
819. But there is also another bed of river drift between the Cockburn and the Peel of a similar character? Yes.
820. Only it has not a rocky bar to prevent it from coming further down? That is so.
821. And you propose to tap this upper river drift, because it is not so liable to contamination from surface dwellings as is the Peel-Cockburn drift? That is it.
822. Have you any idea of the quantity of water in the basin you have spoken about? You can only arrive at an approximation. It would be a rash thing to attempt even an approximation on oath.
823. Is there a very vast quantity? Certainly; much more than Mr. Gipps would ever retain in his dam if he raised it 40 feet.
824. Why could he not retain it? He could retain it most decidedly, but it would be retaining water purely.
825. Suppose it were dry weather, and your water receded from you down to the bottom of the basin, you would require some artificial pumping arrangement to bring it up so as to supply Tamworth? No; I would require nothing of the kind if I had my supply pipe to Tamworth.
826. You would use a syphon to raise the water? It is a syphon, but a syphon which works automatically. My proposal has this merit, that the supply can never be exhausted nor can the machinery go wrong.
827. You know Mr. Gipps' storage area? Well. The Council and Government jumped my claim and destroyed a security which cost me £100.
828. But they have done nothing with it? No; we have not been able to do anything with it either. Somebody has gone and fossicked it since and the race has fallen in.
829. Did that interfere with you? Most decidedly. They destroyed the security of my tenure. I was getting 8s. a week for a portion of my race. Nobody would work afterwards without he had some security.
830. Do you think it is good holding ground where Mr. Gipps has placed his storage reservoir? It is excellent; it could not have been placed in a better position. It is about the only available spot if you wish to derive a supply from that part of the Cockburn.
831. Do you think there is any likelihood of the water coming underneath or through the bed of rock? There is not much drift for the water to percolate through.
832. Do you know the Mulla Creek right up? As far as the mine.
833. How far do you think you would have to go up the creek from Mr. Gipps' site to get an additional 50 feet of head? I think it could be got in about 12 miles.
834. Would you lose any very important tributaries other than Swamp Oak? Yes; one or two.
835. Do you consider the Mulla Creek water larger in quantity and purer in quality than the Swamp Oak Creek water? Most decidedly.
836. You are aware that Swamp Oak Creek drains more country than Mulla Creek? I know there is a larger watershed.
837. How do you account for there being more water in the smaller watershed? It has less fall, therefore, it does not run away so rapidly. Swamp Oak Creek is very steep.
838. Do you think we could get 50 feet more head by going up Swamp Oak Creek than by going up Mulla Creek? I doubt if you could find a suitable site for a water supply by going up Swamp Oak Creek. I doubt if you could retain the quantity.
839½. You think Mulla Creek will be the best place to select? Most decidedly, of the tributaries.

Mr. William Wood, overseer, Borough of Tamworth, sworn, and examined:—

Mr. W. Wood. 2 Oct., 1892.

839. *Mr. McCourt.*] What is your position? I am overseer for the Corporation.
840. You are pretty well acquainted with both schemes before the Committee? Yes.
841. Which do you think is best in the interest of Tamworth? I should go for the gravitation scheme myself.
842. You think the gravitation scheme, with amendments, would be the best? I should recommend it to be amended.
843. That is, you would have the pipes? Yes.
844. Do you think you would be able to lay the pipes along the railway line? I do not know. I do not think the Commissioners would allow it to be done.
845. Do you know the site of the storage reservoir? Yes.
846. Do you think there will be any chance of the creek silting up there? I think it would silt up a good deal. There is a lot more gravel now than there was when we were out before.
847. If a dam were put across, would it not silt up there? They could put a dam at the head station; it would stop a lot from coming down.
848. Have you any knowledge of the purity of the water? They say it is very good. It is always recommended as first-class water.
849. Have the men working out there, say in summer time, to boil the water before using it? The man whom we saw yesterday is the only one I ever heard say that.
850. He has been in the habit of working there? For a long time to my knowledge.
851. What would be the difference in the cost of working the pumping scheme as against a gravitation scheme? I could not tell.
852. Would it be one-half? It would depend a good deal upon how it was constructed. If it were done like the Sydney water supply, I do not think it would be one-half.
853. It would be less than one-half? I think so.
854. Therefore, if it was a gravitation scheme as against a pumping scheme, you could add several thousand pounds on to Mr. Gipps' estimate without increasing the cost to the Council? Yes.
855. You could add probably £10,000? All that, I think.
856. If Mr. Gipps' scheme were carried out at a cost of £32,000, his would be as cheap to the Council as the other scheme at a cost of £22,500? Yes, and it would be cheaper in time.
857. For what do you think his scheme could be carried out, with pipes? I have no idea. I have never gone into that question.
858. Do you think it could be done for £40,000? I should not like to say. I should like to have some idea of the prices.
859. On the whole you are in favour of the gravitation scheme as against the Government scheme? Yes.
860. You would not recommend the Government scheme to be carried out, to do Tamworth for ten or twenty years? I think so.
861. There is so much reticulation in that scheme which could be all used in the big scheme? The big scheme would have to be constructed so as to work that reticulation in.
862. Have you any idea of the quality of the water in Tamworth? The water from the town pump was analysed.
863. Was it found to be good? Yes.
864. Is the supply at the other well supposed to be of the same quality? I believe it will be a better, softer water.
865. Have you known of any sickness occuring in Tamworth through drinking water from the town pump? No.
866. What is your experience in well-sinking here? I had to sink the town pump well, and four or five others besides in Tamworth. I sank the well at the Phoenix mill.
867. Did you always find abundance of water? A plentiful supply, but a difference in the sinking.
868. Different in the depth? Not in the depth, but in the different kind of earth. In some wells you get a sandy earth, in others you get a gravelly bottom.
869. Have any of them gone dry? Not that I know of.
870. Has the town pump gone dry? It has never been dry; but the pump could empty the well, of course.
871. Do you know anything of the well at Mr. Patterson's place? Yes.
872. Does it give plenty of water? Yes, but he has only a small pump—a 2-in. pump.
873. Did you sink the well? No.
874. Does he use the water for irrigation purposes? Yes.
875. There seems to be plenty of water in the garden? He has a good supply, but only a small pump.
876. You think there will be no doubt as to the sufficiency of the supply to be obtained from the Government well? I should not like to say that. I should like to see a test of its sufficiency made.
877. What sort of test? I should put down a prospecting shaft, and get a pump to see the capacity of the supply. I would run the water into the river for two or three days.
878. Would you test the supply in more than one place? As many as you like. You may get a supply by going further across the river. We went on that land because it was a reserve. I should not like to see the money spent and the scheme not to be of any use. It should be tested properly before any money is spent.
879. Do you think the residents generally are in favour of the pumping scheme? I could hardly say.
880. What do you think is the opinion of the residents with regard to the scheme? They do not care what scheme it is, I think, as long as they get a supply. The town generally desires to have a water supply.
881. Most of them? Some are against it.
882. They would be a very small minority? Yes.
883. *Mr. Neild.*] Are you acquainted with the levels of the town? Pretty well.
884. Have you taken the levels of the streets? No, but they were taken about fourteen years ago by Mr. Vett.
885. You have a record of these levels in the Council Chambers? We have the plan.
886. And levels have also been taken by Mr. Gipps, for the purpose of his reticulation system? Yes.
887. Have you compared the two sets? I have.
888. Do they fairly agree? They come within about 3 feet of each other; and I think the alteration is owing to the street having been raised in a good many instances.
889. Generally they agree? Yes.

890.

Mr. W. Wood. 22 Oct., 1892.

890. Is it in some of the main streets, where most work has been done, that the greatest differences are shown; or is it in some of the outlying streets? I only tried two or three places.
891. Can you say what point in the reticulation scheme, as shown by Mr. Gipps' plan, is the highest level in the town? I think Raglan-street, and Brisbane-street. I have not gone over his plan thoroughly.
892. He went up the centre of the street? I saw him making his survey, but he took the building line.
893. Will you say what height is shown there? 278·54 feet.
894. For a mean level of 1,100 feet above high-water mark? Yes.
895. Would not that 1,100 feet be 146 feet below the level of the railway station? Something like that, I think.
896. So that the highest point in the proposed reticulation of the town would be 131·50 feet above the level of the railway station; you have seen Mr. Gipps' report? Yes.
897. Do you recognise this document in my hand as his report? Yes.
898. Will you read the marginal note on the report? "The top level of the reservoir will be 1,373 feet above sea level or 127 feet above the railway line at Tamworth."
899. Was the well on the reserve sunk under your directions? Yes.
900. How far did you go before you struck water? Ten feet.
901. What sort of earth did you pass through? Loamy soil.
902. Is it loamy soil or loamy clay? It is loamy soil; I would not call it clay at all.
903. Is it soil that vegetation grows in very well? My word! it grows well there.
904. Is it soil that will hold water? It will if it is not disturbed on the surface. It does now on the flat.
905. If the surface is ploughed up the water will pass through? I think so, to a certain depth.
906. Have you any knowledge of the nature of the wells in the vicinity of the well? Only the Chinamen's. There are any number of Chinamen's wells higher up which are worked with Californian pumps. I suppose there must be twenty at work in the dry times.
907. Would there be more than one well to each plantation? Only one. It is a big well, but worked with a horse and Californian pump. It is constantly going.
908. There are at least twenty Chinese plantations up there? Yes.
909. Do you think there would be more—thirty or forty? Altogether, I daresay there would.
910. Do you know how many Chinamen are living on the ground above the well site? No; perhaps about 100 men—four or five men on each garden.
911. Do they use manure? Yes; stable manure mostly.
912. Have you a public rubbish-heap in the town? Yes.
913. Do the Chinamen cart the stuff away? Yes; they get it out of the yards and the stables.
914. There is some public place to which the people cart their rubbish? Yes, two.
915. House and yard refuse, but not night-soil? They do not cart the house refuse away, but only the stable manure.
916. When you speak of house refuse, do you mean night-soil or the odds and ends? The yard sweepings.
917. Do the yard sweepings go to the place where the manure is deposited? Yes.
918. And the Chinese help themselves? Yes.
919. If there were any fever germs about, the Chinamen would be able to help themselves to the germs and distribute them, too? They would.
920. Is not the site of the proposed well within less than 200 feet of a Chinese dwelling? Less than 100 feet.
921. A nice collection of sewage matter about there? I did not go round to have a look at it. I did not see anything of that sort.
922. Did you not see a lot of sewage matter at the back of the Chinese house that stank very badly? I did not go near it.
923. You were too careful of your health to go near it? I saw the Committee looking at it, so I did not go.
924. You said that the water from the town pump has been tested. By whom was it analysed? By Mr. Hamlet, the Government Analyst, I believe.
925. Have you a copy of his certificate? It is in the Council Chambers.
926. Does it not state that there is a large amount of vegetable matter present in the water? Not a large amount, a small amount.
927. Did you have more than one analysis made? There were two. One, of the water from the Cockburn, and another of the water from Crawford's dam, about 1½ mile up the river.
928. Which was the better water? The town pump water.
929. Were the analyses made by the same person? At the same time. We sent a 3-quart bottle full of each kind of water.
930. How long ago? Eight years ago.
931. Were there as many Chinese gardeners at work on the flat then as now? There were not plenty then. They keep increasing in number every year.
932. Can you put your hand on these certificates? I do not think I can very well. I think they are put away.

Mr. Gifford Morant Jarvey, storekeeper, Tamworth, sworn, and examined:—

Mr. G. M. Jarvey. 22 Oct., 1892.

933. *Chairman.*] What is your occupation? I am a storekeeper, and a miner sometimes.
934. Did you write a letter to the Chairman of this Sectional Committee? Yes; on the 17th October.
935. Will you read the letter? It is as follows:—

Some five years ago, when the water supply was first mooted, I proposed to bring water from the Macdonald River in iron pipes, to be laid along the railway line to supply all requirements *en route* to Tamworth, and extended still further along the line. The Government sent an official to report on the matter, which was favourable with the exception of cost, viz., about £58,000, which, I think, was too highly rated. Myself and party were, I believe, the first men in Australia to bring a race of water for sluicing purposes, viz., from Warrenheip Springs to Ballarat (Vic.), 1853. I would beg to introduce an inexpensive plan of supply for Tamworth. On the present site where the town pump is, I would have a large cistern dug out and bricked, then build a tower or column, say, 150 to 176 feet high, with tanks erected thereon, the first tank 40 feet from the basement to supply all ground floors, water the streets, &c., and so lay tanks on from the 40 feet upwards, the uppermost tanks to supply upward stories and the fire hose. The tower or column to be erected in honour of our present Governor. If our present engine and force pumps are not fit for the work, then lay on a new set. Trusting that if my suggestions are of any value to the country, I beg to think this would be the least expensive.

Mr. G. M. Jarvey. 22 Oct., 1892.

936. *Mr. Neild.*] Have you made any calculation of the cost of the piping for this scheme? No.
937. Your scheme would do away with the necessity for a large reservoir? Yes; you would want a small reservoir.
938. A supply reservoir? Yes.
939. But your scheme would not give the same security for a regular supply as would a reservoir in which several days' supply was impounded? I should have several days' supply impounded at the head.
940. Are you in favour then of drawing the water from this site between the Cockburn and the Peel? I think you might have it just as well where the town pump is. It is the same run of ground, and it is nearer home.
941. You would not have any fear of contamination? No more than at the junction of the rivers.
942. Do I understand that you are disposed to abandon your idea of pumping* the water from the Macdonald River? Well, through the cost merely. Of course it is a good body of water up there. It is different from the Mulla and Swamp Oak water, because there you get all the sheep wash and manure for miles. The country is so bad that it is all swept down. It is all bare rock, so it has no time to purify through the gravel.
943. Do not the same remarks apply to the Macdonald River? No; it is a gravelly river and the water purifies better.
944. Is there anything else that you would like to say? No.
945. *Mr. O'Sullivan.*] Are you well acquainted with the watershed of Mr. Gipps' scheme? I had a sluicing scheme on the very site.
946. You have lived there in dry seasons? Yes.
947. Did you see any dead sheep about there at any time? Yes; dead sheep, kangaroos, opossums, snakes, and everything else. I do not consider the water is at all fit for human consumption.
948. Near the watercourse? Yes.
949. I suppose these animals in dry seasons always made for water? They get bogged where the water is and no one troubles to take them out.
950. Do you think the presence of numerous dead bodies would pollute the water? Yes.
951. *Chairman.*] You have formed no estimate of the cost of your plan? I should think it would cost under £20,000.
952. You would have a series of reservoirs at different levels instead of one reservoir to command the whole of the town? Yes; instead of pumping it up the hill and bringing it back I should have reservoirs built.
953. That would mean that each zone of reticulation would have a tank of its own;—do you not think that the connections of these different zones, and the different reservoirs for the different zones, would be rather expensive? I do not think so. I have seen one in France done in the same way.
954. Would it not be a great deal better to have one commanding reservoir which would enable you to have a good pressure in the lower parts if a fire took place? You can have one instead of more.
955. But your tanks would soon be exhausted in case of fire? Not if they are made large enough.
956. But you would have to make your tower or column hold enough? So I would.
957. I understand that you do not think that the river drift would give out in any way? Oh, no.
958. You believe that there is plenty of water there? Yes.
959. Depending on the same source for your supply as the Government, you have every confidence that it will respond to every call? Yes; it would be purer than the water from Swamp Oak.
960. Why? Because it purifies through the gravel.
961. Is it a fact that water drawn from under the ground is very much harder than river water flowing on the surface? Yes; it is a little harder, according to the strata.
962. Do you not think it will be less liable to contamination at the proposed well than at the town well? It may be.
963. Do you know anything about the watershed above Mr. Gipps' dam? I was working there for several months.
964. Which watershed has the best water—Swamp Oak Creek or Mulla Creek? Neither is any good.
965. Which is the better of the two? Swamp Oak Creek.
966. Why? Because it is of larger extent.
967. It has a greater quantity of water? Yes.
968. What about the purity of the water? The Mulla Creek water is the purer.
969. While Swamp Oak Creek has a larger quantity the Mulla Creek has a purer quality? Yes.
970. Does Mulla Creek rise more quickly after its junction with Swamp Oak Creek than Swamp Oak Creek does? Oh, yes.
971. So that if we tap or use only one of these creeks we should get a greater head at a shorter distance up Mulla Creek than we should up the Swamp Oak Creek? Yes.
972. Does the ground rise more quickly? Yes.
973. So that if amongst other things it were found desirable to get an increased head of water, we should go up Mulla Creek rather than up Swamp Oak Creek? Yes.
974. Do you know of any other watershed in the immediate vicinity of this town equal or superior to these two? None.
975. You propose to get your supply from the Macdonald River;—are you aware that it has run dry very frequently? Perhaps once in twenty years.
976. When the twentieth year comes round the people must leave off drinking water and take to whisky? You must have a little storage water.
977. You propose to have a dam? Yes.
978. The Department reported on that? Yes, and the scheme was too costly.
979. Do you know anything about Jamieson Creek? Yes.
980. Are you sure that it runs into Swamp Oak Creek? It is about 4 miles above the junction of Mulla Creek.
981. What other creeks run into Swamp Oak Creek? Up to Swamp Oak gold-fields there are no creeks that I know of.
982. You do not know a creek called Shearer's Creek? I have heard of it.
983. Do you know another creek called Canbo Creek? No.
984. Do you know any creeks running into Mulla Creek? No.

985.

* Note (*on revision*):—Gravitation, not pumping.

Mr. G. M. Jarvey. 22 Oct., 1892.

985. You do not seem to be very familiar with the two creeks of which you had such an intimate knowledge just now; you heard the evidence of Mr. Riley; do you agree with him as to the probable very deep bed of gravel at Moonbi Station? Yes, it is very extensive.
986. What do you think of his scheme to bring the water into Tamworth? Well, he never explained it to me. I only know what I have heard here.
987. *Mr. Collins.*] Do you know if much drift comes down this creek? It is nearly all swept bare.
988. Does any drift come down? There is always a little drift coming down.
989. Not enough to silt up a dam? No; there is plenty of sheep manure.
990. That would not fill up the dam? Oh, yes. You see there is nothing to retain it; it is so steep, and it is bare rock.
991. If it is dammed up, would the shingle and stuff stop there? It would; you would get the old gum leaves, and everything else.
992. Would it make the dam inefficient? It would take years to do that.
993. *Mr. Neild.*] How many sheep stations are included in the watersheds of these streams—Swamp Oak and Mulla? I think there are only Mr. Gills' and Mr. Ferguson's.
994. Do the sheep stations extend beyond the area of the watershed? Yes, I have seen sheep much beyond.
995. How many sheep does Mr. Gill own? Perhaps from 90,000 to 100,000.*
996. And the other proprietor? I am not certain.
997. How many sheep will this country feed to the acre? In summer, not many.
998. That is the time when sheep would be dying; could you feed a sheep to 5 acres? Oh, yes.
999. Do you not know that you are making a very extravagant statement in suggesting that Mr. Gill has 90,000 sheep there? I only go by hearsay.
1000. Do you not think you are making a mistake—do you not mean 20,000? No, not judging by the extent of the run.
1001. Could you feed 100 sheep to the square mile there? Oh, yes; because there are some very good parts in the valley.
1002. Could you feed 200 sheep to the square mile? I do not think so.
1003. In fact you have seen a lot of sheep there now and again? Yes.
1004. And sometimes you have seen none at all? It is very seldom that you cannot see sheep there.
1005. What number of dead sheep have you ever seen there? Sometimes I have seen two or three when I was there in the summer time. I never examined them.
1006. Did you see any cattle there? A few.
1007. Did you ever see any dead cattle? I have seen their carcases lying about.
1008. How many? Two or three.
1009. In all the years you have known the place? Yes.

Mr. Charles Laverty, Council Clerk, Borough of Tamworth, sworn, and examined:—

Mr. C. Laverty. 22 Oct., 1892.

1010. *Chairman.*] How long have you been Council Clerk of the Borough of Tamworth? Eighteen months.
1011. As long as you have been a resident of the town? No; I have been here six years.
1012. By virtue of your position as Council Clerk you are one of the valuators for the borough? Yes.
1013. Government buildings are exempt from ordinary municipal rates? Yes.
1014. The Under Secretary for Public Works has been furnished with an estimate of the ratable value of the properties within the proposed reticulation area; did you make out that estimate? Yes. I made it up from the valuators' book.
1015. You mention in your estimate that the properties on the opposite side of the streets from the reticulation area have not been included? No; because I was asked for a valuation of the properties within the reticulation area.
1016. You took the pipe-line in the street as your boundary? Yes.
1017. But as a matter of fact some of the properties on the opposite side of the street will be charged with the water rate? Yes.
1018. Have you not been rather too conscientious in framing your estimate of revenue? It is moderate.
1019. I suppose the water will reach all the properties on the other side of the street? Yes.
1020. Take Napier-street, for instance. You have only included the properties on the south-west side of the street, while the properties on the north-west side will be liable to assessment? Yes.
1021. They will not only be liable for the water rate, but you can supply them with water if the height is not too great? We could supply the water in any case, I think.
1022. Is not the intersection of Raglan-street and Brisbane-street the highest point in the municipality? It is.
1023. Consequently the properties on the north-east side of Napier-street would be commanded by this reticulation scheme? Yes.
1024. And that holds good with reference to every other street through which the reticulation pipes pass? To all streets.
1025. Then you have undoubtedly under-estimated the value of the properties which will be liable to assessment if the reticulation is carried out? Yes.
1026. Is there very much margin between the annual assessment and the amount of money received per year? For this particular year I think the general rates which have not been collected amount to only £59.
1027. Are there any arrears from previous years to any extent? I think there were about £280 at the beginning of this year.
1028. Then the area which you have put down as inside your reticulation pipes, but which ought to have been extended because the properties on the other side of the street are liable to assessment, will yield a revenue of £1,450? Yes, taking off the nine-tenths.
1029. The Public Works Department assert that from inquiries which they have made if the Council supply the Locomotive Department at West Tamworth with water it will receive an annual revenue of £182, and you now receive from a special watering rate of 4d. in the pound an annual revenue of £167? We have the whole of that rate in this year. That is the amount which we received last year. The whole of the rate which we have collected this year has been £211, but that includes some rates which were owing last year.

NOTE (*on revision*):—20,000.

Mr. C. Laverty. 22 Oct., 1892.

1030. Can you tell us accurately about how much of this year's rates you have received? About £180.
1031. Supposing you were assessing the Government buildings for municipal rating purposes, at what amount would you assess the post and telegraph offices? At £300 a year, which would yield a revenue of £13 10s.
1032. The lands office? The rent of the lands office, I believe, is £350, but I would take £300 as the assessment value.
1033. Have you a right to do that in the interests of the ratepayers;—have you any option but to take the actual rental? We could take it at £350; it is open to appeal. I am going to assess it at £300, and I am not sure that the rent has not come down to that amount. That would give a revenue of £13 10s.
1034. The roads office? It is only assessed at £65; it has but two rooms.
1035. The court-house and lock-up? At £350 for the two buildings.
1036. The police barracks? At £130.
1037. Any other public buildings? The gaol at £300.
1038. How is the railway station supplied? By its own tanks.
1039. Have they ever suffered any inconvenience from want of water? I do not think so.
1040. You had better exclude the railway station? There is the station-master's house. It is a public building. It is not situated at the station, but is out in the street. It is supplied with tanks.
1041. At what value do you assess Tamworth railway station? At £300.
1042. And the station-master's residence? At £78 10s.
1043. Any other buildings? The railway superintendent's residence at £78 10s.; four gate houses at £26 each; the public school, and I suppose the master's residence. We exempt the mechanics institute from the municipal rates; it is worth about £100 a year, I suppose. The show ground is vested in trustees and is not taxed.
1044. Are they likely to take water? I should think so—it would be very convenient.
1045. The question arises whether it should be taxed on the assessed value or by meter? On the assessed value, which is £26 a year.
1046. Is there any other source of income which you think you will be likely to get? I think a good many persons would take water for their gardens.
1047. Have you any idea what it would realise? No.
1048. Do you know anything about the rates for fire insurance? No. I think they charge extra rates in towns which have no water supply. I know they have increased all the insurances on wooden buildings, they are almost double this year.
1049. On what ground? They could not make it pay.
1050. Were there many fires here? No; very few.
1051. I suppose with a plentiful supply there would be a reduction in fire premiums? Yes.
1052. Have you any appliances here for extinguishing fires? We have a fire brigade board; I am the secretary for the board.
1053. What is the income derived from the town pump. How much do you lose on the service? Last year the income was £80, and I think the expenditure was about £163.
1054. Has the rate been decreased of late? No; but the seasons have been particularly wet.
1055. There have been years in which it has more than paid its way? I do not think it has ever paid its way, even in a drought. We take a good deal of water ourselves to water the streets.
1056. How much have you received actually for the sale of water? £22 16s.
1057. *Mr. McCourt.*] Have you had any special grant from the Government for works within the municipality? Yes, for roads.
1058. How much? £419 is the special grant.
1059. I do not mean the grant of 5s. in the £, I mean grants for other works? We have had £249 10s., for minor roads, and a like sum I think during the past twelve months, for Warialda Road.
1060. Have you had any special votes for drainage or bridge work, or anything of that kind? We have had no votes for bridge work. We have had no special vote for anything to which we were not entitled.
1061. *Mr. Neild.*] Do you know how many Chinese gardens there are above the well site on the reserve? There are sixteen farms occupied by Chinese.
1062. Do you know how many inhabitants there are? No. There are only thirty farms on the flat above the well site.
1063. That is within municipal limits? Yes.
1064. But the flat extends miles away, and is more or less occupied? Yes.
1065. Have you any by-laws with reference to the use of cesspits? Yes, we have a by-law.
1066. What do you require the people to use within the municipality? We require them in most cases, unless they get special permission, to use cesspits.
1067. Does the necessity for that permission apply to farming places? To anything with the boundaries.
1068. What have the Chinamen got? I cannot say.
1069. Do not they get permission from the Council? I do not think they have built one for a long time.
1070. Are earth-closets or pan-closets used by the population round this well site on the flat? I do not know.
1071. Do you know what sort they use in Paradise Gardens? No.
1072. I suppose it is ten to one that they have cesspits? About that.
1073. These cesspits must be sunk some few feet in the earth? Between 4 feet 6 inches and 6 feet.
1074. You require them to be lined? Brick-lined, and cemented, and made water-tight.
1075. Does the water never make into them in wet weather? Not if the work is properly done. They are inspected before they are used.
1076. Is it not a fact that every cesspit, no matter how it is cemented, takes in water when the ground is heavily charged. Do not you get more applications to empty cesspits in wet weather than in dry weather? I have not noticed that.
1077. You heard the evidence this afternoon with reference to the use of the river water for the electric lighting plant. Is it a fact that you get the water for your boilers direct from the river? Yes.
1078. Did you ever get it from a well? No, I think not.
1079. Has the insulation been made since you came here? No, before.
1080. You do not know whether the water for the boilers was ever obtained from a well? No. I do not think it was.

1081.

Mr. C. Laverty. 22 Oct., 1892

1081. Is it easier for the corporation to get the water from the well or from the river? I think from the river.
1082. There is water all about is there not? Ten or 15 feet.
1083. You require ten times that amount of piping to get it from the river? About 150 yards.
1084. You would have required 15 or 20 feet of piping to get water from the well? I do not know anything about the arrangements in the first instance.
1085. Is there not water within 15 or 20 feet of the surface in the vicinity of your engine-house? I should think so.

Henry Deane Walsh, Esq., B.E., M. Inst. C.E., Supervising Engineer, Harbours and Rivers Branch, Department of Public Works, sworn, and examined:—

H. D. Walsh, Esq., B.E., M.I.C.E. 22 Oct., 1892.

1086. *Chairman.*] You are resident engineer in charge of the northern districts in connection with the Department of Harbours and Rivers? Yes, the Newcastle district.
1087. You visited this town in 1880 in connection with the water supply? In 1881.
1088. It was then suggested that the town should have a pumping scheme close to the proposed site? That was the alternative scheme.
1089. Have you been in the district since that time? No.
1090. You know the departmental scheme before the Committee and you are also familiar with Mr. Gipps' scheme? Yes.
1091. You have had an opportunity of examining the papers in connection with Mr. Gipps' scheme lately? Yes.
1092. Will you give the Committee the level of his storage reservoir over the railway station at Tamworth? The mean head above the railway station would be 160 feet.
1093. Is it usual to take the mean in cases of this kind? I think so.
1094. The top of his reservoir would be 12 feet above that? Yes.
1095. What is the top level of his service reservoir? One hundred and twenty-seven feet is the top level above the railway station, and the mean is 115 feet.
1096. What is the mean level of the departmental service reservoir at the other end of the town? The mean level would be 191 feet above the railway station.
1097. Can you state, according to the departmental figures, the height of the corner of Napier and Brisbane Streets above the railway? I have not got it here.
1098. The height of the corner of Raglan and Brisbane Streets above the railway? One hundred and thirty-three feet.
1099. Are you aware that Mr. Gipps' plan shows a difference of 17 feet between the departmental level and his level? I was not aware of it.
1100. Can you give me the height of the corner of Napier and Brisbane Streets, above the railway level, from your departmental plans? I have not got them here.
1101. Are these the departmental figures on this plan? Yes.
1102. Can you give me the height of that corner from this plan? Seventy-eight feet.
1103. Will you look at Mr. Gipps' plan, and state the height which he gives in the same way? What is the difference between the corner of Napier and Brisbane Streets, and the railway station? 93·13 feet.
1104. 93·13 feet, as against the Department's 78 feet? Yes, according to this.
1105. The difference, according to his plan, between the railway station and the corner of Raglan and Brisbane Streets? 131·80.
1106. Then there is a discrepancy between his figures and the Department's as regards the height of the railway station and Napier-street? Yes, there seems to be.
1107. Can you suggest any reason as to how that could come about? No, I cannot.
1108. Who took the levels for the Department? When I was up before the railway station was not in existence.
1109. There has been no officer here since? No, excepting Mr. Pridham.
1110. Who would be responsible for the departmental figures as to the height? I took all the levels I know of, except the new section. We had the marks for the railway station then. I am quite certain that any figures I put down are correct.
1111. It may be accounted for by some alteration since the railway station was built? Yes; there may have been an alteration in the street—a cutting in the street would make a difference of several feet.
1112. Do you know the place on the flat where it is proposed to get a supply of water? Yes.
1113. Do you think there is a reasonable prospect of getting sufficient water for the purposes of Tamworth? I think so.
1114. It would be rather unfortunate after £25,000 had been spent, to find there was no supply there at all? Yes.
1115. Can you suggest any means by which a more effectual test than seems to have been made can be made as regards the quantity of water available? Well, it would depend on the weather for the next six or eight months whether we should get a very much better test. If we tried after six or eight months of dry weather we might get a better test. I do not think it would have been of any use to have put down the shaft any further, because there was abundance of water about. I do not think it could have given any better test.
1116. As a matter of fact, the last two years have been exceedingly favourable as far as the rainfall is concerned? Yes.
1117. And if the next few years should be droughty, it may not be successful at all? I fancy that in between the two rivers there will always be enough water. If the well should fail at any future time provision is made in the plans for putting in galleries, which would enable us to draw from a larger area.
1118. Is there any means by which the area and depth of that supposed river bed may be ascertained? We could put in trial shafts all over the bed; but that is an island.
1119. Would it not be better to spend a few hundred pounds in doing that, rather than to put down a fine plant and then find that you have not a supply? I think the experience of the other wells would go to show that there would be enough water.
1120. You have heard the evidence of Alderman Britten. In 1880 he was of the same opinion as you are, but more mature experience led him to the conclusion that he was mistaken? Yes; I heard that, but there are a great many other people who still maintain that there is a large amount of water to be got from all the wells about here.

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1121. Supposing the well were discarded as the source of supply, and the storage reservoir proposed by Mr. Gipps were utilised, how much lower would you have to bring your service reservoir down the hill to let the water gravitate through the pipes—from his storage reservoir to your service reservoir. What head would you lose? About 50 feet, I think.

1122. Then there would be 50 feet above your reticulation zone which would be shut out, and would have to be either left out or served in some other way. Have you any idea of the number of buildings in that zone which would be left out? I have no idea of the number of properties. I have just seen the buildings. I think there would be a couple of streets—Raglan-street and a part of Napier-street.

1123. Would not Napier-street be commanded by this reduced head? All the south end would. The high part would be, where Mr. Patterson lives.

1124. Do you think it would be best, if this scheme is to be carried on as a temporary one, to build a reservoir where the Department propose so as to command the high parts, and if it is found necessary afterwards to go in for a more extensive scheme, and to utilise Mr. Gipps' storage reservoir, to build another reservoir some 40 or 50 feet below the departmental reservoir? I think it would be better to chance it.

1125. Better to put the reservoir where the Department propose, and if afterwards you have to go to a more distant source of supply to build another reservoir which would allow that to be used by gravitation? I think so.

1126. And with a small pump pump the water up to the higher zone? Yes.

1127. Do you think Mr. Gipps' scheme, to bring water by an open conduit from the storage reservoir to the service reservoir, is practicable? I am certain it is not.

1128. Do you think the country is too broken? I do not think the channel would keep open.

1129. You think that if the scheme is adopted the water should be brought in in pipes? I think so.

1130. Can you give us any idea of the cost of the necessary sized pipes to bring the water from the storage reservoir, say inside the railway fence, to the service reservoir in the town? I have made out an estimate for a 10-inch pipe. I have taken the actual cost of the pipes for the Hunter River water supply, and I have added the railway freight and extra cost which the pipes would entail.

1131. On what do you base your railway freight? Three pounds nineteen shillings a ton.

1132. Is that a special or ordinary class—is that what you paid? That is what we would pay. I have added £4 14s. a ton on to what it cost us per mile for the Hunter River water supply. According to that estimate a 10-inch cast-iron pipe, for a distance of 16 miles would cost £34,432.

1133. Would there be any difference in the cost if the pipes were wrought iron? I do not think there would be much. The wrought iron would cost more in the first instance, and the freight would be somewhat less.

1134. What do you think would be the cost of a dam, built on the site which Mr. Gipps selected, that would satisfy the requirements of the Department? I should think between £3,000 and £4,000.

1135. What do you think of the catchment area in connection with that scheme; is it a good one? As far as I could see I think it is a good one. The site for the dam is a very good one.

1136. You have not been up to that part at all? No further than I was yesterday.

1137. If another 40 or 50 feet of head could be obtained, so as to command the highest part of Tamworth by gravitation, by going up another 2 or 3 miles, do you think it would be desirable to do so? If there is a suitable site for a dam, and we adopt the pipe system, it would only come to £5,000 more to go up another 2 miles.

1138. I suppose if a gravitation supply from that watershed is adopted it will be absolutely necessary for its safe working to have a service reservoir somewhere near the town? I certainly think so, with such a long pipe-line as that.

1139. The risks of breaking are so great that you want to have a few days' supply stored in some service reservoir? Yes.

1140. What do you think, approximately, it would cost to give a gravitation scheme as has been suggested? I consider about £56,000 would give a gravitation scheme from the site of Mr. Gipps' reservoir.

1141. Allowing for the departmental dam as against Mr. Gipps'? Yes. That is to bring a 10-inch pipe down.

1142. Does that amount include reticulation and all? Roughly, it covers everything.

1143. You have no reason to doubt that there is sufficient water at the well site free from any serious contamination which would be available to supply the wants of Tamworth for some years to come? I think there is no doubt about it myself.

1144. *Mr. O'Sullivan.*] Have you had the water in the well tested? No.

1145. Why not? It was not tested because it was not thought necessary, I presume.

1146. Are the Department satisfied that it is good and wholesome water? Yes. We have taken the opinion of many of the leading people here on the subject, and they all seem to think that it is good, wholesome water.

1147. If the water has never been tested and analysed it is a matter of belief after all, there is no certainty? No. The water has been tested in the municipal well and it has been found to be very good. It is the same kind of water as is now got from the other wells in the town.

1148. Have the Department heard of any deleterious results arising from the use of this water, have any complaints been made? No.

1149. I presume they are satisfied that there will be a continuous supply or they would never propose to carry out that scheme? They are perfectly satisfied that there will be enough water.

1150. *Mr. Collins.*] If the people of Tamworth are willing to pay £60,000 for Mr. Gipps' scheme, provided that iron pipes are substituted for the open conduit, would you recommend that scheme against the other? There would be nothing in it similar to Mr. Gipps' at all. It would be a different dam, different conduit, and different service reservoir.

1151. The water would come from the same place? Yes.

1152. If the people are willing to pay £60,000? Personally, I prefer a gravitation scheme if it could be got at a reasonable cost, and be equally as effective. In this case they cannot get the water to the same height.

1153. But if the people are willing to take the water at a lower level, and at a greater cost, that is a matter for themselves? There would be 50 feet difference in the level of the reservoir, and a large increase in the cost of the works.

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1154. You think a gravitation scheme is much better? I prefer a gravitation scheme if it can be done economically.
1155. *Mr. Nield.*] You stated that you are familiar with Mr. Gipps' scheme? Yes.
1156. What is the nature of that familiarity? Simply that I have been over the ground and gone over the plans. I have spent some time on the plans.
1157. You went over the ground yesterday morning and over the plans last night? I went over the plans the day before, and I had the particulars of the plans in my office a fortnight ago.
1158. To bring water through pipes what fall is necessary per mile? It would depend on the amount of water you want to get through a certain sized pipe.
1159. What sized pipe do you recommend? I daresay the same head which Mr. Gipps has given will be sufficient for a 10-inch pipe.
1160. What is that fall? Two feet in the mile.
1161. Is not that more than sufficient? For a small pipe I do not think it would be very much more than sufficient. I have only allowed 30 feet for 16 miles of pipe. It would not have as much as 2 feet in the mile.
1162. What is the mean level of your reservoir above the railway station? One hundred and ninety feet.
1163. What is the highest part of the town to be served? The corner of Raglan and Brisbane Streets.
1164. What height is it above the railway station? One hundred and thirty-two feet.
1165. Why, for an exceptionally high point and in order to supply a single house, should you require a head of 58 feet above the mean level of the service reservoir? The whole of Raglan-street may be built on in a few years time.
1166. Are you acquainted with the Sydney water supply? Not very well. I have been on it.
1167. Is it customary to require 58 feet of head for the supply of the outlying scattered streets in a reticulation area? No.
1168. Would not less than half be amply sufficient? It would do very well for the present.
1169. For the next twenty years? Except when the reservoir was nearly empty.
1170. I am talking of the mean level. You admit that there is a difference between the mean level of the service reservoir and the highest point of the reticulation area. Is there any possible necessity for such a head? We could come down a little.
1171. Is not 60 feet reckoned a very excellent head for the very centre of a large and populous district? Sixty feet will not give you much head in case of fire.
1172. We are not talking about that. Are you not aware that the head for a great portion of the metropolitan area is not equal to 58 feet? I was not aware of that.
1173. Do you know any country town which has a head of 58 feet over its most extreme and remote point? Nearly the whole of Newcastle, the whole of West Maitland, nearly the whole of East Maitland, Waratah, Hamilton, Carrington, and Wickham have 100 feet head.
1174. Do you know if there is a head of 58 feet on the highest and most remote part of East Maitland? No. Some parts of East Maitland cannot be supplied at all.
1175. You have made provision for a head of 58 feet at the very highest and most remote part of Tamworth, and at present not built upon? As far as I know, except Mr. Patterson's house.
1176. As to the level at the corner of Brisbane and Raglan Streets there is a difference of about 18 inches between your level and Mr. Gipps' level? About that.
1177. When you come to the next corner of the street there is a difference of nearly 16 feet? Yes; 15·13 feet.
1178. And that difference Mr. Gipps has made against himself? So it seems.
1179. That is to say, he makes the level something like 94 feet above the railway station, while your Department makes it 78 feet? Yes; according to the plan.
1180. According to the evidence you gave just now the mean level of Mr. Gipps' storage reservoir is 160 feet above the railway station, and the highest point in the town to be served is the corner of Brisbane and Raglan Streets, which is 133 feet above the railway station, so that there is a fall of 27 feet between the mean level of his storage reservoir and the highest point in the town to be served? Yes.
1181. There will be a mean head of 27 feet from the storage reservoir? Yes.
1182. And allowing 20 feet for the passage of the water through the pipes, in accordance with the evidence you gave just now, there would still be a head of 7 feet between the mean level of his storage reservoir and the highest point of the town? No. You must take the mean levels of the service reservoir as well.
1183. I am leaving the service reservoir out of this question altogether. I say you have stated that there is a difference of 27 feet between the highest point of the town and the mean level of his storage reservoir, and you have alleged that a 20-feet fall will be sufficient to bring the water to a given distance. Therefore, there would be a difference of 7 feet of head between the mean level of his storage reservoir and the highest point of the town? If you brought it direct to that point.
1184. You gave the Chairman an estimate of the cost of a dam on the site of Mr. Gipps' proposed dam;—what was that dam to be constructed of? I just gave a rough estimate of a concrete dam.
1185. Cement or lime concrete? Both.
1186. Lime concrete faced with cement? Yes.
1187. Taking the measurements, I presume, from Mr. Gipps' surveys? I have not gone into the measurements exactly.
1188. I suppose you looked at the measurements? Yes; roughly.
1189. What was the sum total which you gave? Between £56,000 and £60,000.
1190. For the dam? For the whole scheme. I put the dam down at £4,000.
1191. What would it cost to raise that dam, say 5 feet? I suppose £400 if it was of concrete.
1192. If you raised it 10 feet, I suppose £1,000 would cover the expense? I daresay it ought.
1193. That would give you a much better head in the town? Yes; but you would have to enlarge the base of the dam to get that height.
1194. Is there any necessity to retain a head of 50 feet for the highest point of the town? It was done for future requirements.
1195. What are they likely to be—you are not likely to have any four storey buildings at the top of Raglan-street. According to your plan that point is on a spur of the mountains. You are never likely to have dwelling-houses two stories high? No.

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1196. Thirty feet of head would be plenty for a two storey dwelling—it would throw water right over the top of the dwelling in case of fire? I do not think so.
1197. What pressure would you lose in a short distance like that—between the head and the discharge? I suppose it would be 30 feet to the top of the roof.
1198. Are there many two storey houses in the highest part of the town? I do not think so.
1199. Is it not customary in the outlying portions of country towns to build comfortable one storey dwellings? Yes.
1200. Well, then, is it worth while to go to a lot of trouble and expense to get so great a head as 58 feet for some outlying corner of this town? ——
1201. Do you think there is any need for it? I do not think there is. I think you could keep down.
1202. Thirty feet? Thirty feet.
1203. If you had a head of 30 feet you would not want a fire-engine in the town. It would give sufficient pressure? We could always have a little elevated tank if it was required.
1204. You are suggesting 10-inch pipes to bring the water into the town. What is the price of 10-inch pipes in Sydney in wrought or cast iron? Cast iron pipes, 9-16ths of an inch thick, cost about £7 15s. per ton—160 tons to the mile.
1205. And wrought iron pipes? I do not know exactly what the last quotation is. I think it is from £20 to £22 a ton. I think Hoskins' contract for the North Shore pipes was £20 a ton.
1206. What is the tonnage per mile? Of wrought iron pipes, I have not run it out. I fancy something less than half the weight of cast pipes.
1207. Do you know anything of the cost of carriage? £3 19s. a ton by railway.
1208. Is the rate the same for each kind? Yes.
1209. Per weight? Per ton.

MONDAY, 24 *OCTOBER*, 1892.

[*The Sectional Committee met at the Court-house, Tamworth, at* 9·30 *a.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. John Davies, C.M.G. | John Cash Neild, Esq.
William McCourt, Esq. | Edward William O'Sullivan, Esq.
Charles Collins, Esq.

The Sectional Committee further considered the proposed Water Supply for Tamworth.

Mr. Richard Bourne, Mayor of Tamworth, sworn, and further examined:—

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1210. *Chairman.*] The Committee understood from you that the rates levied are as follows:—A general rate of 1s. in the £ on nine-tenths of the assessed value of ratable property, a lighting rate of 5d. in the £, and a special water rate of 4d. in the £. Are these all the rates which are levied? Yes.
1211. And if this scheme, or any scheme is carried out, you are clearly of opinion that the people are prepared to pay an additional rate of 1s. in the £? Yes.
1212. *Mr. Davies.*] As regards the reticulation of Napier-street and Brisbane-street, a large portion of that block for which you provide reticulation is unoccupied? Yes; not very much in Brisbane-street, but in Napier-street there is some unoccupied land.
1213. Are you aware that the reticulation goes round the 10-chain block in which the public school and the master's residence are situated, they seem to be all 10-chain blocks? I think so.
1214. You know that provision has been made for a reticulation service round the whole of these sections? Yes.
1215. When the service can be got from the end of either street, do you, as an alderman, think it necessary to go round four streets to supply one house, making a difference of about 40 chains of mains? If that is so, I should say it is unnecessary.
1216. Is it proposed to handicap the water scheme by laying down a reticulation service that at present is not required? I cannot say that we have laid out the reticulation scheme exactly as it is required. We are looking to the future.
1217. You are saddling the whole of the municipality with the cost of the future requirements and not the present requirements? I do not think we have gone much into the reticulation scheme beyond the question of present requirements.
1218. Would your municipality, if it had to find the money, authorise the cost of a reticulation service for the purpose of supplying one house in a square block? Certainly not.
1219. The public school is, of course, exempt from all rates, yet you propose to go right round the block in which it is situated with a 4-inch main and a 3-inch main to supply one cottage. Would you not adopt a different course if you had to provide the capital for the purpose of giving water to that house. Would you not adopt the same principle which is adopted by the Sydney Corporation, a very wealthy body; would you not simply put down a 1½-inch or 1¼-inch galvanised iron pipe, and attach to that pipe a ¾-inch galvanised iron pipe? I have no doubt that it would be the wisest plan.
1220. Not only the wisest but the most economical? Yes.
1221. That remark applies to several blocks. Can you tell me why the Department has departed from the original site chosen for the service reservoir? I understand that the site proposed by Mr. Darley was not high enough to serve the houses which have been built since he visited the town.
1222. What is the difference between the level of the reservoir now proposed and the original one? I cannot say.
1223. Who informed you that the original one was not high enough? I do not know.
1224. Have you had any official communication from the Department, indicating that it was not high enough? I do not think we have.
1225. When was the site changed? When Mr. Pridham was here examining into the scheme, some twelve months ago. We have his report suggesting the site.
1226. But no intimation was made, as far as you remember, of a change in the site? Through Mr. Pridham's report there was. I cannot say from memory what reasons were given for changing the site.

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1227. What were the reasons for changing the site of the pump-shaft? I said on Saturday that it was considered a more suitable site than the one originally proposed by Mr. Darley.
1228. By reason of the population being more extended? I do not know what was the reason.
1229. If you come half a mile more this way you come into the population? The principal reason, I think, was that we should have some chance of obtaining the waters of the Cockburn. We should get the waters of the Peel at the other site.
1230. Which water, in your opinion, is the better of the two? The Cockburn water, decidedly.
1231. Is there any doubt in your mind as to the permanency of this watershed? If you sink the well-hole 15 or 20 feet is there a certainty of getting a supply, or is it a mere matter of speculation? It must only be a matter of speculation until the question is decided. I have no reasonable doubt in my own mind that there would be a good supply obtained from there.
1232. It was at your instance, I presume, that the overseer put down the well shaft? Yes, on a request from the Department.
1233. And the only test of the water which has been made, has been made by your department? That is all.
1234. On what date was the shaft put down? The overseer informs me that it was put down on the 6th April. The depth is 11 feet.
1235. During the last three years you could not get a proper or accurate idea of the quantity of the supply in the drift, owing to the wet seasons you have had? No.
1236. The only way to ascertain the permanency of the supply is to make a test in a dry season? Yes.
1237. And to put down a number of trial shafts? I do not know.
1238. One shaft would not be sufficient to give you an idea of the quantity of water there? If you had engine-power to pump it out, it would be quite sufficient.
1239. Would it not be more prudent to have a thorough test made within a certain radius, putting down a boring rod to ascertain the character of the soil, and the quantity of the supply likely to be stored there? I said on Saturday that I thought it would be well to have a thorough test made before the scheme is adopted.
1240. You still think that? Yes, although I have no reasonable doubt in my own mind.
1241. There is no certainty? No.
1242. Have you any knowledge of the quality of the water in the shaft? No.
1243. You could not say that it is free from animal, or vegetable, or mineral matter? We could not.
1244. You could not speak as to its effect on the public health? No.
1245. Do you think that before this scheme is recommended or approved the quality of the water should be ascertained? Undoubtedly.
1246. Has the reticulation scheme been approved of by your Council? Nothing has been done in the Council since the resolution which was read on Saturday was passed. It has been simply left in the hands of the Government.
1247. The departmental reticulation service has not been submitted to the Council? No.
1248. It has been submitted to the Mayor, and he, on behalf of the Council, has approved of it? Yes.
1249. It will be necessary to submit the scheme to the Council before it is approved of finally? Yes.
1250. You, I suppose, exercising your executive functions with your Council Clerk, submitted the information to the Government as to the streets and the houses in the different streets? Yes.
1251. That is the sort of approval you have given to the scheme? Yes. I was assisted by a good many of the aldermen.
1252. You had no official meeting? No; there has been no official approval.
1253. *Mr. Neild.*] With reference to the reticulation scheme prepared by Mr. Gipps, who fixed the limits of that reticulation? I cannot say; Alderman Smith was mayor at the time.
1254. You do not know then whether Mr. Gipps had instructions from the Council as to which streets should be reticulated? I believe he had, but what they were I cannot say positively.
1255. You are under the impression that the Council fixed certain limits within which he was to carry out a reticulation scheme? Yes.
1256. Do you know if his reticulation proposals went to the limits laid down or beyond them? I cannot say.
1257. Then Mr. Gipps was limited to certain areas by the Council, and in carrying out the same work the Department had a freer hand? Yes.
1258. In your engagement with Mr. Gipps was the amount to be expended on the scheme limited. Was he, for instance, told to prepare a scheme which could be carried out for a given sum? I think so.
1259. Do you know what that sum was? I cannot say.
1260. By the resolution which you subsequently passed it is very possible that you limited him to a sum of about £20,000? I think so.
1261. Therefore he had to prepare the best scheme possible for a given sum? Yes.
1262. On what date did he send in his report? I cannot remember.
1263. Can you say in what year it was? It was in 1890, I believe.
1264. Then the alteration in the site of the pumping station, and in the site of the reservoir was made subsequently to the date of his report? Yes, certainly.
1265. Long subsequently? Yes.
1266. Is not Peel-street sometimes flooded? I have never seen but a very small portion of Peel-street flooded since I have been in Tamworth.
1267. You have seen portions of the flat above the proposed pumping station flooded? I have not seen them, but I have known that they have been flooded.
1268. Was not a portion of the flat flooded last Friday? Yes, a long way above the Chinese gardens.
1269. Have you seen the flood waters extending further in this direction towards the town? I have seen them spread over the flats. I have seen the flood waters running down the lower portion of Peel-street, but I have not seen any part of the upper portion flooded.
1270. Have you seen any of the Chinese gardens under water? I have heard of them being under water.
1271. Have the Chinese gardens near Paradise gardens ever been under water? I think they have.
1272. Then the flood waters have extended occasionally as far as the pumping station? I do not think they have ever been over that portion since I have been in Tamworth, although I have heard that they have been in very exceptional high floods.

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1273. How long have you been in Tamworth? Nearly fourteen years.
1274. Have you heard that during one flood the "Royal Hotel" was supplied on its balcony with provisions from a boat? I have heard so.
1275. If the flood water rose as high as that, it must have been fairly deep over the site of this pumping station? I should say it was at that time.
1276. Is it not a fact that the fences about there have been washed away several times? They are often washed away in flood time.
1277. That is on these flats? Yes, on the flats.
1278. Is Mr. Pridham's report in the possession of your Council? It was here on Saturday. I can soon procure it if it is wanted.
1279. You stated that the water of the Cockburn is purer than the water of the Peel? Decidedly.
1280. Are you aware that in the reticulation scheme as designed several miles of pipes are laid through streets that have not yet been formed? No.
1281. I do not mean streets cleared of stumps, but streets that have not been formed. Brisbane-street has been formed throughout? Yes.
1282. And a portion of Upper-street, in front of the public school and the recreation reserve, has been formed? Yes.
1283. But beyond those limits Upper-street has not been formed? I think not.
1284. The northern portion of Darling-street has not been formed? No.
1285. No portion of Napier-street has been formed? I do not think it has.
1286. That is the case with White-street, and Fitzroy-street, and Hill-street? Yes; it is the case with a good many of them.
1287. You are aware that with the exception of Hill-street the water mains are designed to be laid nearly all through the streets I have named? Yes.
1288. In some of these streets, in Napier-street for instance, it will be necessary to do a considerable amount of road-making before you get to your permanent levels and are in a position to lay your water pipes properly? Yes.
1289. In the block that lies at the northern side of the recreation reserve—the block on which Mr. Britten's house stands—there is a two storey house in the hollow fronting Fitzroy-street? Yes.
1290. Are you aware that the reticulation scheme shows 8 chains of 3-inch pipe to supply that one house? I was not aware of it. It is quite possible though.
1291. Are you aware that in Brisbane-street 9 chains of 3-inch service main are proposed to be laid to supply a little cottage on one side and a large cottage on the other? No. It is not possible that we should be aware of these things, for we have never had the reticulation plan laid before us.
1292. I thought you informed the Committee that it had been worked out between the Department and yourself? It was marked out by the Council on a map, I think, but the reticulation proper I never saw until I saw it here on Saturday, and none of the aldermen did.
1293. Do you not think if it is a fair thing to lay down a main to supply a single house at the levels in question, it would be a fair thing to carry similar lengths of pipe to supply other houses in the vicinity of the well at the eastern end of the town? Yes.
1294. Was it your intention in carrying out the reticulation that scores of chains of mains should be laid to meet the requirements of individual dwellings? No; certainly not.

Henry Louis Harris, Esq., Government Medical Officer, Tamworth, sworn, and examined:—

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1295. *Chairman.*] You are Government Medical Officer for the district of Tamworth? Yes.
1296. How long have you occupied the position? Under twelve months.
1297. How long have you resided in the district? Nearly five years.
1298. Do you know anything of the proposals before the Committee for supplying Tamworth with water? I have not made them a study. I have taken very little notice of them.
1299. Having heard an explanation of the departmental scheme, do you think that a sufficient supply of good water can be obtained from the proposed pumping station? It is right on a flat.
1300. Do you think that if a supply of water is obtained there it will be sufficiently pure for the use of human beings? No, I do not. There are so many Chinamen and there is so much soakage about there, that I think it would make the water very impure.
1301. You are aware that the inhabitants of Tamworth have for many years, more or less, been drawing their supplies from what is known as the town well? Yes.
1302. You are aware that the town well is situated a considerable distance below the site of the proposed well and consequently gets more drainage from the town? Yes.
1303. Have you in your practice come across any disease or illness which could be traced to the use of the water from the town well? Take for example typhoid fever, which is the most common disease in the colony; it is most frequently produced by drinking impure water; but I would not like to say that the typhoid fever cases which we get in Tamworth are due to taking impure water.
1304. Is it not quite possible that there is some danger in using well water? I should say so.
1305. Is it not a fact that all this water coming into the well has to percolate through a screening bed of river drift? Certainly.
1306. Is it not a fact that there is very little population above the site of the proposed well—there is no town population above that point? No; but there are any number of Chinamen.
1307. Who go in for manuring the ground to grow lucerne? Certainly.
1308. Do you think that if manure is used on the flats it is likely to reach down through the soil some 11 feet to the shingle bed? I do, in the course of time.
1309. Do you not think that the greater portion of the manure is absorbed by the crops? Only the active ingredients to promote the growth.
1310. Would any wet weather or rainy weather carry off what is retained on the surface direct into the river? It all depends on the position.
1311. Presuming that there are many feet of river gravel after the first 11 feet, do you not think it would provide sufficient screening for any possible drainage that might go through the land from the manure? It is a well known fact that these microbes of disease will travel tremendous distances.

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1312. At all events, in your experience you have never been able to trace directly any case of disease or illness to the use of the corporation well-water as against any other private supply? Well, not exactly. Of course there are various causes for it; it may be due to dirty back yards, or it may be due to the putting of the water into dirty receptacles. You cannot exactly condemn that water.
1313. Do I understand you to say or believe that no more danger is attached to the use of the corporation well-water than to the use of the well-water in the general run of private establishments about the town? Most of them use tanks about here.
1314. Is it not a fact that many of these tanks are not bricked and cemented, and therefore allow percolation from the outside? Certainly.
1315. And if a cesspit happens to be built on the higher ground the drainage may percolate into the tank? Certainly.
1316. As a general rule what are used—cesspits or dry earth pans? It is a combination. There are a good many dry earth pans about here.
1317. Do you think that half the town is supplied with dry earth pans? In the better class of house, I believe, they have dry earth pans; but where you mostly get the disease—among the poorer classes—they have anything. That is the principal cause of typhoid fever.
1318. Taking the case of the better class of houses, if they have a sufficient area do they bury the contents of their pans in their own grounds, or are they taken away under some system? The contents are taken away by the corporation carter.
1319. Do you know if any persons bury their night-soil on their own premises? Yes, frequently, and it is the principal cause of typhoid fever in Tamworth. It is caused simply through trying to save expense.
1320. That might be a source of contamination to their own water supply? Certainly.
1321. Would the nature of the soil on the hills be a better filtering medium than the river bed? Well, the river bed being lower the percolation will find its own level. Of course the supply of water on the higher level would be very much superior and purer.
1322. But you would not like to say definitely that you believe the water from the corporation well is more liable to breed disease than the supplies in private places? Taking the iron tanks away, I think it would be much about the same.
1323. Is Tamworth considered healthy? It is an exceedingly healthy district.
1324. In spite of defective sanitary arrangements it is a healthy place? Exceptionally so.
1325. I presume as a medical man you believe that a pure and sufficient supply of water is very essential to the health of the people? Most important.
1326. You rather doubt that the water in the proposed well would be free from contamination? Most decidedly objectionable, as far as I can see.
1327. If, in addition to the natural filtering which it would get in the river bed, it were pumped up into artificial screening tanks before going into the reservoir, do you think that would prevent any disease from occurring? No filtration will destroy these microbes of disease.
1328. How do these microbes arise—do they not usually germinate where there is a large congregation of human individuals? They will germinate from any decomposed matter, small or large in quantity.
1329. Do you know the nature of the manures which are used by the farmers, Chinamen, or others, and which you think might find their way to the water in the well-hole? It is generally matter from their own houses and refuse.
1330. Human excreta? That is it. On a great many farms there are no water closets at all.
1331. What is the population on that flat per acre? I could not say. It is not very thickly populated. It is all under cultivation.
1332. Do you think there are two people to each acre? About that.
1333. Then, we are to understand that if you, as Government Medical Officer, had been asked to say whether a supply of water could be drawn from that spot which would be fit for human consumption you would have expressed at least very strong doubts as to whether it was pure? Certainly.
1334. Has any medical man resided in the town longer than you have? No.
1335. Do the medical men of Tamworth frequently meet for the purpose of consultation? Yes.
1336. The state of the health of the borough and the means for preserving health occupy their attention? Certainly.
1337. On this matter you think you are expressing the views which are held by the other medical men in Tamworth? By one of the medical men, certainly. I had a consultation with Dr. Walley a few days ago.
1338. And he expressed to you his opinion that this water is not fit for human consumption? As regards that well, certainly.
1339. It is a fact that the people of Tamworth in dry weather are almost solely dependent on the town well for their water? Certainly.
1340. And yet they live? Yes. There is more fever at that time of the year, although we could not exactly trace it to that cause. It may be due to that cause. I should say it would be most injurious to drink that water, because there is a sewer very near it.
1341. You admit, of course, the drainage of the town to a large extent goes into the river above the well? Yes.
1342. It would not hold good with reference to the well site proposed by the Department? No; it would have only the soakage from the farms.
1343. How many people suffered from hydatids? We have had a great number of cases in this district.
1344. To what do you attribute the cases? They are not local cases; they seem to come from the surrounding districts.
1345. They would not be due to the impure water supply of Tamworth? No; they are mostly cases from the country.
1346. Do many of these cases come from the neighbourhood of what is known as the watershed of Mr. Gipps' scheme. Which particular portion of the district is the breeding ground for these hydatid cases? I remember getting a case from Dungowan, which is just below Swamp Oak. I cannot exactly call to mind where the cases came from. I was not prepared to be examined on this matter.
1347. Does that portion of the district contribute more cases of this kind than any other? The cases generally come from the surrounding districts. I could not recall the places.

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1348. Do these cases usually come from where sheep are run? Most decidedly.
1349. Therefore any watershed on which sheep are grazing is liable to that danger? Certainly.
1350. *Mr. O'Sullivan.*] Is not the site of the proposed well on an island? Yes.
1351. Would it not, therefore, be saved from the drainage of the farms above the island? The water from the rivers surrounding the island would certainly percolate through.
1352. But would not the well, being situated on an island, be saved from being contaminated by the drainage from the farms above the island? It would to a very great extent.
1353. The drainage most to be dreaded is the drainage of the Chinese on the island? Certainly.
1354. If that well were sunk across the Cockburn River on the town side, it would be separated from the Chinese gardens by the water? Yes.
1355. Therefore it would be saved from the drainings of the Chinese gardens? Yes.
1356. By changing the site of the well, might we not make a great improvement in the quality of the water? Very great.
1357. Are the microbes from the dead stock which might be found on the watershed of the Cockburn as dangerous as the microbes which might come from the Chinese gardens? One would be animal, and the other vegetable.
1358. Which is the more dangerous to human beings? One is just as bad as the other.
1359. *Mr. Davies.*] Would you be inclined to drink the water from the Council well? Certainly not.
1360. You would not risk your own health by drinking the water from the town well? I never have.
1361. You would not recommend that water to your patients? No.
1362. If this scheme is carried out and the well-hole is put down on the flat about 100 or 150 feet from the Chinamen's shanty, would you drink the water out of the well? Of course I would not.
1363. What do you think would be most objectionable—the present town well or the proposed well? I think of the two I would have the old one.
1364. You would sooner trust to the old well than the proposed one? Yes.
1365. You think there would not be so many cases of typhoid fever arising from the old well as from the new well? Certainly.
1366. You have typhoid fever in the town at the present time? Yes.
1367. How many cases do you think you have? I think there are only two cases, but they come from Somerton.
1368. Is not the Wesleyan minister now suffering from typhoid fever? Certainly.
1369. Is he not under your care? No, under Dr. Walley's.
1370. You have two or three cases yourself? They are in the hospital.
1371. In the summer months, when the people are compelled to take their water from the town pump, there is a large amount of mortality and sickness? Certainly.
1372. As a medical man, you could not possibly recommend as a source of water supply for an important town like this a well-hole which would drain a sort of sewage farm or Chinese garden? I would not.
1373. *Mr. Neild.*] Did you know the late Dr. O'Reilly? Certainly.
1374. Did you ever hear him say anything to the effect that the corporation well was worth about £500 a year to him? I have heard something to that effect.
1375. You have heard something to the effect that sickness arising from the use of the corporation well-water was lucrative? Certainly; it has caused a tremendous lot of sickness.
1376. *Chairman.*] Did you hear Dr. O'Reilly say that? I have some faint recollection.
1377. Can you swear that you heard Dr. O'Reilly say that? Yes.
1378. *Mr. Neild.*] You know this kind of municipal gehenna at the back—this pestilential collection of refuse and manure;—you are aware that the Chinese gardeners on the flats closely adjacent to the proposed well-hole cart this stuff away and use it for manuring their grounds? Yes.
1379. Do you not think it is desperately dangerous to human life to draw water from under ground which is manured with this rubbish? I do.
1380. Am I using too strong a term when I say "desperately dangerous"? Not a bit.
1381. You are aware that within 100 feet of the proposed well there is a Chinaman's house, with a cesspit of some sort or another, and a pond of water which you can smell many yards away? Yes.
1382. Is that a proper thing to have in the vicinity of a water supply? Certainly not.
1383. On the other side, at a distance of a few hundred feet, the Paradise Gardens are situated? Yes.
1384. A large number of people are in the habit of congregating there at times? Yes.
1385. Would the cesspits in these gardens be likely to prove a source of contamination to the water in the proposed well? Certainly.
1386. Will you say that microbes will pass through drift for an immense distance? Yes.
1387. Will hydatids do the same? They will travel for moisture, you know.
1388. You have seen farmers frequently ploughing on these flats? Yes.
1389. Have you noticed whether a fall of rain causes much delay in their farming operations? Certainly.
1390. Is it possible to plough on the flats soon after rain? No.
1391. Why? Because it is so awfully sticky that you cannot get along.
1392. Does the water lie on the surface much? It takes a considerable time to disappear.
1393. But it sinks through? Yes.
1394. Have you ever examined the nature of the soil on the flats? No.
1395. But you know that it is porous soil? Yes.
1396. It is alluvial soil, and is very good for vegetable growing? Very good.
1397. You say that many of the persons occupying land upon these flats have really no proper sanitary arrangements of any kind? None whatever.
1398. But some of them have cesspits? Some of them.
1399. You are not aware whether any of them use pans? None of them do.
1400. If the inspector of nuisances says that none of them use pans, you indorse his remarks? Certainly.
1401. The contents of the cesspits must of necessity find their way through the porous alluvial soil into the drift or sand, or whatever is below? Yes.
1402. And would necessarily contaminate the water? Certainly.
1403. *Mr. McCourt.*] Are you aware that under the Country Towns Water Supply and Sewerage Act power is given to the local authorities to prevent the pollution of a catchment area? Certainly I am.

1404. If proper precautions were taken in this case there would be no objection, then? You would have to drive all the Chinamen away, then. H. L. Harris, Esq. 24 Oct., 1892.
1405. Supposing they were compelled to make proper sanitary arrangements under the law? Well, for the stuff they produce—cabbages, for instance—they must have a certain amount of manure. Chinamen seem to have a peculiarity for growing vegetables in a better manner than any other people, and there must be a certain amount of percolation from the manure which they use.
1406. Are you aware that under the law they can be prevented from using any objectionable manure? Well, all manures are objectionable.

Mr. Richard Bourne, Mayor of Tamworth, sworn, and further examined:—

1407, *Chairman.*] Having had an opportunity to refresh your memory by looking through the papers, you wish to state that the liability is not on the Department, but on the Council, for the amount of reticulation that is proposed? Yes. Mr. R. Bourne. 24 Oct., 1892.
1408. And having had an opportunity to read certain statements in Mr. Pridham's report, you desire to state that the Council furnished the Department with a plan showing the then existing houses? Yes.
1409. And that subsequently the Department sent to the Council a reticulation scheme to embrace those houses? Yes.
1410. And that later on your Council requested the Department to send an officer up to choose another site for the reservoir, so as to command houses which had been built since the original site was decided on? Just so.
1411. And that the original site be kept for other purposes? Yes.
1412. You have heard Dr. Harris state that the water from the town well is detrimental to the health of the people, and that he thinks the water from the proposed well is equally objectionable;—now, do you still think that a sufficiently pure supply can be obtained from that source for the people of Tamworth? I do think so.
1413. You do not think that the doctors have the sole right to say or dictate as to what is a pure supply of water? I have sent over to the Council Chambers to try and find the Government analysis of that very water.
1414. That was made many years ago? Several years ago.
1415. *Mr. O'Sullivan.*] Supposing the suggestion of Mr. Davies were carried out—that the houses standing by themselves should be served by a small pipe instead of by a main, and the unformed streets referred to by Mr. Neild were left unsupplied by large pipes for a while—how much do you think could be saved on the reticulation? That is a question which I could not answer.
1416. Is there much of the town to which the remarks of Mr. Davies might be applied? Well, possibly a fourth of the reticulation area.
1417. It is quite possible, then, that a sum of £4,303 might be saved? Yes.
1418. *Mr. Neild.*] The remarks which have been made, and the evidence which has been given with reference to scattered dwellings in the northern part of the town, would also apply to West Tamworth? Yes.
1419. Where the population is, if anything, more scattered? Yes.

Mr. Frederick Poate, District Surveyor, Tamworth, sworn, and further examined:—

1420. *Mr. Neild.*] Where does the Peel River take its rise? In the main range of the Colony. Mr. F. Poate. 24 Oct., 1892.
1421. Has it got anything to do with the Moonbi? No.
1422. From your knowledge as a civil engineer, do you think it is wise to attempt to supply a town of such varied altitude as Tamworth from one service reservoir? No; I do not think it is advisable.
1423. To attempt to supply the town from one reservoir would be to have a feeble head of water at the high levels, and an overwhelmingly severe pressure at the low levels? That would be so, unless counteracted by mechanical appliances, which are, of course, liable to accident.
1424. Do you know the level of the proposed new reservoir? No.
1425. Will it serve the whole of the surveyed township? No.
1426. *Chairman.*] How can you say that if you do not know the level of the reservoir? Because I know it is below the top part of the town. I do not know the relative levels.
1427. *Mr. Neild.*] Then if the north-eastern portion of the township is sold and built upon, the reservoir will not be of sufficient altitude to command those building sites? No.
1428. Some portion of that ground has recently been sold—the lower portion? Below the reservoir.
1429. That portion will be commanded by the reservoir? Yes.
1430. You have heard the Mayor's evidence with reference to the floods on the flats? I was not here when he gave his evidence.
1431. Are the flats above the proposed well site ever flooded? The flats above the proposed site are flooded.
1432. Are the Chinese gardens ever flooded? I have no doubt they have been flooded in past years—I have not seen them flooded.
1433. As the proposed reservoir will not supply or command the whole of the township, it will be necessary, when the higher levels are built upon, either to pump water there or to supply them from some other source? If they are to be supplied with water.
1434. *Mr. Davies.*] You know the site which was proposed for a reservoir, above the school? Yes.
1435. What is the difference between the level of Peel-street and the level of that site? I do not know.
1436. Do you think that a reservoir, if built there, partly above and partly below the surface, would command sufficient head to supply the whole of the district that is built on? I should hardly say it would supply the whole, but it would very nearly. It is a matter which could only be determined by running a contour line. Suppose, for instance, it were raised 20 feet, it would be a matter of running a contour line to see what houses were above or below the level.
1437. You know the locality well? I have a fair knowledge of it.
1438. What portion would be served by a reservoir built 20 feet above the level of the school-ground? Almost the whole. Very few houses indeed would be left out.
1439. How many existing houses, in your judgment, will it not serve? No value can be attached to the answer which I give to a question of that sort, but I should say that there might be fifteen or twenty houses above that level.

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1440. You have already stated that the proposed site would not give a supply to all the houses? I understood that Mr. Neild was only referring to the future.
1441. The proposed departmental site would supply the whole of them? Yes, at present.
1442. In your opinion, which would be the best service for the town? In my opinion it would be advisable to have two service reservoirs for Tamworth—a high-level one and a low-level one.
1443. You do not think that for the future supply of these sites there would be sufficient pressure to convey the water to the highest point? Not to the highest future point—not to the highest point of the surveyed township.
1444. You know where the Department propose to put down their pumping-shaft? Yes.
1445. Do you think it is a very desirable site to tap the water in the drift? Well, it is impossible to say—there have been so few experiments made as to how the water in the drift goes. We know nothing about the way in which it travels.
1446. You think the tests are not sufficient to enable you to form an accurate opinion? I am certainly of that opinion.
1447. You do not know the depth of the soil or the different strata at that site? No, not just there.
1448. It is very porous? In my opinion it is very porous soil.
1449. Which would you prefer—water from the river, or water from the well? I would sooner have water from Swamp Oak Creek.
1450. You think the water at Swamp Oak Creek is far purer and better? I have no doubt it is.
1451. Did you hear what Dr. Harris said about the water in the town well and the other well? I heard him say that when the water is used from the town well there is a great deal of sickness always in the town.
1452. Would you drink water yourself from the town well? It would depend on the necessities of the case.
1453. As a matter of choice, would you drink it? Not if I could get other water.
1454. You would sooner use water which was caught from the roof? Yes.
1455. Do you drink the well water? I do not think I have ever tasted it.
1456. Would you drink water from the proposed shaft when it is put down 25 feet? Not from choice.
1457. You think it is not possible that there could be pure water so close to the disturbed soil which the Chinamen are always manuring? It may be pure at present, but in my opinion it is only a question of time when it will be polluted, if the land is retained in cultivation.
1458. You do not think it is a desirable site for a water supply for a town like Tamworth? I do not.
1459. With reference to the reticulation, you are familiar with that portion of Napier-street between the public school and the reserve? Yes.
1460. Do you think it is necessary to put down 3 or 4 inch pipes for the present to supply one or two houses with water? Certainly not.
1461. Do you think that a very large saving might be effected for the present in the cost of reticulation? In my opinion the gentlemen in the Council are far too businesslike to put down pipes unless it will pay them to do so. Although it may be in the scheme, they will not put down the pipes until such time as it is necessary.
1462. You think it would not be a fair thing to load the scheme with £4,000 or £5,000 worth of reticulation pipes which will not be required for some years to come? I do not think it would.
1463. You are aware that it would be loading the proposal with an expenditure which is not necessary at the present time? Yes.
1464. Would it not be easy and economical to supply the distant houses with a small galvanised-iron pipe on the surface? It would be a great deal cheaper to give them a few tanks, and let them catch their own water.
1465. It would be very easy to do the other, and charge them, of course? Yes.
1466. *Mr. O'Sullivan.*] What suggestion would you make for the purpose of better testing the capacity of the water supply in this well? That question requires a great amount of consideration, because there are a number of ways of trying it. One would have to study the locality, and experiment to see which would be the better way.
1467. You were asked some questions about the floods sweeping down the flats;—you are aware that the Hunter is very much more subject to floods than is the Peel? I know it is subject to floods.
1468. Are you aware that from the Hunter River, subject to floods as it is, and, therefore, subject to pollution, the water supply for the whole of that valley is taken? I do not know where it is taken from.
1469. Are you not aware that the Hunter River scheme is taken from the Hunter River? I only know of it. I do not know anything of the details.
1470. If that is so, and it is liable to floods, and, therefore, to the drainage of towns like Singleton, Muswellbrook, and Murrurundi, would it not be liable to the same danger that you say this well would be subject to? Hardly in the same way, I think, because that would simply wash the surface down, whereas here the soil no doubt would be constantly polluted by sewage matter, and that would sink through into the well.
1471. Would not that sewage matter be washed away by the water surrounding the island—would it not be very much modified by the water surrounding the island? On these flats the manure is constantly soaking through the ground, and it has only a few feet to go to get to the water supply. In the case of the Hunter, you have a flood occasionally, which simply sweeps the surface.
1472. Supposing a strip of land 300 or 500 yards wide were resumed, and the Chinese gardens were put further back, would not that allow sufficient margin for drainage? Not if what I have read is correct—that the different microbes and animalculæ will travel a considerable distance underground.
1473. You are aware that the considerable distance is really under 100 feet—60 or 70 feet? I have read of microbes travelling over a mile. I think I said on Saturday that I had read of them travelling 60 or 70 chains.
1474. I think you said 60 or 70 feet on Saturday? If I said 60 or 70 feet on Saturday, I meant 60 or 70 chains.
1475. You are aware that all water is subject more or less to impurities? Yes.
1476. In fact, almost all the food we eat has some little danger about it; and bearing these facts in mind, do you think that the danger of this water draining into the well would be so great as to render the well absolutely

absolutely dangerous to human health and life? I do not say it would at present. I consider it would in time. I am looking to the future. There is nothing there to purify the water. The greatest purifiers of water we have are air and sun; there is no chance of purification under the ground. Mr. F. Poate. 24 Oct., 1892.

1477. The air and sun have very full play on the Chinese gardens? Quite true; but they do not get to the water under the gardens.

1478. Did you ever hear of persons drinking water on sewage farms and surviving? Yes.

1479. *Chairman.*] And even from the well at the junction of the Cockburn and Peel? Yes.

1480. Are you quite sure that the corner of Raglan and Murray Streets is the highest point in the town? I am quite sure that the highest point is just about where I have my finger now—that is, in the section bounded by Murray, Raglan, Napier, and Roderick Streets. In point of fact, I think the exact eastern-most corner of the section is a little down the gully.

1481. Does not the plan show a watercourse running almost through that section? It does run through the section, but it is on that rise that the highest part of the town is. That is my opinion, without running levels.

1482. Presuming that the watercourses are placed correctly on the plan, would you not think that the site for the reservoir is likely to be above the highest of the points there? No.

1483. Have you been on this particular section lately? Not very lately; but I aligned it. I have looked to see whether it would not be possible to bring water from the gully on to that point, and I came to the conclusion that we could get it on there with some 40 or 50 feet of head.

1484. Outside the town boundary? I would be a little outside the town boundary. Unless I did I do not think I should be much higher than I should be on this crest.

1485. You spoke just now of the danger of having an excessive head of water in the lower levels if you have the reservoir so high;—are there not such things in modern mechanical appliances as reducing valves? Yes, and loaded valves, too.

1486. Is it not very easy if you have too much head to reduce the pressure? You certainly could. The only question is, is it the best way of doing it under all the circumstances of the case. Valves are liable to accident.

1487. In view of the fact that there are such things as reducing valves, where is the necessity to have two reservoirs at different levels? Suppose you had one reservoir and anything went wrong, the whole of the town would be cut off from the water supply.

1488. Is it only for fear that something would go wrong with the reservoir that it is desirable to have a second reservoir? I would not say that. I think it would be better generally to have two reservoirs.

1489. But if a few reducing valves, at a cost of under £50, will do the work, what is the use of constructing another reservoir at a cost of £2,000 or £3,000? A reservoir is not required at present so high as the departmental site now suggested. A reservoir at the back of the school, as originally suggested by the Department, will answer for the present, and not entail anything like so much incidental expenditure.

1490. It will possibly be required in the future? I have no doubt it will.

1491. Supposing the supply from the well-hole is proved to be insufficient, and the site of the departmental reservoir is found too high to allow the water to be brought by gravitation from what is known as Mr. Gipps' storage reservoir, would you advocate the construction of that reservoir at a lower level? I would advocate the bringing in of the water by gravitation, and if it could not be brought high enough to supply the whole of the town, then I would do as is done in Sydney—I would raise the water when it is necessary to higher levels.

1492. And as the town extends you can easily pump up to the higher levels from the storage reservoir which will receive the water from Mr. Gipps' storage reservoir? Yes.

1493. *Mr. Davies.*] What is your opinion with reference to the permanency of the supply in the well-shaft on the flat? There is not sufficient data to enable one to say whether there is a large, or an impure, or what sort of supply of water there is in the shaft.

1494. It is an unknown supply? It is.

1495. It is a mere matter of assumption? To a great extent. With reference to a question which Mr. O'Sullivan asked me, as to the purity of the water in Swamp Oak Creek, I would like to read a passage from Rankine, who is acknowledged to be an authority on these matters:—

> The purity of water is a subject of which the detailed consideration belongs to chemistry and physiology rather than to engineering. The following general principles, however, may be stated:—For purposes of cleansing, cookery, chemistry, and manufactures, the best water is that which approaches nearest to absolute purity. Such is the water which flows from mountain districts where granite, gneiss, and slate prevail.*

1496. *Mr. Neild.*] The value of the land which forms the watershed of the Cockburn would bear no comparison with the value of the land above the well site? Certainly not, acre for acre.

1497. You know that the annual rental value of the land on the flats is about £4 an acre? I do not know that I have heard that it is as high as that.

1498. How high have you heard it is? I have heard of £1, 30s., and £2.

1499. Could you get 30s. or £2 for 100 acres of land on the watershed of the Cockburn up in the hills? I do not think the Government would let it for less than that.

1500. Per 100 acres? Well, they might be satisfied with a rental of £1.

1501. The alluvial deposit gets shallower the further you go up these flats? I believe so.

1502. If there are 10 feet of covering over the drift at the site of the well, it runs shallower as you go south-east? As you go up towards the source of the river it runs shallower certainly, and after a time it gets deeper and deeper.

Mr. William Wood, overseer, Borough of Tamworth, sworn, and further examined:—

1503. *Chairman.*] What quantity of water can be supplied per hour from your town pump? Four thousand gallons. Mr. W. Wood. 24 Oct., 1892.

1504. What is the capacity of the wrought-iron tank into which you deliver? About 4,200 gallons.

1505. How many hours could you pump at a rate of 4,000 gallons an hour without exhausting your supply? Oh, under an hour.

1506. Then would you have to stop? Yes; the water would go to waste if we did not.

1507. I suppose you could start pumping now and keep on until to-morrow and still supply water at that rate per hour? Yes.

1508.

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* Note (*on revision*): This is the formation of the Swamp Oak Creek watershed.

Mr. W. Wood. 24 Oct., 1892.

1508. Of course in dry weather it would be very much reduced? Yes; in 1888 we could pump it dry.
1509. You would only be able to supply perhaps 2,000 gallons an hour in the middle of summer? We would be able to supply more than that.
1509½. For ten hours? I think we would.
1510. *Mr. Davies.*] When did you put down the well shaft on the reserve? It was commenced on the 6th April and finished on the 9th.
1511. What depth did you go? Eleven feet.
1512. Under whose instructions did you sink the shaft? The Mayor's.
1513. What is your opinion about the quality of the water? You could form no idea at the present time.
1514. You do not know? I would not call what is there now a fair sample of the water.
1515. You have had wet seasons during the past three years, and therefore you can form no correct estimate of the quantity of the water supply in the drift at the present time? No.
1516. It would require a dry season and a number of shafts or bores to be sunk to ascertain what supply could be obtained in this locality? Yes, it would be the safest way.
1517. As an officer of the Council, you think it would be wise not to approve of this source of supply until it is properly tested? I think so.
1518. You do not think it would be prudent to sanction the expenditure of this money before you make a test of the capacity of the supply? Oh, no.
1519. Have you ever known the flats to be covered with water? Yes.
1520. Frequently? Only once since I have been here, which is now twenty-five years.
1521. Do you ever remember 5 feet of water being on the flats? I do not think so.
1522. In 1864? I have heard them say it was up over the corner post. I suppose it would be about a foot under in 1874.
1523. It has been flooded in your time? Yes.
1524. Right over the island? Not all the way up.
1525. From one river to the other? Yes.
1526. *Mr. Neild.*] I think you have stated that you have pumped out the corporation well in four hours? We could pump it out in less than that time in 1888.
1527. How long? In about two hours from the first start.
1528. How long did it take to fill again? Twenty-five minutes.
1529. How long did it take to pump that out? Not half an hour.
1530. Did you not give evidence that you could pump it out in ten minutes? I never said so.
1531. Did you ever pump it out a third time? Constantly; we kept going all day.
1532. How long did it take you at the end of the day? We gave it a longer spell—it was according to the demands on the water. We tried it specially at that time.
1533. You have been able to pump as many as 30,000 gallons? We sold that quantity; we could pump more than that.
1534. Would you be able to give over 20,000 gallons in dry weather? I think so. There was no scarcity of water.
1535. Could you pump 30,000 gallons? Yes.
1536. The corporation well gets not only the waters of the Cockburn and the Peel, but also the waters of Goonoo Goonoo Creek? Certainly.
1537. So that there is a bigger volume of water in the vicinity of the corporation well than there is in the vicinity of the proposed well near the Chinese gardens? Certainly.
1538. *Chairman.*] Does the Goonoo Goonoo Creek enter or discharge into the Peel above or below the position of your town pump? It empties above now, but it emptied below when the well was sunk. It has broken over since then.
1539. *Mr. O'Sullivan.*] You appeared to imply, in replying to a question by Mr. Neild, that there would be greater soakage at the municipal well than there would be at the proposed well on the island? There is a greater area of land. I do not know about soakage.
1540. Is it not a fact that on the island you would have the soakage of the two streams at once, whereas down here you would have only one flowing stream? You have the flat as well as Goonoo Goonoo Creek.
1541. It is only subject to one side down here? You get the soakage from all over the town; it comes from all ways.
1542. Would you not get the soakage from three sides on the island? I think we would get more water at the Government well.
1543. You think you would get water more quickly on the island than in the municipal well? I think so.
1544. *Mr. McCourt.*] All the works of the Council are carried out under your supervision? Yes.
1545. Supposing the Government scheme is approved of, do you think that if the Council are allowed to carry out the work and purchase their own material you could do it much more cheaply than the Government would? I think so.
1546. How much would you save? A good deal.
1547. Roughly speaking, do you think £2,000 or £3,000 could be saved? I think so.

Mr. James Piper, Alderman, Borough of Tamworth, sworn, and examined:—

Mr. J. Piper. 24 Oct., 1892.

1548. *Chairman.*] You are an alderman of the borough? Yes.
1549. I understand that you know something of the analysis which was made of the water in the town well some time since? In 1883, I think.
1550. Have you a copy of the analysis? It is in the Council Chambers.
1551. Were you mayor when it was made? Yes.
1552. Why was it made? We wanted to know the quality of the water we were using.
1553. Was there any outcry on the part of the doctors that the people were dying through the use of the water from the town well? No; it was made purely to know the sort of water we were all using.
1554. Was there any extraordinary sickness at the time? No.
1555. What was the result of the analysis? Very good indeed.
1556. Who was the analytical chemist? Mr. Watt.

Mr. J. Piper. 24 Oct., 1892.

1557. Do you remember whether, in comparison with the water which is supplied to other towns, it held relatively a good position? A good position. I had two or three samples analysed. The first sample was taken from the town well; the second sample was taken from a well up at Crawford's Bee Farm, on the Cockburn River, and the third sample was taken from a well on the west side of the Peel River, nearly opposite the town pump. The third sample was not analysed.
1558. Which was the purest of the three samples? I think the water in our well and the water in Crawford's well were of about the same quality.
1559. But if anything the water in the town well was the better of the two? It was quite as good as the other. I do not think there was any difference between the sample taken from the Cockburn River and the sample taken from the town well.
1560. Can you tell us whether the sample from the Peel was better than the other samples, or was it a little inferior? Two were about alike, and the other was the worse of the three.
1561. The sample from the town well and the sample from the Cockburn River were very similar; but the sample from the Peel River was not quite so good? Yes.
1562. Has there been any great increase in the population of the town since then? Yes.
1563. Has there been very much increase in the population on the flats? There has been an increase; but it has not been so great as in the town.
1564. What is the general view of the ratepayers on this proposal to draw a supply from the junction of the Cockburn and the Peel—do they seem to be satisfied with the supply? I think the majority would prefer the gravitation scheme.
1565. That is, always supposing that the cost of the scheme can be brought within their reach? Yes.
1566. Do many of the people still draw their supplies from the town well? Yes; a great many.
1567. And are alive to tell the tale? Yes.
1568. Do you think there is any danger from drawing a supply from this well site? No; I do not think there is any great danger; but still there is a danger where there is so much cultivation.
1569. There would be very much more danger in drawing your supply from the town well, with all the drainage of the town running in that direction, than there would be in drawing your supply from the proposed well? I should think so.
1570. *Mr. Davies.*] The population in the valley has doubled during the last nine years? Scarcely that, I think.
1571. What was the population nine years ago within the municipal area? It was not so much as you would think, for it was about that time that we had a large floating population working on the railway.
1572. They would not be ratepayers? No.
1573. Speaking of the ratepayers and dwelling houses and shops, have you not doubled in number? Not quite doubled. I should say the number has increased by about one-third.
1574. That settlement all along the town up to the site of the proposed shaft would help to pollute the source from which you would get your supply? Yes.
1575. You do not think it is as pure now as it was when it was analysed? I should think so.
1576. Did you drink the water out of the well? No.
1577. You would not like to drink the water unless you were compelled? I get lime water from the other end, from a well on my premises.
1578. *Mr. Neild.*] When you had your analysis made, were there as many Chinese market gardeners up the valley as there are now? I think not.
1579. There were hardly any then, I suppose? There were some, but not so many.

Mr. Charles Jeffries Britten, Alderman, Borough of Tamworth, sworn, and further examined:—

Mr. C. J. Britten. 24 Oct., 1892.

1580. *Mr. Davies.*] You are aware that it is proposed to reticulate the whole of the unoccupied allotments in the neighbourhood in which you live? Yes.
1581. Has the reticulation plan been submitted to the Council for its approval? No.
1582. As an alderman, do you think it is wise to load this scheme with a large expenditure which is not necessary at the present time? I should certainly say we should not reticulate quite as heavily as is put down here. We could cut out some of it.
1583. Cannot a large portion be cut out for the present? We could cut some out—I do not know how much. That is a question we have never gone into yet. I daresay before the Council comes to a final decision we shall consider that question carefully.
1584. Have you ever seen the flat where the well shaft is sunk covered with water? I have seen the fence washed down there.
1585. Has it not all been covered frequently? About twice.
1586. Do you think it possible to get a permanent supply from that source? I certainly think not.
1587. *Chairman.*] How do you reconcile the statement of the Mayor with your statement that the Council had nothing to do with the reticulation plan? It was not done through the Council, but through the ex-Mayor.
1588. Was it not left to the Mayor by the Council? No. The Department sent up a plan for the Mayor to dot down the houses on, and he dotted down the houses.
1589. Subsequently a plan came up to the Council showing the reticulation service for the houses which he dotted down? That plan I never saw. I do not think I was absent from the Council last year. I never saw the plan.
1590. As a matter of fact, was it not remitted to the Mayor to deal with? I cannot remember.
1591. Do you know anything about the proposed reticulation area? I never saw it until I saw it here. I saw a rough sketch which the Mayor drew out, but as for what sized pipes were going to be used I did not know.
1592. If you were present at the Council meeting at which a plan was drawn out showing the different houses to be served—— ? There was no Council meeting at all when it was done. The ex-Mayor and the Council Clerk did it themselves.
1593. When did you see the plan with the houses dotted down by the Mayor? He brought it in one day.
1594. Do not you know that it was for the purpose of deciding on the reticulation service? I did not know what pipes they were going to put there. I did not know that they were going to reticulate everything. They reticulate where there are no houses.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Water Supply for Tamworth.

SECTIONAL COMMITTEE.

APPENDIX.

A.

[*To Evidence of Mr. C. Laverty.*]

ANALYSIS OF WATER FROM TOWN PUMP AND CRAWFORD'S WELL, TAMWORTH.

Municipal Borough of Tamworth,
Council Chambers, 26 October, 1892.

Dear Sir,

I am directed by his Worship the Mayor to forward you the enclosed copies of analysis of water from the Town Pump and Crawford's Well.

After a continued search amongst old papers the originals were found, and I trust the copies may be of some service to you in making your report.

I am, &c.,
CHAS. LAVERTY,
Council Clerk.

Jacob Garrard, Esq., Chairman, Sectional Committee on Public Works.

Municipal Council of Tamworth, May 14, 1884.

Remarks—

Town Pump.—The soluble solids consist chiefly of chloride of sodium with sulphate of magnesia and nitrates. The insoluble solids of carbonates of lime and magnesia with a little silica.

No. 2, Crawford's Well.—The soluble solids consist chiefly of chloride of sodium and sulphate of magnesia and nitrates. The insoluble solids of carbonate of lime and magnesia, with some silica and alumina.

The presence of considerable quantities of nitrates in these waters probably indicates contamination at some time or other with animal organic matter such as sewage, though the fact that little ammonia is found indicates that the organic matter has for the most part undergone oxidation. In a case such as this, authorities would differ as to the suitability of the water for drinking purposes, but in my opinion there is always more or less risk in drinking water which has at any time previous been subject to such contamination as that referred to. An inspection of all the surroundings might throw some light on the matter. In the water from No. 2 well the quantity of nitrates is larger than in the water from the Town Pump, and, moreover, in the former case the amount of total solids is rather too high for a water which is intended for constant use. It is not advisable, therefore, to use the No. 2 well water for drinking purposes.

EDWARD H. RENNIE
(Acting for CHAS. WATT, Government Analyst).

REPORT respecting Samples of Water received from the Tamworth Municipal Council.

	Town Pump.	No. 2.
Total solids (grains per gallon)	16·64	56·64
Soluble solids	5·20	16·64
Insoluble solids	11·44	40·00
Chlorine	1·30	2·50
Saline ammonia (parts per 100,000)	Traces	·005
Organic ammonia (parts per 100,000)	Traces	Traces

[One plan.]

Sydney: Charles Potter, Government Printer—1892.

PLAN
SHOWING

PROPOSED WATER SUPPLY
FOR

TAMWORTH

SCALE
Chains 0 1 2 3 4 8 12 16 20 24 28 32

PERMANENT COMMON

R.1881 FOR POUND
R.1882 FOR POUND PURPOSES
R.10055 FOR GAOL
HOSPITAL SITE
R.10059 FOR PLANTATION
RIFLE RANGE
RECREATION RESERVE
R.6742 FOR PUBLIC RECREATION
Cemetery

JOHNSTON St
TRIBE St
HUNT St
DEAN St
SMITH St
COHEN St
HYMAN St
JANISON St
PIPER St
NORTH St
MARIUS St
PEEL St
POLICE PADDOCK
CORMAN St
JEWRY St
BLIGH St
O'CONNELL St
NAPIER St
RACLAN St
UPPER St
CARTHAGE St
DARLING St
BOURKE St
BRISBANE St
LOWER St
FITZROY St
PEEL WHITE St
HILL St
RAILWAY
MURRAY St
ASH St
RESERVE
RECN RESERVE
CRICKET GROUND
RAILWAY STATION

AUSTRALIAN AGRICULTURAL COMPANY'S
ANA BRANCH
GOONOO GOONOO CREEK
PEEL RIVER
COCKBURN RIVER.
GRANT

WEST TAMWORTH
BARNES St
BELMORE St
WILLIAM St
DENISON St
FITZROY St
DEANE St
CHURCH St
BOWORTH St
PEEL St
GIPPS St
MATTHEW St

GREAT From Sydney
to Armidale
to Armidale

PROPOSED SERVICE RESERVOIR.
Capacity. 500,000 Gallons.
T.W.L about 525.00.

PROPOSED SITE FOR PUMP WELL
NEMINGHA ROAD

(Sig 311).

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

1892-3.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLANS,

RELATING TO THE

PROPOSED WATERWORKS FOR THE TOWN OF JUNEE.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1893.

669—A

[4s.]

MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable William Henry Suttor, Vice-Chairman.
The Honorable James Hoskins.
The Honorable Frederick Thomas Humphery.
The Honorable John Davies, C.M.G.
The Honorable William Joseph Trickett.

LEGISLATIVE ASSEMBLY.

Jacob Garrard, Esquire, Chairman.
Thomas Thomson Ewing, Esquire.
William Chandos Wall, Esquire.
William McCourt, Esquire.
John Cash Neild, Esquire.
Edward William O'Sullivan, Esquire.
Charles Collins, Esquire.
Henry Dawson, Esquire.

MEMBERS OF THE SECTIONAL COMMITTEE.

Jacob Garrard, Esquire, Chairman.
The Honorable John Davies, C.M.G.
The Honorable William Joseph Trickett.
William McCourt, Esquire.
Edward William O'Sullivan, Esquire.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

WATERWORKS FOR THE TOWN OF JUNEE.

REPORT.

The Parliamentary Standing Committee on Public Works, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred for consideration and report "the expediency of constructing waterworks for the Town of Junee," have, after inquiry, resolved that it is expedient the proposed works should be carried out, conditionally upon the Railway Commissioners undertaking to enter into an agreement for a period of not less than ten years to pay a minimum of £1,900 per annum for water supplied for railway purposes at Junee and Bethungra; and, in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Description of the proposed works.

1. The proposed scheme provides for a water supply by gravitation from an impounding dam situated 20 miles from Junee and about 2 miles from Bethungra, on the Ulandrie Creek, at the head of what are known as the Waterfalls. This dam, 40 feet in height and 520 feet in length, and built of concrete, will impound 140,000,000 gallons of water, obtained from a catchment area of 5¼ square miles. From the dam the water will flow through 18·12 miles of 7-inch riveted steel pipes to a service reservoir constructed of brick and cement on a concrete bottom and with a capacity of 353,000 gallons, situated on the summit of the ranges, 2½ miles from the Junee railway station. Thence the 7-inch steel pipe-line will be continued to the railway tank in the town of Junee, and from that point the water will be reticulated for the use of the residents through 6-inch, 4-inch, and 3-inch cast-iron pipes. The capacity of the impounding dam is equal to two years' supply for both the town of Junee and the railway, and of the service reservoir to three days' supply for the town with its present population. The sufficiency of the catchment area is shown by the circumstances that the average rainfall in the district is 28 inches, and that one inch flowing off would give 75,000,000 gallons or more than a year's supply. The works will be capable of supplying 302,000 gallons of water in twenty-four hours, and as the daily consumption for the present for both the town and the railway is estimated at 110,000 gallons the supply will be equal to three times the present requirements. The bottom water-level of the service reservoir will be about 200 feet above the rails at the Junee railway station, or 70 feet higher than the highest house in any part of the town.

2.

Estimated Cost.

2. The estimated cost of the proposed works is £45,000, which is made up of the following details :—

Storage reservoir	£10,000
Main to service reservoir	17,953
Service reservoir	1,380
Service main to town centre	2,833
Reticulation, &c., (4·8 miles)	4,000
Land at water-shed, with fencing	1,860
Contingencies (5 per cent.)	1,901
Engineering (5 per cent.)	1,901
Total cost of new works	£41,828
Preliminary surveys and reports	2,000
Additional land resumption	1,172
Total	£45,000

Reasons for the proposal.

3. A proper water supply for Junee is required by both the residents of the town and the Railway Department. Under present circumstances the former are obliged to put up with a limited supply, much of which is obtained by them at considerable inconvenience and expense. The latter, though able to draw from Wagga Wagga sufficient for railway requirements at Junee, can only do so by means of a system of water-trains, and these are inconvenient and expensive. The people of Junee secure as much as possible of roof-water in overhead and underground tanks, and, as this supply is exhausted, recourse is had to wells sunk to a water-bearing drift of small extent situated to the south and west of the town. These wells fail in extremely dry seasons, but, while they yield a supply, the water has to be carted from them at an expense of 20s. per 1,000 gallons. When they cease to flow the people depend upon the water-trains from Wagga Wagga, the Railway Commissioners supplying the town as required at the rate of 10s. per 1,000 gallons. To this rate must be added the cost of cartage, and that makes the total cost to the residents, for water obtained in this manner, 30s. per 1,000 gallons. The expense to the Railway Department would be reduced if an adequate supply of water could be obtained at Junee, but the chief advantage to the Department would be the convenience of having an ample supply always at hand at an important station for locomotive purposes and for distribution to fettlers and other employees along the railway line.

Different schemes put forward.

4. From a statement made to the Committee by the Under Secretary for Public Works it will be seen that several schemes for supplying Junee with water have, at different times, been put forward. Two of these, as well as the scheme referred to the Committee by the Legislative Assembly, appear somewhat prominently in the inquiry. They are proposals by Mr. F. B. Gipps, civil engineer, who, in November, 1889, at the request of the Borough Council of Junee, considered the subject of a water supply for the town, and recommended that the water should, by means of a turbine worked by water-power, be pumped from a pond ten feet deep, formed by constructing a weir across the river Murrumbidgee, near Wantabadgery, into an elevated tank, from which earthenware and iron piping would conduct the water to a service reservoir on the top of a ridge near Junee, whence it would be delivered through a delivery main and reticulation pipes to the town. The service reservoir would have a capacity of 12,000,000 gallons, and the estimated total cost of the scheme was £27,483. This scheme, which was a modification of one proposed originally by the Department of Railways, Mr. Gipps subsequently abandoned for an amended one. In this amended scheme he proposed to pump the water from the Murrumbidgee, near Wantabadgery, by means of turbines supplemented by steam pumps, into a reservoir on the summit of a hill 4½ miles distant from the river and 11½ miles from Junee, known as Hartley's Delight. From this reservoir the water would be delivered daily, either direct to the town at the rate of 200,000 gallons in 24 hours, or into a smaller reservoir at the top of the range above Junee, from which point it would flow into the town as required. The estimated cost of this amended scheme was £35,210. Mr. Gipps' schemes were investigated by Mr. E. B. Price, the engineer who is the author of the scheme referred to the Committee, and objections were raised to them which were considered sufficient to justify their rejection. The first of the two was condemned as impracticable, on the ground of the unsuitableness of the river at the part indicated for the construction

of

of a weir, and for other minor reasons. The second of the schemes, in which a possible alternative plan of pumping from the river by means of steam pumps, mentioned by Mr. Price in his report upon the first scheme, was followed, met with equally strong disapproval. The pumping station, it was pointed out, would be 17½ miles from Junee, the nearest town where repairs could be attended to; the pipe-line would be along roads of a nature that would make the cost of maintenance considerable, and at times much delay would occur in the discovery of pipes that had burst or of joints blowing. There was also in connection with this scheme the circumstance that the pipe-line not being in the vicinity of the railway, the fettlers and other railway employees along the line could not be supplied with the facility and advantage desirable. In his examination before the Committee, Mr. Gipps explained that, in view of experience he had gained during a recent visit to Europe, he had returned to his first proposal for constructing a weir across the river, and would raise the water by turbines, supplemented by steam-pumps. Two other schemes suggested, but found after investigation to be undesirable, were proposals to obtain water from either Houlaghan's Creek, west of Junee, or the Bomen Lagoon, near Wagga Wagga. In both these schemes pumping would have to be resorted to, and this, in comparison with a gravitation scheme, is sufficient to make them unsatisfactory; but, until the Bethungra proposal was adopted by the Department of Public Works, the scheme most favoured was that in which the source of supply was the Bomen Lagoon. The Bomen scheme has advantages over Mr. Gipps' Wantabadgery scheme, in that it would cost less for construction and maintenance, there would be a lower altitude to which it would be necessary to pump the water, and the pipe-line would be laid along the course of the railway between Wagga Wagga and Junee.

The Committee's inquiry.

5. The Committee have made a searching inquiry into the scheme referred to them, and, to the necessary extent, respecting the other schemes proposed or suggested. The schemes other than that referred by the Legislative Assembly they are satisfied cannot, in comparison with the Bethungra scheme, be recommended for adoption. They have had before them a statement of the whole matter from its inception, the details of the different schemes, and the reports of the officers of the Department of Public Works upon those schemes; they have examined the necessary witnesses in Sydney; and they have, by means of a Sectional Committee, inspected the locality in which the works in connection with the Bethungra scheme are proposed to be carried out, and taken the evidence of local witnesses.

Points for consideration in the inquiry.

6. Three important points present themselves in the inquiry for consideration:—

(I) The necessity for a water supply.

(II) The probable return from the expenditure upon the works.

(III) The merits or demerits of the scheme itself.

The necessity for a water supply.

7. The necessity for a proper water supply has already been stated in the explanation of the reasons for the proposed waterworks. But it will be further seen that the Sectional Committee came to the conclusion, as expressed in their report, that the requirements of Junee, as to water supply, were of an urgent character. Within another month, they found, if dry weather continue, the people of the town will have exhausted the supply from the wells in the drift, and must depend upon the water brought to Junee by train. The same condition of circumstances may be experienced year after year.

The probable return from the expenditure upon the works.

8. According to the statement placed before the Committee by the Under Secretary for Public Works it is estimated that the revenue from the operation of the scheme will be £250 in excess of the expenses, as follows:—

Revenue:—	
Rate at 9d. in the £ for all houses in Junee served, say 80 per cent. of the whole town, the population being taken at 2,000	£400
Water supplied to Railway at Junee, as per Commissioners' offer	1,500
Water supplied to fettlers along 16 miles of line, and Illabo Station, &c. ...	100
Stables, gardens, &c.—say 5,000,000 gallons, at 1s. per 1,000 gallons ...	250
Total...	£2,250
Expenses:—	

Expenses:—	
Interest and sinking fund on £45,000—at 4 per cent.	£1,800
Working expenses, consisting of a caretaker at Bethungra and a turncock at Junee, &c.	200
Total...	£2,000

showing a balance in favour of the scheme of £250.

From these details it will be seen that most of the revenue will be derived from the Department of Railways, and that without the consumption in connection with the railways the scheme could not be carried out except at very great loss. The town of Junee is likely to progress, but of itself it could not, under the most favourable circumstances probable, for many years meet the expense of the construction and maintenance of the waterworks. The Sectional Committee found that the town had progressed greatly during the last ten years, and that owing to its being surrounded by a large area of wheat-growing land, and to its position as a railway junction, there seemed to be every prospect of further improvement in the future. Financially the town as a municipality is in a satisfactory condition, and the people are able and if necessary willing to pay the full rate of 1s. in the £ for a water supply. But without the assistance of the Railway Commissioners scarcely a third of the necessary revenue could be provided, and the amount contributed by the Railway Department becomes therefore an important matter for consideration. The £1,500 mentioned in the detailed estimate of revenue is assured for a time, as the Commissioners have undertaken to pay that amount per annum, for a term of years, as a minimum charge for the water they may require from the proposed waterworks, and any excess over that sum if the consumption for any year calculated at a rate of 1s. 6d. per 1,000 gallons should represent more than £1,500. The period for which this undertaking holds good is ten years. Before the Committee's inquiry it was five years, but in compliance with representations from the Committee the Commissioners agreed to extend it to ten years, "subject to the agreement being open to review at the end of five years if any undue profit is being made by the municipality by the supply of water." It was also represented to the Committee that the Commissioners would be prepared to pay 1s. 6d. per 1,000 gallons for water taken at Bethungra in addition to the amount paid for water at Junee. This would increase the minimum annual payment by the Commissioners to £1,800 or £1,900. It is probable that the amount actually paid will be considerably more, for with an ample supply of water available at a reasonable rate the Railway Commissioners will, it is believed, find it advantageous to use a much larger quantity than they do under the circumstances surrounding their present supply. The item in the estimate of revenue, "£100 for water supplied to settlers along 16 miles of line and Illabo Station, &c." must be regarded as included in the Commissioners' minimum of £1,500, and to that extent the estimate is defective, but with this alteration it is still satisfactory. There are two other matters in connection with the estimate of expenses which call for some attention. One is the rate at which the annual amount for interest and sinking fund is calculated in connection with the expenditure upon the works, and the other the question of renewals of pipes. The rate is 4 per cent., ½ per cent. of which represents the sinking fund, and it is estimated that this should pay off both principal and interest in sixty years. There is, however, to be borne in mind the fact that loans raised by the Government cost more than 3½ per cent., and consequently the prospect of the expenditure upon the proposed waterworks being paid off in the manner indicated may not be realised. The Minister for Works, it was explained to the Committee by the Under-Secretary, regards the depression at present affecting the securities of the Colony as only temporary, and therefore does not think it right to apply to this particular case a rate of interest which may not be justifiable when the financial position of the Colony has improved. If the present state of affairs should become so prolonged as to indicate a likelihood of its permanence, then the question would arise, the Minister considers, whether this subject of interest in relation to these works should not be reconsidered. The question of the renewal of pipes is of importance, inasmuch as if their renewal should be necessary before the expenditure on the works has been paid off the capital cost will to that extent be increased. In this Colony there has been no experience of the life of steel pipes, but the opinion of the Engineer-in-Chief for Harbours and Rivers is that in this case they will last from thirty to fifty years. It is highly probable they will have to be renewed before the original cost of the

the scheme has been repaid; yet nothing for renewals is included in the estimate of cost. The Engineer-in-Chief considers that the additional expenditure will be met by the natural increase of the population, and consequently the larger consumption of water.

The merits or demerits of the scheme itself.

9. No step necessary to assist the Committee in understanding fully the merits or demerits of the proposed scheme was neglected in the inquiry. Accompanied by Mr. E. B. Price, the engineer who designed the scheme, Mr. W. M. Hamlet, Government Analyst, and Mr. M. Sawyer, an old resident of the district of Bethungra, the Sectional Committee made a careful inspection of the "catchment area and the site of the proposed impounding dam and storage reservoir, attention being given *en route* to the character of the country through which the main pipe-line would run before reaching the railway line, south of Bethungra Station." The rock, which, if the scheme be carried out, will form the floor of the reservoir, was closely examined, and samples of water were taken from above the falls by Mr. Hamlet for analysis. Witnesses were then examined at Bethungra and Junee. The satisfactory nature of the rock and quality of the water are questioned by some of those who gave evidence, and it became necessary to have the suitableness or otherwise of these important elements in the scheme definitely established. The rock was described to the Committee by the Departmental Engineer as granite unaffected by any flaw, and therefore unquestionably good holding-ground for the reservoir. Mr. Gipps, who was examined as a witness in Sydney, denied that it was granite, and described it as schist, which, being a kind of rock comparatively soft and laminated, such as slate rock, would not be of a good holding nature. The water does not run over the falls in any large quantity in dry seasons; it is only after rain that there is an appreciable flow. Ordinarily there is little more than a trickle, and this being brackish to the taste is believed to come from saline springs which occur in parts of the rock. These springs are not regarded with any apprehension by the officers of the Department of Public Works. Though probably they will always exist, the great body of fresh water which will constantly overlie them in the impounding reservoir must, in the opinion of the Department, effectually prevent them from affecting the flavour or purity of the water. Mr. Gipps asserts that the springs will affect the water supply so much as to make it unfit for consumption. The schist, he stated to the Committee, "absorbs a large quantity of water, and gives it out in saline springs where the bed-rock is intercepted and exposed by the denudation of the valley forming the basin of the reservoir; and if the basin were covered with water as proposed the effect would be not that the water would drain the streams, as is believed, but that it would force the springs to break out in different places above the surface of the water in the reservoir." A difference of opinion with regard to the holding nature of the rock and the quality of the water, which was apparent in the evidence given before the Sectional Committee, was also noticeable, and it seemed advisable to have the rock as well as the water specially examined by an expert. The Sectional Committee arrived at the conclusion that the strata at the site of the dam and reservoir were "sufficiently sound for the respective purposes of those structures," but in view of the importance of the proposed works they recommended that Professor David of the University of Sydney be requested to inspect the locality and furnish a report. This recommendation was at once carried out. Professor David, as will be seen by his evidence, visited the site, minutely examined the rock, the saline springs, the ground which will be covered by water when the reservoir is full, and the catchment area generally, and furnished the Committee with a report which definitely sets at rest all question as to the nature and holding capacity of the rock or of the effect of the saline springs upon the water in the reservoir. He found the rock to consist of tough granite and of a hard greenish-black rock, also tough, but probably a micaceous dolerite, with no evidence about it to indicate the possibility of the water which would be impounded in the reservoir escaping by leakage through joints, and of such solidity generally that it is impossible for any formation permeable for water to underlie it. As a site for the dam he considers the position as far as relates to geological considerations to be favourable, and with respect to the holding nature of the ground there is in his opinion "no possibility of any serious loss of water from the reservoir through percolation, as everywhere within this area the

 impervious

impervious bed-rock would be reached at a comparatively shallow depth." To the question of the saline springs he devoted special attention, and he is convinced thar they are nothing more than the soakage usual from rock or soil such as that which exists in the locality, likely to cease entirely as soon as the reservoir is filled, and it then still in existence not at all of a nature that would affect the great body of water which the reservoir will contain, or render it unsuitable for drinking purposes of for use in locomotives running on the railways. Mr. W. Shellshear, an engineer of experience in the employ of the Department of Railways, regards the site for the dam as "one of those rare sites that nature has prepared beforehand, a particularly suitable place for a dam, possessing very great advantages over the majority of sites for works of that kind," and, with the dam properly made, such as not to raise any doubt as to the firmness and holding capacity of the reservoir. The Government Analyst who analysed samples of the water obtainable at the site of the reservoir at the present time found them unsuitable for drinking purposes, by reason of the presence in them of albuminoid ammonia and saline matter in excessive quantities, but with the proposed reservoir filled with rain-water, exposed to the free action of the atmosphere, this organic matter, he states, would disappear or be rendered harmless, and the water would be pure and drinkable. As for the saline springs, he is of opinion that when the reservoir is full the weight of rainwater will "lock up the stratum of saline matter with silt," that the saline deposit will be "permanently sealed over." At the time of Mr. Hamlet's visit the water in the creek was low and had almost ceased running, and the season being a dry one, a great many sheep drank from the pools in the creek. This watering of the sheep there he regarded as the prime cause of his analysis appearing so bad. If it were prevented, as it will be by the resumption of land around the reservoir, all danger of serious pollution of the water would be at an end.

The Committee's decision.

10. The Committee consider that the proposed work should be carried out conditionally on the Railway Commissioners entering into an agreement to take for ten years the water which will be supplied by the scheme at 1s. 6d. per 1,000 gallons, with a minimum payment of £1,900. Satisfied as to the nature of the scheme itself, the only important point remaining for the Committee to consider was the contribution to the revenue from the works which is required from the Railway Commissioners. As the scheme is mainly one in the interests of the Railway Department, and such as without their consumption of water and payment for it could not justifiably be carried out, the Committee thought the Commissioners might give a guarantee unlimited in regard to time and larger than they are disposed to give in respect of a minimum annual payment. But beyond a term of ten years and a minimum charge to them of £1,500, to which the cost of water for Bethungra may be added, they declined to go. They consider it undesirable to commit themselves or their successors to a longer period than ten years, or to a larger minimum than £1,500, but they are of opinion, as expressed to the Committee by their Secretary, that the consumption of the water by the Railway Department will be permanent. The Committee think that the guarantee is sufficient to justify the construction of the works, especially as they see no reason why the Commissioners should not be permanent customers, or why their consumption of the water should not bring in an annual payment considerably beyond the minimum decided upon. The Commissioners want the water, and obtaining it at Junee and Bethungra will be cheaper and much more convenient for them than their present system of getting a supply from Wagga Wagga. Summarizing the results of the inquiry, the Committee find (1) that Junee is greatly in want of a proper water-supply; (2) that the probable revenue from the water will more than meet the interest and working expenses in connection with the scheme; and (3) that the scheme in the choice of the site for the dam and storage reservoir, and the planning of the works, appears to be an excellent one and likely to prove thoroughly satisfactory.

Resolution of the Committee.

11. The resolution passed by the Committee, as shown in the Minutes of Proceedings of Wednesday, 8 March, is as follows:—

"Mr. O'Sullivan moved,—

'That the Committee consider it expedient that the proposed Waterworks for the Town of Junee, as referred to them by the Legislative Assembly, be carried out.'

'Mr. Davies seconded the motion.

"Mr.

"Mr. Wall moved,—

'That the motion be amended by the omission of all the words after the word 'That' with a view to insert the following words: 'it is not expedient to carry out the proposed Waterworks for the Town of Junee, as referred to the Committee by the Legislative Assembly, the Committee being of opinion that the guarantee from the Railway Commissioners does not extend over a sufficient period to warrant such construction.'

'The amendment was seconded by Mr. Collins, and negatived on the following division upon the question 'That the words proposed to be omitted stand part of the question.''

Ayes, 9.	Noes, 3.
Mr. Garrard,	Mr. Wall,
Mr. Suttor,	Mr. Neild,
Mr. Hoskins,	Mr. Collins.
Mr. Humphery,	
Mr. Davies,	
Mr. Trickett,	
Mr. Ewing,	
Mr. McCourt,	
Mr. O'Sullivan.	

"Mr. Humphery moved,—

'That the motion be amended by the addition of the following words: 'Conditionally upon the Railway Commissioners undertaking to enter into an agreement for a period of not less than ten years to pay a minimum of £1,900 per annum for water supplied for railway purposes at Junee and Bethungra.'"

The amendment was seconded by Mr. Wall, and passed on the following division upon the question, "That the words proposed to be added be so added":—

Ayes, 8.	Noes, 4.
Mr. Garrard,	Mr. Suttor,
Mr. Humphery,	Mr. Hoskins,
Mr. Davies,	Mr. Ewing,
Mr. Trickett,	Mr. McCourt.
Mr. Wall,	
Mr. Neild,	
Mr. O'Sullivan,	
Mr. Collins.	

The motion as amended was passed.

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 14 March, 1893.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

WATERWORKS FOR THE TOWN OF JUNEE.

TUESDAY, 14 *FEBRUARY*, 1893.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
The Hon. William Joseph Trickett.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee proceeded to consider the proposed Waterworks for the Town of Junee.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

1. *Chairman.*] You have a statement which you desire to read to the Committee in connection with this work? Yes; it is as follows:— J. Barling, Esq. 14 Feb., 1893.

When the question of providing a supply of water at Junee was first initiated, and for some years after, the requirements of the Railway Department alone were considered.

About 1880, a tank, intended to meet these requirements, was excavated in the vicinity of Junee, but it did not prove a success, and supplies of water had to be obtained (on payment) from Hammond's Dam, but that supply was precarious.

An effort to obtain water by sinking wells in the vicinity was equally unsuccessful, the quantity obtained being very small.

In February, 1885, Mr. Derbyshire, of the Railway Department, submitted a proposal to convey water to Junee from the Murrumbidgee, at Wagga Wagga, by means of pipes laid inside the railway fence, at an estimated cost of £21,826, not including cost of carriage of materials, amounting to £8,000 or £10,000 more. A consideration of this proposal was deferred pending an examination of it by a competent authority, but Mr. Cowdery, to whom the duty was confided, submitted his own modified Murrumbidgee scheme at a cost of £42,908, subsequently reduced to £27,532.

Shortly after, Mr. Secretary Lyne approved of a still further modified Murrumbidgee scheme at a cost of £25,000, but directed that action should be suspended pending an examination of the details. Before anything definite was done Mr. Lyne's attention was directed to Houlaghan's Creek as a likely source of supply, and the Minister directed that nothing further should be done until Houlaghan's Creek had been thoroughly tested.

In October, 1886, Mr. Stephens reported upon the Houlaghan's Creek proposal, showing that 70,000,000 gallons might be impounded there, with a watershed of 294 square miles, and claiming that the cost would not exceed £13,500.

In the December following, the Junee Municipal Council definitely raised the question of combining a supply of water for the railway with a supply for domestic use in the town, and they were informed that the annual charges in connection with the Houlaghan's Creek scheme would be £700, and that the works would be constructed if they would guarantee to take 10,000,000 gallons per annum at 8d. per 1,000 gallons.

This proposal, however, came to nothing, in consequence of Wagga Wagga protesting against Junee being made the watering-station, and claiming for itself (Wagga Wagga) the prior right.

On a date which I am unable to fix from the papers, Mr. Stephens (or Mr. Melrose), of the Railway Department, propounded a scheme for obtaining a supply from the Murrumbidgee by pumping at Wantabadgery. The details cannot be given, but this is not of much importance, because a modification of the same scheme will presently be referred to.

In September, 1888, Mr. Halligan, of Harbours and Rivers, reported on the matter. For several reasons (the most important being the alleged impossibility of keeping the water from contamination) he condemned the Houlaghan's Creek proposal, and recommended another scheme for obtaining water by pumping at Wagga (the pipes in this case also to be taken along the railway line), at a cost of £35,000.

In this year the Junee Council passed a resolution in due form requesting to be brought under the operation of the Country Towns Water Supply Act.

In November, 1889, the Council placed themselves in communication with Mr. Gipps, C.E., who furnished a report also condemning the Houlaghan's Creek project, and recommending a modification of a proposal submitted by Mr. Stephens, or Mr. Melrose, for pumping water from the Murrumbidgee at Wantabadgery. Mr. Gipps proposed to form a pond by throwing a timber dam across the river, and to pump the water thence into a reservoir by means of a turbine worked by water-power; estimated cost, £27,483.

The Council were anxious that Mr. Gipps' proposal should be adopted, and the duty of testing the feasibility of the project was entrusted to Mr. Price, who, after examination, condemned it as defective in a variety of ways. Mr. Gipps thereupon abandoned that scheme, and suggested another, in which some of the objectionable features of the previous proposal were avoided; but this scheme also Mr. Price adversely criticised, maintaining that the Bomen project was superior in every way.

But the examination of the country incident to Mr. Price's investigation of the various proposals resulted in a discovery which enabled that officer to submit a scheme of an entirely different character, and which is claimed to be the best suggested.

J. Barling, Esq.

14 Feb., 1893.

This proposal, which is now submitted for the consideration of the Public Works Committee, is described in full detail in Mr. E. B. Price's report, dated 11 November, 1892, of which the following is a summary:—

In the course of his exploration of the country, Mr. Price discovered a basin near Bethungra 470 feet higher than Junee. The land being in great part inferior there was but little settlement, and therefore not much fear of contamination; nevertheless, to obviate the risk of future pollution, he (Mr. Price) thought it would be prudent to resume the alienated area of the entire watershed.

The official description of the scheme is as follows:—

The supply will be obtained from an impounding dam situated 20 miles from Junee, at a site marked on the plan—about 2 miles from Bethungra, on the Ulandrie Creek.

The dam, which will be 40 feet in height, and composed of concrete, will be thrown across the Ulandrie Creek at the head of the waterfalls. The length of the dam will be 520 feet. This will impound 140,000,000 gallons of water, supplied from a catchment area of 5¼ square miles. The average rainfall is 28 inches. The sufficiency of this catchment will, therefore, be at once apparent, when it is stated that 1 inch flowing off would give 75,000,000 gallons, or more than a year's supply for Junee.

From this dam the water will be conducted by 18·12 m. of 7-inch riveted steel pipes to the service reservoir on the summit of the ranges, 2½ miles from the Junee Railway Station.

The reservoir will be constructed of brick and cement on a concrete bottom, and will be capable of containing 353,000 gallons, which will equal a three days' supply for Junee at its present population.

The bottom water-level of the reservoir will be about 200 feet above the rails at the Junee railway station, which means an altitude of 70 feet above the highest house in any part of the town.

From thence the 7-inch steel piping is continued to the railway tank in the town, and from thence it will be reticulated by 6-inch, 4-inch, and 3-inch cast-iron pipes.

These works will be capable of supplying 302,000 gallons in twenty-four hours. The daily maximum consumption is at present estimated at 110,000. In other words the supply would be equal to three times the present requirements, including both the town and the railway supply.

The estimated cost of the works is made up as follows:—

Storage reservoir	£10,000
Main to service reservoir	17,953
Service reservoir	1,380
Service main to town centre	2,833
Reticulation, &c. (4·8 miles)	4,000
Land at water-shed, with fencing	1,860
Contingencies (5 per cent.)	1,901
Engineering (5 per cent.)	1,901
Total cost of new works	£41,828
Preliminary surveys and reports	2,000
Additional land resumption	1,172
Total	£45,000

The population of Junee, I may mention, is at present understood to be 2,000.

The revenue is estimated as under:—

Rate at 9d. in the £ for all houses in Junee served, say 80 per cent. of the whole town	£400
Water supplied to Railway at Junee, as per Commissioners' offer	1,500
Water supplied to fettlers along 16 miles of line, and Illabo Station, &c.	100
Stables, gardens, &c.—say 5,000,000 gallons, at 1s. per 1,000 gallons	250
Total	£2,250

The expenses would be as follows:—

Interest and sinking fund on £45,000—at 4 per cent.	£1,800
Working expenses, consisting of a caretaker at Bethungra and a turncock at Junee, &c.	200
Total	£2,000

showing a balance in favour of the scheme of £250.

The Council are acquainted with the details of the scheme which it is proposed to carry out, and I have a letter here from Mr. Gormly, one of the Members of the district, dated 9th December, 1892, in which he says:—

I am informed by the Mayor of Junee that at a special meeting of the Council, held on 5th inst., the following resolution was unanimously carried:—"That the Minister for Public Works be informed through Mr. Gormly that this Council approves of the scheme for a water supply submitted by Mr. Price, and that the Government be urged to have it carried out at once." I would, therefore, respectfully urge that steps be at once taken to have the proposed water scheme carried out.

The Cabinet thereupon decided to submit this scheme to Parliament for reference to the Committee, which was accordingly done. I hand in a plan of the work.

2. You have not handed in any correspondence from the Railway Commissioners, which, I believe, is the backbone of the whole thing? On the 22nd April, 1890, I wrote the following minute:—"Will the Commissioners kindly say what they are prepared to guarantee in this matter?"

3. To what scheme did that minute refer? The Wagga Wagga scheme. Of course, it does not matter to the Commissioners where the water comes from. In reply, I received the following minute:—"The Commissioners are prepared to pay 1s. 6d. per 1,000 gallons supplied, and guarantee a minimum payment of £1,500 per annum for a term of five years."

4. That was three years ago? Yes; but I believe they are perfectly prepared to give the same guarantee now.

5. Do you know that circumstances have not altered—that they still want the water? I do not know that I have a letter to that effect, but the information could be obtained from the Secretary to the Railway Commissioners. I believe their water supply costs the Commissioners something like £3,392 per annum. They bring a large quantity of water from Wagga Wagga by train. It has also cost them from £200 to £300 per annum to supply the fettlers between Wagga Wagga and Junee, and we have allowed £100 for a similar service between Junee and Bethungra, which is about the same distance as from Wagga Wagga to Junee. The supply of water to Illabo has also to be taken into consideration.

6. Is there a settlement at Illabo? A small settlement, I believe. The pipe-line would run alongside the railway line.

7. Inside the railway fence? On the public road. The Railway Department will be able to put in service pipes.

8. According to the paper which you have put before us, a great deal of attention seems to have been devoted towards supplying Junee with water? Yes; the matter has been engaging attention for some years.

9. A number of schemes have been propounded? Practically, they resolve themselves into four.

10. Do you know why the Junee Council employed Mr. Gipps to propound a scheme? I cannot answer that; I suppose they thought that they would bring the matter to a head more quickly in that way.

J. Barling, Esq. 14 Feb., 1893.

11. Do you know whether they gave their adherence to Mr. Gipps' scheme? I believe that at one time they were favourable to his scheme. The scheme we are now proposing has only been recently discovered, and I think the Committee will see that it is so manifestly superior to all others that they will not be surprised that the Council has unanimously resolved to accept it.
12. When Mr. Gormly's letter was written how had the Council become informed of Mr. Price's scheme? Because we supplied them with his report.
13. It was after a consideration of that report that they decided to accept the scheme? Yes.
14. They did not come to that conclusion merely because they were tired of waiting, and were ready to accept any scheme that came before them? No. The advantage of a gravitation scheme over a pumping scheme was so manifest that they were ready to jump at it.
15. Who made out the estimate of revenue? Mr. Price, I believe, after consulting with the local Council, and checking the figures by the aid of the Treasury officials.
16. You anticipate getting £400 per annum from a rate of 9d. in the £ on all houses in Junee served—80 per cent. of the whole town? Yes.
17. £250 from stables and gardens—do you not think that excessive? I do not think that 5,000,000 gallons would be a very large amount to be used.
18. If you are only going to receive £400 per annum from ratable property, is not £250 per annum rather much to expect from stables and gardens? There may be factories. We have only calculated on a rate of 9d. in the £, so that it would not be difficult to make up any deficiency by increasing the rate. Municipalities in other parts of the the country are paying 1s. in the £.
19. You can charge that rate under the Country Towns Water Supply and Sewerage Act? Yes; so that any deficiency in our estimate could easily be made up by raising the rate to the maximum.
20. Were the Junee Council aware that your calculations were based upon the 9d. rate? I think Mr. Price's report states that they were.
21. They might alter their minds if they knew that the 1s. rate was to be charged? The Committee will be able to find out all about that from the Council direct.
22. If it were not that the railway would be so large a customer, there could be no warrantry for a scheme of this kind? Undoubtedly not.
23. It all depends on the Railway Commissioners being customers in the future? Yes; unless Junee increases to a very great extent.
24. Junee is a junction township which has been brought into existence by the railway? Yes.
25. Where did you obtain the figures you read just now as to the present cost of water to the Commissioners? I have them in documents, which I can easily put in.
26. Have any plans of reticulation been prepared? Yes; there is one before the Committee.
27. Has that plan been before the Council? I do not think that that particular plan has.
28. Has any reticulation plan been before the Council? That I cannot say for certain.
29. The town of Junee may be considered an accident in this matter. It is only the Commissioners that you are providing for? Undoubtedly they will be the principal consumers.
30. Mr. Darley is absent from town? Yes, but Mr. Tillett will represent him. He will be back in time to be examined by the Committee, if they wish to do so.
31. Has Mr. Darley given any personal attention to this matter? He is in favour of the scheme.
32. Has he examined the site of the proposed reservoir? I am not sure—I think he must have done so.
33. The scheme comes before the Committee with the approval of the Minister in Cabinet, and also of the professional officers? Yes; and also with the unanimous approval of the Council.
34. Has the Junee Council passed a resolution under seal in favour of this scheme, and forwarded it to you? No; we have not got a resolution under seal. The Council passed the resolution which I read just now.
35. In the statement put before us, you say that the Council passed the ordinary resolution to bring themselves under the provisions of the Country Towns Water and Sewerage Act? That had nothing to do with this scheme.
36-37. But when a Council pass such a resolution they leave it entirely to the Government to propound a scheme? But I may mention that the Country Towns Water Supply and Sewerage Act does not necessitate the passing of any such resolution.
38. The document which you have is authenticated? Not the document which I read.
39. But the previous resolution? In this particular case?
40. Yes? I am not certain—I will make sure.
41. In your statement you say "In this year (1888) the Junee Council passed a resolution in due form, requesting to be brought under the operation of the Country Towns Water Supply Act"? I had forgotten that for the moment. No doubt that matter is all right, but in this particular case we should not think the passing of a resolution of very great importance, because the Committee will be in communication with the Council, and will ascertain directly if they are in favour of the scheme. As this is not a legal necessity we should not attach much importance to a resolution of the Council.
42. Is the £100 per annum for supplying fettlers with water included in the Railway Commissioners' subsidy? No, I do not think so; but I think it would be very fair to include it. The Commissioners are quite prepared to give £1,500 a year towards the scheme for bringing water from Wantabadgery, which would not perform this work.
43. *Mr. Ewing.*] Would the carrying out of this scheme be justifiable if the railway were not in existence? I think not.
44. Therefore, the merits of the case depend to some extent upon the permanence of the railway demands? Yes.
45. You can say nothing about that? No; the Commissioners will answer for themselves.
46. You know nothing about the quality of the water? Mr. Price will tell you about that.
47. *Mr. O'Sullivan.*] Does the Minister consider this an urgent work? It has been represented as an urgent work, and the Minister, by referring it to the Cabinet, and to Parliament, admits, I think, that it is an urgent work. I think there is no doubt about its urgency.
48. I suppose there would be no doubt about the money being forthcoming if the Committee should recommend the carrying out of the work, and Parliament approved of it? You refer to loan money. That is a political matter about which I cannot give an answer.

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49. *Mr. Davies.*] You stated that the Railway Commissioners are prepared to pay £1,500 a year for five years, taking water at the rate of 1s. 6d. per 1,000 gallons? Yes; £1,500 is the minimum. If their requirements at 1s. 6d. per 1,000 gallons do not amount to £1,500, they will pay that sum.
50. You estimate that the ratable property in the town at 9d. in the £ will bring in £400 a year? Yes.
51. If you imposed the maximum rate of 1s. in the £, it would only bring in about £530 a year? In the Municipal Directory the rates are put down at £700 a year, and we have ascertained from the Treasury that the revenue for the year ending February, 1892, was £752 16s. 10d. The Council Clerk was asked what amount a rate of 1s. in the £ would bring in, and he said £670. Of course, we have to deduct from that one-fifth for the houses not reached by the water, which would make the amount about £536 a year, which, at 9d. instead of 1s. in the £, would amount to £402; but, to be under the mark, we put it down at £400 a year.
52. The reticulation will not reach the whole of the town? It is not proposed to extend it at the present time.
53. The portion of the town which it is proposed to reticulate will give about £400 a year? Yes.
54. *Mr. Hoskins.*] That is only an estimate? Yes; but I think it can be relied upon pretty well.
55. *Mr. Davies.*] If you went to the extreme limit and imposed a rate of 1s. in the £, you would only get £530 in the year? Yes.
56. You also hope to make £250 a year by selling 5,000,000 gallons at 1s. per 1,000 gallons? Yes.
57. Is it consistent to charge the ordinary public 1s. per 1,000 gallons and the Railway Commissioners 1s. 6d. per 1,000 gallons? The Railway Commissioners are prepared to give us 1s. 6d. per 1,000 gallons. It is worth their while to give that, and unless they did so, it would not pay to carry out the scheme. We put down 1s. per 1,000 gallons in this item, but it is a very low rate indeed. In fact, it is manifest throughout the statement that we have endeavoured to under-estimate rather than over-estimate.
58. What data have you for reckoning on the consumption of 5,000,000 gallons? I have not gone into the matter, but Mr. Price, who has dealt with it very carefully, will be able to give you the details.
59. I suppose you have no personal knowledge of the scheme, except what you have obtained from documents and correspondence? Yes.
60. The total annual cost for interest and working expenses is estimated at £2,000? Yes; the interest is calculated at 4 per cent.—4·0088, I think, it is really—which will pay off the cost in sixty years.
61. Do you think that £200 is a reasonable sum to provide for a caretaker and a turncock? Yes; I think so. It is well known that gravitation schemes are almost inexpensive to manage. You would have a caretaker at the reservoir, and the turncock in the town, and they would get about £2 a week each.
62. Are you aware that none of the turncocks in connection with the Water and Sewerage Board receive so low a salary as £2 a week? I should imagine that the work which a turncock would have to do at Junee would be very small in comparison with what a turncock has to do in Sydney.
63. Still, his whole time would be taken up? Yes; but still I think there would not be much difficulty in getting such light work done for that amount.
64. No provision is made in the estimate for wear and tear and repairs? Wear and tear ought to be very light indeed.
65. Still, some provision should be made for it? The whole of the cost will be paid off in about sixty years by providing a sinking fund of something like ½ per cent. The engineers will be able to tell you about how long these pipes should last.
66. But in the best scheme that may be devised, is it not likely that there will be breakages and leakage? No doubt there will be something, but our estimate of revenue is so low that there will be an ample margin to cover the slight amount of wear and tear involved. The engineers will be able to go more into detail than I can.
67. You cannot tell what is the life of these pipes? That is an engineering matter.
68. You observe that no provision has been made for repairs? Yes.
69. *Mr. Hoskins.*] The Municipal Council of Junee have not bound themselves by resolution to levy and remit to the Treasury rates which, together with the rates paid by the Railway Department, will be sufficient to pay the interest upon the money expended in carrying out this work? No, they have not passed such a resolution as that; but I do not think it is at all important in this particular case.
70. Why? Because under the Country Towns Water and Sewerage Act they are compelled to pay the interest to the Government. In fact, they are bound to pay the cost of the work in twenty-eight years. The Minister, however, intends to introduce a Bill which will largely extend the time, and if they do not pay under its provisions we can appeal to the Supreme Court for a receiver, who will come in and take the rates. In that way the Government will pay itself.
71. Can you say whether the Minister or the Government has determined to enforce the payment of rates due by defaulting Councils? The matter is under consideration now; but, as I think I have explained before, it is a very difficult question. Even with the extended time, the Councils will, in some cases, not be able to pay; but I believe I have good reasons for thinking that if these works were differently managed they could easily be made to pay.
72. Can you tell me whether the Government has determined to take steps to compel the Councils to pay? I can only say that the matter is now before the Minister. I have no doubt that he intends to bring it before the Cabinet.
73. Can you tell me how many defaulting Councils there are—Councils which have had money expended for waterworks, and which have not made any attempt to comply with the provisions of the Water Supply Act by remitting their rates to the Treasury? The large majority have not paid anything. Hay has paid, I believe, and Deniliquin and, I think, Lismore, have each paid for one year; but most of them have not paid. I think, however, that I have explained before that the term "defaulting" is too strong a word for the case.
74. What else are they if they do not pay? If you will allow me I will explain. The Act provides that we should give a statement of the cost of these works. When the cost has been officially given the Act comes into operation, and the Councils have to pay the principal and interest within 28 years, but in a large number of cases we have not officially stated the cost of the work.
75. Why? The reason why we have not done so is that it was very early seen that under the 28 years system it was utterly impossible for the Councils to pay; the question was then raised whether we should extend the period for the repayment of the money or whether we should write down the capital.

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76. What do you mean by writing down the capital? That is, supposing a work cost £50,000, whether we should forego £20,000 and write it down at £30,000. It was decided that a Bill should be introduced to extend the period for repayment, but from one cause and another it has not yet been put before Parliament. There have been so many political changes that the matter has not reached that point. When I appeared before the Committee on another occasion, and a somewhat similar question was asked, I pointed out that even with this extended period the Councils, in some cases, would not have sufficient revenue to pay. But I also pointed out that it was almost certain that the works in those cases could be made to pay if they were under more rigid management. In one case I am almost certain that they have been charging the expenses of street-watering to the water revenue, which is a most improper thing to do. Then again, how do we know if Councils have vigorously followed up the plan of compelling persons to pay? I imagine that as they are not compelled to pay the Government, they become very lax in regard to compelling the consumers to pay, but I believe that by strict management it is not improbable that these various water-supply works would pay.

77. The Department has not up to the present time furnished the Minister with the particulars of the actual amount expended in connection with each water-supply work? That is hardly it. I do not say that we have not furnished the Minister with these particulars. We have furnished the Minister and this Committee with the cost of these works, but we have not officially published the cost in the *Gazette*, because it was seen that the Councils really could not comply with the requirements of the Act. For some years past the question has been found such a difficult one that it has not yet been settled.

78. Did you, as Under Secretary for Public Works, never consider it your duty to bring before the Minister the necessity for publishing this information in the *Gazette*? Undoubtedly the question has again and again been brought before the Minister. The papers in the office will show that. When I was examined in connection with the Parramatta sewerage scheme, I went very fully into this matter, and read the various Ministerial minutes upon the subject.

79. How much money has been expended, up to the present, on these various schemes? Between £300,000 and £400,000, I think, but I will get the exact figures.*

80. Have you ascertained from the Railway Department if the water it is proposed to get from this source of supply is likely to damage the tubes of the locomotives, because of its containing minerals? I have not instituted that inquiry.

81. Seeing that it is admitted by Mr. Price that the water in summer-time is very brackish, and that the Railway Locomotive Department will be your principal customer, ought you not to ascertain if it is likely to damage the tubes of the engines? I should be glad if you asked the engineers for this information. It is only the water at the bottom that would be brackish. The water on the top, which will be drawn upon, is as pure and as sweet as possible. The evidence of those who follow me will show that.

82. I suppose you are aware that some water cannot be used for locomotive purposes? I understand that, but I think it will be shown conclusively that there need be no fear on that point in this case.

83. You do not undertake to express an opinion with regard to the quality of the water? Certainly not.

84. You said in reply to the Chairman that other country towns paid 1s. in the £ for their water supply, and that it is proposed to charge Junee 9d. in the £;—will you tell me what other towns pay 1s. in the £? I think all the other towns pay that rate.

85. I understood that they paid nothing? The consumers have to pay 1s. in the £, but the Councils do not pay anything to the Government.

86. Do the consumers pay? No doubt many of them have paid.

87. Are you aware that there is a Bill now before Parliament empowering the Municipal Council of Goulburn to enforce the payment of rates. The taxpayers there will not pay the rates? There has been some technical informality there, though I forget for the moment what it is, for which it is necessary to provide a remedy.

88. Would it not be the same with regard to the other towns? I think there is some particular feature in the Goulburn case, such as the time of striking the rate. I think the Bill has to do more with back rates than with present rates.

89. *Mr. McCourt.*] What is the total length of the pipe-line? A little over 20½ miles.

90. The cost of that is set down at what? The main to service reservoir will cost £17,953, and the service main to town centre £2,833.

91. Do you remember the length of the pipe-line in connection with the Armidale scheme? I think it was more than this.

92. It was 10 miles. What was the cost of it? £17,627 14s. 9d.

93. If 10 miles of pipe-line at Armidale cost £17,000, how is it that 20½ miles of pipe-line at Junee would cost the same amount? I do not think you can apply the rule of three in that way.

94. Do you not think that this estimate is a low one? The engineers will inform you as to that, but I do not think it follows as a matter of course that the estimate is low.

95. *Mr. Wall.*] What period is this loan to extend over? It has not been definitely settled yet, but the cost will probably have to be repaid within sixty years.

96. What loss will the Government sustain by advancing the money? At 4 per cent. I presume the idea in your mind is this: our loans at present cost considerably more than 3½ per cent., and why should we charge practically only 3½ per cent. to these Councils. I spoke to the Minister on the point yesterday, because I thought it would be raised by the members of the Committee, and he said that he looked upon the present depression which was affecting our securities as only temporary, and he therefore did not think it right to apply a rule which would probably be of very short application to this particular case. He said, however, that if the present state of things appeared likely to become permanent, the question would arise whether the subject should not be reconsidered.

97. As this money is advanced purely for the accommodation of the municipalities, does it not occur to you that during the time money is dear they should be compelled to pay the Government proportionately for it? That is entirely a political question, which it would not be right for me to enter into.

98. Suppose we pay 4½ per cent for this money? I do not know that the loan will cost 4 per cent.

99. Well, 4 per cent.,—what is allowed for a sinking fund? Half per cent.

100. That will be practically 4½ per cent., so that we should be losing half per cent.? It will be a little over half per cent. It will take 4·0088 per cent. to pay off the principal and interest in sixty years.

101.

* Note (*on revision*):—The total amount spent to 28 February, 1893, is £390,251.

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101. That will entail a loss on the Government of half per cent. for sixty years? If we give 4 per cent.
102. You refer to advances made to Municipal Councils for the carrying out of these works? Yes. That is to say, to moneys spent by the Government in carrying out the works for the Councils.
103. Did the Department take any trouble to inquire into the revenue likely to be derived from this town? I forget at the present time, but I have no doubt the matter was looked into. I think the Committee have asked me before about that. The cost of the works which have been carried out has been largely increased since the first estimate was given, and I pointed out that to a considerable extent this was due to the municipalities having increased their reticulation so much. In some cases we have constructed additional reservoirs. At Goulburn, for instance, we have erected a dam. At Bathurst we are making another reservoir, and we have done the same thing at Albury, so that from one cause and another the original estimates have been largely exceeded.
104. If the original estimates had not been exceeded, would those towns be in a position to pay the interest at the present time? I think that may be considered a fair inference.
105. Who is responsible for the increased cost of these works? I think the Department, and also the Council. The Council have asked us to make these additional works, and of course they are to that extent responsible for them. The Government are also responsible, because they have acceded to their request.
106. Is it not a fact that not one of these Councils is in a position to pay its way? I do not think that could be said, but still not one of them could pay the cost of these works under the twenty-eight years system.
107. Is there any better mode now of estimating the cost of these works? I think so.
108. You think the Department go more accurately into these matters now? I do not know that they go more accurately into them. I think they have always been accurate, but the estimates for the Goulburn, Bathurst, Wagga Wagga, and Maitland schemes were compiled on very imperfect data by the late Mr. Clark. The Department was in no way responsible for that.
109. Then who is responsible—who is responsible for the estimate before us now? The Department, undoubtedly, but the circumstances now are different from what they were then.
110. In what way? When Mr. Clark, the late hydraulic engineer, was here, twenty years ago, advantage was taken of his presence to get him to give estimates of waterworks in connection with different country towns. This he did, but I fancy that the time at his disposal was limited, and that the estimates he gave were more off-hand than accurate. This, I think, can be shown most conclusively; but on these estimates the people pressed the Government to have the works carried out, and their demand was acceded to. When the works were carried out it was found that they cost more than was estimated.
111. Was the Department in existence at the time? Yes.
112. Were Mr. Clark's estimates checked in any way? I do not think it was asked that they should be checked.
113. These estimates have been checked by the Department? Yes, most carefully. As showing what can be done when waterworks are properly managed, I may instance the Hunter River Waterworks. You are aware that last session an Act was passed appointing a Board to manage these works, which cost the Government between £300,000 and £400,000, and were a heavy drag upon it. I think they were hardly paying working expenses, let alone the interest upon the capital. Directly they were put under proper supervision, however, although we have increased the cost of the works by the amount of interest that has been held over from year to year, the levy for the first year is estimated not only to pay interest on capital and working expenses, but also ½ per cent. sinking fund as well. I mention this as a notable instance of what water-supply works will do when they come under rigid and proper management.
114. Does that not go to show that the administration of the Department is defective. Directly these works are taken away from the control of the Department and placed under an independent Board they are a success. In reply to Mr. Hoskins you stated that the Minister had under consideration the question of dealing with those municipalities which had not paid; but have not the Government the power under the provisions of the Water and Sewerage Act to take over the rates? They have the power to appoint a receiver.
115. They are limited in that case to the 5 per cent.? Yes.
116. I think you stated in reply to Mr. Hoskins that the Councils were compelled to pay—that is, if they could pay—at the rate of 5 per cent.? Yes.
117. If they cannot pay, the Minister has no power to make them? Certainly.
118. Was not the Hunter River Supply under the control of the Department? Yes; but your inference was that the Department was at fault, but I maintain that the Department was not in any degree at fault. We could not levy rates and make the people pay, but the Act gave the Board the necessary powers, which the Government did not possess.
119. You are precisely in the same position with regard to these Councils, because you cannot levy rates in excess of 5 per cent.? I do not think there is any occasion to levy rates in excess of that amount.
120. You have stated that you are under the impression that these schemes do not pay because they are not properly managed? I should not like to make a sweeping charge like that; I only put it forward as an hypothesis. I think that if these schemes were more stringently managed they could be made to pay.
121. You think that if the Government had control of them they would be better managed? Yes.
122. *Mr. Hoskins.*] If the Government appointed a receiver? Something of that kind.
123. *Mr. Neild.*] Page 2 of Mr. Price's report creates a certain amount of doubt as to the purity of this water—in this way, that he appears to make a special effort to show that the water is not impure—in other words, damning it by faint praise. Reference is made to several analyses. Have you copies of these analytical reports? I daresay we have among the papers. They can easily be supplied.
124. Do you not think that in view of the particular attention which is drawn to the character of the water these analyses by the Government Analyst are of extreme importance? Yes; but I think it will be explained when you examine the engineers that when the dam is put up the conditions will to a certain extent be altered. We should then have a great body of water, the upper stratum of which, I think, will be found perfectly pure and sweet. This is an engineering matter, however, about which I would rather not be questioned.
125. In one paragraph Mr. Price says:—"Of course I never expected any of them to pass the stringent tests of the Government Analyst with regard to ammonia, as it would be impossible for the water to escape contamination from the numbers of sheep, cattle, fowls, and wild animals using it during a dry season, when every other creek in the district was dry. Such impurity is temporary, as of course, the bed of the creek will be cleared from dead animals, and the watershed fenced." Can you tell the Committee what sort of a fence it is proposed to erect? The engineers will tell you that.

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126. You do not know whether it is to be a wood or a wire fence? I should think it would be a close wire fence, but that I cannot tell.
127. Would the fence prevent the fowls from getting over and dying in the creek? I can with confidence allow that question to remain over till the Committee have seen the place. There will certainly be no fear of dead animals getting in, and no fowls will get in.
128. It will not be necessary to wire in the top of the reservoir? No.
129. £1,860 is put down for land at watershed with fencing, but it is shown that the catchment area which I suppose is, in other words, the area of the watershed, is 5¼ square miles? That does not mean that we are going to resume all that.
130. But you are going to fence it? I do not think so.
131. What will be the use of fencing part of it? To keep the cattle out of the reservoir. There is to be a dam 40 feet high thrown across the creek, and we certainly could not allow the cattle to go near it.
132. I thought it was proposed to fence in the watershed? That is only the part which we intend to resume.
133. Are we to understand that the catchment area and the watershed area are distinct? I cannot exactly say that, but the term watershed is intended to apply to 960 acres; the real watershed is the whole of the area marked on the plan.
134. It is proposed to fence the smaller area, and not the larger? Yes.
135. Would it not be a practical waste of money to fence in one part and not all? I do not think so. There will be 40 feet of water in the reservoir, and it would be most improper to allow cattle to depasture along that. The country round about is almost uninhabited, and I believe there is not a single person living about there.
136. I suppose the fowls and the wild animals have no connection with any settlement? I dare say there may be some settlement in the district. There are homesteads in two places, but we propose to resume part of the land. The settlers of course may keep some fowls, but I think the contamination will be very slight.
137. Wild animals are referred to? They would be kangaroos, wallabies, native dogs, and so on.
138. It is proposed to fence the area more closely surrounding the dam, not the whole catchment area? Yes.
139. If it is desirable to keep dead animals out of the reservoir and away from the immediate vicinity of the reservoir, do you not think it would also be desirable to keep them off the watershed? No doubt, if the matter were looked at from a purely theoretical point of view, it would be better to resume the whole watershed, and fence it all off.
140. A reference is made in the report to the sudden showers that fall in these mountains, very severe showers? Yes.
141. Would not these showers be likely to wash into the dam the bodies of small dead animals and of birds which were lying on the watershed? There will be a caretaker there whose business it will be to see that if anything of that sort falls into the dam it is taken out again. Of course such accidents are inseparable from any water supply. It is just the same with the Sydney water supply, but we have caretakers to take out anything deleterious which may fall into the water.
142. I see that provision has been made in the estimate for the purchase of 2 square miles of watershed,—can you tell me at what rate per acre this land is valued? I must ask you not to press that question, because it is very undesirable in the public interest that we should be closely questioned about a matter of this sort. If we gave an answer we should be exposing our hands.
143. Under these circumstances I will not press for an answer; but do you not think that £1,800 odd is rather low for 1,280 acres, together with fencing? I have not seen the place myself, but I should imagine that the country is very rugged and worthless. The Committee will see it for themselves.
144. Do you know the nature of these holdings? There are only two holdings.
145. Are they paid up, or only partially paid up selections? That I do not know.
146. The report speaks of there having been a good deal of settlement at one time on this watershed: it refers to the selections as dummied selections which have been abandoned? That I cannot say, but one need only to look at the map and see the mountainous character of the country to be aware that the settlement is not likely to be great.
147. I understand that you hold that the consent of the Council to this scheme is not necessary? Not legally necessary.
148. Do you not always make a point of obtaining it? Yes.
149. Have you applied for it in this case? We have not applied for any document under seal. We have a letter.
150. That is not from the Council at all? Mr. Gormly has transmitted to us at their request the exact wording of a resolution passed by the Council.
151. But there may possibly be some misapprehension about the matter? We shall not press for the expenditure if the Council do not require it.
152. I understand from your answers that in your opinion there would be no justification of this outlay were it not for the amount of water which the Railway Commissioners are willing to take? I think there would not.
153. Are we to understand that it is the Commissioners, or is it the Council who are seeking for this work? I think that right through it has been the Council, but they have been in communication with the Railway Commissioners, and they have always brought the wants of the Commissioners forward as the strong reason of constructing this work. Junee, to a very large extent, is a junction town, brought into existence by the railway.
154. Is it proposed to supply any other locality besides Junee from this source? This source is capable of supplying the whole line from Bethungra to Junee; and there is also the little township of Illabo which could be supplied.
155. It is almost on the pipe line? Yes.
156. Has Old Junee been taken into consideration at all? That is a station.
157. Does it not strike you that this is a very expensive scheme in view of the exceedingly small local demand for water; the scheme is to cost some £45,000, and about £400 will be obtained from town rates? That is very true. The railway requirements stand out as the main feature of the scheme. If what I say

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is correct—and I believe it can be proved from the papers—as to its costing the Railway Commissioners something like £3,400 a year for water, it will be at once seen that the State will benefit by the construction of these works.

158. *Mr. Dawson.*] Two thousand pounds is set down to meet the cost of preliminary surveys and reports; will they cost as much as that? That expenditure has extended over some years.

159. You are actually paying the money now? That is not the cost of the present survey.

160. That is what you have paid? Yes, that has been paid since 1888.

161. How much of it has been already paid? I think the whole of it.

162. If this work is not carried out there will be a loss of £2,000 for surveys? You might say the same about railway trial surveys.

163. Two thousand pounds has been already paid, and you cannot ask the Council for that money if the work is not carried out? No.

164. With regard to the item "additional land resumption £1,172," have any overtures been made to the holders of land there? I think not. We take the land from them *nolens volens.*

165. How many miles of fencing are there to be? Four miles.

166. How much will it cost a mile? One hundred and twenty pounds.

167. What sort of fencing are you going to have? It will probably be a barbed wire fence, but the matter has not yet been decided.

168. *Mr. Ewing.*] If an ordinary council cannot pay interest on its waterworks, you have a remedy? Yes.

169. The confiscation of the works? The confiscation of the rates. We can go to the Supreme Court and obtain the appointment of a receiver.

170. That is your remedy? That is our remedy.

171. Generally speaking the interest is sufficient to put the Government in a safe position? I am under the impression that, properly managed, the works will pay.

172. The amount of rates paid by the Council will cover one-fourth of the interest? Yes; but the Railway Commissioners will also pay the Council.

173. Three-fourths of the interest will not be covered in the ordinary way? The Railway Commissioners' contribution no doubt is the principal item in the calculation.

George Alfred Tillett, Esq., Principal Assistant Engineer in office, Harbours and Rivers Branch, Department of Public Works, sworn, and examined:—

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174. *Chairman.*] You are acting for Mr. Darley during his absence? Yes, for a few days.

175. You are familiar with the scheme before the Committee? Yes.

176. Have the details been worked out in the office in Sydney? The greater part of the details.

177. Have you visited the site at all? Not since the survey was made; but some years back I was engaged on the survey of the railway between Cootamundra and Wagga Wagga, and I was then camped very near this site for some weeks.

178. You have not inspected the site since it was proposed to utilise it as a reservoir? No.

179. The data supplied by the officers in the field has been worked up under your supervision in the office, and the result is now put before us? Yes.

180. *Mr. Ewing.*] You have a general knowledge of the scheme in question? Yes.

181. Will you say whether you consider the supply sufficient? The water to be impounded by the proposed dam will be amply sufficient.

182. You do not believe that it will be polluted? I believe that it will not be polluted.

183. Have you read Mr. Price's report? I have.

184. Do you agree with it in every detail? I do.

185. He puts down sundries at £29. Does that mean wear and tear, or does it include wear and tear? The sundries will include small items of expenditure in connection with the turncock's duties.

186. Can you explain why there is nothing put down for wear and tear? The wear and tear in connection with a gravitation scheme must be very small. It will be merely the matter of supplying the turncock with a fresh set of tools occasionally, costing a few shillings.

187. There is no danger whatever of the pipes breaking? That would hardly come under the head of working expenses.

188. You have made no provision at all for renewals? No, no provision has been made for renewals.

189. In a work like this costing £45,000, what would you reasonably suppose would be the yearly cost of renewals, supposing it to be spread over a term of years? I hardly think that the question of renewals has been gone into. It has been considered that the life of the different parts of the works would extend over probably thirty or forty years, so that no estimate has been made of the cost of renewals.

190. Do you believe that there will be any breakage or accidental injury before the end of thirty years? There may possibly be some breakage or injury during the thirty years, but nothing of a very important kind.

191. You believe that it is not worth considering? I think not.

192. You agree with Mr. Price in everything that he says in his report? I do.

193. *Mr. Hoskins.*] You know nothing of the quality of this water? The water we propose to use will be simply rain water. There is no water there at present.

194. Mr. Price in his report refers to it as brackish and containing minerals? He refers to a very small soakage in the bed of an almost dry creek.

195. Will you undertake the responsibility of saying that the cost of the scheme will not be more than is estimated by the Department—£45,000? I am quite justified in saying that it will not.

196. You feel no doubt about it? I feel no doubt about it. The prices made use of in preparing the estimates are quite liberal.

197. *Mr. Trickett.*] You have not been on the ground? Not of late. I was there some few years back.

198. Not since the survey has been made? Not since the survey has been made.

199. *Mr. Davies.*] You are aware that a proposal has been made for several years past in regard to supplying the town of Junee with water? Yes.

200. Have you prepared from time to time plans or surveys in connection with the proposed water supply? We have only dealt with this one proposal—the gravitation scheme from Bethungra—in detail. We made an examination of a proposed pumping scheme from near Wagga Wagga to Junee, and other proposals have been made by the Railway Department and others which we have not carefully investigated; we simply know of them as proposals.

201.

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201. You have investigated all proposals up to date? We may say that we have investigated them, but no detailed surveys have been made to inquire into them properly. We have sufficient information, however, to enable us to form some estimate as to their cost.
202. The Department regard this as the best scheme that has been submitted up to date? Undoubtedly.
203. You would depend solely on the rainfall? Entirely on the rainfall.
204. There is no river or lagoon, or anything of that kind? Nothing of the kind.
205. You simply dam up the creek and store the water from a certain catchment area? The scheme is virtually to construct a dam across the bed of a dry valley.
206. What is the character of the country—sandstone formation? No, granite formation.
207. Your Department has checked the estimated cost of all these works—the storage reservoir, the pipe service, and so on? Yes, we have gone very carefully into it.
208. I understand that you are of opinion that the whole work will be done for £45,000? Yes.
209. Have you any knowledge of the estimated revenue to be derived from these works? We estimated the revenue upon the basis of a rate of 9d. in the £ upon the ratable value of property in Junee, which gives us £400 per annum, and the Railway Department have promised to pay £1,500 a year for a certain quantity of water, or rather they will pay for the water at 1s. 6d. a 1,000 gallons and they guarantee a minimum sum of £1,500 a year.
210. Your Department has a document bearing out that offer? Yes. A further sum of £100 a year is promised by the Railway Commissioners for the supply of water to their men on the railway line between Junee and Bethungra.
211. Without the railway consumption the scheme would result in an absolute loss and failure? Undoubtedly, financially.
212. The total amount to be received from the ratepayers will not exceed £400 a year? Not more than £650, we estimate.
213. Including water for domestic purposes, factories, and everything else? Yes.
214. What kind of pipes do you propose to use in connection with the reticulation? Six inch, 4-in., and 3-in. cast-iron pipes.
215. Is your calculation based on the cost of imported pipes or locally manufactured pipes? It is based upon the assumption that the pipes are to be made in the Colony.
216. Can you tell the Committee what is the difference in cost between imported pipes and pipes manufactured in the Colony? I can simply tell the Committee that at present a contract is in existence for the manufacture of 4-in., 6-in., and 3-in. pipes in the Colony at £7 10s. a ton, and that a tender was lately received for imported pipes of the same dimensions at £6 a ton.
217. There is a difference of 30s. a ton, which is equal to 25 per cent.? The difference is 30s. a ton.
218. Are all your castings and steel pipes to be of colonial manufacture? The steel pipes would most probably be of colonial manufacture. Local tenders for anything in the shape of wrought-iron pipes and steel pipes have been so low that it has been advisable to obtain them here.
219. There has not been much difference? There has not been much difference.
220. What is the life of the steel pipes from the catchment area to the storage reservoir? That is a question I am unable to answer with any degree of certainty, but we look upon the life of a steel pipe as depending almost entirely upon the coating of the pipe. The life will be from thirty to forty years.
221. What is to be the thickness of these pipes? One-eighth of an inch.
222. The cost of this scheme is proposed to be paid off by providing for a sinking fund to wipe it off in sixty years? I am not aware that that is the case.
223. Do you think that any of the pipes, whether they are cast-iron, steel, or wrought-iron, will exist sixty years? I very much doubt it.
224. Have you any accurate knowledge as to the life of a cast-iron pipe? A cast-iron pipe is generally calculated to last almost for ever; but it may become unsuitable for the duties required of it by reason of internal incrustation and corrosion.
225. That depends on the pressure? Yes. In this particular instance the pressure is a matter that need hardly be taken in consideration; it is very small.
226. What do you estimate the practical life of a cast-iron pipe to be? It is very hard to say, because a pipe may become useless by reason of corrosion and internal incrustation.
227. It will gradually waste away? Yes.
228. Do you think the life would exceed thirty or forty years? I think that would be about it.
229. That would be the full life of a cast-iron 6-inch pipe? Yes.
230. *Mr. Neild.*] You said just now that the pressure upon the pipes would be very slight? Comparatively slight.
231. The reservoir provides for a fall of 470 feet, does it not? No; 270 feet.
232. What would be the pressure in the reticulation pipes for Junee? The reticulation does not connect directly with the storage reservoir, but with the service reservoir.
233. What is the difference in height between the service reservoir and the main reservoir? There is a difference of 270 feet in their top water-levels.
234. What difference is there between the service reservoir and the reticulation? That would vary very much. The highest house would be within 70 feet of the surface of the water in the service reservoir, but the lower part of the town would be under a greater pressure.
235. Would there be sufficient pressure to do away with the need of fire engines? In the greater part of the town there would.
236. Have you any practical experience of the life of such steel pipes as you propose to use? We have had no practical experience in this Colony of the life of such pipes. It is only by reading that we can ascertain what is supposed to be the life of a steel pipe.
237. The greater portion of the pipe-line will run alongside the railway? Yes.
238. Are the pipes to be covered? Yes.
239. To what depth? They are to be about 18 inches below the surface of the ground.
240. Would that keep the water fairly cool? I think so.
241. You estimate that the settlers will consume water to the value of £100 per annum? Yes.
242. Is not that rather a free estimate? You can hardly look upon it in the light of an estimate. It is virtually an offer made by the Railway Commissioners.

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243. Are the Railway Commissioners under an obligation to supply water to the fettlers? I think so. If they did not the fettlers could not exist on that plain.
244. Then we are to understand that the Commissioners guarantee to pay £1,600 for water for all purposes? Yes.
245. Do you think that the oversight provided for—viz., two men, one at each end of the service, is sufficient? I think it is amply sufficient.
246. Will a residence have to be built at the reservoir? A small cottage will probably have to be built at the storage reservoir. The family of one of the men may live there.
247. Will that cottage be provided for under the head of contingencies? Yes.
248. *Mr. Dawson.*] You say that you knew Junee some years ago? Ten or twelve years back.
249. It was then a plain? It was all open country where the present Junee junction is.
250. Have you been there since then? I have only passed through in the train.
251. Do you know of your own knowledge if the want of water is a great drawback to the settlement of the place? I should imagine that it would be a great drawback.
252. Do you know that for some time past water has had to be bought from Mr. Hammond and taken from his dam. Do you know what they pay for water? Do you refer to the Railway Department?
253. The inhabitants of the town? I have no knowledge of Junee Junction as a town. When I made the railway survey there was no town there at all.
254. There are a lot of shallow wells sunk there; do you know if they go dry? I have seen small tanks sunk in different places.
255. Do you think that if a plentiful supply of water were obtained for Junee the place would go ahead? I should imagine that it would. The soil is fairly good.
256. Is it fine country all round? It is fine country.
257. I think you stated that you had carefully considered this scheme? I have.
258. Do you think that the figures are correct, and that there will be a profit? I do.
259. The income is not over-estimated? No.
260. Do you think that the expenses are fairly estimated;—will they be more or less? I think that the expenses are very fairly estimated.

Edward Bellingham Price, Esq., Supervising Engineer, Harbours and Rivers Branch, Department of Public Works, sworn, and examined:—

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261. *Chairman.*] You were called upon, some years ago, to report on certain schemes in connection with the proposal to supply Junee with water? Two years ago.
262. What were those schemes? There were Mr. Halligan's proposal to pump water from Wagga Wagga, and Mr. Gipps' proposal to bring water from Wantabadgery.
263. Mr. Halligan is an officer of the Department? Yes. Mr. Gipps' scheme was to pump water from Wantabadgery on to the summit of a hill, and then bring it in earthenware pipes to Junee. That was his No. 1 scheme.
264. You reported upon both? I reported on their relative merits.
265. Subsequently you obtained permission to explore the country further north? At that time I was one of the Examiners of Public Works. I afterwards returned to the Department, and my first work then was to survey one of these schemes, and I asked for a free hand to enable me to explore the country, in order to work out another scheme.
266. Your scheme received the approval of the Engineer-in-Chief? Yes.
267. *Mr. Humphery.*] Mr. Halligan's scheme would cost £35,000 to carry out? Yes; it was supposed that it would cost that.
268. Who made the estimate? The estimate is his own.
269. You did not check it? No; I was not asked to go into the estimates.
270. You condemned the scheme without regard to the cost? I did not condemn Mr. Halligan's scheme; I said it was better than the Wantabadgery scheme. I was Examiner of Public Works at the time, and I reported favourably upon Mr. Halligan's scheme as compared with Mr. Gipps' scheme.
271. You then became an officer in the Harbours and Rivers Department? I always belonged to that Department. I was lent as Examiner of Public Works for two years, and then returned to the Department because there was nothing more to report upon.
272. You discovered that it was possible to obtain an ample supply of water from a part of the country that had not previously been explored? Yes. I spent a good many days in exploring the ranges until I found the basin which is to form the reservoir. It is not shown on any of the maps, because it had never been surveyed.
273. Having compared all the schemes, are you prepared to say that this is the best? Yes; we actually made a survey of the Bomen scheme, and then we made complete plans of the Bethungra scheme, and compared the two. We did not make plans of Mr. Gipps' scheme, because we were informed that he had made plans of it himself, and we had an old survey to go upon. Mr. Melrose, of the Railway Department, made a survey of that scheme ten years ago,—in fact, Mr. Gipps' scheme was a revival of that survey.
274. Do you mean the scheme to dam the river by throwing timber across it? That was the No. 1 scheme. In the No. 2 scheme there is no dam. Mr. Gipps proposes to pump the water from the Murrumbidgee, at Wantabadgery, to the top of the hill called Hartley's Delight, which he shows to be 4½ miles from the river, but which we make out to be 5 miles. Hartley's Delight is about 20 feet higher than the range which cuts off Junee from Wantabadgery. The total distance from Hartley's Delight to the summit of this range is 9½ miles.
275. There is a difference in elevation of 20 feet? He could get more but he only wants 20 feet. Mr. Gipps forces the water up by means of a pump, and then lets it gravitate.
276. That is his No. 2 scheme? Yes.
277. How far is it from the top of the range where the proposed storage reservoir is to be placed? It is 3½ miles to the railway tank at Junee.
278. Then the total distance is from 18½ to 19 miles? 17¾ miles we make it in round figures. I think he makes it a good deal less.

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279. What is the distance of your catchment area from Junee? To the service reservoir is 18·12 miles, and from the service reservoir to the iron tank is 2½ miles.
280. You say that Mr. Gipps' scheme would be about the same length as your scheme? No; this scheme is a good deal longer. His scheme is 17¾ miles in length, while our scheme is 20½ miles.
281. Does Mr. Gipps propose to convey the water in pipes similar to those which you propose to use? No; he would use larger pipes. He would use a 9-inch pipe, while we only require a 7-inch pipe, because we have a very high head of pressure.
282. What would be the difference in the cost of pipes? From £300 to £400 a mile. You must use a stronger pipe for a pumping scheme than would be required for a gravitation scheme.
283. And how much a mile do you estimate that the pipes would cost? We allow £25 per ton for these steel pipes delivered in Sydney. That is the price at which we can buy them from Hoskins. The price for a large quantity would probably be less. It takes 27·77 tons of pipe to a mile, or in round figures 28 tons, and as the distance from the reservoir is 18·12 miles, we should require 503 tons of pipes, which, at £25 a ton, will come to £12,580. That is the price of the pipes delivered in Sydney, and we allow for the laying of some of them 5s. a yard, 2s. 6d. for the laying of others, and 1s. 6d. for the laying of others again. The cost of laying depends on the character of the country, and I have put down the total cost of laying the pipes at £3,067. To that we must add for special casting, air-valves, retention valves, and things like that, £250—the cost of 10 tons weight—and the freight of 514 tons at £4 a ton, which amounts to £2,056, making the total cost of the main from the storage reservoir to the service reservoir, when completed, £17,953.
284. In round figures that would be £1,000 a mile? It comes to £986 a mile.
285. Assuming that the pipes used in each case are the same, your scheme being two miles longer would cost £2,000 more than Mr. Gipps' scheme? He could not use similar pipes.
286. Inasmuch as your pipes are £200 or £300 cheaper than those used by Mr. Gipps, his scheme would cost £5,400 more as against the £2,000 which the increased length of your scheme necessitates? Of course, he has a set off against that. He has no impounding reservoir to construct, while we should have to expend £10,000 upon constructing a concrete weir, resuming land, and erecting a caretaker's house. He has only to spend £2,000 for a pump, an engine, and inlet works, and about £2,500 for his first reservoir.
287. What would his annual expenses be, as compared with yours? Probably £1,000 a year, though they would depend very much on the quantity of water pumped. The more water that was required the greater the expense of pumping would be. If Junee continued the same size as now, the cost would not be over £500 a year. The wear and tear of the engines would be a very considerable item.
288. There would be no saving in the end? If the two schemes were equally good, it would be worth while spending £20,000 more on a gravitation scheme than on a pumping scheme. The working expenses would pay interest on that amount.
289. Have you carefully estimated the cost of your scheme? Yes; I went over it with Mr. Darley again and again, and he visited the place with me. I do not think that more careful consideration was ever given to a scheme before. We even laid bare the rock upon which the dam is to be built.
290. You mentioned the minimum flow per 24 hours as 250 gallons? Yes; it is just a trickle.
291. That does not give any water? No; and I would rather it did not flow at all, because it is brackish.
292. You depend almost solely upon your reservoir? Yes; it will hold two years' supply for Junee as it will be any time during the next twenty years.
293. If your scheme is carried out and the reservoir is filled, it will contain a two years' supply without a drop of rain falling? Yes.
294. That is including the railway requirements? Yes; that is including the requirements of Junee and the railway. A rainfall of 2 inches flowing off the catchment area will more than fill the reservoir.
295. Is that allowing for evaporation? The evaporation is about equal to the rainfall. The evaporation from Lake George is 32 inches, and the rainfall 31 inches.
296. Suppose there were no rainfall? We should lose 3 feet to 3 feet 6 inches. If there were no rain for two years, we could supply Junee for a year and a half.
297. You put it beyond doubt that the supply will be ample? I think it is right of us to do so.
298. You estimate that there are 2,000 people around Junee;—where do you get those figures? From the Council Clerk and the census returns. I do not take the whole of the population of Junee. There are fifty houses within a radius of two miles of the town included in the census, but we could not supply them.
299. Do you know how many ratepayers there are? I could not tell you that. I got a return from the Council Clerk showing that the income from a rate of 1s. in the £ would be £670.
300. Would your reticulation supply all the ratable houses? All the houses in the municipality except sixty.
301. How did you get the information that the Railway Commissioners would pay £1,500 a year? From the papers.
302. Did you get it from an interview with them, or by correspondence which has taken place with them? Partly from the correspondence, and also from a great many interviews which I had with the resident engineer there, Mr. Shellshear, who has taken a great interest in the work, and who will probably be examined by you.
303. How long is it since you discussed this matter with the Railway Commissioners? I have never discussed it with them personally. The last time that writing passed between the Departments was in 1889.
304. The Commissioners have made no offer since that time in reference to this matter? No; but they are worse off now than they were then.
305. So that the circumstances as far as the Commissioners are concerned are unaltered? Yes. In fact, the Commissioners are worse off now than ever. The dam upon which they depend holds less water now than used to hold.
306. As a matter of fact, this is a scheme first to supply the Railway Commissioners, and secondly to supply the people of Junee with water? Yes; the Railway Commissioners would be the largest consumers. If they did not require such a large quantity of water it would be possible to get a small local scheme to supply the town alone.
307. At what cost? For about £15,000. There is a gully there called Butler's Gully, in which there are already several large dams. I examined the country round there, and I found that if we constructed a dam in one part of the creek we could impound about 30,000,000 gallons of water.

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308. *Chairman.*] How far from Junee? About 3 miles. We could impound over 30,000,000 gallons of water at an elevation sufficient to command the highest house in Junee.
309. *Mr. Humphery.*] You could provide a gravitation scheme sufficient for the requirements of the townspeople at a cost of £15,000? Yes; but the supply would not last two years, because the reservoir would be very shallow. I would not recommend it for that reason.
310. You could provide sufficient water in that dam to give a year's supply if there were no rainfall? Yes; but the reservoir would be very shallow, so that evaporation would take off nearly all the water.
311. But allowing for the evaporation, there would be a year's supply? For Junee alone.
312. And the annual cost would not be greater than the annual cost of the scheme under consideration? No; but the water would be inferior, and the land to be resumed would be much more valuable. It does not include the cost of the land in the estimate, because if we resumed the land we could not carry out the scheme.
313. Would you recommend such a scheme, setting apart the necessity for supplying the Commissioners with water? No; I should not. If there were no better I should.

WEDNESDAY, 15 FEBRUARY, 1893.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM MCCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. JOHN DAVIES, C.M.G.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee further considered the proposed Waterworks for the Town of Junee.

Edward Bellingham Price, Esq., Supervising Engineer, Harbours and Rivers Branch, Department of Public Works, sworn, and further examined:—

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314. *Mr. Hoskins.*] How long have you been an officer of the Harbour and Rivers Department, and connected with the conservation of water? I have been in the Service seven and a half years altogether. I was acting as Examiner of Works two years of that time, so that I have been in the Harbour and Rivers Branch five and half years altogether.
315. How long have you been connected with the Water Conservation Branch? I do not belong to that branch at all.
316. I mean the Water Supply Branch? Five and a half years.
317. How many schemes for supplying water to townships had you been connected with before you had anything to do with this scheme? I designed the Wentworth water supply scheme, and afterwards carried it out; and I designed and carried out the Balranald water supply scheme. Then I carried out the additions to the Goulburn scheme—a weir was thrown across the Wollondilly. I at the same time was carrying out the reservoir for Albury, and a small water supply for Dalton. I valued Wilcannia water supply scheme when the Government bought it, and I did the same thing in regard to the Hay water supply scheme. I also reported on the Broken Hill water supply schemes, and many others.*
318. Did you give an estimate before the work was commenced of the probable cost of supplying these first two places with water? No; the estimate was furnished in both instances by Mr. Darley, the present Engineer-in-Chief. At that time he was chief assistant.
319. Did Mr. Darley in all cases inspect these places himself? No; no one connected with the Department ever saw the site of the Balranald scheme except myself.
320. Were the waterworks in connection with the townships to which you have called attention completed for the original estimate of cost? The works themselves were completed for the original estimate, but we added about 2 miles of reticulation to the Wentworth scheme, which made the cost about £1,000 more than the original estimate.
321. What about the other places? At Balranald we put down 1½ miles of extra reticulation, and the cost exceeded the estimate by about £500.
322. And with regard to the other places? I have nothing to say with regard to the cost of the Goulburn scheme. The works there were completed before I had anything to do with the scheme. I had only to do with the construction of a weir, which cost a little more than half what was estimated.
323. You are aware that the original estimate of the cost of the Goulburn scheme was considerably exceeded? Yes; because no reticulation was included in the original estimate.
324. Do you consider yourself responsible for the estimate of the cost of the works before us? Yes. I may mention that every figure in the estimate has been checked by Mr. Darley.
325. Has Mr. Darley been over the watershed and the scheme generally, and seen where you propose to construct the dam? Yes; he has been over every part of it, and he went all over the other schemes as well.
326. Mr. Darley may be taken to be equally responsible with you for the estimate of the cost of these works? Yes.
327. From what you know of the locality, I suppose you do not consider that the Government would be justified in carrying out these works at the estimated cost to supply the requirements of the residents of Junee? Not without the railway guarantee.
328. Even if a rate of 1s. in the £ were charged upon the rental value of the property in Junee, it would not pay the interest upon the cost of construction? No; it would not.
329. The Department depend upon the quantity of water which they hope to sell to the Railway Commissioners for making the scheme pay? Yes; the scheme depends entirely upon the Railway Commissioners, because they are the largest consumers. There are several other towns which depend in the same way upon the railway. For instance, the Narrandera Council carried out their waterworks without any aid from the Government, and they depend largely upon the railway for making the scheme pay. I was there this time last year, and they were then getting £3 a day from the Railway Commissioners for supplying water to the trains.

330.

*NOTE (*on revision*):—Complete list: Greystones, Enniskerry, Balbriggan, Skerries, Galway, Delgany, and Bandon (in Ireland). Wentworth, Balranald, Broken Hill, Goulburn (additions), Albury (additions), Dalton, Binalong, Hill End, Moss Vale, Bourke (additions), Wilcannia, and Hay (valuations).

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330. It is sufficient to say that the Department in respect to this scheme depend mainly upon the quantity of water which they hope to sell to the railway? Yes.
331. Do you know whether an analysis has been made of this water? Yes; I had six analyses made.
332. By whom? By Mr. Hamlet, the Government Analyst.
333. I suppose he has a record of the analyses? I have a copy of them here. The first time I visited the locality I met Mr. Sawyer, the squatter who owns the land there, and he told me that I had better not camp at the waterholes, because the water was bad to drink, since there were poisonous metals in it. At the time the weather was extremely dry, and I took a sample of the water and sent it to Mr. Hamlet, but he could not find any trace of poisonous metals in it. I have sent him six samples altogether, and he has not been able to find in any one of them a trace of poisonous metals.
334. Do you know whether the presence of minerals—iron, for instance—has been detected in the water;—is the water calculated to injure the tubes of the railway locomotives? Mr. Hamlet does not show the presence of iron. I believe there is a small trace of iron, but he does not show how much. I saw iron coming through in one place from the side of a hill, but the railway engines have been using the very same water for the last twelve years. Bethungra is the largest watering-station upon the railway line except Wagga Wagga. Every train takes water there, except the express, which takes it at Junee.
335. Are you sure that the water which the engines take at Bethungra is similar to that which you mean to conserve? It is not nearly so good. They draw the water from a flat near Bethungra Bridge. There is a lot of decaying vegetable matter there, and you can see dead trees lying in the water, which has a peaty taste. You can drink the water, and they say that it is good for the engines. Mr. Hamlet said, in regard to one sample of the water which we proposed to conserve, "This water may be used for raising steam with." We intercept the water higher up the creek, at the head of the falls. The Railway Commissioners intercept it lower down, where it passes under the line, near the town of Bethungra.
336. *Mr. Ewing.*] The water lower down is not as good as that higher up? It does not taste so good, but I have no analysis of it.
337. *Mr. Hoskins.*] Will you read Mr. Hamlet's analysis? Yes; the following tabulated statement gives the results of the analysis.—

JUNEE WATER SUPPLY.

ANALYSES of water in beds of creeks at proposed storage reservoir, near Bethungra.

Place where sample was taken	Ulandric Creek.							Waterhole, McLeod's Creek.	Sydney Water Supply.	London Water Supplies.	
	Falls.	¼ mile above Falls.	Dam site.	Road crossing.	Waterhole at corner of Weston's selection V		Weston's dam.		Mean of various samples.	New River Co.	Hamstead Co.
Date when taken, 1892	Feb. 16	Feb. 16.	June 28	Mar. 18	Mar. 18	May 16	June 23	June 21			
Mark	B	A	H	D	C	E	F	G			
Grains per gallon—											
Total solids	189·2	174·5	141·0	97·44	18 06	17·4	11·81	20 10	7 01	16·19	29·67
Chlorine as chlorides	81 2	72 5	50 0	37 0	1·5	0·1	0 5	5 5	2 40	1 44	7 16
Nitrogen as nitrates and nitrites	None	None	Trace	Trace	Trace	None	Trace	Trace	·10	. .	
Phosphates from animal pollution	None	None	Trace	None	None	None	Trace	Trace	None	. .	. .
Parts per million—											
Free ammonia	·06	·12	·02	·07	·26	·16	·12	·06	None	Trace	Trace
Albuminoid ammonia	16	·14	·06	·22	·80	·38	·30	16	·01	Trace	Trace
Oxygen absorbed in fifteen minutes	1 6	1·8	·35	1 5	6·00	Excessive	3·80	Excessive	·06	.	..
Oxygen absorbed in three hours	3·5	3·0	·62	3·2	10·00	Excessive	5 60	Excessive	·09	.	
Dissolved gases	..	. ..	.	.	.	..	.	.	. . .	..	. . .
Hardness	. .	. .	.	Hard	Soft	. .	. .	.	.. ..	.. ..	.. ..
Appearance in 2-feet test tube	Clear; slightly peaty.	Clear: yellow.	Clear	Suspended matter.	Turbid and light brown.	Turbid	Very turbid	Turbid	Slightly peaty.	...	.....
Poisonous metals	None	None	None	None	None	None	None	None	None	. . .	. .

B—Taken from pool at head of Falls, three weeks after shower of rain, flow over Falls being about 600 gallons per hour.
A—Taken from pool about ¼ mile above Falls, three weeks after shower of rain.
H—About 500 feet above Falls, one week after a slight fall of rain. Proposed site for dam.
D—From waterhole about one-third of a mile above proposed site for dam where cattle, horses, &c., daily drink.
C—Taken during hot weather. Waterhole with ducks, cattle, sheep, horses, and kangaroos drinking daily.
E—Taken during cold weather. " "
F—Taken from catch dam just below Weston's homestead, all drainage from which is caught in dam; after rainfall sufficient to cause slight freshet, but did not overflow dam.
G—Taken after a slight fall of rain, which just caused creek to flow.
NOTE.—Owing to extreme dryness of season, there were only two freshets in the Ulandric Creek, both of which occurred during the absence of Mr. Price, who was therefore unable to obtain any except "low-water" samples, which are, however, useful as showing the water under the worst possible conditions.

Mr. Hamlet said in regard to the sample from the dam site that we might use the water for drinking purposes if we could not get any better. The presence of ·26 free ammonia in the fifth sample condemns the water altogether. The fact that the water in that sample absorbed oxygen freely points to the presence of animal matter. The table compares the water with the water supply for Sydney, and the water supplied by two London companies.
338. Is it proposed that the water running down McLeod's Creek should contribute to this water supply? No; but by putting a dam across that and another creek we could get an additional 7 miles of catchment.
339. How far above where the water is admitted to be bad do you propose to take it for your supply? Neither above nor below—right in the middle.
340. You have stated that some of this water is very inferior, and that it ought not to be drunk;—how far is it above that water that you propose to take your supply from? We propose to take it right from the centre of that water. The water only becomes bad in an extremely dry season. I was there for three months last summer, and we hardly got a single drop of rain at the place. We had to bring water from Bethungra. I was ordered to go to Jerilderie for a short time, and while I was away the creek flowed a banker, and I calculated from the marks on the sides of the bank that the discharge must have been 2,500,000 gallons in 24 hours.
341. Unless there were an abundance of water in the creek, the water would not be fit for drinking? We depend entirely upon the rain water in connection with this scheme, not upon the water in the creek. The flow in the creek is a mere trifle—400 gallons a day on the average.

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342. Part of the water would not be fit for drinking? According to the analysis little of the water there now in a dry season would be fit to drink. The analyst passed one sample, because it did not show the presence of animal matter; but I might point out that one dead sheep in the water would cause it to give off a considerable quantity of free ammonia. If the reservoir were fenced in, animals would be prevented from getting into the water.

343. Did Mr. Hamlet say that there was anything in the water which would be injurious to locomotives? He did not mention the subject at all, except in one case, when he said, "This water may be used for the purpose of raising steam."

344. What percentage of chlorine is there in the water which Mr. Hamlet said could be used for steam? I have not got the original papers here.

345. Was Mr. Hamlet specially asked to report as to whether the water contained products injurious to the tubes of boilers? No. Three months ago, when speaking to me in regard to this matter, he said that it was utterly useless to send him up samples in a blind way, and that he would do better if he could go down and take the samples for himself, as he did at Tamworth. I said I would write and ask for instructions to be sent to him to accompany me there, and he has now been instructed to go there when he gets back from Broken Hill, in order that he may take samples himself, and judge of the character of the water.

346. I know the Department have at times erected tanks and conserved water which has been found to be so injurious that it could not be used? Yes.

347. On the map before us there is a road from Bethungra to Junee coloured red;—does that road run parallel to the railway? Yes; and it was originally railway ground. The Railway Department took a strip of land 3 chains wide, and they left 1 chain upon each side of the line for a road, taking 1 chain in the middle for themselves.

348. Is it intended that the pipes conveying the water to Junee should be taken along the road? Yes; we propose to lay them just outside the railway fence. They will be in view from the railway. There is a doubtful part, three-quarters of a mile in length, which we cannot find has been reserved. They cannot give me any answer in the Lands Department as to whether the land is a road or whether it belongs to the adjoining owner.

349. If it is not reserved the adjoining owner may claim part of the railway? The railway is fenced off.

350. But still if it is embraced in the grant, and has not been paid for, he can resume it? At any rate that does not affect this matter. The Railway Commissioners always said that the pipes could be laid alongside the railway inside the fence, but we intend to lay them so as to avoid the settlers houses there.

351. What is the capacity of your storage reservoir? 140,000,000 gallons.

352. What calculation did you make in regard to the rainfall? I took the average rainfall at Bethungra, as shown in Mr. Russell's returns—28·78 inches. The rainfall at Bethungra is on the average 3 or 4 inches a year more than the rainfall at Bethungra Park, 10 miles out on the plain.

353. You will have to depend on the rainfall entirely for your supply? Yes; and principally upon sudden showers, because ordinary rainfall would evaporate off the surface or soak into the soil.

354. The water in the creek is always brackish? No; it was beautifully fresh for three or four days after the flood which I mentioned.

355. But at ordinary times? I never saw the place but once in winter; I was always there in summer. I expect the water is very brackish now. A third of a mile higher up we get perfectly fresh water—fresher than the Sydney water

356. You do not place any dependence upon the creek at all? No; I would sooner it was dry.

357. You will depend upon what falls upon the catchment area, and will conserve it by damming the face of the gorge? Yes.

358. You estimate the expenditure upon the storage reservoir at £10,000? Yes; that is principally made up by the cost of the dam.

359. How do you make up the estimate? There are 4,700 cubic yards of concrete, which, at £2 a yard—and Portland cement is 2s. 6d. less a cask now than it was when I made the estimate—comes to £9,400. Excavation I have set down at £100; scour pipe and valve, 24 inch, £50; delivery pipe and valve, 9 inch, £25; floating pipe, 9 inch, £25; clearing the site of the reservoir, £200; and sundries, £200; making a total of £10,000.

360. Is the land where you propose to construct the reservoir heavily timbered? No; there are very few large trees there. The growth consists principally of saplings, something like mallee, but they have been ringbarked, and are falling down all over the place. The area of land covered by the water will be 45 acres, a great deal of which has been cleared, and some of it has been cultivated.

361. It must be very poor country? It is very poor. They had wheat on it a great many years, and that has exhausted the land.

362. What is the fall from the storage reservoir to the main service reservoir? From top water-level to top water-level will be 260 feet. The diagram before the Committee I had prepared this morning; it shows the three schemes drawn on the large map plotted to the same scales. The horizontal measurement is 1 inch to the mile, and the vertical height 80 feet to the inch. The elevation of our storage reservoir is 1,460 feet, and the top water-level of the reservoir outside Junee is 1,200 feet. The elevation of Junee railway station is 985 feet. The pipe-line descends towards Illabo, and then rises to Junee. The scheme coloured blue is the Bomen scheme. The Bomen Lagoon is 585 feet above sea level. The pipe-line rises from that, and then falls and rises again to the proposed service reservoir, which is about 170 feet above Junee station, though we could go to any height we liked there, but I thought 170 feet was high enough, because every additional foot which you have to lift the water by the pump is a disadvantage. The other scheme shown is Mr. Gipps'. It is perhaps rather unfair to him to show it in this way, because we have not seen his plans, but I know the levels of the different points. No one has ever chained the length of the pipe line, so we have measured it off on the parish maps by means of the compasses. Mr. Gipps says that he follows the Wantiool road, and that his storage reservoir is at the head of Hartley's Delight, of which he gives the height. His scheme is a little bit shorter, and it has the advantage of starting at a higher level than we do—41 feet higher. He pumps the water to the top of Hartley's Delight, which rises up suddenly in the plain, and he constructs a storage reservoir there which will hold a two day's supply. The engines will pump the water during ten hours of the day into the storage reservoir, and it will gravitate from there throughout the twenty-four hours, thus allowing a smaller pipe to be used. There is to be a service reservoir 3½ miles from Junee railway station, which will give a pressure of 300 feet

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feet in Junee, though I think that is too high. The Bomen scheme gives a pressure of about 170 feet, and the Bethungra scheme a pressure of 200 feet, which I think is an absolutely perfect pressure for a town.
363. The cost of the pipes in the Bethungra scheme to the service reservoir and from the service reservoir into the town, together with the reticulation, will come to about £25,000 in round figures? Yes, about that.
364. Have you made an estimate of the difference in cost between imported and colonial pipes for this work? The steel pipes we can get manufactured in Sydney about as cheaply as we can import them, because in importing pipes, they charge by the cubic capacity. Messrs. Hoskins import the flat plates more cheaply, and there is only a difference of about £2 a ton between their pipes and the imported pipes. The difference is not worth talking about. We put down, the cost of cast-iron pipes, colonially manufactured and delivered in Sydney, at £7 10s. a ton.
365. The rest of the scheme would only cost £16,000 or £17,000? Yes.
366. The total income to be derived from the town of Junee is £650? Yes. About one fourth of the town is inside the railway fence. All the houses inside the railway fence are occupied by railway employees, and we take it that the Commissioner's intend to supply them with water, so that we cannot reckon upon receiving anything in the shape of rates from them. We intend to supply every house in the municipality, except sixty. Some of the houses which we do not intend to supply are 2 or 3 miles out of the town. We supply over 80 per cent of the houses.
367. Those houses will pay you £400 annually? At a rate of 9d. in the £. I did not require a rate of 1s. in the £ for the purposes of my estimate, so I put it down at the lower figure.
368. If the rate were 1s. in the £ you would only get £530? That would give something to lay by.
369. Practically, you are constructing this scheme in order to supply the Railway Commissioners with water? The townspeople could not construct it unless the Commissioners agreed to help them.
370. The interest upon the cost will be about £1,800 a year? Yes.
371. If there were to be an income of only £650 for this work, do you think the Department would be warranted in carrying out the scheme? No.
371½. Do you not consider £250 too much to allow for gardens, stables, and other than domestic purposes? The people there all try to make gardens, but they cannot grow anything without water, and they pay a great deal of money now in order to cart water to their gardens. At Balranald they use 35,000 gallons of water a day, but I have only calculated for a consumption of 14,000 gallons a day, so that my estimate is very low.
372. With the capacity of your storage reservoir, you would be able to supply a large number of farms? We could not irrigate very much. It takes about 22,000 gallons of water to irrigate 1 acre to the depth of 1 inch. If we chose to add about £5,000 to the cost of the dam, we could store 300,000,000 gallons of water.
373. If this is such a dry district, and a great deal of water is likely to be used for the purpose of gardening and agriculture, would it not be wise to make provision for the storage of sufficient water? I think so, but we cannot look to that matter in our Department. I have mentioned in my report that if we wished we could impound a catchment area of 7 additional square miles by constructing two other dams, and I have all the particulars, plans, and cross sections of these dams.
374. You propose to resume a certain quantity of land for the storage reservoir? Yes; but there has been a little confusion over the resumption. If I were personally asked how much it is necessary to resume, I should say nothing except the land immediately adjoining the reservoir. I should like to resume that piece, because it is so steep that cattle grazing upon it might pollute the water. The area of that land would be under 500 acres. There may be some objection in regard to Mr. Weston's homestead, which is about a mile above the reservoir, but I have put down an amount to meet the cost of the resumption of the homestead block and 280 acres of land. Mr. Weston is the man who may be said to have discovered the basin. He went there in 1870
375. What do you estimate the cost of the fencing at? I have allowed 7s. 6d. a rod. At Dalton I paid 7s. 3d. for fencing the reservoir. This fence will be a two-railed fence, with five wires,—one of them barbed.
376. That brings the total cost up to £41,828? Yes.
377. You estimate that there will be a total income of something over £2,000 a year? Yes.
378. You have provided for a caretaker at Bethungra at 5s. a day? Yes; giving him a house and some land. I propose to remove Carroll's house, which stands near there, and give it to the caretaker. I know half a dozen chainmen who would gladly take the place.
379. Then you put down a turn-cock at 6s. a day? Yes; and I could get half a dozen men to take the position.
380. Is the sum of £200 a year sufficient, in your judgment, for expenses, labour, renewal, and repairs? It would not provide for renewals. These wrought-iron or steel pipes, if there is any flaw in them, burst within twenty-four hours after the water is turned on, and the contractor who laid the pipes would have to make good any damage that occurred in that way. The only expenditure that can be required is for a little paint, or for the repair of a fence. Two men should keep the works in perfect order.
381. You do not anticipate any leakage? No; I have never had any leakage in connection with any pipes which I have laid.
382. What do you consider the life of a 7-inch steel pipe? None of us have lived long enough to know what the life of such a pipe is. I do not think such pipes have been in use more than ten years. The life of a pipe depends very much upon the composition of the coating. The pipes are coated with a composition of asphaltum, put on at great heat.
383. Does not the life of the pipes depend upon the character of the water passing through them? No water that I know of will touch this asphaltum. The pipes are coated inside and outside with it. They are dipped in the mixture, and are kept revolving as they cool. The outside is coated with sand as well.
384. What do you consider the life of a cast-iron pipe? That depends on the coating, too. A well-coated pipe will certainly last forty years. There is a great deal in the character of the iron. A poor cast-iron pipe, with holes in it, will be eaten right through while another pipe would not be affected in any way.
385. The whole scheme, stock and barrel, would be destroyed within sixty years if it were not renewed? No, the reservoir would be as good as ever. I have not been long in the Colony, but I know that Junee was only a small place when I first visited it, eight years ago, and there are now 2,000 people there; so by that time they should be able to afford new pipes.
386. If the longest life of a pipe is forty years, all the pipes will have gone long before the end of sixty years? I think that in twenty years Junee will be rich enough to put in a new pipe—in fact, I think they will require a larger pipe at the end of that time. I do not think it would be a good thing to put in a larger pipe now. It would be a waste of money, and the velocity of the water would be too slow to scour the pipe.

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387. Then the new scheme will be handicapped with the partial expense of the renewal of this scheme? Yes; but there will be no pumping to pay for. I think Junee will be rich enough to pay for the renewals.
388. *Mr. Trickett.*] You say in your report, "at the top of this cliff is an admirable site for a storage reservoir";—will that reservoir have to be built up entirely—will it have sides and a back to it? The catchment area is like a large flat basin, which suddenly narrows into a gorge. There are five granite bars there, like natural weirs, and we propose to fill in the gap with concrete, thus making a lake 1 mile long, covering 45 acres of land.
389. What will be the length of the dam? The extreme length will be 520 feet. The dam will be a narrow wedge shape.
390. Like the Lithgow dam? This site is not so good as the Lithgow site, though it is a very good one. The foundation will stand above the surface of the ground towards the centre.
391. It is to be on the edge of the cliff? There is is a good site on the the edge of the cliff, but there is a better site 500 feet above the cliff. There is a bar of granite, then a pool, then another bar of granite, and so on, and we propose to put the dam on the third bar of granite. I have laid the rock bare; but there are two places between which it is hard to choose.
392. The dam would be perfectly secure—there would be no risk of its being washed away? I have drawn the design, and it has been examined by a good many different officers, who have all agreed that it is a good one.
393. What base will you give it? It is to be 28 feet wide at the base. Professor Rankin was the man who designed the sections for these dams all over the world. They vary only a little from his type section. There is a certain formula which you can work out at once.
394. Will it be a level dam? Level, with a notch in the centre, so that the water may run over. The water will fall on solid granite, so that it cannot scour away the bed of the creek.
395. What is the nature of the country between the dam and Junee;—is it level? It is undulating—long gentle slopes. In the first 4 miles from the dam we cross several spurs, until we get to the railway, but from there the pipes will run across nice undulating country.
396. Will the pipe-line be buried? It will all be buried about 2 feet. Once we join the railway, it is the easiest pipe-line you could imagine.
397. How far has the pipe-line to go before it reaches the railway? Not quite 4 miles, and about half of that distance is very easy. Two miles is very difficult country for pipe laying, but I have allowed 5s. a yard for the cost of laying the pipes there, which is about four times the ordinary price.
398. The main feature of this scheme being the requirements of the Railway Commissioners, does your Department contemplate entering into a lengthy contract with the railway people? They have undertaken to take the water for five years, and then the question is to be re-opened. It would be very bad economy on the part of the Commissioners not to take the water, because they acknowledge that it costs them over £3,000 now to keep up their water supply, and we only intend to charge them £1,500 per annum.
399. Five years is a very short period? Yes; but it is not likely that the Commissioners will go back upon their contract.
400. Is there any possibility of a more convenient site, as far as the railway-station is concerned, being obtained? I do not think so. The railway officers have been looking for a site for fifteen years, and they have got up four different schemes. Our Department has been looking for a site for three years, and private engineers—Mr. Gipps and others—have also interested themselves in the matter. The present scheme is acknowledged by the railway engineers to be far and away better than any of the others.
401. Do you think you have provided for the resumption of sufficient land to prevent the pollution of the water? I think more resumption is provided for than is necessary. Personally, I did not see that it is necessary to resume Mr. Weston's selection, because I think that his catch dam would prevent any pollution, and the water running over sandy bars will purify itself.
402. There was some mention yesterday about fencing in part of the land? Yes; I have allowed for 4 miles of fencing. I propose to fence in the land immediately adjoining the reservoir.
403. What is your reason for selecting only that portion to fence in? Because the fall of the ground is very steep. The ground falls suddenly into the reservoir, and a sudden shower of rain would wash off any cattle droppings that might be on it.
404. But beyond that? Beyond that the land is very level and sandy. The mountains on the north are very high—they rise about 1,000 feet. The Bethungra mountain is about 2,700 feet high, which is higher than Goulburn. On the east there are high granite mountains, full of rocks and boulders.
405. Would the country carry much or little stock? It is very poor country. I expect that the Sectional Committee will see it in a very bad state when they go there.
406. Do you think that the fencing precautions which you propose will be sufficient? I think quite sufficient. I have been connected with a good many water supply schemes in the old country and there we could not afford to purchase the land comprising the catchment area; we only fenced in the reservoir itself. Up Gosling Creek, above the Orange reservoir, there are twelve large farms, but we did not resume any land there except at the reservoir.
407. You allow a depth of 40 feet for this reservoir? Just in the middle it will be 40 feet deep.
408. Are you satisfied that that will be sufficient to get rid of the saline matter? If we only caused the water to rise 10 feet it would get rid of the saline matter. The saline deposit rises up about 2 feet in the bed of the creek, which has a very gentle fall, and, in fact, is almost level above the dam, and I calculate that there would be 30 feet of rain-water above this deposit. The saline deposit is only in the bed of the creek. We could find pure spring water 10 feet away. In the Darling I have seen the water-holes quite brackish when they were low; the salt would crystallise upon the banks. I believe that when Sturt found the Darling the first water he came to was so brackish that he could not drink it, while in the next hole the water was quite fresh.
409. *Mr. Wall.*] Have you had any conversation with the Railway Commissioners in reference to this scheme? Not with the Commissioners; I have had a conversation with Mr. McLachlan, the Secretary to the Railway Commissioners.
410. Do you know if they have made any overtures in regard to this scheme? The last communication from them was in 1889;—a deputation waited upon Mr. Bruce Smith in connection with the Wantabadgery scheme, and he then said that he would like to have the Commissioners' offer renewed, which was accordingly done.

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411. Had the Commissioners then any knowledge of the character of the water? The Commissioners have never made an offer in connection with this scheme.
412. In the analysis which you read a good deal of chlorine is shown to exist in the water? Yes; in the samples taken low down, but in the sample taken higher up there is very little chlorine; in fact, the water is as free from chlorine as any I have ever seen. Lots of engines are working with water much more brackish than that is.
413. Would it be possible to prevent the inflow of brackish water? Yes. The water comes through a deposit of sandy salt mud in the bottom of the creek. It is only salt when it bubbles up through the bottom of the creek.
414. If you stopped the inflow of that water, the water in the reservoir would simply be rain-water? Yes; off a granite catchment, which is supposed to be the purest in the world.
415. What would be the cost of damming the creek, so as to prevent the inflow of brackish water? The dam which we intend to construct would prevent the water from becoming brackish. The water will not become brackish, unless the supply in the creek falls below the saline deposit. The maximum flow through the saline deposit is only about 250 gallons a day, and that would be diluted by the rest of the water in the reservoir.
416. You purpose having a fresh analysis made? Yes; I would like Mr. Hamlet to personally take his own samples.
417. *Mr. Neild.*] In your report you say that the cost of a pumping scheme would be fully £1,000 per annum—that is, for the delivery of 110,000 gallons per diem, is it not? No; 200,000 gallons. I have provided for a supply of 200,000 gallons all through.
418. In your report, you say that the population of Junee is about 2,000, and that, allowing 30 gallons each per diem, the daily consumption will amount to 60,000 gallons? The next paragraph will show that I have allowed for a supply of 200,000 gallons.
419. A pumping scheme to supply 200,000 gallons per diem would cost £1,000 per annum? That includes the wear and tear of the engines.
420. In your evidence in regard to the Tamworth water supply scheme, you said that the total cost of delivering 300,000 gallons per diem would be £400 a year? Yes; but the lift in this case is more than twice as great, and the distance the water has to be driven is nearly ten times as great. The consumption of fuel would be enormous, and we should have to have engines something like the Crown-street engines, with high and low pressure cylinders.
421. In your report you say that it is worthy of consideration as to whether the 3,000 odd acres of unalienated land contained in the water should not be resumed. That recommendation, I suppose, relates purely to some remote future? Yes; something might turn up then. For instance, mining might be carried on there.
422. Have you a sufficient knowledge of mineralogy or geology to be able to form a valuable opinion as to the possibility of mining operations being carried on above the site of the proposed dam? I have consulted Professor David, who is a very good authority on this subject. I brought him down a number of samples, and he found traces of tin, gold, and copper in them, in fact he said that the deposit is a very curious one. He has not visited the place, but he promised to go and see it some day. They found gold just below the fall, and were working there for some time. The shafts are there now.
423. You think there is a possibility of mineral discoveries upon this water-shed? Yes; there is a possibility, though I am inclined to think that they are more likely to find minerals upon the other water-sheds lower down.
424. You do not think that the prospects of a mineral discovery are sufficiently bright to at all interfere with this project? No; I do not think so. I think that what they would be likely to find there would be tin. The country is a granite country like that round Tingha, and we find a good deal of tin in the stream.
425. In the event of there being tin discoveries, one of two things would have to be done—the mineral deposits would have to be left untouched, or the water supply would have to be abandoned? Yes; I suppose the provisions of the Country Towns Water Supply Act would prevent the miners from polluting the water.
426. When you refer to the catchment area being 5½ square miles, and when later on you use the term "watershed," do you intend both terms to bear the same meaning? Yes: I refer to the land marked red on the map.
427. What is the total area of that land? 5·38 square miles.
428. You state in your report that the service reservoir will supply the highest house in the town, but you have also told us, and Mr. Tillet said the same thing, that sixty of the houses will not be supplied with water;—why will these houses be excluded—is it in order to save reticulation, or because of their elevation? It is in order to save reticulation. The reservoir will command any house likely to be built in Junee during the next twenty or thirty years.
429. Are the houses, which it is not proposed to supply, scattered houses? Yes; very scattered. Two of them lie about half a mile to the westward of the railway, and some of them are built to the north of the railway yards. I suppose we could take them all in at an additional cost of £2,000, but the rates which they would pay would not meet the interest on that amount. I have shown just sufficient reticulation and no more. I do no believe in showing more reticulation than is absolutely required at the present time. Let the Council pay for additional reticulation later on, if they require it.
430. You do not lay down 10 chains of piping in order to supply one cottage? No; that would not pay. I would lay the piping down in order to supply two cottages.
431. You say in your report that you know of no water supply which is as certain of paying as this is. You make that statement with a special reference to the offer of the Railway Commissioners? Yes; the scheme will depend entirely upon the offer of the Railway Commissioners.
432. You do not put it forward simply as a domestic scheme? No, I do not.
433. We heard yesterday in evidence, that when these works are carried out, the Railway Commissioners will be able to effect a saving of something like £2,000 a year? They gave me a return, showing what it cost them for water in 1886, and the figures came to £3,382 for Junee. I also got a return showing the cost for supplying water to the settlers between Junee and Wagga Wagga, in which the figures came to £238. The Commissioners have to buy water from the Wagga Wagga Council, and draw it all the way to

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Junee, and they reckon in the cost of running the engine, the wages of the employees, the coal burnt, and everything of that kind.

434. Do you know why so much watering is done at Junee, when at Bethungra, 20 miles away, they have a water supply on the spot? Junee is the junction station, and a terminal station for all the engines. An engine running through from Sydney is taken off there and cleaned, and they wash the carriages there. They have a very large population of railway employees with families in the place—300 or 400 in all—and these people they supply with water. Each house has a tank.

435. A great deal of this expense might have been avoided if the railway sheds had been built at Bethungra? Bethungra would not supply Junee. They only use Bethungra water for passing trains.

436. They bring the Wagga Wagga water to Junee? Yes. In fact they bring water from Wagga Wagga to Bethungra, in order to fill the drinking tanks.

437. *Mr. Sutton.*] What is the explanation of the paragraph about the middle of page 2 of your report? These deposits lie in the bottom of the valley, and only rise about 5 feet from the bottom. We propose to put a dam across the valley, and bank up the water to the height of 40 feet. There will be 35 feet of water over these saline deposits, and no water will come through the bottom of the creek. At present the water from the hills sinks down below the creek, and then bursts up through the saline deposit.

438. But the overlying water will keep that down? It will prevent the water from rising, because the water from the hills will flow at once into the reservoir at a point higher up than the saline deposits.

439. The reservoir will hold a three years' supply? That is if the consumption remains what it is estimated at at present. It will only hold a two years' supply five or six years hence probably.

440. Considering that the population of Junee is only 2,000, is it necessary to make such a large reservoir? We should only save £2,000 or £3,000 by making a smaller reservoir. I should like to make this reservoir still larger.

441. *Mr. Ewing.*] What is the creek like between the dam and Junee—would it conduct the water direct from the dam? No; the creek from the catchment area flows due west, and joins the Ironbong Creek, and the two then flow into the Murrumbidgee, near Gundagai.

442. If the dam went, what effect would it have in Bethungra? It would sweep away the people on the creek.

443. It would be a serious thing for Bethungra? It would sweep all the Chinamen off the creek, but it would not affect the railway station.

444. No great body of water would get to Bethungra if the dam burst? Not to the railway station—it is too high. The water would sweep away the Chinamen on the banks of the creek, and I think it would affect the public-house.

445. Is the danger at all serious? I do not think so. I have designed a stronger dam than any yet constructed in the Colony.

446. It would be just as well if these dams were built so that in the event of them bursting they could not swamp any town? I am afraid we have a great many in the Colony that would do that.

447. *Mr. O'Sullivan.*] I presume that when you reported upon this scheme you also reported upon the rival proposals? Yes; I was surveying the rival proposals when I sent word to the office that I was not satisfied that the best scheme had been obtained, and asked for an assistant. They sent me two, and left me a free hand to make an exploration. I then examined all the range to the north until I found this basin.

448. What advantage has this scheme over the Bomen Lagoon scheme? This is a gravitation scheme. The Bomen scheme would be a little less in length, but the water would have to be raised 700 feet, including friction, which, taking into account the repairs, and wear and tear of the engines, would cost about £1,000 a year. The working of this scheme will only cost about £200 a year.

449. Is the water in the Bomen Swamp better than this water? It is just Murrumbidgee water. You could not get better water, but I think the water from our catchment area will be softer. The Murrumbidgee water is not very soft.

450. There is another scheme? Houlaghan's Creek scheme. That is a pumping scheme. Houlaghan's Creek is 200 feet below the Junee railway station, and it is proposed to construct a large dam there. The water would be 13 feet deep in the deepest part, and would be backed up for some miles, but the average depth would be very little. They sank 178 feet there without getting bottom, and then got into a quicksand—decomposed granite, with water in it, though not much water. The water supply was about 5,000 gallons a day. It is very uncertain whether this place would hold water. Since then the Mines Department have constructed a dam north of this place, which overflowed last year, but when I saw it five months after, a great part of the water had sunk into the ground. There is a splendid catchment area, but you cannot hold the water.

451. Mr. Gipps' scheme is the Wantabadgery scheme? Yes.

452. What advantages has the Bomen scheme over it? It is very similar to the Bomen scheme, but is about 2 miles shorter, scaling it upon the map, although it might be longer if actually surveyed. The Bomen scheme has been surveyed. If you had a pumping station 17½ miles from the township, and anything went wrong, it would be very serious. You would have to construct a telephone line, and this and the cost of carting the materials would be about four times as much as the saving in the pipes. Mr. Gipps would have to construct two reservoirs. He has allowed £2,500 for the first, and then there is also the cost of the pipes leading up to it. If I were going to bring water from Wantabadgery, I would sink a porous well about a mile from the river, in the drift under the clay, and then pump direct to the range, but in any case the expenses of the scheme would come to £1,000 a year. It has the same lift to Hartley's Delight, in fact 84 feet more than we have, because Mr. Gipps gravitates over the summit of the Dividing Range, to the east of Junee, which is 84 feet higher than either of the spurs crossed by the other schemes. Junee lies in a basin, and the lowest point in the range, coloured yellow on the map, is 84 feet higher than the reservoir in the Bethungra scheme, and about 105 feet higher than the reservoir for the Bomen scheme. You must pump water over that range in order to get to Junee. Of course you have the advantage in the Wantabadgery scheme of taking the water from the river 50 miles higher up than Bomen, and the total fall, say, is 41 feet. You have to lift 84 feet higher in the Wantabadgery scheme than in the Bomen scheme. If you used a small pipe in each case the friction head would be a very considerable item. If an 8-inch pipe were used in both schemes the Wantabadgery scheme would come out with a lower lift than the Bomen scheme, while with a 10-inch pipe the Bomen scheme would have a less lift than the Wantabadgery scheme. With a 9-inch pipe the Wantabadgery scheme would be about 40 feet better than the Bomen scheme. Everything depends on the quantity of water and size of pipes.* 453.

* NOTE (*on revision*) :—These heights are only approximate, as complete plans have not been made.

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453. Is the service reservoir in your scheme to be partly excavated, or will it all be above ground? I propose to have it 10 feet below the ground, and 10 feet above the ground.
454. It is to be constructed of brick and cement, with concrete foundations Yes; it will be similar to the Cootamundra and the Richmond reservoirs.
455. When Mr. Gipps propounded his Wantabadgery scheme, you were called upon to report upon it? Yes; upon his first scheme, and afterwards upon his second scheme.
456. Was not the scheme originally suggested by Mr. Stephen or Mr. Melrose, of the Railway Department? Yes; Mr. Melrose was Mr. Stephen's assistant. I have his survey in the office.
457. Mr. Gipps took up that scheme, and put it before the local Council? Yes; that is not the scheme shown on the map.
458. You reported on the scheme, and afterwards Mr. Gipps modified it by bringing the cost down to £27,423? No; he raised the cost to £35,000.
459. Did you go into the figures of his estimate? Yes; I think his estimate is too low. He has not allowed anything for the cartage of pipes, which of course will depend upon the size and the quality of the pipes.
460. How is it that the local Council were anxious to adopt his scheme? No. 1 or No. 2?
461. No. 2? The reason given to me was that they thought it a gravitation scheme? I was told that by the Council Clerk and by the Mayor.
462. They wanted his scheme in preference to the Bomen pumping scheme? Yes.
463. *Chairman.*] What is the right way of spelling that name; it appears on the map as Bowman, and in the railway time-table as Bomen? It should be spelt Bomen. It is an aboriginal word meaning sorrow. The white settlers drowned a lot of blacks there at one time.

Hugh McLachlan, Esq., Secretary to the Railway Commissioners, sworn, and examined:—

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464. *Chairman.*] In a statement made by Mr. Barling to the Committee, it appears that the Railway Commissioners in 1890 expressed their willingness to take water from the Junee Council at 1s. 6d. per 1,000 gallons, paying a minimum charge of £1,500 per annum? Yes.
465. Has there been any further correspondence? Nothing to alter that decision.
466. Are your needs as great now—are you still prepared to carry out that promise? Yes.
467. *Mr. Hoskins.*] You do not happen to know if the Commissioners or the Locomotive Engineers are satisfied that the water provided by this scheme will not be injurious to the tubes of the locomotive boilers, because of the presence of minerals in it? I do not think that the water which we should obtain under the new scheme has ever been analysed by us. The water we obtain at Bethungra is rather bad for our use, but from what I can see by the papers the water obtained under the new scheme will be of a much better quality.
468. *Mr. Davies.*] What does it cost your Department at the present time to supply water to the locomotive engines at Junee? I do not know that we have worked it out exactly, but it would certainly pay us to give £1,500 a year for water there. We obtain most of our water now from Wagga Wagga, where we pay 6d. per 1,000 gallons, and it costs us 4d. to pump it again into our tanks at Junee. That is 8d. per 1,000 more than it is now proposed to charge us under this scheme; we practically get 2d. a ton for a service of 40 miles.
469. What would you charge an ordinary consumer for carrying water 40 miles? We should charge him about 3s. 4d. a ton.
470. Your water supply now must cost you very nearly £3,000 a year? It must cost us between £2,000 and £3,000 a year.
471. If the scheme were carried out, your Department would give a guarantee to the local authorities to take water for a number of years at a minimum charge of £1,500 a year? We offered to take it for five years at a minimum charge of £1,500 a year.
472. In doing that you will effect a very large saving? Yes; we should effect a saving.
473. In addition to the haulage and other expenses to which you have just referred, you have at present to maintain a pump and to pay a man to pump water into your tanks at Junee? Yes. If the Bethungra scheme were carried out we might also save the cost of the tank and pump at Bethungra, where we now employ two men to work through the twenty-four hours. That service costs us, I should think, £300 a year.
474. In any case you would effect a very large saving? Yes, a considerable saving.
475. The water being rain-water would be softer and better for your engines? I do not know that it would be better than the Wagga Wagga water, but it would be better than the Bethungra water.
476. You could not have better water than rain-water? No.
477. *Mr. Trickett.*] Do you think there is any possibility of a better site than this presenting itself? That is a matter which we have not considered at all.
478. I mean as regards convenience for watering? No. The Bethungra site would seem a better one than the Murrumbidgee site, because it would allow of a gravitation supply, and would also help us at Bethungra as well.
479. Would the Commissioners enter into a more extended contract than five years? I think that a contract for five years would commit us still further. We are always anxious to help a local body. If we were going to carry out a scheme of our own, and a local body came forward with a scheme, we should give them the benefit of our support. We never run counter, under ordinary circumstances, to a local body.
480. *Mr. Wall.*] Do you think there would be any danger of the Commissioners supplying themselves at any time from some other source? I do not see what other source you could get.
481. If the Commissioners threw up the contract at the end of five years this expensive work would be left on the hands of the local people? I do not think there would be much fear of that.
482. *Mr. Dawson.*] Is there any likelihood of the terminus being taken from Junee? It must always be a junction station.
483. It is now a terminal station for goods and passenger trains, is it not? We have an engine shed there, and I do not think we are likely to alter our arrangements. Junee being a junction station, it must always be a depôt.
484. *Mr. Wall.*] If you altered the station, would it reduce your requirements in regard to water? Yes; but there is no prospect of our doing that.
485. To what extent would it reduce your water requirements? That is quite problematical. We have no idea of altering our arrangement, so far as I know.

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486. *Mr. Collins.*] Do you supply all the railway employees with water free? Yes.
487. If you got your water from the Council, they could not charge any of the railway people for it? We supply the fettlers along the line.
488. I mean the railway employees at Junee? A number of them draw water free from our tanks, but I daresay that if the houses were supplied by the Council, they would have to pay for it. This matter, however, has not been considered.
489. *Mr. Humphery.*] Mr. Price puts down £100 as revenue for water supplied to the fettlers;—would the Commissioners pay that? I do not know that we would. The £1,500 is a minimum, and our present requirements at 1s. 6d. per 1,000 gallons would hardly go beyond that amount.
490. I am referring to the fettlers between Junee and Bethungra? I do not think that the water they would get would cost £100. We only have about twenty fettlers there.
491. The Commissioners are only prepared to guarantee the payment of £1,500 a year, inclusive of everything? Yes.
492. About what quantity of water are you obliged to convey from Wagga Wagga to Junee? It depends on the season. We cannot depend upon geting local water for more than two or three months in the year. At present we are running two trains a day.
493. How many gallons are taken by each train? We are using about 40,000 gallons a day at Junee.
494. What is the local supply? There is no local supply.
495. Are you conveying that quantity every day from Wagga Wagga? I think so.
496. It would cost a customer of the railways 13s. 4d. a 1,000 gallons? We should make a rebate if we carried a quantity, and we should not charge for empty running. We should charge about 1s. 8d. per ton, and 1,000 gallons would come to about 4 tons.
497. Six shillings and eight pence per 1,000 gallons? Yes.
498. Forty times 6s. 8d. comes to more than £13 6s. 8d.;—you are paying that amount a day for water? Yes.
499. You pay £13 a day for about 300 days in the year—that is not including Sundays? We do not run on Sundays. We do not run on 300 days of the year. We may run four or five days a week.
500. Five days in a week is 260 days in the year? You cannot make out the figures in that way. The working expenses do not come to £13 a day.
501. If it cost you between £3,000 and £4,000 a year for water now, could you not afford to pay more than £1,500 a year under the scheme? I do not think that we ought to pay more. £1,500 a year would give a very fair return to the governing body, and it is a little less than our supply now costs us. We always act on the principle of paying what seems to be a fair price, considering the working expenses. In Penrith we pay 5d. a 1,000 gallons, and in Sydney 1s. a 1,000 gallons.
502. It is estimated that the local rates will come to £650, and that the pipes will cost about £25,000; the life of these pipes is estimated at something like thirty or forty years, and no provision is made for replacing them; therefore, the local rates will barely cover the interest upon the cost of construction? Still, the local people will only be charged a very low rate. I do not see why we should bear all the cost. Let the local people tax themselves to some extent.
503. The local consumption will be about one-fourth of the railway consumption, so that it is hardly worth taking it into consideration; the scheme will be entirely in the interest of the Railway Department, and if the Commissioners are provided with water at a cost of £1,500 or £1,600 a year, there may be a loss? Through depreciation?
504. Yes; before we make any recommendation, would it not be well for the Commissioners to consider if they could increase their subsidy from £1,500 to £2,000 a year, so as to provide for any depreciation; the scheme seems to be proposed entirely for the benefit of the Commissioners, and you are anxious to have it carried out;—can you give this matter further consideration? It would suit us to have the scheme carried out, but we did not initiate it. We were asked if we would fall in with the proposal.
505. If the Commissioners can get water for less than £2,000 a year, they will be able to effect a saving of between £1,000 and £2,000 a year? I do not think that the cost of water would be much under £2,000 a year; but I admit that if the scheme were carried out we should save £500 or £600 a year.
506. When you get the water to Junee you pump it into your tanks; the cost for conveyance alone comes to £3,000 a year, leaving out of consideration the 6d. per 1,000 gallons which you pay for the water at Wagga Wagga;—I should like to know from the Railway Commissioners if, on further consideration, they could see their way to increase their subsidy? I could send a letter to the Committee embodying the Commissioners' views.

THURSDAY, 16 FEBRUARY, 1893.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
The Hon. William Joseph Trickett.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Waterworks for the Town of Junee.

Frederick Bowdner Gipps, Esq., Civil Engineer, sworn, and examined:—

F. B. Gipps, Esq. 16 Feb., 1893.

507. *Chairman.*] In November, 1889, the Junee Council communicated with you in respect to a scheme for supplying their town with water? They did.
508. You visited the district, and subsequently recommended a scheme, known as the Wantabadgery scheme? Yes.
509. Did you, at the time, furnish a detailed estimate of the cost of the scheme? If you will allow me, I will give you the particulars and the cost of the scheme. I propose to throw back the Murrumbidgee River,

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River, in the neighbourhood of Wantabadgery, by two weirs, with a maximum height of 10 feet, 220 feet and 80 feet respectively in length, and to apply portion of the raised stream as motive-power to a turbine of 115 horse-power, connected with two pumps.

510. Will you point out the place on the map? It is close to where Stephen Fennel's boundary intercepts the river.

511. You see the red line on the map;—that is said to be approximately the line taken by your pipes? I do not consider myself really bound to any exact point. I have only examined the ground.

512. You did not go minutely into the scheme? With sufficient minuteness to enable me to know that the scheme is practicable. I have not actually fixed the position of the works.

513. At any rate, it is somewhere near the locality pointed out that you propose to construct your weirs? Yes. I propose to force the water by a 9-inch rising main to a service reservoir of 400,000 gallons on the top of a hill, known as Hartley's Delight, 4½ miles distant, and 675 feet above the bed of the Murrumbidgee River.

514. At the point of intake? Yes. These pumps would be supplemented by steam-pumps, which would be used in flood-time. The water supply would be drawn from the gravel drifts by means of twelve 3-inch tube-wells, coupled on to a 10-inch main. The supply would be delivered thence by 9-inch main 8¾ miles long to a smaller reservoir of 300,000 gallons on the top of the Dividing Range, whence it would be connected with the reticulation pipes by a 7-inch pipe 2½ miles long. The cost of this scheme is estimated at £35,210, as follows:—

Weir across Murrumbidgee River...	£2,860
42-inch turbine, and force pumps...	1,500
Penstock, well, and tailrace	1,250
Engine-shed and tube-wells	800
Steam-pumps	1,900
4½ miles rising main, 9-inch steel pipes	6,000
Service reservoir, 400,000 gallons...	1,600
8¾ miles delivery, 9-inch W. I. Ps.	10,000
Service reservoir, 300,000 gallons...	1,400
2½ miles service-main, 7-inch steel	2,900
Reticulation...	3,500
Engineering and surveying	1,500
	£35,210

The revenue to be derived as stated is:—

From town rates	£400
„ Railway Commissioners	1,500
„ gardening and stables supply	250
	£2,150

The expenses would be—£35,210 at 4 per cent, £1,408; engineer, £150; pipe inspector, £100; turncock at Junee, £92; fuel, £150; total, £1,900 per annum, leaving a balance of £250 for reserve fund. The weir would provide over 1,000 horse-power, part of which could be applied to raising water for irrigation. For instance, the turbine and pumps would be able to raise 5,000,000 gallons of water 50 feet high per diem, besides keeping Junee supplied with 200,000 gallons of water per diem, so that the Junee ratepayers would have a large source of revenue available to them from this source, which would more than relieve them of all water-rates in course of time, as the benefits of irrigation become better appreciated. As illustrating the importance of such water-power I may mention the Cavour Canal, which generates 11,542 horse-power. The Cigliano Canal, by a fall of 21 feet into the Grotto Canal, raises a large irrigation supply to the crest of a hill 130 feet above. Connecticut River weir, 1,019 feet long, 30 feet high, for supply of horse-power by turbines at Holyoke, was built in 1849 of timber cribwork filled with stone. The four-foot weir, Yarra River, Melbourne, supplies over 300 horse-power to flour-mills. The weir across the Ker River, at the head of Galloway Canal, is of light open woodwork, 400 feet long, and resting on two rows of 4-in. x 12-in. anchor piles and 4-in. x 12-in. sheet pilings, 10 feet apart, trossels 4 feet apart, maximum height, 10 feet. It is similar to my proposed weir. Paris derives 9,000,000 gallons from the river Marne, which is raised from the river into the Canal de l'Ourcq by double-acting pumps driven by turbine wheels. The Philadelphia supply is raised by three Jonval turbines, working from an average head of 12 feet. Each wheel drives two double-acting pumps, 18-inch diameter, 6-foot stroke, which raises the water 115 feet.

514½. Do you know if the Council passed any resolution adopting your proposal? I believe they did in regard to my first proposal.

515. The scheme which you have just described to the Committee is your amended proposal? It is an amended proposal. My scheme was amended after I had travelled in Italy, and had made further inspections of waterworks there and elsewhere.

516. The first proposal was to cost £27,483? Yes; and I now propose to add some pumps to the scheme, so as to make it available in the time of the highest flood.

517. Nothing more has been done in the matter since you reported to the Council? I have heard nothing further about the matter since my last communication.

518. *Mr. Davies.*] You were instructed by the Council to prepare surveys and make an estimate of the cost of the scheme for supplying water to the town of Junee? Yes.

519. Have you furnished the Council with tracings or with plans showing the levels? With the plans I have before me.

520. Are the plans before you copies or the original plans? They are the plans I have shown to the Council.

521. Are they the plans of both the schemes—the first and the second? They are plans of the first and of the second scheme.

522. Both are pumping schemes? Both are pumping schemes.

523. Did Mr. Price, an officer of the Harbours and Rivers Department, report on both schemes? He did.

524. In consequence of his report upon the first scheme you amended it, and proposed what is known as your second scheme? I did not amend it; I more or less gave way to the opinion of the Department, because

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because I thought that they might be induced to carry out the work. When a deputation waited upon the Minister for Works on the subject and brought my scheme before him, Mr. Darley said that the weir was the chief objection, and he implied that owing to the frequent floods in the river the turbines would be unable to work for very long periods. I consequently compiled this record (*produced*) which shows exactly the number of days during which the turbines could work at full power. It extends over ten years, from 1879 to 1890.

525. You propose to impound the water in the river to a certain extent? To make a pond in the river.

526. By putting weirs across it? By putting two weirs across it where there is an island in the river.

527. And you place pumps there? I intend to apply a portion of the stream to turbine pumps as shown in this plan. [*Plan produced.*]

528. Have you abandoned that idea since your recent visit to Europe? No; quite the contrary. I gave it up for a time in deference to the opinion of the Department; but since my visit to Europe I have become more strongly in favour of it than ever before. I have seen how largely this method of obtaining water-power is resorted to in Italy.

529. I thought that in answer to the Chairman, you stated that you were now recommending the adoption of steam-pumps? I recommend the use of turbines, supplemented by steam.

530. Are you familiar with the scheme before the Committee? I am familiar with the ground. I visited it at the end of March.

531. The site of the scheme now before us? The site of the proposed reservoir.

532. Have you made yourself familiar with the details of this scheme? I have. I think the reservoir would make an excellent position for a salt factory.

533. How is that? Because of the salt springs, which I find draining into it. When I went up there, about the end of March, I found about 1,000,000 gallons of water flowing over the waterfall. I followed the stream up, and discovered that the water was derived from two or three springs, which extended from the site of the dam to about half a mile above it. Beyond that there was a mere trickle. I took a sample of the water for examination, and I also examined a sample of the rock above. A microscopical examination of the residue of a small quantity of the water left by evaporation indicated the presence of chloride of sodium, magnesia, alum, and iron. The first in large quantities. From what I could see, there were over 100 grains to the gallon. Actual observation of rainfall at Bethungra only extends over seven or eight years, which, for the most part, have been very favourable. Mr. Hammond, a grazier and very old resident of Junee, informed me that he has known Houlaghan's Creek, which rises on the opposite side of the range, to cease running for nearly four consecutive years. Considering that Houlaghan's Creek, at Junee, drains more than twenty times the area proposed for the Bethungra reservoir catchment area, it seems doubtful if, even with the storage capacity claimed for it, it would be equal to the contingency of such a drought. The evaporation at 36 inches a year from the surface of the reservoir would equal about 30,000,000 gallons. Every grain of salt per gallon would represent therefore 2 tons of salt deposit per annum, which, as the water became lower, would concentrate and render it completely unfit for domestic service. A large part of the watershed is covered by argillaceous mica schist dipping into the reservoir site. This schist absorbs a large quantity of water, and gives it out in saline springs, where the bed rock is intercepted and exposed by the denudation of the valley forming the basin of the reservoir. If the basin were covered with water as proposed, the effect would be, not that the water would drown the streams, as is believed, but that it would force the springs to break out in different places above the surface of the water in the reservoir.

534. Is that a theory which is borne out in practice? It is the law of springs.

535. Salt or brackish water being heavier than fresh water? No; it is because of the impediment offered by the water. Most springs are produced in this way.

536. The weight of the water would cause the springs to force themselves up elsewhere? The water would act as a barrier to them. Most of these springs are formed by faults, which bring the water against a hard rock and compel it to come up to the surface. The water in the reservoir would, in this case, act in the same way. These springs are derived from the schist rock, which dips into the reservoir, and rises perhaps 300 or 400 feet higher than the site of the reservoir, and consequently, unless you raised the reservoir 300 or 400 feet they would always drain into it. You could not stop them.

537. You have seen at times a very large quantity of salt or brackish water falling over the water-fall? About the quantity I have stated—not far short of 1,000,000 gallons.

538. Are you aware that the proposal is not to depend upon the water coming down the creek, but upon the rainfall for the supply of the reservoir? The water will be derived from the water-shed, which is very largely composed of this schist rock, and these salt springs, which, at the time I was there, certainly gave by far the largest quantity of water, would still flow into the reservoir.

539. Your chief objection to the scheme, as far as I can gather, is that the water would not be pure nor acceptable for domestic purposes? My objections are threefold—first, as to the character and quality of the water; second, as to the character of the rock; and third, as to the estimate.

540. Have you any misgiving as to the quantity of water which will be impounded? The quantity of water is calculated upon the records of the rainfall at Bethungra, which extend over only seven or eight years, during most of which time there have been very favourable seasons. Mr. Hammond, however, a grazier, and a very old resident of Junee, informed me that he has known Houlaghan's Creek, which rises on the opposite side of the range, to cease running for nearly four consecutive years. Considering that Houlaghan's Creek, at Junee, drains more than twenty times the catchment area proposed for the Bethungra reservoir, it seems doubtful if, even with the storage capacity claimed for it, it would be equal to the contingency of such a drought.

541. Is not the watershed of Houlaghan's Creek very much lower than the watershed of the proposed reservoir? The creek rises just on the other side of the range. The water from one side flows into one stream, and from the other side flows into the other stream.

542. *Chairman.*] A range to the west of Bethungra divides the waters which would flow into the proposed reservoir from the waters of Houlaghan's Creek? Yes.

543. *Mr. Davies.*] Is the water going into Houlaghan's Creek brackish? I am not aware.

544. Do you know the difference between the level of Houlaghan's Creek and that of the proposed dam? No; but the head of Houlaghan's Creek would be higher or as high as the head of the catchment area of the proposed reservoir site. It rises in the same range.

545. Did Mr. Hammond, when speaking to you, refer to the head of Houlaghan's Creek or to the creek lower down on the flat? He referred to the creek itself.

546.

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546. Do you know the extent of the catchment area of the proposed reservoir, and also the extent of the proposed reservoir? In Mr. Price's report I see that the catchment area is put down at 5½ square miles, and the reservoir area at 45 acres.
547. Do you concur in Mr. Price's statement that a fall of 1 inch upon that catchment area would give 175,000,000 gallons? Yes; I think he is right there.
548. You still hold to the opinion, notwithstanding that fact, that the water would not be suitable for domestic purposes? One of the chief essentials of a storage basin is that it should have a large outflow as well as a large inflow, but this has neither one nor the other. In bad years, such as those to which Mr. Hammond referred, the water would have to be impounded for two or three years together, and the evaporation in that time would concentrate the salt, which I believe would be found to exceed 20 grains, even in the ordinary water. Evaporation, therefore, would concentrate tons and tons of salt, and thus make the water in course of time, not only unfit for drinking, but also utterly unfit for use in the workshops at Junee. The large inland salt lakes, such as the Utah Salt Lake, have become salt simply because they are confined. Lake George is salt simply because it has no outlet.
549. *Mr. Dawson.*] Salt? It is brackish. It would not exactly do to supply the workshops at Junee, nor do I think most people would like to drink it.
550. *Mr. Davies.*] You object to the site of the proposed storage reservoir, because of the formation of the country there? Yes, to a great extent, because of the formation of the country. A portion of the rock broken off by me and examined microscopically, proves it to be composed of white and smoke coloured grains of quartz, alumina, and the following varieties of mica—muscovite and margarodite, the last being a hydro-mica. The rock itself is of a light brown greyish colour, stained with iron when dry, but much darker when wet. It crumbles easily, and shows distinct lines of stratification. It is dotted in places with oxide of iron, apparently decomposed iron pyrites. The sedimentary rocks seem to rest on palæozoic rocks.
551. Would you be surprised to hear that Mr. Hamlet has analysed several samples of water from this source, and speaks in very high terms of it? I should be quite willing to hand Mr. Hamlet the bottle of water I took from the springs, and if he gives a favourable report of it I shall be surprised.
552. He states that some of it will bear a favourable comparison with the city water? I do not know where he got his samples from. He could not have got the water the time I was there, although that was not after a very bad season.
553. Mr. Price says that he took the water from the source you speak of, and handed it to Mr. Hamlet;—you have no reason for doubting that statement? He could not have taken the water from the same source. I will hand Mr. Hamlet the sample which I took, and be quite content with the analysis he gives of it.
554. Are you surprised to learn that he states that the water will bear a favourable comparison with the Sydney water? No.
555. Why? Because it may have been taken higher up at a very favourable time.
556. If you were informed that it was taken from the waterfall, would you be surprised to learn that he considered it as good as the city water? Of course, if it were taken under very favourable conditions after two or three days heavy rain, for instance, it might be considered splendid water. I should be surprised to learn that Mr. Hamlet had made that statement in regard to water taken from the fall with an ordinary flow in the stream.
557. The character of the test depends altogether upon the time at, and the place from which the water was taken? Yes, exactly.
558. If Mr. Price states that in order to satisfy his Department as to the quality of the water, he had samples taken from the spots you refer to, namely, at the fall, and also up the creek, you would have no reason for doubting that he had any other object than to obtain an honest test? Well, I should rely upon my own observations.
559. You would still be doubtful? I should rely upon my own observations, if I was up there at the time.
560. One of your objections to the scheme is the quality of the water? Yes; I also object to the position of the dam. I think the fact that it is in proximity to a waterfall 170 feet high is a very grave element of danger.
561. Why? I do not know a single other instance in the world of a dam placed in such a position. This waterfall must be due to one of two causes—either to a fracture in the strata, caused by a cataclysm in nature, or to an elevation of the valley. To whichever cause it is due, there is a danger of very large springs breaking out from the dislocated strata in the face of the waterfall, or of a complete slide of the strata, owing to the weight of the water above, which would cause the submersion of Bethungra, and would wash the southern railway line away for some distance.
562. Do you think there is any possibility of that happpening? I am very nearly sure of it, and I was right in my report on the Prospect dam, so I think my opinion ought to receive some amount of credence. My third objection is with regard to the estimate. It seems to me that the estimate of cost for a concrete dam of such a height as this is is very small indeed. The dam is to be 520 feet long on top and 40 feet high, and it is to cost only £10,000. That amount, it seems to me, would hardly cover the cost of making the material, let alone the cost of putting it into position. When I consider this estimate with former estimates of the Department, I think there is a very considerable element of doubt as to whether this estimate is correct. I find that they estimated the masonry dam at the head of the Nepean tunnel, Sydney water supply, to cost £2,278, but it really cost over £10,000. Then the Department estimated that the Prospect dam would cost £176,136, but it really cost over £800,000, and this after boreholes had been sunk along the line of base.
563. Do you know how many yards there would be in this concrete dam? I have formed a rough estimate, but I have not seen the plans I made a mean estimate, according to my idea of what it should be.
564. Can you tell the Committee the approximate number of cubic yards in this reservoir? I have no plan before me, but I estimate it at between 6,000 and 7,000 cubic yards.
565. What do you think a fair price per cubic yard for this kind of concrete work? It depends very much upon circumstances. I have not gone into the matter sufficiently to be able to form a correct idea.
566. If you have not gone into the matter, how can you say that £10,000 will not meet the cost? That is for material alone.

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567. Will not most of the material be found on the spot? Not for the concrete. They would have to bring up most of the sand and most of the cement.
568. What do you estimate it at per cubic yard—give us an approximate price? I suppose from 30s. to £2.
569. It would cost that on any part of the railway line, would it not? I do not know exactly what it would cost there.
570. At any rate, you regard the estimate for the storage reservoir as very much under the actual cost? Yes.
571. The estimated cost of the service reservoir is £1,380? I think it could be constructed for that.
572. It would be constructed of brick and cement? Yes; it is close to the town. Mr. Price, in his report, says: "At several points just above the waterfall a series of trial shafts and trenches were sunk until solid granite was reached." I saw the trial shafts, and there was no granite there—at least, not what I would call granite.
573. What was the character of the country where these trial shafts were put down? It was more of the character of the rock which I have named. The rock was a kind of schist. Mr. Price also says: "Owing to the expensive character of this sinking, I did not like to increase the already high expenses by preliminary investigation." According to this he has not quite certified that he has a safe foundation, and as the expense of the work will very largely depend upon that, I do not see how he could give an exact price for the dam.
574. The main to the service reservoir is estimated to cost £17,953? I think that is a low estimate, considering the character of the country which the pipe-line would have to cross for the first few miles. It is very rocky down from the waterfall, and to make anything like a bed for the pipes, it would take a much larger sum than is estimated.
575. You think sufficient provision has not been made for the cost of laying the pipes? Yes.
576. The estimated cost of the carrying out the work comes to £41,828, exclusive of the cost of surveys and land resumption, which brings the total cost of the scheme up to £45,000? Yes; I have got the estimate before me.
577. You see what the annual return is expected to be? I am rather surprised to find that the Department expect to receive £100 from the settlers along the line, or one-fourth of what they expect to derive from rates in the town of Junee.
578. Do you think that the estimate of £200 for working expenses is sufficient? Nothing like sufficient. A dam in that position would always require, I might say, a professional man there, because if anything happened, and no one was present who could deal with the contingency, the Southern line might be swept away for miles, and many people drowned. A dam of this sort would require a thoroughly competent engineer to be always on the spot.
579. You do not think that a turncock and a caretaker would be sufficient? Nothing like sufficient, even for the pipe-line. The pipe-line would require another man, because there would be a heavy pressure upon the pipes.
580. No provision is made for renewals or repairs? No; I have not noticed any.
581. It is estimated that £2,000 will be received from all sources—from the Railway Commissioners, the townspeople, stable and garden watering, and from the settlers? Yes.
582. What, in your judgment, would be the life of the pipe service? The life of the pipes would depend entirely upon the character of the water running through them. With such water as I saw there, their life would be very short.
583. If this water were passing down cast-iron, wrought-iron, or steel pipes, what would be the life of those pipes? I should not think that a steel pipe would last twenty years with water of this kind passing through it.
584. What would be the life of a cast-iron pipe? It might last a few years longer if well coated.
585. And of a wrought-iron pipe? Wrought-iron pipes and steel pipes would last about the same length of time.
586. You are of opinion that, with this water running through them, wrought-iron or steel pipes would not last more than twenty years? That would be a long life for them.
587. And cast-iron pipes thirty years? Not as much as thirty; twenty-five years.
588. The rates are calculated on a basis which will pay off the whole cost in sixty years, but by that time the whole scheme will be wiped out? It would have to be renewed twice over in that time.
589. *Mr. Neild.*] Twice over? Yes, if the pipes only lasted twenty years; but they would have given it up before that time in the Junee workshops.
590. *Mr. Davies.*] Is it necessary to make some provision for renewals and repairs besides what is put down here? Yes.
591. I asked you if you were employed by the Municipal Council of Junee? I was.
592. You were paid by that body, not by the Government? I was paid by that body for my first report
593. Not by the Government? Not by the Government.
594. *Mr. Neild.*] Is it true that you supplied a plan to the Council providing for earthenware pipes? I did not supply them with a plan.
595. Did you supply them with a scheme? I supplied them with a scheme.
596. In which earthenware pipes were to be used? Yes.
597. Is that the scheme which you have described? No. I now propose to take the shortest distance across country, and to use iron pipes instead of earthenware pipes. Earthenware pipes are largely used at Paisley and other places at home.
598. What kind of earthenware pipes? Ordinary earthenware pipes.
599. Where there is little or no pressure, I suppose? Yes.
600. You would convey the water through earthenware pipes instead of through an open channel? Yes; that is what I proposed at first.
601. Is it the case that the Junee Council approved of the scheme which you have described? I believe so; to the best of my impression that is the case.
602. Did you represent to them that it was a gravitation scheme? Certainly not
603. Do you think it would be correct to say that the Council approved of it, believing it to be a gravitation scheme? No; I do not.

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604. If Mr. Price has stated in evidence that that is why the Council approved of the scheme, do you think his version is correct? Undoubtedly not; they could not have supposed that.
605. Did the plans you produce now, showing the turbines and the steam pump, go before the local Council? No; but they went before the members of the deputation from the Council that waited upon the Minister here. I have before me my first report to the Council, in which it is evident that I call it a pumping scheme?
606. Will you read the portion of that report which refers to the question of pumping? Yes. "The turbine would be one of Wynne's patent, 42-inch wheels, of 90 horse-power, and would be attached to two force pumps, capable of forcing 500,000 gallons in twenty-four hours to the tank station at the top of a high peak, 600 feet above the river and 1¼ miles distant from it. The shafting of the turbine is so arranged that it will work with the highest flood."
607. With regard to the reservoir site, you altogether dispute the truth of the assertion that impounded water overlying salt springs will prevent saline matter from rising more than above a few feet from the bottom? I undoubtedly dispute it; I say it is ridiculous. In the first place there would only be 15 feet of water there at most times of the year, and these springs for all we know, may rise hundreds of feet above the site of the reservoir.
608. What do you consider is the origin of the salt;—is it in the rock itself? It is undoubtedly in the rock itself.
609. It is not any special saline deposit in separated strata? It is very difficult to tell. One would really require a day or two before giving a definite opinion on the subject. There is no doubt about the character of the springs, because the rocks obtrude right on to the banks of the creek, and they show where they have been cut across by the creek. There is no doubt that the springs are derived from the rock.
610. Does your explanation of the effect of water pressure account for the saline water which frequently overlies fresh water in artesian borings? It depends so very much on circumstances. In most artesian borings you go through a very thick series of different kinds of sands and shales, each of which would produce a different kind of water. It would all depend upon how they were formed. I look upon this place as an elevated plateau. Very likely there was a lake on top of it originally, something like Lake George, and in it the salt was deposited. The strata have formed above that again, and so the present saline springs are accounted for.
611. You are convinced that if a large body of water were impounded at this spot, there would be a very great risk of saline springs breaking out in the vicinity of the reservoir, and contaminating the water? I feel convinced of it from my experience in constructing a dam near Kiandra, where there were a few springs in the bed of the creek. As I was constructing the dam, I found a spring facing me in the puddle trench up the left bank. I was cutting out, and I had great difficulty in sealing it over and completing the construction.
612. You are also of opinion that the site of the proposed dam is a great deal too near the declivity to which you have referred? Yes; I am of that opinion.
613. You think that if a large body of water were impounded on the top, it would be likely to force the springs out through the crevices in the rock which forms the face of this declivity? Undoubtedly; it would induce springs.
614. It would practically create leakage? Yes.
615. Would it be possible to stop such leakage? I do not think so. As fast as you stopped it in one place it would break out in another.
616. Did you pay any attention to the face of this cliff? I did.
617. Does the rock lie in solid layers, or is it shattered? It looks to me very broken.
618. If no leakage followed the construction of the dam, there would still be a risk of the weight of water situated near a cleavage in the strata causing a general breakaway? Yes.
619. You made some reference to the accuracy of your opinion in regard to the Prospect Dam;—was that opinion expressed in connection with the falling in and cleavage that took place in the dam there? Yes.
620. You stated some time before that occurred that it was likely to take place? I was directed by the Editor of the *Evening News* to report upon the actual cause of the slide. The officers of the Department had all given the opinion that it was due to ordinary settlement, whereas my opinion was, that unless the dam were weighted in the front, it would probably slide away. This opinion was afterwards confirmed.
621. Was your opinion made public at the time? You can see it in the *Evening News* now.
622. Did anything occur to prove the correctness of your opinion? The Commission appointed by the Government ordered that the dam should be weighted in front.
623. The dam was weighted in front practically in accordance with the suggestion made by you in the *Evening News*? In accordance with the report of the Commission.
624. But the report of the Commission followed upon the lines which you had previously set down? Yes.
625. Of whom did the Commission consist? Mr. Gordon and Mr. Mestayer formed the Commission.
626. They were professional men who were imported into the Colony? Mr. Gordon is a Victorian specialist in hydraulic engineering; Mr. Mestayer, I think, was over here at the time.
627. When speaking of the life of various kinds of pipes, were you aware that the steel pipes are to be lined just as much as the iron pipes? Yes
628. Yet you are of opinion that by reason of the saline deposits which you discovered in the water, the coating of these pipes would very soon be destroyed? Yes; the water will cause the destruction of the pipes themselves.
629. You very positively anticipate that the Railway Department would, in a brief space of time, forego the use of this water in their workshops at Junee because of its impurity; is there anything you would like to add upon this point? Nothing. By reason of the gradual concentration of the salt deposited, as the water gets lower and lower and is most wanted, it will be most unfit for use.
630. You noticed, I suppose, that it is estimated that the railway works at Junee will provide three-fourths of the entire revenue? Yes; £1,500, I think, as against £400 provided by the townspeople.
631. And another £100 from the fettlers? Yes.
632. About how many fettlers' houses would there be between Junee and the reservoir? I do not know.
633. About how many fettlers are employed to the mile? That I do not know. I have not gone into the matter at all.

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634. You stated that the amount expected to be derived from supplying the settlers with water would be about one-fourth of the entire rating of the township? Yes.
635. You have no knowledge of the number of householders from which this £100 would be obtained? None whatever.
636. Did you take into consideration the fact that there are a considerable number of railway employees living upon railway property within the town who, in addition to the settlers, will be supplied for this £100? No; I did not.
637. That would make some difference in your opinion with regard to the propriety or impropriety of the estimate? There are twenty-five houses shown on the map, within the railway property.
638. They would make a considerable difference, would they not? Undoubtedly.
639. £100 may be a not unreasonable estimate after all? Not under those circumstances.
640. Have you made any estimate of the annual cost of your scheme? I have mentioned the annual cost.
641. You would have to provide just as good a man to attend to the steam pumps, although used only occasionally, as if they were worked regularly? I have put down £150 for the engineer's wages. He would be able to attend to the steam-pumps and also to the turbine pumps.
642. Is that a fair thing? I think so.
643. Do you consider it necessary to have a qualified engineer to attend to these pumps? Yes.
644. If the Government have, in connection with their various water supply schemes, appointed ordinary firemen at £2 a week or less to do the work, you would not follow them in that practice? Pumps always require a skilled man.
645. You would not consider a man who ranked as an engine tender competent to look after the water supply of a large town when the water had to be pumped? No; I should not.
646. *Mr. Dawson.*] Your weir is to cost over £2,000? Yes.
647. How long will it last? A similar structure at New Hartford, Connecticut, U.S., 20 feet high, has stood for over forty years without needing repairs.
648. Have you ever seen the Murrumbidgee in flood? Yes; I took the highest levels of the last flood. I have got them marked down here.
649. Is the river at New Hartford very rapid? Yes; it is a very big river.
650. The Murrumbidgee flows with great velocity. Would the timber coming down it affect the weir? In heavy floods the timber would pass over the weir. The weir is only 10 feet in the deepest part, so that a 16 feet flood would go right over it.
651. But trees might be 4 or 5 feet under water? It would simply be a case of putting a fender on the top of the weir. A few old steel rails along the top of the weir would act as a fender and protect it.
652. You gave some instances, just now, of the difference in cost between Government estimates and the actual cost of several works. Do you know if Mr. Price prepared those estimates? He did not prepare those estimates, but they were prepared by the Department.
653. Do you know of any estimates which have been prepared by Mr. Price? No; I have not tried to find out what estimates he has prepared.
654. Do you know the Balranald water supply? No; I do not.
655. That was completed for less than the estimate? Is it a small pumping scheme?
656. Yes? It would be a very easy matter.
657. Who analysed the samples of water to which you have referred? I examined the water microscopically myself. It was a qualitative, not a quantative examination.
658. When did you examine it? I brought it down with me in March.
659. In bottles? Yes.
660. Were the bottles securely corked and sealed? Yes.
661. There was no fear of anyone tampering with them? Not the slightest. I kept them in my house.
662. You know that people have taken samples of water for analysis and got it mixed up with foreign bodies? I do not suppose that I put the bottle down for half an hour from the time I took the sample until I got to the house.
663. How long did you say that steel pipes would last? I gave them a life of twenty years, but that would be a long life with water such as this passing through them.
664. As a matter of fact, is it not only lately that steel pipes have been used. Does anyone actually know how long they will last? We know how salt water acts upon steel, and upon wrought and cast-iron. We know that the life of steel, when acted upon with salt water, is much shorter than that of cast-iron.
665. Who showed you over the scheme? I went there myself.
666. How do you know that you went to the right place? Because I followed up the surveyor's tracks.
667. Mr. Price has stated that he has seen water such as you have described, but that it is not where the reservoir is? Then he has altered the site.
668. The site is above the cliff? Yes.
669. Do you know if the Junee Council are perfectly satisfied with Mr. Price's scheme? I should not think that that would matter much.
670. Do you not think that the people who have lived there for many years would know of the presence of this salt water? There is the salt in the creek itself.
671. Do you think that the members of the Municipal Council would have unanimously accepted this scheme if they had known that the water was salt? They have probably not had it reported upon by a professional man. They have only taken the *ipse dixit* of the man who laid it out.
672. But surely to goodness he is a professional man? Yes; but that is only a one-sided opinion.
673. Would Mr. Hamlet give a one-sided opinion when making an analysis? I should think he would give a perfectly fair analysis of any water sent to him.
674. If he has examined half-a-dozen different samples of water taken from half-a-dozen different places within a mile along this creek, and can find no salt in it, what have you to say? That cannot alter the fact that there are salt springs along the creek.
675. There was no chance of any young fellows whom you may have met tampering with your samples of water by adding ammonia and salts to it? Not the slightest. It is quite easy to see that there is salt on the place. All round the springs the ground is perfectly white, showing true chloride of sodium.
676. I suppose the salt will be seen by the Committee when visiting the place? Undoubtedly.
677. You say that Lake George is salt? It is brackish.

678.

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678. How long has it been brackish? I cannot tell exactly. I suppose it has always been more or less brackish.
679. When was it first discovered to be brackish? I do not know; but I have Mr. Russell's authority for stating that it is brackish. He has said that he considers it to be too brackish to be used for irrigation purposes.
680. Is it not a fact that it is brackish only when one-fourth of its normal size? That is just what I say would be the case here. Directly the water in the reservoir sinks down it will become perfectly brackish, and consequently, just as the people want good water they will get bad water.
681. But what is to prevent the reservoir from being kept full. There are plenty of thunderstorms in that locality during the summer? I have Mr. Hammond's authority for saying that Houlaghan's Creek did not flow for four consecutive years.
682. You mean Mr. T. W. Hammond of Old Junee? Yes.
683. How many years has he been there—over fifty, has he not. You must know that many years ago we had more droughts than we have had during the last fifteen or twenty years? That will not prevent us from having droughts again.
684. *Mr. Ewing.*] What is the difference between schist and granite? Schist is a stratified laminated rock; granite is a solid, amorphous rock.
685. Is all schist laminated? Yes.
686. What would you call granite which had been subjected to heat? It would still be granite.
687. You do not think you are making a mistake in calling this schist? I do not think you can make any mistake in regard to this schist. You have only to breathe on it to detect an argillaceous smell.
688. It could easily be proved whether it is granite which has been subjected to heat or schist? There is no doubt about it.
689. The Committee can find that out when they go up there? Yes.
690. You feel sure that it is not granite? I am certain that it is not granite.
691. How far is the dam from the precipice? I did not measure the distance, but I should say that it was not more than 100 yards.
692. You know the site of the dam? I saw the holes which have been sunk on the site.
693. You say that 100 yards is not sufficient with a laminated body of rock between it and the precipice? No.
694. You say it is not safe? It is not safe.
695. That is one of your great objections to the scheme? That is one of my objections to the scheme.
696. Your second great objection to the scheme is that the water is not good? Yes.
697. What is your theory with regard to saline deposits? They are deposited either from salt-water or from inland lakes which have had no outlet. Gradual deposits have been made on the strata, which after a time have covered the site of the lake. The strata have been tilted, and hence they absorb a certain amount of water, and give the water out by means of springs.
698. If there be saline deposits, where would you find them—in the body of the creek and contiguous to it? Yes; if you got an exposure of the rock; but if the rock was not exposed you would not. The rock might be covered, as it is higher up, with ordinary soil.
699. If there are saline deposits, you will find them in the lower levels in the bed of the creek, or contiguous to it. These deposits are always found in the rivers when the rivers are low, but you stated that when the reservoir was full, salt springs could break out higher up? Yes.
700. What experience have you had in regard to this matter;—when did you know a salt spring to break out from a higher level? The cause of springs is the obstruction caused by a fracture in a rock.
701. You are speaking of ordinary springs, not of salt springs? I take the Worcester springs, for example—they are very similar to these. There we have the red sandstone lying on the top of the palæozoic series, and a number of salt springs have burst out in the line of denudation, very much as is the case here.
702. Salt springs depend upon the presence of salt? In the strata.
703. But if you find salt deposits in the lower levels, and not in the higher levels, you may expect salt springs in the lower levels, but not in the higher levels? Yes.
704. What experience have you had to lead you to believe that higher up on the banks of the creek you will find similar deposits to those in the bed of the creek? If you put a bar to the springs in the bed of the creek, and prevent them from breaking out there, they will break out higher up the hill, and run over the lip of the reservoir.
705. If salt is present everywhere, why are not all the creeks salt? I do not say that it is present everywhere. I did not see traces of the salt for more than half a mile.
706. You found the salt in the low levels? The salt springs about which I am talking extend from a short distance beyond the dam site to about half a mile above it.
707. You found them in the lower levels of the creek? Yes.
708. If you found them in the hills, or anywhere high up, you would prove what I do not think you can prove? The springs break out now because of the denudation of the valley, cutting through this strata. If the valley had not broken through the strata at that point, the springs would have forced themselves out lower down, but the strata have been cut through and they have thus got an outlet.
709. Mr. Price states in his report that nearly 20 inches of rain fall annually in this vicinity? That is the average rainfall for the last seven or eight years.
710. What is the height of the reservoir hill? I do not know.
711. We have heard that it is about 500 feet high;—do you think that it is? Yes.
712. Then it is reasonable to suppose that the rainfall there would not be less than the rainfall of Bethungra? Yes.
713. If anything, it would be a little more? Yes.
714. Supposing the average rainfall were 20 inches, Mr. Price states that a fall of 1 inch over the whole of the catchment area would fill the reservoir, and that when full there would be a two years' supply? In some years the rainfall on the watershed might not give any supply at all. In the year 1886, I think, the rainfall was so slight, and rain fell at such long intervals, that it would not have half filled the reservoir—1885 or 1886.
715. If it is correct that 1 inch of rainfall over the whole of the catchment area means a two years' supply, and we may expect nearly 30 inches of rain per annum, what is your opinion? You must still remember

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remember that the rainfall may extend over so many days that it would have no effect upon the reservoir. For instance, if an inch of rainfall extended over forty days it would have very little effect upon the reservoir; in fact, it would hardly provide for evaporation.

716. Supposing we deduct one-third, and call the rainfall 20 inches per annum, if 1 inch will fill the dam, will not the scheme be safe? It is not a safe scheme under the conditions of the watershed.

717. *Mr. O'Sullivan.*] Your scheme seems to hinge upon the weir which you propose to construct across the Murrumbidgee? Yes; upon the weir and upon the pumping machinery. I maintain that it will be very much cheaper and safer to pump water from Wantabadgery than to carry out this scheme. You will get positively clear and good water at any season and at any time at a cheaper rate than water can be supplied under the proposed scheme.

718. You say that you have seen the Murrumbidgee in flood? During the highest floods.

719. You know that it is a very wide and rapidly flowing stream? Yes.

720. At times it is a terrific torrent, carrying down enormous trees and even large rocks? Yes.

721. Do you think that the weir would stand a strain like that? The river does not carry down heavy rocks at this point. Its declivity being only 2 feet per mile, it has got out of its gravel bed at Wantabadgery, and has almost a sand bed there. As for the trees, all the protection you would require against them would be a few old rails on the top of the weir.

722. I have seen big rocks rolling down the Murrumbidgee? At Wantabadgery?

723. Higher up. If you have them higher up, you may have them lower down. Is this not the most dangerous part of the river? The river has only a fall of 2 feet to the mile at this place, so that it could not move rocks.

724. Is not the river there very tortuous, so that the flood becomes very strong;—in view of what has happened at Brisbane, where two large bridges have recently been carried away, do you think it would be safe to rely upon a weir in a river so subject to floods as the Murrumbidgee? The higher the flood the more it would press on the weir and wedge it in. The danger would not be from the highest floods, because during their occurrence there would be 20 or 30 feet of water over the weir, pressing it down. The danger would be when you had a half flood.

725. The danger would not be from the water flowing down, but from the enormous trees carried by it? When the river was in high flood, the trees would be carried over the top of the weir.

726. Is it possible to devise any other scheme than the weir scheme—I see by your plan that you do not propose to construct two separate weirs, but one weir, connecting both sides with an island;—would it be possible to make a dock there? I have provided a steam pump as an alternative in the case of any accident to the turbine. The steam pump will be auxiliary. I want to give the people of Junee the advantages of the horse-power to be obtained from the river, which will be the source of a very large income. That is done at Connecticut, Paris, and other places. There would be no danger of the weir being damaged.

727. *Mr. Humphery.*] You have read Mr. Price's report? I have.

728. Did you observe that he says that the water will fall over the edge of a granite cliff, 170 feet high. He also says, "The watershed is surrounded by granite mountains and hills, some of which rise to an elevation of 2,500 feet above sea level." Are you prepared to say that there is no granite either in the cliff or in the surrounding hills? I am not prepared to say that there is no granite in the hills, because I did not go round the head of the watershed. I am prepared to say, however, that the specimens of rock which I took from the site of the reservoir were not granite.

729. And this is not a granite cliff? Not solid granite.

730. You say that it is schist—that is slate? It forms into slate at times.

731. Would any man of ordinary experience mistake a slate rock for granite rock? Undoubtedly he ought not to do so.

732. Therefore you regard Mr. Price's statement as a mistake? As a mistake.

733. It is inaccurate to call the rock granite? I do not know about the head of the watershed. I am only talking of the places I actually examined.

734. The area of the watershed appears to be a little over 3,000 acres? Yes; I have been speaking of the area of the reservoir.

735. Assuming that 1 inch or 2 inches of rain fell upon that area in twenty-four hours, what supply will it give to the dam;—you said that if the rainfall spread over a long period of time no water would flow into the dam? It would depend very largely as to whether the soil had been thoroughly soaked, or whether there had been no rain for a long time, and the ground required soaking.

736. Under ordinary conditions? Then what Mr. Price speaks about might happen.

737. Mr. Price may be correct in his estimate of the quantity of water that would fall into the reservoir under ordinary conditions? He is undoubtedly correct as to the quantity of water that would fall into his reservoir, supposing an inch of rain ran off the catchment area into it.

738. You mean that if the watershed were a cement floor, an inch of rain falling upon it would run into the reservoir? Yes.

739. That is not what I wish to know;—under ordinary conditions what quantity of water would flow into the reservoir if 2 inches of rain fell within twenty-four hours? It would be very hard to say, unless one examined the watershed. I have not examined the watershed.

740. In dealing with the possibilities of the rainfall you are assuming that it might spread over a great number of days, and that Mr. Price's estimate might not be realised? I am taking Mr. Hammond's evidence as my guide in this matter. He tells me that he has known the creek which drains a catchment area twenty or thirty times the size of Mr. Price's catchment area to be dry for four consecutive years. I therefore think it extremely problematical that the reservoir will be kept full.

741. You base your opinion as to the supply being insufficient upon Mr. Hammond's statement that a creek draining a larger catchment area has been absolutely dry for four years? It ceased running for four years.

742. Do you know the dimensions of Mr. Price's proposed dam? Only that it is 40 feet high, and 520 feet long on the top. I forget the base measurement.

743. What thickness is it through? I estimated it to be the ordinary thickness that is given for such dams. I think I took 33 feet at the base, narrowing in towards the top. The measurement ran into between 6,000 and 7,000 cubic yards. I have got the calculation in my office.

744. Would 33 feet be regarded as a sufficient thickness in ordinary cases? That is estimating for masonry without notes. I forget whether I took the thickness at 33 feet.

745.

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745. What is your reason for expressing the opinion that the dam would be unsafe if built in the ordinary way and ordinary precautions were adopted? Simply because of the character of the rock.
746. If it should turn out that Mr. Price was correct in describing the rock as granite, would you consider the dam safe? That would not alter the fact that springs would break through.
747. Leave that out of the question now, we will come to it presently;—assuming that Mr. Price was correct in saying that this is a granite formation, would the dam be safe? That there is granite at the site of the reservoir?
748. Where he proposes to put the dam? I should not then like to say that the dam would be safe. It is so very near the cliff.
749. Would it be open to the same objections you have to it now? My opinion with regard to the dam is based upon the dislocation of the strata. If there is no dislocation of the strata—if there is a solid belt of granite there—I should think the dam might be safe. If, however, there is a dislocation of the strata, and it consists of this schist rock, I undoubtedly think that it would not be safe.
750. *Mr. Hoskins.*] I gather from the evidence that you object to the proposed site of the dam as being too near to the waterfall? Yes.
751. If the proposed site is not a good one, could not another equally available site be found? I have not examined the country above the site of the dam.
752. But below it? You could not make the dam lower down. If you did you would lose your pressure head.
753. If a site could be found above the proposed site, your objection in regard to the reservoir would be removed? Except so far as the salt springs were concerned.
754. If the scheme were carried out, and water was collected in the dam as proposed, would it, after a prolonged drought, be fit for the residents of Junee to drink? Not with these saline springs running into it.
755. But it has been stated in evidence that if there was a large body of water there the good water would remain on top, while the brackish water would only extend 10 feet from the bottom of the dam? If you had a tank in this room the size of the table, and an inch pipe connected it with a much larger tank in the ceiling, would the pressure of water on top prevent it from coming out and running over? That is how the springs are situated. If the salt water is derived from sedimentary strata, 300 feet higher than the reservoir, the body of water in the reservoir will not affect it; it must flow into it.
756. You are apprehensive that the water in the reservoir would not in times of drought be suitable for drinking purposes? I am of that opinion.
757. You also stated that you believed that the water, if conveyed through steel pipes, would seriously injure them? Undoubtedly.
758. Why? Because of the mineral matter in it. It contains magnesia, alum, salt, and iron, and these properties would undoubtedly act as a very strong corrosive.
759. Do you believe that the water would injure the tubes and boiler plates of locomotives? It would be highly injurious to them, even without the salt. There is a very fine floating clay in the water, which would collect in the pipes of the boilers, and which would certainly be objected to by the railway people. It would be very objectionable water for steam.
760. Is it not a fact that water taken from the same source is supplied to some of the trains which stop at Bethungra Station? Not water with the mineral matter in it to which I refer.
761. There is water flowing in this creek lower down which is not so impregnated with minerals as the water higher up the creek? I believe so. That water may be derived from other springs.
762. If the minerals to which you have referred, and which would undoubtedly injure the tubes of locomotives, are to be found in the water at the head of the creek, or where it is proposed to construct the dam, does it not seem natural that they should also be found lower down in the water used at Bethungra? The water they use at Bethungra Station is not from that watershed at all; it is from a different watershed, and comes from a drift supplied by springs. At any rate I believe this is the case, though I am not positive about it.
763. *Chairman.*] If Mr. Price has asserted that the waters of the creek he proposes to intercept join another creek, and go to augment the supply at Bethungra Station, will you contradict him? If the creek does go round by Bethungra, still the engines are supplied from wells sunk in the drift, and these wells are kept full, more or less, by other springs.
764. *Mr. Hoskins.*] Are the wells there? Yes; there are wells sunk in the drift.
765. Have your observations led you to believe that the water flowing down nearly all of these gullies passes over a highly mineralised tract of country? I do not know. To what kind of minerals do you refer?
766. Ironstone, especially? Does the water flow through ironstone?
767. Does not nearly all the water pass over the same strata as you have at this place? I do not think so.
768. Which scheme would you recommend for supplying Junee? I have recommended the Wantabadgery scheme?
769. I thought you recommended two schemes? No; only one—the Wantabadgery scheme.
770. What distance would the water be conveyed by that scheme? Sixteen miles altogether, I think.
771. *Chairman.*] Did you furnish plans of your scheme to the Junee Council? No; I did not.
772. They had no plan—only your report? I drew plans which I showed to the Secretary for Works when the deputation waited upon him, and I gave the members of the deputation the advantage of seeing those plans, but I never supplied plans to the Council.
773. They are not in possession of plans of your proposal? No.
774. But they are in possession of your report? Yes.
775. Your report upon the first scheme? Upon the first and also upon the second scheme.
776. You sent a further report upon the modification? Yes.*

TUESDAY,

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* NOTE (*on revision*):—My last reply refers to the second scheme.

TUESDAY, 28 *FEBRUARY*, 1893.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM MCCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. JOHN DAVIES, C.M.G.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	CHARLES COLLINS, Esq.

HENRY DAWSON, Esq.

The Committee further considered the proposed Waterworks for the Town of Junee.

William Mogford Hamlet, Esq., Government Analyst, sworn, and examined:—

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777. *Mr. Trickett.*] You visited the catchment area and the site of the proposed dam of the Junee water supply on Saturday, 18th February? I did.

778. Will you tell the Committee what is the nature of the soil and the surrounding country there? Well, a description of the country I think is the province of the geologist.

779. What is the formation there? It is broken country, pertaining to the palæozoic rock system.

780. The catchment area is basin shaped, is it not? Yes.

781. The valley terminates near the edge of the cliff at a place which would be suitable, as far as you could judge, for the construction of the dam? Certainly; and at the bottom of the valley runs the Ulandrie Creek, which, after traversing one or two bars, falls over a precipice into the valley below. The place pointed out to me as the site of the proposed dam is situated at some distance from the falls, at an apparently safe point, and in a convenient position.

782. Was it at this place that you took some samples of the water? Yes.

783. Will you tell us where you got the first sample? The first sample was taken from the Ulandrie Creek, at the site of the proposed dam.

784. Right in the creek itself? Yes.

785. A few yards above where the dam is to be constructed? Yes; the creek was very low at the time.

786. In fact, hardly running? Hardly running.

787. What is the character of the water as shown by your analysis? I found 180 grains of total solid matter dissolved in a gallon of the water; 75 grains of chlorine; ·06 parts of free ammonia in 1,000,000 parts of water, and ·3 parts of albuminoid ammonia in 1,000,000 parts of water. The amount of oxygen required to oxidise the organic matter in 15 minutes was 2·5 parts per 1,000,000, and the amount required in 3 hours was 3·9 parts per 1,000,000. The hardness of the water before boiling I put down at 25, and after boiling at 10. Its appearance in the standard 2-foot tube was greenish yellow, though clear.

788. Did you find any vegetable matter present? Yes.

789. How do you express the vegetable matter? It is contained in the albuminoid ammonia and the free ammonia. If you like I will give in a few words the significance of free ammonia and albuminoid ammonia. In all animal and all vegetable matter there is a certain element called nitrogen, which, in association with other substances, form very complex bodies, which have to do with the functions of life. Albuminoid ammonia is so called because it is similar to the substance of the white of an egg, or of the blood, and of all other material that has to do with life. If albuminoid ammonia gets into water, it may have been derived from either vegetable or animal albumen. Animal albumen would be worse than vegetable albumen; but both are bad for drinking purposes, because they afford the nidus wherein microbes will live, and may thus become the vehicle for all sorts of zymotic diseases.

790. Can you tell us whether this albuminoid ammonia is the result of animal or vegetable albumen? It is the result of both. I pronounce this water to be quite unfit for drinking purposes in its present condition.

791. What does the vegetable matter consist of? It consists of the dissolved vegetable matter from leaves and wind-borne plants, and from algæ and aquatic plants generally.

792. You also referred to the presence of a considerable proportion of solid matter. Is that separate again? Yes.

793. What would it consist of? It has been dissolved from the substance of the neighbouring rocks, and especially from the saline matter in some of the strata. It is especially rich in saline matter; in fact, it is nearly all saline matter.

794. Can you tell us the proportion of saline matter? Yes; I have a separate analysis. The 180 grains of solid matter per gallon consist of 109·6 grains of sodium chloride—in other words common salt—1 grain of sodium carbonate, 16·2 grains of calcium carbonate, which is lime, 4·4 grains of calcium sulphate, 19·5 grains of magnesium chloride, 1·2 grains of iron and alumina oxides, ·4 grains of silica, loss on ignition 25 grains, and undetermined 2·7 grains.

795. Will you tell us whether you consider this water suitable for drinking purposes, and what its effect would be on boilers if used for steam purposes? In its present condition it is quite unsuitable for drinking purposes.

796. What is the most objectionable element in it? The albuminoid ammonia, and the large amount of oxygen required to oxidise the organic matter.

797. Would it be absolutely injurious to health to drink the water? It is hardly possible to say that; but the water is loaded with organic matter, and the possibilities are that water so polluted may form the vehicle for the spread of zymotic diseases. I would not go so far as to say that if you drank some of the water it would have a bad effect on you; but to a person predisposed to a zymotic disease, or in a low state of health, the water would probably do harm in some way.

798. It is not water that one could get used to. The body would not become acclimatised to it, so to speak? I think it would. If a party of stockmen or surveyors were camped in the neighbourhood, and had no other water to drink, they could adapt themselves to the drinking of this water.

799. But is it the kind of water that you would recommend for the supply of a town, if no other water were mixed with it—rain water? If rain water were mixed with it that would considerably alter its qualities.

800.

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800. If the germs of zymotic diseases got into the water, would they in time be likely to disappear? No, they would be likely to spread. That is the importance of the presence of albuminoid ammonia. If you put typhoid or scarlet fever germs into water containing a large amount of albuminoid ammonia they would have the means to live and propagate, but if you put the same disease germs into water which was free from albuminoid ammonia, they would simply die of starvation, having nothing to live upon.
801. Supposing a dam were constructed at this place, and 140,000,000 gallons of water were conserved, would these germs be likely to spread throughout that volume of water? No; the water would most likely be fit for human consumption and would probably turn out to be a good water.
802. Do you think that if the reservoir were filled with rain water running off the surface of the ground, these injurious elements would remain where they are now, at the bottom—that they would not spread through the whole body of the water? They would be spread through the whole body of the water, but the oxygen of the air would be continually oxidising the organic matter, and rendering it harmless. My analysis shows that nearly four parts of oxygen are required to oxidise the organic matter in three hours, but that is because the water is at a low ebb at the present time, and stagnant. If the volume of water were increased, and exposed to the free action of the atmosphere, this organic matter would disappear, or be rendered harmless, and the water would probably turn out to be good water.
803. So that the statement of the Department is borne out, that if the reservoir were filled with water the injurious substances now in the water would be so wide spread, and so acted on by the light and air, that the water would become pure and drinkable? Yes; I could safely prophesy that.
804. You saw the character of the surrounding country, and I may inform you that it is stated in evidence that a large number of sheep camp and browse upon the catchment area of the proposed reservoir;—do you think that they would be likely to affect the character of the water? They affect the character of the water now.
805. But seeing that 900 acres of land are to be resumed there, do you think there would be any serious pollution? No, I do not think so.
806. When you were there, as the season had been a dry one, a great many sheep were drinking this water. Do you think that that would tend to largely add to its injurious qualities? Yes; no doubt that was the prime cause of my analysis appearing so bad.
807. Would the water be suitable in its present state for locomotives? No; in its present concentrated condition it would be unsuitable for locomotive boilers.
808. But if it were purified, it would be as suitable for locomotive boilers as for drinking purposes? Yes.
809. Which of the objectionable elements which you have named do you think would do most harm to machinery? Magnesium chloride, when in the boilers, would be converted into magnesia and hydrochloric acid. This acid dissolves the steel plates of boilers and eats pin holes into them—it corrodes them.
810. You took another sample of water about half a mile higher up the stream? Yes.
811. Will you tell us the character of that water? The second sample is taken from the Ulandrie Creek, at the corner of Weston's selection marked O.V. I found that the total solid matter in the water was 43·82 grains per gallon, 7·8 grains of chlorine, 2 parts of free ammonia, and 1·4 parts of albuminoid ammonia per 1,000,000. The amount of oxygen absorbed in fifteen minutes was 5·8 parts, and absorbed in three hours, 12 parts. The hardness of the water before boiling may be expressed as twenty-two, and after boiling as ten. Its appearance in the standard 2-foot tube showed suspended vegetable matter, but it was clear on standing. I pronounce this water to be also quite unfit for domestic purposes, and for drinking, in its present condition.
812. You noticed, I daresay, in the creek, amongst the granulated sand, a white incrustation? Yes; a saline deposit from the neighbouring rocks. It is formed from a stratum of saline matter in the fissure of a rock, which at certain stages of the height of the creek, becomes exposed to the action of the water, and is thus dissolved.
813. Do you think that these objectionable properties are all accumulated in the bed of the creek where you took the samples, or do they drift down from the hills which are to form the sides of the dam? The impurities will be derived from the whole area.
814. They gradually drain down as the dry weather continues? Yes; they are received into the creek by the same process as that by which a gutter would receive drainage from high surfaces on either side.
815. Of the samples of water which you took, which do you consider the most objectionable? The sample taken higher up.
816. It absorbed more oxygen in three hours than was absorbed by the water taken lower down? Yes, considerably more—three times as much.
817. Did you boil the water? Yes.
818. What was the result? It reduced the hardness.
819. The water in its present state would be utterly unfit for drinking or locomotive purposes? Yes.
820. Would those remarks apply to it if it were covered by a very large volume of rain water? The water would then probably be good. The water at present in the creek has been concentrated from the effects of the long repeated evaporation. If the water had originally contained a certain quantity of saline matter, it would have been concentrated by the evaporation.
821. That is what usually happens in regard to most of our creeks? Yes; and that is the reason why some of them are brackish.
822. Do you remember the face in the cliff below where it is proposed to construct the dam. If the dam were constructed, do you think that the water would be likely to escape into the gully, through the face of the cliff? I should not think so, judging from the nature of the rocks. They are primary rocks—granite rocks, and would form a very secure foundation.
823. It has been stated in evidence that some of the rocks or stone there was of a slaty, soft character; was that your experience? No; the rocks I saw there were palæozoic rocks.
824. They were very hard indeed? Yes; they are granite.
825. You took a third sample of water from the tank at the railway station at Bethungra? Yes.
826. That water was pumped up from the creek which is an overflow from the place to which you have been referring? Yes it was pumped from the drift.
827. Will you please tell us the result of your analysis of that water? Yes. It contained 28·84 grains of solid matter per gallon, 11·4 grains of chlorine, ·05 parts of free ammonia, ·07 parts of albuminoid ammonia, and absorbed ·3 parts of oxygen in 15 minutes and ·7 parts of oxygen in 3 hours. Its hardness before boiling

was

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was 17, and after boiling 6. In the standard 2-foot tube, it showed a slight opalescence, because of the clay held in suspension. The water is suitable for drinking and all domestic purposes.
828. Is 11·4 grains of chlorine small? Yes, in water that has come through geological strata containing saline matter. If the water had not come from that source, the quantity of chlorine would be considered high.
829. How do you account for this water being purer than the water higher up, seeing that it comes apparently from the same stream? Because it has undergone filtration through the drift, and has been aerated by being pumped into the reservoir, and has then been allowed to subside. It has gone through the most favourable operations for its purification.
830. Did the sample you took come from a considerably large tank? Yes, from a very large tank.
831. It had undergone a process somewhat similar to that through which the water up above will go if the proposed dam is constructed? Yes.
832. That water will be purified in the way you indicate? Yes; the water in the railway tank is very good, and suitable for steam raising.
833. There is not sufficient chlorine to make it injurious? I can give you the analysis of the saline matter. The water contains 17·64 grains of sodium chloride, 2·03 grains of calcium carbonate, ·8 grains of calcium sulphate, 2·83 grains of magnesium chloride, 1·68 grains of iron and alumina oxide, ·84 grains of silica, and 3·02 grains was the loss on ignition. From this analysis I should say that the water was very good. While in Bethungra I heard that some of the people objected to the water. I fancy that was because of its slightly opalescent appearance, which would be rather prejudicial to it, but which is only due to clay.
834. You have not got the samples with you? No, I have not; but I think I have enough left, if you would like to see the water.
835. *Mr. Wall.*] You tested the water in the tank at Bethungra? Yes.
836. But you did not take any water from the source of supply? I took two samples from the source of supply. The water runs through the drift into the well, and is then pumped into the tank.
837. But I understood you to say that it became aerated by being pumped? Yes.
838. The probability is that, had you taken a sample from the source of supply, the analysis would not have been so favourable? It would probably have been not quite so good.
839. Was the water at the site of the proposed dam running when you took samples from it? Just slightly; it was a slow stream.
840. You attribute the fact of its badness to the evaporation going on there, and to the concentration of the deleterious matter in the lower part of the stream? Yes.
841. If this stream were running, would not the objectionable substances in the water be taken away during the time the evaporation was going on? No; they would be more concentrated by evaporation.
842. But if the water were flowing? It did flow.
843. If the water were flowing much it would scarcely remain any time in one place, and consequently, although the evaporation might concentrate the objectionable matter to some extent, most of it would be carried away by the stream? If the water were running at a good pace, it would become aerated and purified.
844. The water of which you took a sample, had not been there twenty-four hours? I should think it had. The stream was running very slowly.
845. Had the stream been running more quickly the water would not have remained there twenty-four hours? I think not, and I should have found it purer. The water has been concentrated all the way down the creek from its source.
846. The catchment area covers a large extent of country? Yes.
847. If stock were depastured there, would they tend to bring germs into the tank? They would tend to pollute the water.
848. In the event of the construction of the dam, would you recommend the resumption of the catchment area, so that it might be kept free from stock? Yes; I think it ought to be kept free from stock.
849. You would recommend the resumption of the whole of the catchment area? Not necessarily the whole of it, but as much of it as could be conveniently reserved.
850. *Mr. Neild.*] You made some examination of the water of this creek some time ago? Yes.
851. Do you know the date? At several times extending over a couple of years, I think.
852. Is it a fact that you spoke in very high terms of the water when you analysed it before? If I did, my opinion would be based upon the figures obtained from the analyses. I really forget whether I did speak in that way of the water.
853. Let me read to you question 551, "Would you be surprised to hear that Mr. Hamlet has analysed several samples of water from this source, and speaks in very high terms of it?" Does that question accurately represent the opinion expressed by you after making the analyses to which you have referred? I should like to refer to my analyses before answering that question.
854. You will find them on page 13 of the evidence? Judging from the analysis of a sample taken from the dam site, I should say that the water was quite suitable for drinking purposes. There are only ·02 of free ammonia, and ·06 of albuminoid ammonia. That is very good.
855. In the sample taken from the water-hole at the corner of Mr. Weston's selection, the free ammonia is put down as ·06 parts, and the albuminoid ammonia as ·8 parts; you would not approve of that water for drinking purposes? No, I should say it was bad.
856. In a sample taken from Weston's dam there appears to have been ·8 parts of albuminoid ammonia; was that good water? No, I should say that it was bad water.
857. Did you see Weston's dam when you were up in that locality? I did not see any dam; I got my sample from the creek.
858. You do not know of the existence of a dam there? The table from which you have been quoting is not my table.
859. But you supplied the particulars and the analyses? Individual analyses.
860. You did not supply the headings? No.
861. Would not the water in this dam be to some extent in an analagous position to the water in the proposed reservoir? Yes; but of course there is the question of size.
862. But I want to find out from you the difference between water that is dammed and flowing water. According to the table from which I have been quoting, the samples of water from Weston's water-hole and from his dam, are very inferior to the sample of water that may be assumed to have been flowing? Yes. I should say that the water in most places was quite unfit for domestic purposes.

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863. That goes to show that water that is dammed up does not improve in quality. From your analyses it appears to get worse? But has it been dammed up?
864. Well, in a water-hole, I presume there is stagnant water rather than running water? The dam to which you refer is very different from the proposed dam.
865. I am not assuming that the conditions are the same. This table shows that the running water stands analysis better than stagnant water? Yes.
866. Would you, from the analyses you have made, state that the water would bear a favourable comparison with the Sydney water? If the dam were full.
867. I mean the water you analysed? Oh, no. It contained 141 grains of solid matter to the gallon, whereas Sydney water only contains six.
868. This is question 554: "Are you suprised to learn that he (Mr. Hamlet) states that the water will bear favourable comparison with the Sydney water." Does that question accurately represent the opinion you formed after making the several analyses? No, it does not; it only refers to one isolated item in the analyses.
869. You stated in answer to Mr. Trickett, just now, that the water in the railway tank at Bethungra had improved in quality from passing through a lot of filtering matter, and that the water in the proposed reservoir would be stored under somewhat similar conditions? Yes.
870. But it would have undergone no filtration? No; but there would be aeration, which would be the chief factor in the purification of the water.
871. Have you not, in giving evidence before the Committee, placed a very great importance on filtration? Certainly.
872. As against aeration? They should go hand-in-hand as much as possible. With some waters aeration would be the simplest method of purification; but for other waters filtration would be the best.
873. Some waters do not require as much aeration as other waters? No. The Sydney water, for instance, does not require much aeration.
874. You stated that some of the impurities in the water shown by your more recent analyses are derived from the rocks forming the bed of the creek, or from the strata in the bed of the creek? Yes.
875. With a large area of rock exposed to the action of the water, will not the same impurities be found in a reservoir? No, I think not; because the place where the saline deposit oozes out is in the very bottom of the creek, and apparently is only visible when the water is extremely low. If the reservoir were full, the silt would wash down and completely cover the deposit, so that it would be embedded in mud.
876. But are not these impurities-yielding strata to be found up the creek as well as near the falls? I did not see them at all near the falls. They were half-way between the two points at which my samples were taken. There was a little stratum of saline matter there which I tasted myself. It tasted just like rock salt.
877. Do you suppose that similar deposits are to be found in other parts of the catchment area? I should like you to question Professor David on that point. I only saw one deposit.
878. You do not like to give an opinion on a matter of geology? Certainly not.
879. I think you said that there were over 100 grains of sodium chloride per gallon in one analysis? Yes, 109.
880. That would confirm Mr. Gipps' evidence. He said, in answer to question 533, "A microscopical examination of the residue of the small quantity of the water left by evaporation indicated the presence of chloride of sodium, magnesia, alum, and iron. The first in large quantities"? Yes; but it would be impossible to find that out by a microscopical examination.
881. If his statement is simply the result of a guess, it is a marvellously correct guess? It is astonishing.
882. Do you think it necessary that cattle and sheep should be excluded from a small or large portion of the catchment area, or even from the whole of the catchment area in order to secure a pure water supply? It would be better to exclude stock entirely from the catchment area. That would prevent all possible pollution.
883. Will it be any material advantage to merely enclose the reservoir itself, or a little more than the reservoir? I think that that would be practically sufficient.
884. The reservoir or watershed? The reservoir, a little distance round.
885. But you think that it would be much safer to enclose a much larger area? Certainly it would.
886. Rain falls in fairly violent storms on these mountains, does it not? I do not know what the rainfall is there.
887. All through that portion of New South Wales there are periodic downfalls of a heavy character? I do not suppose that the rainfall there is as high as on the coast.
888. I am not talking of the total rainfall; I am talking of particular falls. The rain comes down heavily at times? I suppose it would.
889. A heavy fall—a thunder shower, for instance—would probably wash droppings from all parts of the watershed into the reservoir? Certainly.
890. A speedy, heavy fall would do more mischief than a prolonged light rain in washing impurities into the reservoir, if cattle were feeding near the place? Yes.
891. I suppose it is for that reason that you advocate the fencing in of a large area? Of as large an area as possible.
892. *Mr. Suttor.*] Mr. Price, in answer to question 331, states that the storage reservoir would hold 140,000,000 gallons. Do you think that that incumbent weight of water will have the effect of purifying the water underneath? Yes; it would lock up the stratum of saline matter with silt. The saline deposit would be permanently sealed over.
893. The saline matter would be kept back, and the water in the reservoir would be fit for use? Yes. I believe that the saline deposit only outcrops in the bed of the creek, so that a large body of water on top would keep it in.
894. *Mr. Collins.*] What would it cost to purify this water? I do not think I can answer that question. If the reservoir were quite full, I do not think it would cost anything to purify; it would purify itself naturally. I do not think that my analysis would represent the quality of that water.
895. *Mr. Wall.*] If ordinary filter-beds were erected would they affect the quality of the water? They would have no effect upon it for steam purposes, but they would purify it for domestic purposes.

W. M. Hamlet, Esq. 28 Feb., 1893.

896. *Mr. Humphery.*] If the reservoir were full and a drought set in, would the water at the end of the year be fit for human consumption? Yes.
897. Even though subjected to the evaporation of an entire summer? Yes; I think it would stand a two years' drought well.
898. And at the end of that time be fit for human consumption? Yes.
899. You have no doubt about that? None whatever, because I have in my mind a similar instance at Broken Hill. The water in Stephen's Creek undergoes very rapid evaporation indeed. The rainfall is so scanty, and at intervals so far apart, that a great amount of evaporation goes on there.
900. Are the conditions there somewhat similar to those which exist here? They are much worse.
901. They are more unfavourable than the conditions at Bethungra will be? Yes.
902. That water after a long period of dry weather is fit for consumption? Yes; and the water of Bethungra will be fit for consumption at the end of two years' drought.
903. You have examined the site of the proposed dam? I walked over it.
904. You know the difference between granite and schist? Certainly.
905. Will you say whether the site of the proposed dam is granite formation or schist? I saw a schisty rock there as well as granite.
906. On the line of the dam? No, not quite on the line of the dam—nearer the falls. Schist I take to be modified granite.
907. Will there be a granite foundation for the dam? Speaking as an ordinary observer, I should say so.
908. *Mr. Hoskins.*] You said, in answer to Mr. Humphery, that water was stored at Stephen's Creek, Broken Hill, under much worse conditions than will exist at Bethungra. In what way could the conditions be worse there, except for the greater amount of evaporation? The conditions would be worse because of the greater evaporation.
909. But they would not be worse because of the presence of deleterious matter in the water when low? No.
910. You do not know that the water stored at Stephen's Creek contains the deleterious substances which you have shown this water to contain? The Stephen's Creek water contained rather more saline matter than this does, and is altogether very unpresentable. It contains a large quantity of finely divided clay and oxide of iron, which give it a permanently brown coffee colour.
911. The water at Stephen's Creek would be worse if there were a drought than this water, because of the greater evaporation and of the deleterious ingredients contained in it when low? Yes.
912. Do you mean to say that if water were stored at this place as proposed by the Department and there were a year's drought—which would not be an uncommon occurrence in that district—notwithstanding the evaporation and the quantity drawn off for use by the Railway Department at Junee, what was left would be fit for drinking purposes? Yes, I do.
913. You have no doubt about it? I have no doubt about it.
914. That is providing that the bottom of the dam is suitable for holding water? Yes.
915. Would not the droppings of stock upon the ground above the water tend to prejudicially affect the water? Yes, they would tend to pollute it.
916. Do you think it would be sufficient to reserve 900 acres of land in order to prevent pollution? That all depends on the quantity of stock on the ground—as to whether there were only a few cattle or a great number.
917. The catchment area forms part of a squatter's run. Do you think that if the ordinary number of stock were depastured on the land above the proposed reservoir, their droppings would tend to pollute the water? Yes.
918. You would suggest an extension of the resumption? I said, in answer to Mr. Neild, that as much as possible of the catchment area should be reserved. There is Cumberland disease in that country, and perhaps the carcase of a diseased beast which was lying on the catchment area might be washed into the reservoir with the first shower of rain.
919. Anthrax is very prevalent in that district? Yes; so that I think that as much land as possible should be fenced in.
920. You spoke approvingly of the water in the tank at Bethungra Railway Station. Does not that water come, not only from the Ulandrie Creek, but also from another creek? Yes.
921. Is it not possible that the water from the other creek is not so impregnated with injurious minerals as the water from the Ulandrie Creek, and tends to purify the water from the Ulandrie Creek? I think that question arose while I was at Bethungra, and it was found that the other creek did not run very much, so that it was not worth while to take a sample of the water.
922. Still it is a feeder to the supply used at Bethungra? Yes.
923. Seeing that the water near the Bethungra Station contains no ingredients injurious to human beings, would it not be better to collect a large quantity of water there and pump it to Junee rather than to take it from the proposed source, where the water is impregnated with minerals such as you have described? No, I do not think so. The samples taken from that almost dry creek do not represent the actual fact of a reservoir full of water. I apprehend that when the reservoir is quite full, the water will be of a very good quality.
924. If 140,000,000 gallons were stored there, how much do you think there would be left at the end of a year's drought? I am quite ignorant as to how much would be used.
925. If half of it were used, do you think that what remained would be fit for consumption? I do.
926. *Chairman.*] We have been informed that there will always be 10 feet of water in the reservoir. Do you think that the last foot above that would be fit for human consumption? It would be by no means so good; but I have no doubt that it would be still fit for human consumption.
927. That is, if there were 10 feet left in the reservoir? Yes. If the water went down to 11 feet, the last foot would be good. I say that because of the large area constantly exposed to atmospheric influence.
928. The water would be aerated to some extent by being allowed to run through the pipes into the service reservoir? Yes, considerably. I can give you several instances in the Colony of similar cases.
929. The running of the water from the storage reservoir into the service reservoir would have a very material effect in purifying it? A very material effect.
930. If Junee were your own property, and you were deeply interested in its progress, and the only supply of water which you could obtain from the town within a reasonable distance was from this catchment

ment area and under the conditions which you have described, would you hesitate about adopting it? No; I should hail it as a very good scheme. W. M. Hamlet, Esq. 28 Feb., 1893.

931. *Mr. Hoskins.*] Did you ever give any consideration to the propriety of supplying Junee with water from the Murrumbidgee River? No; I have not. I was at Junee some time ago, and we were discussing different water supply schemes; but I did not give much attention to the Murrumbidgee as a source of supply.

932. You are aware that Mr. Gipps proposes to pump water from the Murrumbidgee at Wantabadgery, and to convey it in pipes to Junee? Yes.

933. There can be no question about the quality of the Murrumbidgee water? No; it is very good.

934. *Mr. McCourt.*] You state that the droppings of cattle outside this 900 acres would be injurious to the purity of the water? I cannot give you precise information as to the area which should be resumed. I say, in general terms, reserve as much as possible.

935. You stated just now that the droppings of cattle outside this 900 acres would be injurious to the water? Yes; it would tend to pollute it.

936. Are you aware that the whole of Kangaloon, which is thickly populated, is within the watershed of the Sydney water supply? No; I was not aware of that. I have been told that there were only one or two houses on that watershed, and that it was contemplated to resume them at some time or other.

937. The whole of Kangaloon is within that watershed, and I suppose there are 3,000 or 4,000 head of cattle depastured there. Would that tend to injure the Sydney water supply? Yes; it would injure any water supply; but the question is whether there are not counterbalancing influences sufficient to completely purify the water again.

938. *Mr. Wall.*] You stated in reply to the Chairman just now, that you would have no hesitation whatever in adopting this scheme if it were a private venture of your own. In speaking of the purification of the water for domestic purposes, did you mean that it would be rendered fit for machinery to use? Yes.

939. *Mr. Neild.*] Have you considered whether a dam would retain the impure mineral deposits in the water? Yes.

940. If so, have you taken into consideration the condensation of these deposits by the evaporation of the water? Yes, I have.

941. Does it not follow that the longer a reservoir remains the more the water will become impregnated with noxious minerals? No; I think that would be altogether counterbalanced by the dilution of the rain water.

942. If the water in the reservoir were reduced 10 or 11 feet, you say that if not unfit for use it would not be good water? The water would not be so good as if the reservoir were full; but it would still be fit for consumption.

943. Would a fall of rain scour out the reservoir, or would it simply run over the top and leave the sediment behind to a large extent? Assuming that the dam was full and that the water was flowing over the weir?

944. Would it not be the pure rather than the impure water that would escape? No.

945. Is it not in this way that ponds and dams eventually fill up. The heavy particles go to the bottom and every fresh which fills the pond brings a large quantity of these heavy particles with it? The heavy particles, of course, go to the bottom.

946. Would not that be the case with the salt? No.

947. Would it pass off? The sodium chloride is in solution, which is an entirely different thing from suspension.

948. But the water containing the salt would be heavier than the fresh water? Yes; but it is not a fact that a dense liquid can remain in contact with a lighter liquid and not undergo diffusion.

949. The evidence before the Committee has gone to show that a body of water overlying the salt-yielding strata, would prevent the salt water from rising? Yes; it would prevent it from getting out of the strata, and would seal them up, as it were, with a fine deposit of silt.

950. Would there not be a corresponding pressure on the top of the strata? Yes.

951. Would not that force the salt out of the crevices? No; because the strata shelve up the sides of the valley and are out of the region of pressure.

952. Would it not be under the influence of the water-pressure in the reservoir? No.

953. Will not the proposed dam throw the conserved water back over the salt-yielding strata? The salt-yielding strata I saw at Bethungra was down at the bed of the creek.

954. When the water was thrown back would there not be a pressure on the stratum? It could not exert itself through the mass of overlying rock.

955. The stratum is too well covered by rocks? Yes; the water would have no influence whatever.

956. Did you make a particular examination of the rock to determine whether it was granite or schist? I broke off a few pieces, as a geologist would if he were roaming about.

957. Did you test any of those pieces by means of a microscope? No; it was not necessary.

958. It has been given in evidence that Professor David has discovered traces of tin, gold, and copper, in the rocks forming the side of the reservoir; would you be disposed to question that? No; I should not, because those metals do occur in connection with primary rocks.

959. They would be found more readily where the rock was undergoing disintegration or decay than where it was solid and substantial? Naturally.

960. Your evidence is that while the rock is chiefly granite, a good deal of it is undergoing decay, and thus becoming softer and less capable of holding water? That is a geological change that it would take a few millions of years to bring about.

961. Is not this change taking place? Yes; but it is extremely slow.

962. Has it taken place sufficiently to warrant the supposition that faults exist there through which the water may escape? That question I think should be reserved for a geologist.

963. You did not examine the locality sufficiently to be able to say? No; but if I had examined the country, I should prefer to take the opinion of a geologist.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, sworn, and examined:—

C. W. Darley, Esq. 28 Feb., 1893.

964. *Chairman.*] This scheme has been got out under your supervision? It has.
965. You are familiar with all the proposals brought forward for the purpose of supplying Junee with water? Yes; pretty well, I think.
966. After the consideration of the merits of each scheme, you have come to the conclusion that the scheme before the Committee is the best? I think it is the most desirable scheme to adopt.
967. Have you personally inspected what is known as the Wantabadgery scheme? I have.
968. You have also personally visited the catchment area of this scheme? I have.
969. When were you last there? I could not tell you the exact date—during June last year.
970. Mr. Price is the officer who has had most to do with the finding of this catchment area? Yes.
971. Is he looked upon as a very reliable officer? Yes; he is a very good officer.
972. Energetic and reliable? Yes, thoroughly so.
973. Two sites were pointed out to the Sectional Committee as suitable for an impounding dam. We were informed that a dam erected at the site nearer the falls would impound the larger quantity of water, but there did not seem to be so many trial shafts sunk there as there were a little further up? The rock there did not seem quite so good. There seemed to be a better bar of rock at the site selected. I looked at the place, and I told Mr. Price to keep to that site.
974. The site higher up is a better position for a dam than the lower site, and so you devoted your attention to tracing the rock out where the wings of the dam would go? Yes.
975. Very considerable work has been done in trying to find the bed-rock? The rock is so very irregular on the surface that I thought it better to examine it thoroughly in order to see what the formation was.
976. You have done what you could, by sinking shafts and cutting trenches? Yes.
977. You are fully convinced of the stability of the proposed foundation? Quite.
978. Not merely in the bed of the creek, but also where the wings of the dam will go? Yes; I am satisfied that the site selected is an excellent one.
979. You do not think that there is likely to be any leakage through any fissure in the rock? I do not think so. Nothing to hurt.
980. You do not think that the weight of the water will make the dam and the rock on which it is built slip into the valley below? No.
981. It has been stated by an engineer that it is possible? It is quite impossible.
982. What is the reason for keeping the dam so far back from the falls? We picked what was apparently the cheapest crossing, consistent with the best bar of rock.
983. So far as the stability of the rock is concerned, you would not hesitate about building a dam on the edge? No, so long as the toe of the dam did not slope out beyond the edge.
984. Was it dry when you were there? Yes.
985. Did you taste the water yourself? Yes; I drank the water. It was pretty low then.
986. It was not very palatable? I think there had been a slight fall of rain the day before, but there was not much water running in the creek. The water was slightly hard where it was oozing out of the bottom of the creek.
987. If water were conserved at this site, do you think that those saline springs would have an injurious effect upon it? I do not think so. I think that the pressure of the water will act against the springs. The water contained in the strata is now oozing slowly out, but once pressure is put on the reverse way that operation will cease.
988. Do you not think that the pressure of the water might force the saline spring out at a higher elevation? No, the water will remain dormant in the rock. The water does not come from a distance; it simply percolates through, and takes up the salt in the rock. If a large body of water were stored there, it would stop that action.
989. Have you had any experience in any other part of the Colony where a body of water has neutralised the effect of saline springs? I cannot say that we have had any experience exactly similar to that.
990. But you have no doubt that the body of water you propose to store here will effectually dispel any injurious effects from the saline deposits in the creek? I have no doubt whatever about it. The saline deposit is in the shale immediately overlying the rock in the bed of the creek, and the water passing through the shale brings the salt with it.
991. You do not think it would do if you impounded less than 140,000,000 gallons? I do not think it would be wise to impound less water. The country is subject to heavy droughts, and we hardly know what the demand will be. It may increase more than we have anticipated.
992. Your catchment area is comparatively small, and the rainfall erratic, and you therefore desire to conserve as much water as possible? Whatever rainfall comes there comes from storms, and it is best to conserve a good lot at one time.
993. You do not think it desirable to reduce the size of the dam and impound less water? No. The small saving in material would not justify it.
994. Do you think that you have allowed sufficient in your estimate for the construction of a dam of this size? Quite sufficient.
995. Where do you propose to get the material for your concrete dam? The rock on the site is sufficiently good. It will be excellent rock when broken up.
996. You would only have to cart the cement? Yes, and bring up the sand from the valley below. The work could easily be done for the price I put down, and I think for less. In fact, if the present price of cement continues, the work will be done for very much less than our estimate.
997. You have estimated that the price of cement will be higher than it is now? Yes.
998. You have gone very carefully into the various prices? I have.
999. You are satisfied that you have allowed sufficient for the dam? I have allowed ample.
1000. Do you think you have allowed sufficient for the surface reservoir, which, I understand, is to be built on concrete of brick and cement? Quite sufficient.
1001. Do you think you have allowed enough in every detail for the carrying out of the work? Yes.
1002. In reference to the steel pipe main, have you ever given the Committee any idea what the life of these pipes is? I think I have already explained that they are somewhat new, and have not yet been tested up to their full durability. They have not been made long enough to give a test. I saw some thin sheet-iron mains, which could not be compared in thickness with the pipes which we propose to use here;

in California when I was there ten years ago, they had been down from eighteen to twenty years and were still good. C. W. Darley, Esq.

1003. Were they used in order to supply a town with water, or merely for machinery purposes? In some cases they were used for the supply of towns; in other cases for hydraulic sluicing purposes. In one case two large towns were supplied, and a large number of pipes were being made for the supply of San Francisco. They cut things very much finer in America than they do here. They look for an immediate return. They do not reckon on the life of their materials to the extent that we are called upon to do here, and so they use very thin sheet-iron. 28 Feb., 1893.

1004. Would we be safe in assuming that these pipes will live thirty years? Yes; I think they will live thirty years at the very least. I am inclined to think in that dry country, where there is not much salt in the soil, they will be good for fifty years.

1005. At the end of from thirty to fifty years you would have to face a renewal? We might very probably have to face renewals at the end of fifty years.

1006. If this scheme is to be paid for within sixty years, ought not some provision to be made for renewals? The natural increase of the population will pay for them. I think that before the end of that time they will want a larger main. In all these schemes, although we look well ahead, we find that a larger supply is eventually required.

1007. You would either have to duplicate your mains or provide a fresh main of a greater capacity? The townspeople would be able to do that work before the end of sixty years.

1008. I suppose you look upon the impounding dam and reservoir as practically everlasting? Yes.

1009. Does the same remark hold good in reference to the service reservoir? Certainly.

1010. What is the life of your reticulation pipes? I do not think you can put the life of the reticulation pipes down at more than fifty or sixty years as a rule. Of course the pipes would be good for nearly 100 years, but they corrode internally, and choke before that time. We must spend a good deal on scraping and cleaning them, and that practically reduces their life to fifty years. That has been our experience in Sydney.

1011. The growth of the town would probably justify a larger service when they were worn out? Yes.

1012. You do not propose to draw off the water from the impounding dam to more than 10 feet from the bottom? No.

1013. That would allow you to draw off about 137,000,000 gallons of water? Yes; there would be that quantity of water to within 10 feet of the bottom.

1014. Would there be a sludge door to allow the sludge to be run off? Yes; we always put a scour at the bottom.

1015. So that any sediment would periodically, when the weather permitted, be drained off? In wet weather they generally open this scour and give it a good run. That completely changes the water in the reservoir.

1016. At the end of a few years there could not possibly be several feet of silt at the bottom? No; the scour at the bottom would let it out.

1017. Who is responsible for the estimate of revenue—yourself or some officer under you? Mr. Price consulted me about nearly all the prices.

1018. He has allowed £250 for water sold by meter for gardens, stables, &c. Do you not think that that amount is excessive? For that dry country I do not think it is at all out of the way. Nearly all the towns in the dry country use a very large quantity of water for gardens; in fact, it pays the inhabitants to buy water in order that they may grow vegetables.

1019. *Mr. Humphery.*] Mr. Price, in his report, mentioned that he thinks it worthy of consideration whether 3,000 acres of alienated land contained on the watershed should be resumed. Are we to understand that there is no unalienated land on the watershed? I think that it has nearly all been alienated. I think that the whole of the watershed has been alienated.

1020. His report contains the item "land at watershed, with fencing, £1,860." Do you think that that is sufficient? I think so. It is only necessary to resume a very little above the dam.

1021. Yet you observe that Mr. Price recommends that the whole of the 3,000 acres should be resumed? I do not propose to resume all that land. Mr. Price only points out that it might be desirable; but I do not think that it is at all necessary.

1022. You do not agree with him that it is desirable to resume the whole of the alienated land there? No; you can always bring the Act into force to stop the pollution of a stream. If it were necessary to resume the whole of these watersheds the cost would prohibit the carrying out of any water supply in the world.

1023. I do not understand whether from your estimate you make provision for the resumption of the whole of the watershed? No; I think it is not necessary.

1024. Do you think that £1,860 will be ample for the resumption of all the necessary land within the watershed? Yes; I think so.

1025. You are also of opinion that you would be able to prevent pollution from any of the alienated portions of the watershed? You can always prevent direct pollution.

1026. Would the £1,860 include the cost of the resumption of the existing watering places for stock upon the catchment area? There is a dam belonging to a farmer named Weston, some distance above.

1027. There is a watering place for stock within the proposed catchment area. Will the £1,860 cover the cost of its resumption? I do not propose to resume that dam.

1028. How will you get over a difficulty which may present itself, caused by the pollution of cattle watering at this place? The same thing occurs in connection with all river supplies. Bathurst, and all the other country towns are supplied from rivers, the water of which the cattle must drink, and I think that if they drank from the water above it would have very little effect on the water in the reservoir. The river runs some distance before it reaches the impounding dam, and the water would practically purify itself in that distance.

1029. Would it not be necessary to resume that watering place? No.

1030. My questions are the outcome of evidence given by Mr. Hamlet as to the extent to which the water might be used? I do not think that it is necessary to resume the land. It has not been done in the case of other water supplies; in the case of the London supply, for instance, they have not reserved an inch of land above the intake. There is no instance where the catchment area has been resumed, except in connection with the Sydney water supply, the catchment area of which is, fortunately, almost unfit for human habitation.

1031.

C. W. Darley, Esq. 28 Feb., 1893.

1031. You have no misgivings on this point? None whatever. A few cattle drinking from a stream some distance above the dam cannot possibly hurt the water to any extent.

1032. It is understood that this water supply will chiefly benefit the Railway Commissioners? Chiefly. If it were not for them the scheme could not be carried out. It would pay the Commissioners to carry out the scheme for their own use.

1033. In fixing £1,500 as the amount to be contributed by the Commissioners ——— ? That is a minimum. They must pay for the water by meter.

1034. Do you not think, having regard to the probability of a renewal of the pipes when necessary, within thirty or forty years, a larger minimum should be fixed. Could the Commissioners not afford to pay a larger amount, having regard to the cost of the supply? I think it will be found within a very short time that the use of water by the Railway Commissioners will be very much larger than the minimum price. The Corporation will have power to fix the meter rate, and if they fixed it at 1s.6d. per 1,000 gallons the Railway Commissioners would soon expend £1,500.

1035. Do you think there ought to be any hesitation on the part of the Commissioners in consenting to the minimum payment being raised to £2,000? I do not think so; but, of course, you would have to get the information from the Commissioners themselves. I understand that they are now paying about £3,000 a year for a very imperfect supply. The engineer there told me that they did not wash out the boilers nearly so often as they should do, because of the short supply of water.

TUESDAY, 7 MARCH, 1893.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	Thomas Thomson Ewing, Esq.
The Hon. James Hoskins.	William Chandos Wall, Esq.
The Hon. Frederick Thomas Humphery.	William McCourt, Esq.
The Hon. John Davies, C.M.G.	John Cash Neild, Esq.
The Hon. William Joseph Tricketi.	Edward William O'Sullivan, Esq.

Charles Collins, Esq.

The Committee further considered the proposed Waterworks for the Town of Juneé.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, sworn, and further examined:—

C. W. Darley, Esq. 7 Mar., 1893.

1036. *Mr. Hoskins.*] Will you undertake to say that if the Committee recommend that this work should be carried out, and Parliament approves of its construction, it can be completed for the estimated cost? I think I can say that.

1037. *Mr. Davies.*] The total cost of this work is estimated at £45,000? Yes.

1038. You are strongly of opinion that amount will be sufficient to cover the cost of all the works necessary for the carrying out of the scheme? I think that it will be quite sufficient.

1039. You are conversant with the estimate of revenue—£2,000 per annum? Yes.

1040. Do you observe that no provision has been made in the estimate of cost for renewals because of breakages in connection with the pipe or reticulation service? There is very little required for renewals and maintenance in connection with schemes of this kind after the pipes have been laid. The price put down for the carrying out of the work includes the cost of testing. It is only during the testing that any breakages are likely to occur; after that there will be practically no breakages.

1041. You are aware that the scheme is based upon a repayment of the principal and interest within sixty years? That is the proposition; but no Act has yet been passed containing provisions to that effect

1042. What is the life of a cast-iron pipe? A great deal depends upon the character of the water passing through it. In some cases cast-iron pipes are given a life of 100 years. In Sydney our experience has been that we cannot give them a life of more than fifty or sixty years, if they are not cleaned during that period.

1043. Do you know of any pipe in this Colony which has been laid down for forty years? No; because no waterworks have been in existence for that period.

1044. The Botany waterworks have been in existence for nearly 100 years—eighty years, anyway;—but do you know of any pipe that has been laid down forty years? I suppose that one of the first laid pipes in the Colony was the pipe through which the water was pumped from Botany; but that is not really a pipe; it is a bore through the rock.

1045. But the water was delivered by means of pipes? The original pipes are there still.

1046. Have they not been replaced by other pipes? That was chiefly because they were considered too small. We have cleaned them where they were large enough, and a great many of them are still in use.

1047. Were not many of the 4-inch pipes corroded and wasted away before the present Water Supply Board took them over? They had not corroded, but they were choked up with the peat which was carried into them by the Botany water and adhered to the rust on the inside of the pipes. The Board is now cleaning these pipes, and a good many of the original pipes are still in use.

1048. Have you any practical knowledge of pipes through which the water has been passing for forty years? Yes; the pumping-main from Botany must have been laid forty years.*

1049. No, nothing like that; besides, that is a 30-inch main? A 30-inch main? I think it must have been laid nearly forty years

1050. Not thirty years? It has certainly been laid thirty years. I have been in the country twenty-six years, and it was looked upon as a pretty old main when I came here.

1051. But a 30-inch main is not like a 4-inch, or a 6-inch main;—the largest pipe used in connection with the Bethungra scheme will be a 7-inch main? That is for reticulation purposes.

1052. You think you are safe in saying that these pipes will last forty years? I think so. Of course, it will be necessary to clean them, but I do not think that it will be necessary to renew them. It is only of late years that the cleaning of these pipes has been carried on in Sydney to any extent. We are now recovering pipes by proper cleaning, which were formerly looked upon as dead.

1053.

* Note (*on revision*):—I find the Botany main was laid in 1857–8, say thirty-five years ago.

C. W. Darley, Esq. 7 March, 1883.

1053. In the higher levels of the city there is hardly any water pressure? The old Botany water was peculiarly injurious to the pipes. It was highly charged with a peaty matter, which adhered to the skin of the pipes, and a growth took place. I have frequently seen 4-inch pipes, which, because of this growth, had scarcely a 1-inch bore. The surface of these pipes is not destroyed, because the pipes can be cleaned. We have taken up lots of these pipes, burned them, dipped them in tar, and put them down again. All water, however, does not act in this way upon the pipes.

1054. Do you think that the water supplied from the proposed reservoir will be injurious to the pipes? I do not think that there will be the same amount of peaty matter in it as there is in the water coming from the Botany swamps.

1055. Do you think that the various constituents discovered in the water by Mr. Hamlet's analysis would in any way affect the pipes? I do not think so. Some of the analyses, of course, show the presence of a considerable amount of salt in the water, but this is easilyaccounted for by the existence there of saline springs, caused by the water exuding through the schistose beds at the bottom of the creek.

1056. The salt would be injurious to the pipes? It would be injurious; but I am of opinion that when the reservoir is constructed the difficulty will disappear.

1057. But if there were a fairly large percentage of salt in the water it would destroy your pipes? Yes; but I do not think there will be any salt there at all when the reservoir is completed.

1058. You think that the service provided for by your estimate should live sixty years without the need of any large expenditure upon renewals? Without a very large expenditure for renewals; but you must count upon a natural increase in population, and consequently in consumption, and that will pay for the renewals.

1059. You are under the impression that the increase of population will give additional income to provide for renewals? I believe that the income will be ample to pay for renewals if the scheme is properly worked. The estimate of revenue which has been given is an estimate of the probable immediate revenue.

1060. *Mr. Trickett.*] Have you had any experience in the construction of reservoirs in country similar to this? Yes; I have had somewhat similar cases.

1061. Where? Well, of course no two reservoirs are exactly alike.

1062. I mean have you constructed reservoirs where the holding-ground was similar to this? Not with exactly similar country—not upon rock.

1063. I wish to ascertain what your views are as to the holding character of this ground? My opinion is that it is unquestionably a good holding ground.

1064. We had evidence from Mr. Weston, who lives up there, to the effect that the ground will not hold water until it has been puddled by the cattle? The chances are that he simply made his dam on the earth, and there may be a gravel bed between it and the bed-rock. Of course, we intend to build upon the rock itself with concrete.

1065. But will not a great deal of the water escape in the country up above? It cannot escape if we go down to the rock. In Mr. Weston's case, no doubt, it escapes through the strata.

1066. I do not mean exactly at the site of the dam;—I mean through the country round? All the water must pass down the valley, and there will be no outlet for it, because it will not be able to pass through the solid rock.

1067. All the water must drain towards the dam? It must all work down the valley.

1068. You have no doubt about that? No doubt whatever. There is no possible outlet for it. At Weston's, on the other hand, there is probably a very extensive outlet. There may be a bed of loose gravel between his dam and the solid rock, and, if so, the water would pass under the dam and run away.

1069. The country there seems to be of a porous granulated character, through which water would easily percolate? I do not think so at all. The country struck me as a very good granite formation, peculiarly suited for our purpose.

1070. Is it not broken country—partly boulders and partly soil? I think that the boulders have been formed by the decaying of the rock, and have been washed over the face of the cliff, but the rock, as a whole, struck me as a peculiarly good solid mass of granite.

1071. You are strongly of opinion that if the dam were constructed there would be no great fear of the water escaping and running away at the bottom of the fall? I think not. Professor David has been down there to examine the place, and his evidence on the subject would be worth far more than mine; but the impression I have formed is that this is a particularly likely site for a good storage reservoir.

1072. I suppose you have given this subject great consideration, because it would be no use if all the water in the world were centred there and the ground would not hold it? I examined the ground very closely, and satisfied myself that it would be perfectly safe to construct a reservoir there.

1073. Has the bottom of the Prospect Reservoir been puddled in any way? No; except in the middle of the dam. There is no necessity to puddle the surface of the reservoir, so long as the outlet is made water-tight. That is what has been done at Prospect, and what will be done at Bethungra; but the Bethungra site is more promising than the Prospect site. We made a concrete dam at Orange, which corresponds as nearly as can be with the dam which it is proposed to construct here, but I had some misgivings about the reservoir there because the country is loose basaltic formation. We went down an immense depth, and found that the bottom was composed of disturbed blocks of basalt buried in red decomposed clay, and we really could not at any reasonable depth reach the solid bed-rock. The dam, however, has proved to be fairly good. There is a little soakage, but I think it comes chiefly from the side of the hill. It is, however, no inconvenience.

1074. A number of cracks were pointed out to the members of the Sectional Committee below the rock overhanging the gully—have you considered whether those are places where the water would be likely to escape in any large quantities? I do not think so. I think those cracks are simply due to the weathering away of the face of the cliff. Some of the upper surface has been washed away, and large boulders have fallen down; but the rock at the site of the dam is, I believe, the solid bed-rock.

1075. Are there any other places besides Orange where you have constructed a dam similar to the proposed dam? No; that is the only place in this country where we have a concrete dam.

1076. Do you know the site of the Stephen's Creek dam at Broken Hill? No, I do not.

1077. You have not seen it? I have not seen it; it is an earthen dam.

1078. *Mr. Wall.*] Have you made any surveys in the locality for the purpose of providing for irrigation in the vicinity of Junee? No; we have not taken irrigation into consideration; not farm irrigation.

C. W. Darley, Esq. 7 Mar., 1893.

1079. Have you any scheme under consideration for irrigating any of the country on the Murrumbidgee? None whatever; irrigation falls under another branch of the Department, and I have not given it any consideration. We do not, as a rule, mix up irrigation requirements with domestic requirements.
1080. But you have control of the Irrigation Department? No; Mr. McKinney is in charge of the Irrigation Department.
1081. *Chairman.*] You have the report which was furnished by Mr. Gipps to the Junee Council on the Wantabadgery scheme, upon which Mr. Price reported? I have a copy of the report.
1082. Will you please hand it in, and copies of all other reports, so that we may have a continuous history of the agitation for a water supply at Junee? I hand in a copy of Mr. Gipps' first report to the Junee Council. It is dated 4th November, 1889.
1083. Then comes Mr. Price's report upon that report? Yes; it is dated 17th April, 1891.
1084. Then you have Mr. Gipps' supplementary or second report? Then I have Mr. Gipps' second report, dated 6th July, 1891.
1085. And Mr. Price's further report upon it? Yes; dated 14th August, 1891.
1086. The next document would be Mr. Price's report upon the Bethungra scheme? Yes.
1087. *Mr. Wall.*] You have had the whole of these water supplies for country towns under your consideration? I have.
1088. You have dealt only with the engineering, and not with the financial aspect of them? We have not dealt very fully with the financial aspect of them.
1089. But you have considered the financial aspect to some extent? Yes.
1090. Taking this scheme apart from the service to the Railway Commissioners, and looking upon Junee as a country town demanding a water supply, do you think it worthy of consideration? Certainly not. The town could not pay for it at all.
1091. The supply is virtually divided between the town of Junee and the Railway Commissioners? This is really a scheme to supply the Railway Commissioners. The town of Junee has only a little to do with it. The Railway Department could very well afford to carry out the scheme, and it would pay them to do so.
1092. The financial success of the scheme depends solely upon the Commissioners continuing to take the water? Solely.
1093. Did your Department originate the scheme for supplying Wagga Wagga with water? I think that scheme was one upon which Mr. Clark reported.
1094. Who carried out the work? Our Department.
1095. You cannot, at the present moment, tell us what it cost, or give us a description of it? I can describe fully the nature of the work, but I could not undertake to give you the cost without a reference to the papers.
1096. What is the nature of the work? The water is pumped direct from the Murrumbidgee River.
1097. Without any dam? Without any dam. The engine is set back about 300 feet from the bank, and a tunnel is driven into the river. Two pairs of pumps, which draw from the bottom of the well, are worked by a vertical beam engine. The water is pumped into a concrete reservoir, which commands Wagga Wagga.
1098. Will you give instructions to one of your officers to look up the cost of this work and the revenue derived from it? We could only get the revenue from the town authorities.
1099. Was no estimate of revenue got out? No estimate of revenue was got out for the original scheme. The people applied to the Minister, and the Minister gave instructions for the work to be carried out. Formerly no investigation was made as to the probable estimate which would be derived from these works.
1100. At all events you can give us the total cost of the Wagga Wagga supply? I can give you the total cost of the work to date.*
1101. *Mr. Collins.*] Was the consideration of the Bethungra scheme taken up by your Department on the recommendation of the Railway Department, or on the recommendation of the town of Junee? The request was made by the town. I think the matter originated by the Railway Department asking the town to get a water supply, and promising them that they would take water from them at a minimum of £1,500 a year.
1102. Your Department had no direct communication with the Railway Department? There has been some direct communications, but the request came originally from the town.
1103. *Chairman.*] Is there anything else you desire to state? No; I think that is all.

T. W. Edgeworth David, Esq., B.A., F.G.S., Professor of Geology, University of Sydney, sworn, and examined:—

T. W. E. David, Esq., B.A., F.G.S. 7 Mar., 1893.

1104. *Chairman.*] At the request of the Committee you recently visited the site of the proposed impounding reservoir at Bethungra? Yes.
1105. And you have furnished us with a report containing your views as to the character of the country there? I have. It is as follows:—

The Parliamentary Standing Committee on Public Works,—

Gentlemen, University of Sydney, 2 March, 1893.

I have the honour to report to you that in accordance with your written request, and by permission of the Chancellor of this University, I inspected, on 28th February ultimo, the proposed site for a reservoir on Ulandrie Creek, near Bethungra.

Having read the minutes of evidence relating to the above site, given before your Committee prior to my visit, I considered that my attention should be directed specially to obtaining evidence which would enable me to answer the following questions:—

(1.) Is the bar of rock, above which it is proposed to erect the concrete dam, sufficiently strong to withstand the pressure of water when the proposed reservoir is full, or is there any liability of its breaking away, as has been stated in the evidence?

(2.) Even if the bar is sufficiently strong to bear the pressure of water, may it nevertheless be so traversed by joints, cracks, and various lines of weakness as to render it probable that there will be considerable leakage through it from the water in the proposed reservoir, and is there any evidence to show that a leakage of water through the bar is even now taking place on a small scale?

(3.) Assuming that questions 1 and 2 can be answered satisfactorily, is the actual site for the dam suitable in every way, from a geological point of view?

(4.) Is the whole of the area, which will be covered by water when the reservoir is full, "good holding ground"—that is, is it so impervious to water that there would be no serious underground leakage?

(5.)

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* Note (*on revision*):—Cost to date, £32,200.

(5.) What is the nature and origin of the brackish water, which, as has been stated in the evidence, is constantly flowing into the Ulandrie Creek at various spots on the reservoir site; and is it likely to seriously damage the quality of the water, so as to render it unsuitable either for drinking purposes or for use in the railway locomotives?

(6.) Are the relations between rainfall evaporation and percolation in the catchment area such as would ensure a supply of water being maintained in the reservoir sufficient for the needs of the present and the immediate future?

T. W. E. David, Esq., B.A., F.G.S. 7 Mar., 1893.

As regards (1), the bar of rock at the falls is, in my opinion, amply strong enough to resist the pressure of a head of 40 feet of water. The rock composing the bar is a tough granite, having a slight streaky structure in places, but not sufficiently pronounced to justify the rock being termed schistose. In addition to the granite there is a hard greenish-black rock developed there, a transparent microscopic section of which prepared at this University shows it to be probably a micaceous dolerite. A dyke-like mass of this rock about 6 feet 6 inches wide runs across the bar near the top of the falls, and a fair-sized patch of a rock closely related to it extends for some distance from above the site for the dam to near the "road crossing" over Ulandrie Creek, below Carroll's house. This rock near the top of the falls is very tough, and certainly does not detract from the strength of the bar.

With regard to (2), I carefully examined the face of the bar as exposed at the falls, and could not detect any evidence of leakage; and I consider it almost impossible that any extensive leakage could take place from the proposed dam through joints in this bar, the joints being very close, and the principal set running W.N.W. and E.S.E., that is, in a direction nearly parallel with the dam, and at right angles to the path of any water which might seek to escape from the dam through the bar. Another, but less important system of joints runs E.N.E. and W.S.W., so that these joints also would be unfavourable for the escape along them of water from the dam. It would be unnecessary, but for evidence already given your Committee by other witnesses, to point out that it is impossible for any formation permeable for water, such as a bed of gravel, to underlie this granite formation. If, therefore, the dam be erected at the site at present proposed, there is every reason for believing that there will be no leakage from it through this bar.

As regards (3), the site recommended for the dam is favourable, in my opinion, as far as relates to geological considerations, the solid rock out-cropping either at the surface or at a comparatively shallow depth along the whole distance, so that there should be little difficulty in making a thoroughly water-tight joint between the base of the dam and the bed-rock on which it will rest.

As regards (4), the whole area which would be covered by the water of the reservoir when full, would, in my opinion, be good holding ground, and there is no possibility of any serious loss of water from the reservoir through percolation, as everywhere within this area the impervious bed-rock would be reached at a comparatively shallow depth.

To question (5) I devoted special attention, and am convinced that the brackish water soaking into the creek from its banks at intervals between the proposed site for the dam and the "road crossing" is nothing more, both as regards quality and quantity, than the usual soakage from such soil and decomposed rock, when the latter consists of a rock like the micaceous dolerite, which occupies this part of the reservoir. Such rock contains, in very minute proportions, all the mineral ingredients which make the water brackish over the area mentioned. The water itself is simply rain-water which has percolated into the surrounding soil and rotten rock, and in working its way to the lowest point of outlet, the channel of the creek, it washes out from the decayed rock any soluble minerals which the latter may have contained, and so becomes brackish. Such a phenomenon is extremely common, and has been observed by numbers of geologists in all localities where such rocks as dolerites are developed. It is almost certain, in my opinion, that this saline soakage will cease entirely as soon as the reservoir is filled, as it is highly improbable that the head of this soakage is anywhere more than about 50 feet above the floor of the proposed reservoir. Even, however, were the flow of brackish water to continue after the reservoir was full it is evident from the following figures that the quality of the whole mass of water in the reservoir would not be affected by it at all seriously. If the flow of brackish water at the site for the dam be 1,000 gallons a day (a liberal estimate), on the assumption that the lower water in the reservoir is not periodically discharged as it would be in practice, the total amount of brackish water in the reservoir at the end of one year would amount to 365,000 gallons, containing saline material at the rate of about 100 grains per gallon. As, however, there would be 140 million gallons of water, less this 365,000 gallons—139,635,000 gallons—practically free from saline ingredients impounded in the reservoir at the end of the year, the total amount of saline water, if diffused evenly throughout this vast body of fresh water, would add to it saline material at the rate of only about 2½ grains per gallon, a practically negligible quantity. This saline soakage should not, therefore, I think, cause any serious apprehension, as, even if it continues after the reservoir is full, it will not render the water at all unsuitable for drinking purposes, or for use in the locomotives; and, as already stated, it is nearly certain that it will cease to flow when the reservoir is full. As the greater part of the catchment area consists of granite, or of sandy soil derived from the weathered surface of the granite, the rain-water flowing off it should prove of good quality, certainly at least as good as that at the large well near the railway bridge over Ulandrie Creek, near Bethungra, and probably better.

As regards question (6), the relation between rainfall evaporation and percolation in the catchment area for the reservoir, light rain will no doubt be lost partly through direct evaporation, and partly through indirect evaporation, after it has percolated. Much of the percolated water, however, would eventually reach the reservoir, the bed-rock of the catchment area being so thoroughly impervious. It is certain, however, that a few heavy showers will make the creek run strongly, and it has already been stated, in Mr. E. B. Price's evidence, that after heavy rain the flow of water over the falls has been at the rate of 2,109,609 gallons per hour. One inch of rainfall flowing off the whole catchment area would, according to Mr. Price, put 75,000,000 gallons of water into the reservoir, so that 2 inches of rain flowing off the whole catchment would more than suffice to fill the reservoir. On the assumption that in the area of this catchment one-third of the rain-water flows into the reservoir, one-third evaporates, and one-third percolates, an annual rainfall of 6 inches would more than fill the reservoir. As the average annual rainfall over this catchment is not less than probably about 28 inches, an ample margin is left for rains too light to make the creek run, and for evaporation off the surface of the water impounded in the reservoir. As the evaporation will not amount to probably more than 3 or 4 feet annually, about ½ inch of rain flowing off the whole catchment area would no doubt be quite sufficient to replace the water lost by evaporation.

In conclusion, I would beg to state that, from a geological point of view, the site for the proposed reservoir on Ulandrie Creek is, in my opinion, well suited in every way for the purpose for which it is intended.

I have, &c.,

T. W. EDGEWORTH DAVID, B.A., F.G.S.,
Professor of Geology, University of Sydney.

1106. *Mr. Humphery.*] Do you desire to add anything to that report. It appears to me to cover the whole ground, but it is just possible that there may be something that you would like to add to it? I do not know of anything that I could add to it at the present time.

1107. Is there any possibility of the water becoming deteriorated by anything in the soil? No, I think not, when so large a body of water as it is proposed to impound is impounded. If only a very small quantity of water were impounded, there would, no doubt, be a risk, because of this brackish soakage, of the water being rendered somewhat unsuitable for use for locomotives, where it would be brought into contact with iron, but in view of the very large quantity of water which will be impounded when the reservoir is full, this consideration is so unimportant that it can almost be left out of account.

1108. Have you considered what effect may be produced by the prevalence of a very long drought and continued evaporation? I have thought over that, but I have not been able to find that a single year has passed when a considerable quantity of rain has not fallen in those ranges, or in their neighbourhood. No doubt there have been years when the creeks in the neighbourhood of Junee, such as Houlaghan's Creek, have not run; but there is evidence to show that during those years there was a rainfall, and a considerable rainfall, too. The case of Houlaghan's Creek is not at all parallel with the case of the Ulandrie Creek, which drains this catchment area. Houlaghan's Creek runs for a considerable distance over a very porous formation, which would allow of a large quantity of water percolating permanently through it, and never returning to the surface. Although there might be 25 or 30 inches of rain upon the Houlaghan's Creek watershed through the year, the creek might not run. It would not run unless the water came down in heavy falls, such as an inch or more in twenty-four hours.

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1109. So that the conditions of the two watersheds are entirely different? Entirely.
1110. No comparison can be made between them? No comparison can be made between the two creeks, as regards their discharge and qualifications for discharging water. The Ulandrie Creek has an impervious bed of rock. There is a thin covering of porous material in different parts of the catchment area, but everywhere, at a greater or less depth, you come upon an impervious bed-rock.
1111. If the dam were constructed on this rock, it is improbable that percolation would take place? If it were properly constructed, the dam would render percolation impossible. It would be impossible for any percolation to take place so as to occasion a loss from the reservoir. The water in the upper portion of the catchment area would percolate down to the bed-rock, and would then work along to the dam. The dam would be placed at the lowest point of the outlet, and there the water would be impounded.
1112. There is no doubt about that? No doubt at all.
1113. The whole of the water falling on the catchment area would be impounded by the dam, if it were constructed on this bed of rock? Of course—that is with the exception of the water returned by evaporation. Any water that flows down the creek, or is circulating in the porous beds in the catchment area, would be caught by the dam at the proposed site.
1114. When once the reservoir was filled, all impurities would disappear? That is my opinion.
1115. Unless there were a very long drought, the water would be absolutely pure, and fit for human consumption? That is exactly my opinion.
1116. *Mr. Davies.*] Did you examine the shafts which have been sunk on the proposed site of the dam? Yes; I examined all the shafts.
1117. From that examination did you come to the conclusion that it is a good site for the proposed dam? I am of opinion that there is a good foundation for the dam.
1118. Did you meet with any slate, or soft rock of that character, in your examination? There is some softish rock there. The rock is soft on the surface, but such rock occupies a comparatively small area;—it extends from just where it is proposed to put the dam up to what is called the road-crossing below Carroll's selection.
1119. You did not meet with any great quantity of slate? No; I met with no rock that I should term a true slate, with the exception of some pieces which had evidently been carried to make a road to Carroll's selection. No slate in position was observed by me in the area which I examined.
1120. You do not apprehend any risk of the pressure of water causing the dam to slip from its foundation over the waterfall? If the concrete dam is properly constructed, seeing that it will have such a good foundation of solid rock, there should certainly be no danger of anything of that kind.
1121. Do you approve of the site which has been chosen as the best site offering itself? I think so, within that catchment area. I think that the engineers have done wisely in putting the dam back a short distance from the top of the fall, in order to render less likely a certain amount of leakage through the joints of the granite.
1122. You saw a band of blue-metal rock going through just above the fall? Yes.
1123. Do you think it possible for any percolation to take place through that belt of rock down to the waterfall? No, I do not. I do not think that the dyke of rock will in any way endanger the holding capacity of the bar of rock there. It runs at right angles to the trend of the creek, and, if anything, would rather tend to strengthen the holding capacity of the bar.
1124. You think it would be an advantage? I think it would be an advantage, if anything.
1125. *Mr. Neild.*] I understand from your report that you express a very positive opinion as to there being no risk of any cleavage of the rock due to water-pressure? Giving rise to a weakness or leakage?
1126. Yes? I do not think so. I paid special attention to the question whether the joints and cleavages which exist in granite rock would weaken the holding capacity of the rock, and make it less able to bear the weight of water above it, and I do not think that there is any danger whatever on that score.
1127. Do either of the photographs on the screen represent any part of the reservoir site? One of the photographs appears to represent the upper portion of the fall.
1128. The rock shown on those photographs appears to be very tossed and shattered? It is very shattered on the surface.
1129. Is the rock more solid when you get back? Yes; at a depth of a comparatively few feet the rock is very solid and impervious.
1130. You speak of these beds containing saline matter;—do you think that the pressure of the water thrown back by the dam will be likely to cause any percolation through these saline-bearing beds? I do not think that it will cause any percolation through the saline matter into the reservoir. In my opinion, it will simply stop the soakage which is now going on from the upper portions of these saline beds into the creek. These beds are comparatively limited in extent, and they are not very thick. They are only, I suppose, 10 or 15 feet in thickness, and they ascend perhaps altogether 30 or 40 feet above the level of the creek. There would be no powerful pressure upon this saline matter, and when the reservoir was entirely full the soakage would cease.
1131. What will occasion the stoppage of the soakage;—the weight of the water pressing against these saline beds? The weight of the water pressing upon the face, and the surface of these saline beds.
1132. A little time ago specimens of rock from this neighbourhood were sent to you, which you analysed, and in which you discovered traces of various minerals? I made a careful examination of them at the University, with the blowpipe and the microscope, and I determined them as being of certain particular species, and named them.
1133. I think Mr. Price stated that you discovered traces of gold, copper, and tin? Yes, that is so.
1134. In your opinion, those minerals will not be found in any large quantity above the site of the dam? I think it rather improbable that they will be found in sufficiently large quantities to lead to mining on any scale upon the catchment area. I saw no evidence, for example, of reef quartz to any extent upon the catchment area.
1135. I was going to ask you whether, in your opinion, the occupation of this part of the country for water-storage purposes would be likely to interfere with any useful mining operations higher up. I take it that you do not consider that minerals exist there in sufficient quantities to make the matter worthy of consideration? I do not think it likely that minerals will be discovered in payable quantities in that catchment area.
1136. Then the construction of these waterworks will not block the development of any useful mining hereafter? I think not.

1137.

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1137. *Mr. O'Sullivan.*] Do you consider that the shafts and trenches which have been made for the purpose of examining the rock were sufficient to enable you to come to a decision in regard to it? I think so. In all cases the shafts have been carried down until the rock obtained was tolerably solid—practically solid, in fact. When I say solid, I mean not only that the rock was in position, but that it was hard, and not rotted by the surface-action of the weather.
1138. You have no doubt whatever that the engineers have reached the bed-rock? I have no doubt of it.
1139. There is no chance of a leakage underneath? No chance at all.
1140. Your report is not based on theoretical knowledge alone, but upon practical observations which you have had ample means of making? Yes.
1141. *Chairman.*] The photographs upon the screen show the broken rock on the face of the falls;—these are merely fractures of the face, or boulders that have tumbled over? That rugged face is due partly to the presence of boulders which have rolled over owing to the gradual decay of the rock on the surface. It is well known that in all granite country large blocks weather out and roll over. Granite is traversed by joints, and the weather attacks these joints and eats round them till large boulders are left.
1142. It is only where the rock is exposed that these fractures occur? Yes. At a depth these fractures disappear.
1143. The site of the proposed dam is 500 or 600 feet from the face of the reservoir, is it not? Yes, quite.
1144. You have not the slightest doubt about its solidity? I have not the slightest doubt.
1145. Is there anything else you would like to state in connection with this matter? I think not, unless it be that I have very carefully examined the rock formation surrounding what would be the area of the reservoir when full, with a view to ascertaining whether there may not possibly exist some pervious beds which would allow of a lateral soakage and escape of the water, and I find that there is a bed-rock at no very great depth everywhere, ringing round this basin, so that in my opinion there is no escape whatever laterally. There is not the slightest doubt about the ground being really good holding-ground.

Walter Shellshear, Esq., M.Inst.C.E., Divisional Engineer in charge of the Southern Division, Department of Railways, stationed at Goulburn, sworn, and examined:—

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1146. *Chairman.*] What are the limits of your division? Everything south of North Goulburn gates, including the Blayney branch and the lines to Albury, Cooma, Gundagai, Corowa, Jerilderie, and Hay.
1147. The supply of water to the fettlers in the permanent-way department is immediately under your control? Yes.
1148. Can you inform the Committee as to the quantity of water you took from the Municipal Council at Wagga Wagga last year for the use of the permanent way? I cannot give you the exact quantity, because we take from other places besides Wagga Wagga, but I can give you the cost of running the trains.
1149. We were informed by the Locomotive Inspector at Junee, that he had actually taken 10,608,000 odd gallons from Wagga Wagga last year;—is there no check by your Department of the quantity of water taken by you from Wagga Wagga? The returns are sent in, but they do not go through my office. They go through with the returns for the locomotive water supply. The total amount taken from Wagga Wagga is returned in one item. The number of truckloads taken by the locomotive department is charged to that department, while the number of trucks taken by my trains is charged against my branch.
1150. If the Locomotive Inspector at Junee could give us definitely to a gallon the amount of water taken by the locomotive department, could not your department do the same? Our department could give you the information, but I do not happen to have the figures with me.
1151. The Wagga Wagga Municipal Council supply the Railway Department, I understand, at the rate of 6d. per 1,000 gallons? Yes.
1152. We have been informed by them that last year they supplied to the Railway Department between 18,000,000 and 19,000,000 gallons? Yes.
1153. That would be for locomotive purposes at Wagga Wagga and Junee, and for permanent-way purposes along the various lines you have mentioned? Yes.
1154. Can you tell the Committee how far south you have to take the water which you obtained from the Wagga Wagga Council? Well, we have equally good water at Albury. We fill up the train at Albury, and the Wagga Wagga water takes us half way from Wagga Wagga to Albury.
1155. What is the distance between Wagga Wagga and Albury? Seventy-eight miles, practically.
1156. Half of that distance is supplied with water from Wagga Wagga? Yes; and the other half from Albury.
1157. How far north from Wagga Wagga do you go with the water supplied there? That very much depends on the season.
1158. Take last year—you know what seasons you had then;—I daresay the zone is a very varying one? We have no water between Wagga Wagga and Yass in very dry seasons which we can use. The distance is 122 miles.
1159. Then we may safely assume that you go as far north as Cootamundra with the water taken from Wagga Wagga? As far as Cootamundra, and to Gundagai.
1160. You have no water on the Gundagai branch? Not in dry weather. The water all turns brackish, and is unfit for consumption.
1161. How far do you go on the Narrandera and Hay line? There is good water at Narrandera; we get the Murrumbidgee water there.
1162. What is the distance between Junee and Narrandera? Sixty miles, as near as possible.
1163. Might we take half that distance as supplied with Wagga Wagga water, or half the distance between Wagga Wagga and Narrandera? Half the distance between Wagga Wagga and Narrandera, because if the train were working back it would fill up at Narrandera.
1164. About 20 miles west of Junee is the furthest point to which you take the Wagga Wagga water; as a rule? Yes, as a rule.
1165. What portion of the water which you now take from Wagga Wagga for the supply of the permanent-way branch would you take from Junee or Bethungra if there were an ample supply at those places—one-third, one-half, two-thirds? About two-thirds, as nearly as possible, if there were a supply of water at Junee.

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1166. You mean to say that 30 odd miles between Wagga Wagga and Albury consume twice as much water as the other lines? We work back. We have got water at Goulburn, and we have got water at Yass.
1167. You run water-trains to supply the fettlers, and so on? Yes; we run water trains to Narrandera, Jerilderie, Albury, Gundagai, Cowra, and as far north as Goulburn in dry seasons.
1168. Do you not think that one-third of the water you take from Wagga Wagga would give a very small supply for that service? I do not think so. The principal places where we want water are on the Jerilderie road and on the Narrandera road. There are no water trains required between Narrandera and Hay, and we can get good water at Cowra, and fairly good water from Yass except in very dry seasons.
1169. Presuming that there was an ample and good supply of water at Junee and Bethungra, it would reduce the quantity of water taken from Wagga Wagga by one-third or two-thirds? It would reduce the amount of water taken from Wagga Wagga by about two-thirds.
1170. Can you give us any idea of what it costs to supply the fettlers on the various lines during the year? The total cost from October, 1891, to October, 1892, was £12,039 16s. 10d. That included the wages of the guards, engine drivers, and other men on the train.
1171. Was that for the water service? No; that is the cost of the water train service for the whole division.
1172. That is the cost of running the water trains? That is the actual cost of the engine power and the wages of the guards, engine-drivers, firemen, and other men connected with the train. The cost of the engine power comes to £946, the guards wages to £174 17s. 6d., the gangers wages to £118 10s., and so on.
1173. How much would that amount be reduced if you had a supply of water at Bethungra or Junee? If we had a supply of water at Bethungra or Junee it would reduce our mileage running by 12 or 15 per cent. because we should not have to go back to Wagga Wagga when the tanks were empty. That, of course, is an approximate estimate.
1174. Would you be able to do with a less expensive water plant than you have now? No; the water plant is the minimum that we could do with.
1175. That is because you have such long distances to go;—if water were more accessible, could you not reduce your plant? We should still have very long runs to make. It is a long run from Bethungra to Cowra or Yass.
1176. Still it is 40 miles less than you are running now? That would make a saving of from 12 to 15 per cent. That saving is represented by the cost of going from Junee to Wagga Wagga and back.
1177. *Mr. Wall.*] Are you referring to the running of the water trains alone? To the permanent-way water supply, pure and simple.
1178. *Chairman.*] Does the permanent-way branch charge the locomotive branch anything for running over the line from Wagga Wagga to Junee? No charge is made for that service.
1179. Is there not a book charge? There is no book charge. Engine power and wages are the only things charged for.
1180. That is not a charge against you? No.
1181. The permanent-way branch allow the locomotive branch to run a train between Wagga Wagga and Junee every day in the year without getting any *quid pro quo*? There is no book charge that I am aware of.
1182. Do you not think that that is a very unfair thing for the permanent-way department? One train more or less a day does not make a very great deal of difference.
1183. How many trains are there between Wagga Wagga and Junee each day? Two expresses, two mails, and two up and down goods—eight trains.
1184. That is excluding the water trains? Yes; and not counting specials. On stock days and during the wheat season there are more.
1185. There are eight trains, on the average, excluding water trains, and the water trains run twice a day—once each way? Yes.
1186. What does it cost to maintain the permanent-way between Junee and Wagga Wagga? That section is not kept apart in the books.
1187. What is the cost per mile? I have not got the cost per mile.
1188. You allow the locomotive department to run one-fifth of the ordinary traffic over the lines without charging them any of the cost of maintenance? If they did not run over the lines the maintenance would be practically the same. If you had six trains a day running over a line, and you put on a seventh, it would not make much difference to the maintenance.
1189. If anyone else desired to run an engine and a few carriages over the line, would the Commissioners not charge them anything? Of course; that is where the question of profit would come in.
1190. Does not each branch charge against the other any services done by it? Not in this particular way.
1191. The locomotive department make you no return for your very generous treatment of them? Not that I am aware of.
1192. You think that the extra cost of maintenance is so small that it is not worth charging it? I do not think it would make any difference to the cost of maintenance if they took the train off.
1193. Do you know Junee well? Yes.
1194. Do you think that the Commissioners are likely to remove the workshops to some other place? It would be highly inconvenient if they did, because Junee is a junction.
1195. Is it not very inconvenient to have to get water from Wagga Wagga? It is a source of expense and inconvenience.
1196. If a supply of water could be obtained at Junee it would be an advantage? Unquestionably.
1197. As an engineer, you are of opinion that if a more abundant supply of water could be obtained at Junee, more water would be used by the Department—the boilers might be blown out more frequently than they are now? No doubt if there were an abundant supply at Junee work would be done there which is now done at Goulburn and Albury.
1198. At a less cost? At a less cost; it being a central depôt. Where you have to carry water you have to be careful of it.
1199. Has there not been an almost continuous agitation for making Wagga Wagga the centre of the southern railway system, because water there is abundant? It has been talked of from time to time, I think,

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think, ever since I have been in the Colony; but it would be quite impracticable to make Wagga Wagga the centre, not only because Junee is a junction, but because Wagga Wagga would be too long a section for the mail and expresses to run. At present an engine takes a train from Sydney to Goulburn, the next engine takes it from Goulburn to Junee, and the third engine takes it from Junee to Albury. From Goulburn to Wagga Wagga would be too long a section to work in the proper hours, while it would make a long trip for the engines.

1200. If there were no junction at Junee, would you not probably make a long section rather than establish a changing-place there? Locally, Wagga Wagga is not so convenient as Junee. It does not divide the distance to be run so conveniently.

1201. I suppose you consider it of very great importance to have a good supply of water at Junee junction? It would be a decided advantage, both to the Department and to the public, to have a good supply of water there. In dry weather Junee is a terribly miserable place.

1202. Have you visited the site of the proposed impounding dam? I have.

1203. Have you during your professional career had much to do with the construction of waterworks and dams of this kind here? I have not had anything to do with waterworks directly, but I have visited many of the leading waterworks in different parts of the world.

1204. You are probably familiar with the various modes of conserving water for town supplies? I have made it more or less a study.

1205. You have visited this site? Yes.

1206. As an engineer what do you think of this site? I think it is one of those rare sites that nature has prepared beforehand. It seems to me a particularly suitable place for a dam, possessing very great advantages over the majority of sites for works of that kind.

1207. As a practical engineer you have no doubt of its holding capacity or of its firmness;—there would be no danger of the dam tumbling headlong into the valley if a large quantity of water were conserved in the reservoir? If the dam were properly made, I do not think there would be the slightest risk of that.

1208. Do you know the size and the nature of the dam proposed to be constructed? When I was there I saw the plans, but I could not say from memory exactly what the dam was going to be.

1209. Did you at the time think that it would be strong enough? It was the survey plan showing the levels of the dam that I saw; I did not see any cross-sections; but for the purpose of conserving the water the dam would be amply strong.

1210. We are told that the dam is to be built on the bed-rock, and is to be 40 feet high at its highest point, 24 feet thick at the bottom, and some 4 feet thick at the top, while it will impound over 140,000,000 gallons of water; knowing these particulars, and from what you saw of the plans, do you think that the dam would be a suitable one to construct? I understand that the dam is to be built of concrete, and there are well-established rules as to the size and proportions of such dams.

1211. If the ordinary formula has been adopted in this case, you think the dam will be perfectly safe? Certainly.

1212. What do you think of concrete dams—do you think they are the best? In that position I do not see what other kind of dam you could construct. You could not make a dam of brick, and to hew it out of masonry would be more expensive than to make it of concrete. If I were going to make a dam myself I would make it out of concrete.

1213. Do you think the rock there would do for concrete? I have made a good deal of concrete from the same kind of rock, and it turns out very well. Only a few months ago I made concrete piers for a bridge that we were renewing quite close to the site of the reservoir from the local rock, which is practically the same as the rock at the proposed site.

1214. You would not have the slightest hesitation in using concrete? Not the slightest. There is plenty of good rock and good sand there to make excellent concrete.

1215. We have been told that if the scheme is carried out the 7-inch main leading from the impounding reservoir to Junee, will pass within 500 yards of the Bethungra Station, tapping the railway line to the south of Bethungra;—do you think it would be advisable to take a branch pipe from the main at the nearest point, so as to supply Bethungra? Certainly. The water which we have at Bethungra now is taken from the drift. After there has been plenty of rain it is very good; but in dry weather it turns brackish. When we get to the bottom of the drift it becomes brackish, though after heavy rain it is always good.

1216. Would 140,000,000 gallons of water overcome any brackishness which there may be at present? Certainly. It is only the low water flow that is brackish. The last drainage from the soil that goes into the stream is brackish. The dam would practically impound no brackish water. It would impound the rainfall direct. If the dam got extremely low, the percentage of salt in the water would inevitably increase, because the water would run out from the soil.

1217. We are informed that at the lowest point from which it is proposed to draw off the water there will be from 3,000,000 to 4,000,000 gallons of water in the reservoir;—do you think that that water will be too brackish to use? I do not think so.

1218. We are also informed that there is to be the usual sludge hole at the bottom, which would be opened at flood time, and thus allow of the water being sweetened? I do not think that the brackishness would be appreciable unless the water got very low. When the reservoir is nearly dry the water no doubt will be brackish, as it is now; but as long as there is a head of water in the dam, I think the pressure will keep the saline matter in the soil; or at any rate, if it gets into the water, it will be so diluted that it will not be appreciable.

1219. From whom could we get information as to the quantity of water you took from Wagga Wagga last year? I daresay I could get the information for you, either from the returns in the accountant's office, or from my own books at Goulburn.

1220. If between 18,000,000 and 19,000,000 gallons of water were sold to the Railway Department by the Wagga Wagga Council last year, and 10,608,000 of that went to Junee for locomotive purposes, the balance—some 8,000,000 gallons—would be divided between the locomotive branch at Wagga Wagga and the permanent-way branch? Yes; and from that 8,000,000 gallons you would have to take the percentage that is run south of Wagga Wagga. If we took 8,000,000 gallons from Wagga Wagga we should not bring more than 6,500,000 or 7,000,000 gallons north of Wagga Wagga.

1221. If there are 8,000,000 gallons to be divided between your branch and the locomotive branch at Wagga Wagga, do you think you would take as much as they do or more? We should take less than the

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the locomotive branch—not more than one-third of that taken by the Wagga Wagga locomotive branch. The amount of water which our branch takes is comparatively small. The expense comes in because of the running which we have to do.

1222. How many trucks constitute a water train? We have six trucks, each of which carries 2,000 gallons. We find a train of that size more convenient than a heavier train.

1223. Have you to work heavier grades than the locomotive branch, who use fifteen trucks? We have to go up 1 in 40 grades this side of Wagga Wagga, and we use a passenger engine because it is necessary sometimes to run at high speed in order to get out of the way of the other trains. A goods engine would mean a longer time on the road.

1224. You have to have a less heavy train and a quicker engine? A higher speed engine

1225. The locomotive department have only a short distance to run, and arrange things differently? Yes; as soon as our tanks are empty, we make it a point to hurry off the road, so as not to cause any block.

1226. *Mr. O'Sullivan.*] You know the country round Junee very well? I know a little of it. I cannot say I have been very far outside the railway fences, but I know the nature of the country.

1227. Were you not one of the promoters of the Wantabadgery scheme at the outset? No; I had nothing to do with it. I prepared a rough estimate years ago for a scheme to pump water along the railway line from the Wagga Wagga viaduct into Junee. That was shortly after I joined the Department, about ten years ago.

1228. Where were you going to obtain water from? From the Murrumbidgee, at the bridge. We have a pumping plant there now, which was in use before the Wagga Wagga public supply was made. The proposal then was to increase the power of the pumps on the bridge, and force the water direct into Junee Only a rough estimate was made.

1229. No attempt was ever made to carry out that scheme? None whatever.

1230. Do you think the scheme before us the best that has been proposed for Junee? I certainly consider that it has many advantages over the Wagga Wagga scheme. It is the best scheme that I know of.

1231. What advantages has it over the Wagga Wagga scheme? The Bethungra scheme is a gravitation scheme, and the first cost is practically the only cost. With the Wagga Wagga scheme there would be a continual heavy charge for pumping,

1232. Do you think the water at Bethungra would be better? Under ordinary circumstances it would be better; although, in dry seasons, if the dam were allowed to get low, the Wagga Wagga water would probably have the advantage. I think that there would be practically no difference between them.

1233. *Mr. Humphery.*] Have you estimated the quantity of water that would be used by the Railway Commissioners at Junee if this scheme were carried out? No; I have not gone into the question. My branch would probably only use 4,000,000 or 5,000,000 gallons in the year.

1234. That is what you would have to take? That is what I would require for the permanent-way water train.

1235. That is what you would take from Junee? From Junee and Bethungra, if there were a water supply at both places.

1236. According to this scheme? Yes.

1237. You do not know how much would be required by the Commissioners for other services? I could not say.

1238. The local evidence is that, exclusive of your 4,000,000 or 5,000,000 gallons, the consumption would be about 10,000,000, making the local consumption about 15,000,000? That is probably what it would amount to.

1239. The 4,000,000 or 5,000,000 gallons you use must be drawn over the line between Wagga Wagga and Junee? Yes.

1240. *Chairman.*] Is that the total quantity you take, or is it what you would take at Junee and Bethungra if there were a water supply at those places? That is what we should take if there was a water supply at Junee and Bethungra.

1241. *Mr. Humphery.*] I want to know what you would take between Wagga Wagga and Junee? I cannot give you the quantity exactly without referring to the books, but approximately 3,000,000 gallons.

1242. One thousand gallons of water would weigh about 4 tons? Yes.

1243. Three million gallons of water, then, would weigh about 12,000 tons? About that.

1244. What would that represent if the service were performed for the public? I really forget what the rates are. I have nothing to do with the traffic branch. I simply look after the maintenance of the road.

1245. That is about the tonnage of the water taken from Wagga Wagga for your service? Roughly speaking, about 3,000,000 gallons of water are taken.

1246. The whole of that could be taken from Junee if the scheme were carried out? The greater part of it.

1247. You mean the greater part of the 5,000,000 gallons—the whole of the 3,000,000 gallons? Yes; in fact, more than 3,000,000 gallons would be taken.

1248. *Chairman.*] Is there any point which we have not touched upon which you desire to give evidence? I do not know that I can give the Committee any further evidence.

WEDNESDAY,

WEDNESDAY, 8 *MARCH*, 1893.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. John Davies, C.M.G.	Edward William O'Sullivan, Esq.
The Hon. William Joseph Trickett.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Waterworks for the Town of Junee.

Hugh McLachlan, Esq., Secretary to the Railway Commissioners, sworn, and further examined:—

1249. *Chairman.*] When you were last examined before the Committee you were asked to ascertain from the Railway Commissioners, if, upon a review of the position, they would be prepared to increase the length of the term and the minimum price in their guarantee, and a letter has been received by the Secretary from you dealing with this matter? Yes. H. McLachlan, Esq. Mar., 1893.

1250. Will you read it? Yes, it is as follows:—

Dear Sir, 7 March, 1893.

With regard to your Committee's request that the Commissioners would reconsider the question of the guarantee in connection with the Junee water supply, I am directed to inform you that the matter has had careful reconsideration by the Commissioners, but they regret they cannot see their way to increase the amount they were prepared to guarantee, namely, £1,500 per annum, as the minimum that the Department is prepared to pay.

With regard to the term, they will be quite prepared to enter into an agreement to take the water for ten years, subject to the agreement being open to review at the end of five years if any undue profit is being made by the municipality by the supply of water.

1251. *Mr. Humphery.*] Is that the final decision of the Commissioners? Yes.

1252. Are the Committee to understand that the minimum price of £1,500 will not be increased? Yes. At 1s. 6d. a thousand gallons.

1253. Since you were last examined, have you ascertained the total quantity of water drawn from Wagga Wagga by the Commissioners for use at Junee, and to supply the fettlers along the line? We have paid £224 for water drawn from Wagga Wagga during the last six months—that is at the rate of nearly 18,000,000 gallons a year.

1254. This is the information which we have received from the Wagga Wagga Council in regard to the quantity of water supplied by them to the Railway Commissioners:—

Sir, 4 March, 1893.

I have the honor to acknowledge receipt of your letter of the 2nd inst., addressed to his Worship the Mayor, and to inform you in reply that the amount of water supplied to the Railway Department at Wagga Wagga for the year 1892 was 18,698,000 gallons.

As the Railway Department is supplied with water through one 3-inch meter, it is impossible for the Council's officers to apportion the respective quantities applying to the locomotive and permanent-way branches respectively.

J. HAWKES,
Council Clerk.

Do you question the correctness of those figures? I know that we paid £224 for water during the last six months. That would make £448 a year, or about 18,000,000 gallons.

1255. How much of that water would be taken from Junee if the proposed scheme were carried out? We should take practically the whole of it.

1256. *Chairman.*] Of course you understand that the 18,000,000 gallons are for Wagga Wagga requirements as well as for the Junee and permanent-way requirements? Yes; but most of it is required for Junee.

1257. *Mr. Humphery.*] What would be the tonnage of 18,000,000 gallons of water, supposing you take 1,000 gallons as weighing 4 tons? About 70,000 tons.

1258. What would be the cost of conveying 70,000 tons of water from Wagga Wagga to Junee? I do not think you can work it out in that way. The supply, it is said, costs us a little under £2,000 a year, and those are the only figures that we can go on. We pay so much to the Wagga Wagga Council, so much for wages to the men employed in connection with it, and so much for renewals of plant. If we carried that tonnage of water for the public at our ordinary tariff charges, it would come to about £5,000 a year.

1259. How much a ton would you charge for the 22 miles between Wagga Wagga and Junee? We carry water for about 1d. a mile.

1260. If this scheme were carried out, you would save a considerable sum annually in connection with the pumping into the tanks? That was included in the figures before the Commissioners.

1261. What do you pay for pumping? We have no fixed scale.

1262. What are the annual charges in connection with the water service at Junee at the present time? It is said it costs us about £2,000 a year.

1263. I am not speaking of the cost of conveyance. What are the expenses at Junee? The whole cost, including the charges at Junee, has been worked out at £2,000 a year.

1264. You still think that the Commissioners would be unwilling to raise the minimum to £2,000 per annum? The Commissioners considered the matter very carefully. They had all the figures before them, and they are unwilling to increase the minimum.

1265. *Mr. Neild.*] What figures were before the Commissioners? They had before them the working expenses which we are put to in conveying the water.

1266. Not the cost of the water? The whole cost of the service. We know how many men are engaged in connection with this work.

1267. *Mr. McCourt.*] What do the Commissioners mean by saying, "Subject to the agreement being open to review at the end of five years if any undue profit is being made by the municipality by the supply of water"? They think that some alteration might be made in the agreement if the Council were making a big profit at 1s. 6d. a thousand. For instance, at Penrith, we pay 5d. a thousand, and at Sydney 1s. a thousand.

1268. Supposing the revenue received would not pay interest on the cost? We do not think it worth our while to guarantee more than £1,500 per annum.

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1269. Whether the scheme pays or not? That is not a matter for us. We fancy that it might be better to go back to our present system rather than give a larger guarantee.
1270. The Commissioners do not care whether the scheme pays or not, so long as they are supplied at their own figure? Of course they have to look after their own interests, and it would pay them to guarantee £1,500 per annum, which they think would be a fair amount.
1271. They will only bind themselves for ten years? Well, their term of office is limited, and they would not like to bind themselves for a longer period.
1272. You are aware that the charge is founded upon sixty years as the term of repayment? No; but if we got the water in this way, we should not be likely to enter into competition with the Council. The Commissioners would be only too glad to help the Council, and they would not attempt any sharp practice. They would not go back upon their bargain.
1273. *Mr. Davies.*] You said that the water service to Junee at present costs you about £2,000 a year; but that you are only prepared to guarantee a payment of £1,500 a year to the Municipal Council there? Yes.
1274. I want to know why you seek to get a permanent and better supply for £1,500 when your present supply costs you £2,000? We pay salaries, &c., to the men engaged in this service; but if we abandoned the Wagga Wagga supply to-morrow, we could not save that amount, because we could not cast these men adrift at once. We might save £1,000 or £1,200. There is not a separate staff for this work. If we obtained a supply of water at Bethungra we might save £2,000 a year in all. We think that, under the circumstances, £1,500 is a fair guarantee.
1275. In making out your estimate of cost, have you taken into account the rolling stock employed in the work? Yes.
1276. And the cost of maintaining the road? We have not allowed anything for the cost of maintaining the road; but allowance has been made for depreciation and the cost of renewing the rolling stock used in connection with the water service.
1277. Would the officer in charge of the locomotive department at Junee be a competent witness? He is a witness who ought to be able to give some information. We got our information from the account branch.
1278. I presume that the information would come from Mr. Love before it went to the account branch? We should have to get some of it from him; but he is not an accountant; he is simply the locomotive manager.
1279. He says that the cost of the water supply comes to about £2,000 a year—that is, without making any provision for traction, rolling stock, or road maintenance. Surely you will admit that the engine, tanks, and guard's van, must have cost something? £25 a year for each tank was put down as the cost of renewals.
1280. What do you consider the value of these water trains? They have allowed £25 a year for each of the water-tanks to cover the depreciation and cost of renewals.
1281. Then there is the capital cost? If you allowed £25 a year for renewals that would cover the cost of a new tank in a few years.
1282. But there is nothing for the renewal of the engine and the trucks? We always renew out of working expenses.
1283. What have you allowed for the locomotive? £400 a year, I think, for rolling stock.
1284. These are the figures given to us by Mr. Love—£265 4s. for water, at 6d. a thousand gallons; £698 2s. for the cost of haulage, including drivers', firemens', pumpers', and guards' wages; £687 15s. 1d. for coal, oil, waste, and so on, making a total of £1,642 1s. 1d. That is what the water supply cost the locomotive department at Junee. Then there is about £350 a year for the pumping station at Bethungra, which would be abandoned if the proposed scheme were carried out, bringing the cost up to £2,000 per annum in round numbers, without any provision for renewals, road maintenance, and so on? In the estimate of expense which I gave the saving which might be effected at Bethungra was not included.
1285. That makes a stronger case why a larger guarantee should be paid by the Commissioners? I daresay the Commissioners would be prepared to pay 1s. 6d. a thousand gallons for water taken at Bethungra, in addition to the amount paid for water at Junee.
1286. I presume you could not tell us how much water would be taken from Bethungra? No; I have not the figures with me.
1287. You are under the impression that the Commissioners would be willing to pay 1s. 6d. per 1,000 gallons for water taken at that place? Yes.
1288. That would make the amount paid by them altogether more than £1,500 a year? Yes; I daresay it would increase the amount by £300.
1289. Making it £1,800 a year? Yes.
1290. Would you be surprised to learn that between 6,000,000 and 7,000,000 gallons of water were consumed at Bethungra last year? That would amount to about £450 a year at 1s. 6d. per 1,000 gallons, but of course we might not consume so much water at Bethungra if we had a good supply at Junee.
1291. That would make the cost to the Department nearly £2,000 a year? Yes.
1292. Would it not be a great advantage to the Department to have a larger supply of water at Junee and Bethungra than they have now? Yes; I think it would be an advantage to us to have a direct supply.
1293. Even if you paid £2,000 a year there would be a great saving? Between the two places.
1294. *Mr. Wall.*] When speaking of reviewing the agreement at the end of five years, did the Commissioners anticipate that the charge for water to the Department might be increased;—would the object of the review be to keep the charge at the minimum, or to touch the minimum? If our requirements were very large, we should like the charge per 1,000 gallons to be reconsidered, but we should not want to go under the minimum.
1295. If your water requirements did not increase, you would not ask that the minimum should be reduced? No; we should not want the minimum to be disturbed.
1296. I suppose you recognise that this scheme has been proposed practically to supply water to the Railway Commissioners? No; although we should be the biggest customers.
1297. If any alteration were to take place in the Commissioners' arrangements in regard to their water supply, this costly scheme would be thrown upon the hands of the people at Junee? Yes.

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1298. Seeing that there is no probability of the Commissioners getting a supply from any other source, would there be any reasonable objection to their extending the guarantee to a longer period? Their term is a comparatively limited one, and I do not think they would like to make too long an agreement which might bind other people.
1299. This scheme is to extend over sixty years, but the Commissioners might say at the end of ten years, "We do not require water from you any more"? I do not think that that is likely, but the Commissioners would not like to bind themselves or their successors for a longer period.
1300. They would prefer to bind the people of Junee? I do not think there would be any risk of their getting water from elsewhere; but still they would not care to enter into a longer agreement.
1301. To put it in a more business-like form, they would object to extending the term to more than ten years? They do not care about binding themselves for more than ten years.
1302. The question for the Committee to consider is, will the scheme pay, and if the Commissioners definitely refuse to bind themselves to take water for a longer period than ten years, that may make a difference in our decision? The Commissioners would decline to enter into an agreement to take water for more than ten years, even at the minimum rate.
1303. *Mr. Ewing.*] How many men connected with the railway are there at Junee? I have no idea.
1304. *Chairman.*] I suppose there is no probability of the railway works being shifted from Junee within the next ten years? I do not think so.
1305. The Wagga Wagga people have agitated from time to time to get them removed to Wagga Wagga? Yes.
1306. But in spite of the difficulties of obtaining water at Junee, the railway works still remain there, and are likely to remain there on account of the convenience of situation, since Junee is a junction? Yes. I do not think the Commissioners will remove the works from Junee.
1307. Mr. Barling has informed us that a year or two back he obtained from the Railway Department an estimate of the cost of the water supply at Junee, which was set down as £3,392 per annum. How do you reconcile that amount with your amount—£2,000 per annum? I do not think that I gave that estimate. I think it was Mr. Midelton's estimate.
1308. The estimate was given during the Commissioners' term of office, and since you have been Secretary to the Railway Commissioners? It was based on some figures given by Mr. Midelton. I may have sent them on, but I did not work them out.
1309. Further information which you have received has led you to the conclusion that £3,392 is in excess of the cost? Yes.
1310. Do you think it likely that the Commissioners would be inclined to increase their guarantee? I feel certain that they would be inclined to pay for water taken at Bethungra in addition to what they paid for at Junee.
1311. Since you were last examined, and have conferred with the Commissioners, have you obtained further information from your local officers? The estimate which I have given is based upon information obtained from the locomotive department and the officer in charge of water supply.
1312. You had it direct from Mr. Thow? Yes; and I also had a consultation with the officer in charge of water supply.
1313. Who is he? Mr. Derbyshire.
1314. Has he the control of the water supply upon all your lines? He is only a mechanical officer; he has not the accounts at his fingers' ends.
1315. But, of course, the account branch get their information from the practical men? Yes.
1316. You informed the Committee just now that no charge was made against the locomotive and traffic departments for running trains over the permanent-way? In a case like this the running of trains is not debited to the traffic department. The maintenance is essentially part of the permanent-way charges.
1317. If we are told that on an average there are twelve trains a day running over the line between Junee and Wagga Wagga, two of which are water trains, would not something be fairly chargeable by the permanent-way branch against the water trains? As an average, throughout the year there is one water train a day, but the permanent-way branch do not debit the locomotive branch in connection with it. I do not know that this additional train adds to the cost of maintenance, because we should still have to employ the same number of men if it ceased running.
1318. It increases the traffic by one-sixth? But the same number of men would have to be employed even if it did not run.
1319. I suppose, then, that if there were only one train a day, you would require the same number of fettlers as if there were twenty trains a day? No; but we should require the same number of fettlers for nineteen trains as for twenty trains a day.
1320. At all events you are not charging the locomotive department anything for permanent-way expenses? No.
1321. You do as a rule charge for services rendered by one branch to another? If it were a direct service, we should.
1322. We are informed that as a set-off against the cost of the water train, it takes goods for the traffic department from Junee to Wagga Wagga, and thus earns some £200 or £300 per annum? That is a mere matter of calculation. No debit would be made for that. The only way in which a debit could be made would be by the traffic department charging the guards' wages against the locomotive department.
1323. We know that. Mr. John Day, Traffic Superintendent at Junee, informed a Sectional Committee that last year the traffic department credited the locomotive department for running goods to Wagga Wagga with £282, so that you are in error in supposing that these cross entries are not made? I am still doubtful whether that would finally pass through the account books.
1324. Is it not only fair? The wages of two or three guards would be debited to the locomotive department, and if the locomotive train hauled a certain quantity of goods, it might be a fair thing to divide the charge, and something of that kind no doubt is done.
1325. We were told by Mr. Love that the guards' wages were debited against the locomotive department? That is what I say ought to be done.
1326. If that is a correct principle to go upon, why should not some charge be made against the locomotive department for running over the permanent-way? It is merely a matter of book-keeping, and is really not worth the trouble.

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1327. It is apparently worth the trouble to charge the guards' wages? You can get at the guards' wages, but the damage done to the permanent-way is merely suppositious.

1328. *Mr. Humphery.*] Supposing this scheme were carried out, what quantity of water do you think would be required at Wagga Wagga? I could not say.

1329. In the event of the Commissioners only taking 3,000,000 or 4,000,000 gallons of water from the Wagga Wagga Council, instead of between 18,000,000 and 19,000,000 gallons as at present, would they expect to obtain the water at 6d. per 1,000 gallons, or would they be prepared to pay for it at the rate of 1s. 6d. per 1,000 gallons—the Junee rate? Have you any idea what the Wagga Wagga Council charge the public?

1330. I have not got that? The matter has not been considered by the Commissioners.

1331. Why should you pay 6d. at Wagga Wagga, and 1s. 6d. at Junee? Circumstances alter cases, and the price charged for water varies in almost every instance.

1332. If this scheme were carried out, fresh arrangements would have to be made with the Wagga Wagga Council? Yes.

1333. *Mr. Collins.*] Was any special arrangement made by the Wagga Wagga Council with the Railway Commissioners, in regard to the water supply? They offered to give us the water at 6d. per 1,000 gallons, largely because of the quantity that we were taking. I think that that affected the price. If they had charged us any more for it, we should have used our own pumps.

1334. How long is it since they have had a water supply in Wagga Wagga—before the Commissioners required water there? I think so.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Waterworks for the Town of Junee.

APPENDIX.

A.

[To Evidence of E. B. Gipps, Esq.]

RECORD OF MURRUMBIDGEE RIVER AT WAGGA WAGGA, ABOUT 30 MILES BELOW WANTABADGERY.

Showing heights above summer level from 1879 to 1890, and number of days a turbine would work full power.

Year.	Maximum.	Minimum.	Mean.	Turbine would pump full.
1880.	ft. in.	ft. in.	ft. in.	
January	.....	.....	2 8	31 days.
February	.. ...	. . .	1 7	29 ,,
March	.. ..	.....	1 10	31 ,,
April	.... .	. ....	5 11	19 ,,
May	.....	.....	5 11	20 ,,
June	.....	.... .	6 6	24 ,,
July	.....	.....	7 8	15 ,,
August	.....	.....	9 9	
September	....	.....	9 9	
October	.....	.....	6 11	12 ,,
November	.....	....	5 4	27 ,,
December	.....	.....	3 2	31 ,,
1881.				
January	2 0	0 6	0 8	31 ,,
February	4 0	.....	1 3	28 ,,
March	5 0	.....	1 5	31 ,,
April	5 0	1 6	2 3	28 ,,
May	7 6	1 6	3 7	26 ,,
June	7 6	3 0	4 2	18 ,,
July	5 0	3 0	3 8	31 ,,
August	7 0	3 0	3 9	26 ,,
September	6 6	4 6	5 7	23 ,,
October	9 6	3 0	5 10	14 ,,
November	6 0	3 9	5 1	27 ,,
December	6 0	1 6	2 10	31 ,,
1882.				
January	2 0	0 6	1 0	31 ,,
February	1 6	.....	0 6	28 ,,
March	2 4	.....	0 6	31 ,,
April	4 0	....	1 3	30 ,,
May	5 0	1 6	2 3	30 ,,
June	7 0	2 0	3 9	26 ,,
July	8 0	3 0	5 1	23 ,,
August	22 0	5 0	6 11	16 ,,
September	22 0	7 0	9 9	
October	8 0	5 0	6 7	
November	8 0	2 0	4 10	26 ,,
December	10 0	2 0	5 6	19 ,,
1883.				
January	3 6	1 2	2 2	31 ,,
February	3 0	1 0	1 9	28 ,,
March	2 0	1 0	1 4	31 ,,
April	4 0	1 0	1 10	30 ,,
May	3 6	1 10	2 5	30 ,,
June	10 0	3 0	4 3	24 ,,
July	9 0	3 9	5 7	20 ,,
August	13 0	4 0	6 8	13 ,,
September	10 0	4 0	7 6	5 ,,
October	10 0	5 0	7 8	4 ,,
November	9 0	5 2	7 1	6 ,,
December	7 0	0 2	3 1	27 ,,
1884.				
January	2 0	1 0	1 3	31 ,,
February	2 0	.....	0 7	29 ,,
March	1 0	.....	0 5	31 ,,
April	2 6	.....	0 10	30 ,,
May	3 0	1 0	1 6	31 ,,
June	7 0	1 0	2 6	28 ,,
July	7 0	2 6	3 10	30 ,,
August	4 0	2 0	3 2	31 ,,
September	10 0	4 0	6 10	14 ,,
October	5 0	4 0	4 4	31 ,,
November	10 0	4 0	4 11	23 ,,
December	4 0	2 0	3 0	31 ,,

Year.	Maximum.	Minimum.	Mean.	Turbine would pump full.
1885.	ft. in.	ft. in.	ft. in.	
January	20 0	1 0	2 9	26 days.
February	9 0	2 0	3 5	25 ,,
March	2 0	1 0	1 6	31 ,,
April	3 0	1 0	1 5	30 ,,
May	2 0	1 0	1 5	31 ,,
June	8 0	1 3	3 7	25 ,,
July	5 0	2 0	3 5	31 ,,
August	7 6	2 6	4 9	19 ,,
September	13 0	5 0	7 4	12 ,,
October	8 0	3 0	4 4	25 ,,
November	5 0	2 0	2 10	30 ,,
December	3 0	0 9	1 8	31 ,,
1886.				
January	2 6	1 0	1 9	31 ,,
February	2 0	0 6	1 1	28 ,,
March	0 6	.....	0 5	31 ,,
April	1 0	. .	0 2	30 ,,
May	3 0	0 4	0 10	31 ,,
June	1 6	0 9	1 1	30 ,,
July	3 6	0 4	1 1	31 ,,
August	19 6	4 0	9 3	9 ,,
September	20 0	6 0	10 7	
October	13 9	6 0	7 3	
November	9 0	3 0	6 2	14 ,,
December	22 0	3 0	7 1	14 ,,
1887.				
January	28 0	2 0	7 5	22 ,,
February	10 6	2 6	5 0	16 ,,
March	21 0	3 6	9 1	4 ,,
April	10 0	3 9	5 10	22 ,,
May	4 0	3 0	3 3	31 ,,
June	16 0	3 0	8 7	4 ,,
July	27 0	10 0	15 7	
August	15 0	4 6	12 8	
September	16 0	4 0	13 8	
October	16 0	3 0	10 11	
November	17 0	1 0	7 9	4 ,,
December	9 0	5 0	7 7	16 ,,
1888.				
January	13 0	3 0	6 5	13 ,,
February	4 0	2 0	2 8	28 ,,
March	2 0	1 0	1 10	31 ,,
April	3 0	1 0	1 10	30 ,,
May	4 0	1 0	2 1	31 ,,
June	9 0	2 0	4 4	23 ,,
July	9 0	4 0	5 5	24 ,,
August	6 6	3 6	4 11	31 ,,
September	11 0	6 0	7 10	22 ,,
October	7 0	3 0	4 3	28 ,,
November	3 0	1 0	2 0	30 ,,
December	16 0	1 0	4 4	17 ,,
1889.				
January	11 0	3 0	4 10	14 ,,
February	6 0	2 0	2 10	26 ,,
March	2 0	0 6	1 0	31 ,,
April	4 0	0 6	1 7	30 ,,
May	14 0	1 0	6 2	13 ,,
June	22 0	4 0	13 11	8 ,,
July	15 0	5 0	8 11	6 ,,
August	12 0	6 0	7 9	
September	25 0	10 0	15 11	
October	18 0	7 0	11 0	
November	14 0	6 0	8 11	
December	10 0	3 0	5 10	14 ,,

NOTE.—There are very few days in any of these years that the turbine would not have worked over half power, which would have sufficed to pump the full supply of 200,000 gallons a day to the service reservoir.

A 1.

COMPARISON OF GIPPS' WANTABADGERY SCHEME WITH PRICE'S BOMEN LAGOON SCHEME.

	* Wantabadgery Scheme.	† Bomen Lagoon Scheme.
Source of water supply	Filtration through gravel drift on the right bank of the Murrumbidgee River.	Filtration through clay and gravel drift on the border of a large lagoon 2 miles from Wagga. The lagoon nearly dries up in drought, and is liable to contamination by decomposition of vegetable and organic matter.
Length of rising main	4½ miles	17¼ miles.
Height of surface of service reservoirs ...	655 feet	589 feet.
Frictional head	60 ,, ...	228 ,,
Total head	715 ,, ...	817 ,,
Head or height of service reservoirs above the rails, Junee.	290 ,, ...	170 ,,
Total length of piping	16 miles	19¼ miles.
Estimated cost	£35,210	£44,000.
Motive power	Turbine and steam-engine .	Steam-engine only.
Delivery per diem	200,000 gallons	160,000 gallons.

* Rising main would traverse easy unoccupied country.
† Rising main would traverse Great Southern Railway Line, and in event of fracture on account of heavy pressure it would always be subject to, it would sweep away the ballast and probably cause the derailing of a train

B.

BOROUGH COUNCIL OF JUNEE AND THE PROPOSED WATERWORKS.

Sir, Council Chambers, Junee, 28 February, 1893.

I have the honor of informing you, by direction of His Honor the Mayor of Junee and the Council, that they have given full consideration to Mr. Price's plan of the reticulation of their borough, and have unanimously decided to recommend its adoption.

I am, &c.,
ALBERT BEATHAM,
Town Clerk and Surveyor.

The Chairman of the Parliamentary Committee for Public Works.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECTIONAL COMMITTEE.

WATERWORKS FOR THE TOWN OF JUNEE.

REPORT.

THE Sectional Committee appointed on the 15th of February, 1893, to whom was referred the duty of examining the local witnesses, and the inspection of the locality of the proposed works in connection with a water supply for Junee, have the honor to report to the Parliamentary Standing Committee on Public Works as follows:—

The Committee, consisting of Mr. J. Garrard (Chairman), the Hon. J. Davies, the Hon. W. J. Trickett, Mr. E. W. O'Sullivan, and Mr. W. McCourt, left Sydney by the 9 p.m. train, on Friday, 17th February, 1893, arriving at Bethungra early on Saturday, 18th February. There attention was given to the plant used by the Railway Department for supplying water to the locomotives stopping at Bethungra. The supply is obtained from two wells sunk in the drift near the bed of a creek which is a continuation of Ulandric Creek, one being about 300 yards north of the railway station and on the eastern side of the line, and the other on the western side and about a quarter of a mile from the station. The water is pumped by steam power to an overhead tank at the railway. A sample of water was taken from this tank for analysis.

At 9 a.m., accompanied by Mr. Engineer Price, of the Harbours and Rivers Branch, Department of Public Works, Mr. W. Hamlet, Government Analyst, and Mr. M. Sawyer, a resident of the district, the Committee on foot and by vehicle, proceeded to inspect the catchment area and the site of the proposed impounding dam and storage reservoir, on the Ulandrie Creek, above the falls, attention being given *en route* to the character of the country through which the main pipe-line would run before reaching the railway-line, south of Bethungra Station. The country is fairly easy for laying the main pipe until within about a quarter of a mile of the falls, when it becomes somewhat rough. At several places along this portion of the route the pipes will require bridges and trestles.

Your Committee were impressed with the apparent solidity of the rock which forms the face of the falls.

About 500 feet above the falls two sites for a dam exist. The first would impound a larger quantity of water, but at an increased cost. The second site is some 150 feet higher up the creek and seems to be the one most favoured by the Engineer-in-Chief. Very careful and apparently satisfactory investigations have been made, by the sinking of trial shafts and by trenching, to prove that the bed-rock continues on each side where the wings of the dam would be built. A sample of water, for analysis, was taken from here by the Government Analyst. The Committee then proceeded further up the creek to Mr. Carroll's, from which place another sample of water was taken by Mr. Hamlet. The nature of the country and the position of the several holdings upon the water-shed were pointed out, and the Committee then returned to Bethungra by another road.

At 2 p.m. your Committee opened the inquiry at the "Bethungra Hotel," and examined the following witnesses:—Mr. M. Sawyer, grazier; Mr. E. Carroll, selector; Mr. R. Weston, selector; Mr. R. McLeod, selector; and Mr. R. Wheeler, officer-in-chrage of railway pumping plant.

At

At 4 p.m. the Committee left Bethungra by a goods train, arriving at Junee, *via* Illabo, shortly after 5 p.m. On the way they had a favourable opportunity for viewing the whole of the proposed route for the delivery main, which runs parallel with the eastern side of the railway-line and is distinctly marked, and also the site of the service reservoir on a commanding elevation, about 2½ miles north of Junee. At Junee the railway-yards were examined, and also the water-train, the tanks for receiving the water brought from Wagga Wagga, and the appliances for the distribution of it. Attention was given to the proposed reticulation area; and what is known as the railway reservoir, situated near the Wantabadgery Road, about 1¼ miles south-east of Junee, was also examined.

On Monday, 20th February, at 10 a.m., the Committee continued their inquiry at the Junee Municipal Council Chambers, and examined the following witnesses:—Mr. G. Dobbyns, Mayor of Junee; Mr. T. C. Humphreys, ex-Mayor and stock and station agent; Mr. T. W. Hammond, grazier; Alderman J. Egan; Mr. J. Love, railway locomotive inspector; Mr. J. Day, railway traffic superintendent; and Mr. M. H. Davis, stock and station agent and municipal valuer.

The inquiry was concluded at 4 p.m., and the Committee left Junee at 6·20 p.m. the same day, arriving in Sydney at 6·15 a.m. on Tuesday, 21st February.

It will be seen from the foregoing that twelve witnesses in all were examined by the Sectional Committee, five at Bethungra and seven at Junee. From the evidence taken there seems little doubt that the rainfall upon the catchment area will quite equal the expectations of the officers of the Department, but in view of the nature of the country and the uses to which it is put—principally grazing—it is questionable whether it is necessary, at present, to resume so much land as that proposed, viz., 906 acres. The witnesses at Bethungra differed in their opinion as to the quality of the water immediately above the proposed dam, some asserting that even in dry weather the water had improved of late years, while others held a contrary opinion, but these also admitted that even in the driest season sheep and cattle drank the water without any ill effects, and that in wet seasons it could be used for human consumption.

A difference of opinion also exists among the same witnesses as to the holding nature of the ground at and above the site of the proposed impounding dam, some of them asserting that they have seen water coming through the lower face of the falls when there was none running over the top; while in opposition to this it was pointed out that if this were true this water might be some draining through a small fissure leading from a water-pool a few yards from the top of the falls, and that as the proposed dam site is some 500 feet higher up the chance of leakage was very slight indeed.

The value of the land proposed to be resumed on the catchment area (906 acres), including all improvements, water-rights, &c., was estimated by disinterested witnesses at from 45s. to 55s. per acre.

The route of the main pipe-line, the situation and elevation of the service reservoir, and the proposed reticulation seem to have been carefully considered, and meet with the approval of the Junee Municipal Council.

The requirements of Junee as to water supply are of an urgent character. The present system is to conserve in overhead and underground tanks all the roof water, and when these supplies are exhausted, which occurs after a few months dry weather, recourse is had to wells sunk through about 8 feet of surface soil to a narrow and shallow belt of water-bearing drift, lying to the south and west of the town. The owners of these wells make no charge for this water, but it costs 1s. per cask of 50 gallons, or at the rate of 20s. per 1,000 gallons, for cartage. In extreme dry seasons this source of supply soon fails, and then the people are dependent upon the water brought by train from the Murrumbidgee at Wagga Wagga, for which 10s. per 1,000 gallons is paid to the Railway Commissioners, and adding the cost of cartage the total cost becomes 30s. per 1,000 gallons.

It was stated in evidence that at the present time a number of people are obtaining their supply from the wells in the drift, and, that if the dry weather continues, within another month they will have to depend upon the supply brought by train.

Junee seems to have made great progress during the last ten years, and owing to its being surrounded by a large area of wheat-growing land, and also to its position as a railway junction, there seems every prospect of further progress in the future. It has been incorporated eight years, and the only rate at present is the usual Municipal rate of 1s. in the £ on nine-tenths of the ratable value, yielding in 1892-3 £670. There is no debt, and there are assets, including town hall property, valued at about £880. The mayor and aldermen examined, unanimously expressed the opinion that the people were able and willing to pay the full rate of 1s. in the £ for a water supply, and they all approved of the Bethungra scheme as the best that had been proposed.

In view of the magnitude of the Railway Department's requirements your Committee gave special consideration to this aspect of the case. Judging from the evidence of Mr. Love, the locomotive inspector at Junee, and of Mr. Wheeler, at Bethungra, the quality of the water at present supplied at Bethungra is all that can be desired for boiler purposes. The cost of supplying water at Bethungra to the locomotives is about £300 per annum; but this does not include interest on cost of pumping plant. Last year the cost of supplying 10,608,000 gallons of water by train to the Locomotive Department, at Junee, was £1,642 1s. 1d., exclusive of interest upon capital invested in plant, consisting of one locomotive and fifteen tank trucks, &c., which are worth at least £7,000, and of any charges for running that may be made by the permanent-way branch. There is, however, a set-off against the cost of supplying the water by train of £282 earned by the water-train taking goods to Wagga Wagga on account of the traffic branch.

In addition to the above items it should be stated that the permanent-way branch obtained last year, from Wagga Wagga, 2,232,000 gallons of water for distribution by train to the settlers along the railway-line, a portion of which it would be cheaper for them to obtain at Junee or Bethungra if a supply were available at either of these places. There can also be but little doubt that if an ample supply of water were available at a reasonable rate the Railway Department would find it advantageous to use a much larger quantity of water than they do at present.

Under all the circumstances your Committee are of opinion that if the proposed scheme is to be carried out the Railway Commissioners may reasonably be expected to increase the minimum amount of their guarantee, and also to extend the time during which they promise to take the water to say ten years.

While your Committee have every reason to believe that the strata at the site of the impounding dam and reservoir are sufficiently sound for the respective purposes of these structures, they would in view of the importance of the work recommend that Professor David, of the University of Sydney, be requested to inspect the locality and furnish a report.

Your Committee desire to express their approval of the energy and ability displayed by Mr. Engineer Price in connection with this scheme.

In conclusion the Sectional Committee have unanimously passed the following resolution, proposed by Mr. Trickett and seconded by Mr. McCourt:—

> That having regard to the evidence given before the General Committee and locally, and after an inspection of the Bethungra site and scheme, the Sectional Committee recommend that the Bethungra scheme be carried out, subject to the following reservations:—
>
> 1. Mr. Hamlet's evidence proving satisfactory as to the quality of the water.
> 2. Professor David's evidence being obtained as to the nature of the country around the site of the proposed dam, and as to the holding quality of the dam and the surrounding ground."

J. GARRARD,
Chairman.

Sydney, 28 February, 1893.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

WATERWORKS FOR THE TOWN OF JUNEE.

[TAKEN BEFORE THE SECTIONAL COMMITTEE.]

SATURDAY, 18 *FEBRUARY*, 1893.

[*The Sectional Committee met at the "Bethungra Hotel," Bethungra, at 2 p.m.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. John Davies, C.M.G.	William McCourt, Esq.
The Hon. William Joseph Trickett.	Edward William O'Sullivan, Esq.

The Sectional Committee proceeded to consider the proposed Waterworks for the Town of Junee.

Mr. Matthew Sawyer, grazier, near Bethungra, sworn, and examined:—

Mr. M. Sawyer. 18 Feb., 1893.

1. *Chairman.*] Your holding is in and around Bethungra? Yes. Ironbong is the name of the station.
2. Do you understand the proposal before the Committee in reference to the catchment area at the waterfall? Yes; I think so.
3. You are aware that it is proposed to construct a dam at the head of the waterfall on the Ulandrie Creek, which will impound some 45 acres of water, and will have a catchment area of 5¼ square miles? Yes.
4. Some of the land, I understand, belongs to you? Yes.
5. You own portion 10, 80 acres; portion 1, 40 acres; portion 31, 80 acres; only part of which is within the catchment area? No; the whole of it.
6. Part of portion 30? Yes.
7. You have been a resident of the district for a long time? About thirty-four years.
8. You therefore know the character of the country and its capability for carrying water? Yes.
9. Do you water your stock now from the Ulandrie Creek, above the waterfall? Yes; I have 9,000 sheep watering in the paddock, and that is the only water in it.
10. You do not water them all there? That is all the water I have. There is one little drop left in the little tank.
11. Below? Yes, further away.
12. Have all your sheep to be driven to the top of the fall to be watered? They all run in the same paddock.
13. And find their way to the top of the fall in order to obtain water? Yes.
14. Except in very wet weather when they get water elsewhere? Yes, the creek runs in wet weather; but there is no standing water after it has stopped running.
15. Is there always water there in the driest times? I have never been short of water from that spring since I have had it.
16. Is the water good drinking-water? Not for human beings; it does for stock.
17. What is detrimental about it? It contains salt and sulphate of iron; it is not good drinking-water.
18. Did you ever use it yourself? No.
19. How do you know that it is not good drinking-water? I have tasted it often enough, and I know that the people living on the banks of the creek have to cart their water for miles.
20. What people? Mr. Nash.
21. Is it not a fact that Mr. Carroll uses the water for drinking purposes? I never knew it.
22. Where does he obtain his water? I think he has a tank.
23. You think that this water is not good for human consumption though it is good for stock? It is not good for human consumption as it is now.
24. If a large quantity of water were impounded there, would not that freshen the salt water? Yes; it might choke it or drown it.
25. If 140,000,000 gallons were impounded at this place, the water would certainly be fit for human consumption? I think so; I cannot see what would stop it.
26. Have you any other land through which the proposed pipe-line to Junee would go? Yes.
27. Have you any land immediately below the site of the dam? Yes, all below.
28. The pipe-line would go through one of your portions numbered 72? I think so, though I never looked at the pegs.
29. Have you any other land through which the pipe-line would go? No; they keep above my land along the hills.

Mr. M. Sawyer. 18 Feb., 1893.

30. The line goes through Crown land? All through Crown land.
31. The land which you have mentioned is the only land which you possess which would be affected by the scheme in any way? Yes.
32. How long in one year has your stock had to depend upon the water above the dam? That is according to the season.
33. On the average how long have you been dependent on the water there this year? They have only been dependent upon it for the last three weeks. They have had other water in different places; but it is all dried up now.
34. On an average how long in each year would your stock be dependent upon the water above the fall? From three to four months, according to the season.
35. Then you anticipate that this season they will be dependent upon that water for another two months? For another two months very likely, but we cannot tell.
36. Is it true that a great volume of water runs over the fall during heavy rain? Yes; if the rain falls heavily there. The water came over last year when there was a fall of 5 inches in half an hour.
37. At present the creek has a very limited impounding capacity? Very, and as the water has always been running I have never made a dam. The land has not been mine for many years.
38. Do you think that the rainfall on those hills is heavier than it is down here in Bethungra? I do not think so.
39. Has not high ground a tendency to catch more rain than low ground? It does not seem so here.
40. Do you know the annual rainfall in Bethungra? No.
41. You do not think that the fall on the hills is heavier than that down below? Not a bit. It is only when thunderstorms occur that the creek runs.
42. And they occur as much on the flats as on the hills? Yes. Last year the creek ran all the time very strongly.
43. How long have you owned the land which forms part of the catchment area? It is six or seven years since I bought it.
44. Have you used it exclusively for grazing? Yes.
45. You have not put it under cultivation? No; I have paid rent for it for the last thirty years.
46. Why did you rent it? Because I could not keep my cattle away from the water. Mr. Hurley used to own Cootamundra run, and the creek is just at his boundary. I had to pay him £50 a year as rent for seven years.
47. How many acres did you rent? Well, no particular area. I only rented the land in order to allow the cattle to get to the water. When the land was selected I paid the selector.
48. Now it is all freehold? Yes.
49. Supposing the blocks to which you have been referring were taken from you by the Crown, what effect would it have on the rest of your holding? A very great one. It would take all the water I have in a dry season.
50. If the Government were prepared to supply you with water at a more accessible level, would not the disability under which you expect to labour be removed? I daresay it would if they did that, and they could get water to hold anywhere below; but I do not think they could. The creek there runs through gravel and sand. Of course you might conserve the water to a very great extent. They might make a dam if they spent some thousands of pounds, but an ordinary clay dam would not do.
51. If you were provided with a trough filled by a pipe from the Government main what then. Would it not be more convenient than the present arrangement? Not quite, I should always have to be looking after the troughs, and there would be the expense of putting them there.
52. Your stock now have to travel to the extreme end of your run in order to get water; would it not be better if your water supply were brought nearer the middle of the run? The stock travel of their own accord, and those that go to water to-day do not go again for a couple of days perhaps. We have not the trouble of driving them.
53. How far south does your holding go? About 2½ miles.
54. And west? Until it joins North Junee.
55. *Mr. Trickett.*] Have you no other water but this? No permanent water, nothing but dams or tanks. If I got short of water, I could shove 20,000 sheep into this paddock for a few months.
56. *Chairman.*] If the pipe-line runs near to or through your property, would it not be far better for you to have a water supply in the middle of the run than to be dependent upon the present supply at the extreme northern end of it? No doubt it would.
57. Does the pipe-line go anywhere near the rest of your run? Yes; it goes right through the hills.
58. It taps the railway line about 1½ mile below Bethungra and then runs along it? Yes.
59. That would be close to your land? Yes.
60. If you could get a supply of water, say two miles south-west of the water on top of the waterfall, it would be far more convenient than your present supply? No doubt it would, if we got it.
61. Was the land which you now hold, and which you previously rented, taken up practically in order to obtain access to water? When the people there first took it up they wanted it to live on.
62. But so far as you are concerned? I bought it for the water.
63. It is not the best part of the run for feed? Yes; it is the best part of the whole run round that spring.
64. But it is only a limited area. It would not feed 9,000 sheep? No.
65. You bought to obtain access to what you consider permanent water? Yes.
66. Have you ever used this water continuously? I have tried a drink or two from it.
67. You do not like it? No.
68. Do you know anyone who has used it continuously and suffered ill effects from using it? No; but the people who lived there for years always carted their water.
69. The people who lived on the top? Yes; Mr. P. Nash was the first man who selected the land. The water has got a great deal better during the last year or two than it used to be, because there is so much springing in the creek and running. It is chiefly running water now. I had not tasted it for some time until the other day, and I was surprised then.
70. Do you know anything about the other schemes proposed for supplying Junee with water? Only what I have heard. They have made a survey to Bomen, and another to Wantabadgery.

Mr. M. Sawyer. 18 Feb., 1893.

71. How do you think those schemes compare with this—which is the best? If you could get plenty of water here, and good water, this would be the best, because the water will run down of its own accord—there will be no pumping.
72. As a layman you would say that this scheme is the best? Yes.
73. Have you any idea that there is not a sufficient catchment area to give a good supply? It is just according to the season. I have seen the creek under the bridge not run at all, and for five years at my place the creek never ran.
74. But have you not told us that the reason why you cannot water under the fall is that the water sinks into the ground under the gravel beds? Yes; but you want rain to fill the dam.
75. If we have been told that 2 inches of rain running off this catchment area would give a two years' supply to Junee, or, in other words, would twice fill the proposed reservoir, what is your opinion on the subject? It would do that perhaps, for all I know, if all the water went into the dam, and none went into the ground.
76. But there are times when the ground is so soaked, or when the rainfall is so heavy, that all the water runs off? Yes, when you get a thunderstorm like that of last year.
77. I suppose that during a thunderstorm about half of the water that falls runs off? Nearly all of it.
78. What is the nature of the country above the waterfall—granite? A good deal of it is granite.
79. Is it good solid granite, or do you think there are fissures in it which would allow the water to percolate through? I hold that it is mostly a sort of coarse granite.
80. If a dam were constructed, and the water impounded, do you think there would be any possibility or probability of its leaking away through fissures in the granite rock? Not through the granite rock.
81. Or through the soil? It is a porous sort of soil there; it is not a clay for holding water.
82. If the engineers say that they have excavated on the site of the proposed dam, and have found the true granite bed rock right up to the height they want for their dam, do you think there is any likelihood of any leakage taking place? I have doubts about it. They have not got to a solid granite rock.
83. You are aware that 20 yards north of the fall there is a dyke of ironstone, some 5 or 6 feet in width? I noticed it to-day, but I have never noticed it before. I never look at such a thing.
84. Do you not think that it forms a metallic bar, preventing the water from getting away? Yes; but I question how far it would go. I have never traced it out to see. It might end just where you saw it.
85. If geologists are of opinion that these dykes come from great depths, and that there is not likely to be any serious fracture in them, do you not think that this bar would prevent the water from getting away? No doubt it would. I have only my own suspicions about the water.
86. Do you think that if the water were impounded there, the weight of it would make the whole rock slip down into the valley? There is not the slightest danger of that. My reasons for thinking that the water will leak through are that half-way down the waterfall the water comes out under the rocks when it has left off running over the top.
87. Does that occur to any extent? There is just a little stream for a certain time. In very dry times, of course, it does not run over. It is only for the last couple of years that the water has run for more than two or three months after a wet season. The water has increased lately, so that it has continued to run.
88. If your theory is correct, and there is a fissure in the rock, it is only a small one? Yes.
89. That would not allow the dam to be so undermined that the whole thing would fall down? No; there is too much rock for that.
90. Is there anything else you would like to state? No; I do not think so. I thought that there was sulphate of iron in the water, because after I have mixed sulphate of iron to use for the sheep the troughs smell like this water does.
91. Do you think that this is a good time to take a fair sample of the water in the creek? Yes.
92. If the Government Analyst has just taken samples of the water of the creek above the site of the dam, you think he could not have taken it at a better time in order to discover whatever injurious ingredients it contains? No; because no fresh water has run into the creek for months now except what has drained in from the banks.
93. What is the country which forms the catchment area used for besides grazing? It is all used for grazing, except what Mr. Weston uses for cultivation.
94. It never will be fit for anthing else? Mr. Ward has some fine agricultural land up there; he cultivates a little of the land.
95. Do you think that grazing or agricultural operations carried on above the site of the dam would lead to impurity in the water? No; if you were to resume the whole of the catchment area there would soon be such a coating of grass on it that unless a thunderstorm occurred the water would not run off, and even with a thunderstorm it would hardly run.
96. You do not think that the catchment area is likely to be put to any purpose which would make the water impure? No; I do not.
97. You desire to make an explanation in reference to a suggestion that the Government might supply water from their pipes into troughs in your land? Yes; this would not benefit me in any permanent way, as the land is leasehold, and may be taken from me at any moment by selectors.

Mr. Edward Carroll, selector, near Bethungra, sworn, and examined:—

Mr. E. Carroll. 18 Feb., 1893.

98. *Chairman.*] Whereabouts is your holding? In the forest.
99. That is to say on the catchment area for the proposed Junee water supply scheme? Some of it is.
100. You are the owner of portions 26, 80 acres, and 27, 100 acres, within the proposed catchment area? Yes.
101. How long have you resided at this place? Thirteen or fourteen years.
102. Do you combine grazing with farming? Yes; a little.
103. What land have you got under cultivation? Thirty acres; I have not got any crop in this year; that is the area I have cleared and have had under crop.
104. Why is it not under crop this year? Because the paddocks were too dirty, and I am giving them a spell.
105. What have you grown on the land? Twenty-four bushels to the acre.
106. Wheat? Yes.

Mr. E. Carroll. 18 Feb., 1893.

107. How long have you been cropping it? I have only taken four crops off it.
108. Now it wants a rest? It is not on account of the bad ground that there is no crop there, but dirty seed was sown, and there are oats coming up upon it.
109. It is not because the ground was worked out that you are resting it? No.
110. Do you use any manures? No.
111. You are not likely to do so? No.
112. It would not pay you to do so? No; I do not think it would pay me.
113. Do you run sheep? 300, 400, 500, and so on.
114. On this particular piece? No; I use that just for my cattle—cows, and bullocks—and for my crop.
115. These are really your cultivation paddocks? Yes; my house paddocks for my bullocks, and cows, and horses, and cultivation.
116. Where do you get your water to supply the cattle and for house purposes? The water I use for house purposes comes off the roof, and is stored in iron tanks.
117. The cattle use the water in the creeks? Yes; and I have a dam. I would sooner that they went out to the salt water.
118. What water do you allude to? The water just outside the gate on Mr. Sawyer's land.
119. Do your cattle always get their water from the creek? No; all through the winter they get it from the dam, but the dam goes dry. I never made a big dam, because they can get to water in the creek outside the gate.
120. The water in your dam is good soft water? Yes.
121. And when it is exhausted you allow the cattle to go further down the creek where the water is salt? Yes.
122. Do they suffer any ill effects from drinking it? I fancy it does them good.
123. Is it unpalatable for drinking purposes? You could not use it now.
124. It is too salt? Yes.
125. You are aware that the Committee were on the land this morning? No; I am not.
126. You did not see the Committee there? No.
127. Do you know that your daughters were down there getting water? They get it just against the house. The salt water is down at the watering place.
128. You mean down where the Department propose to construct a dam. That is what you call the salt water? That is what I call the salt water. There are salt springs there.
129. Where do they come from? I think they come out of the ground.
130. You know that the rock crops up there? It does in places, but I suppose the water finds other places to come up. I fancy it must come up.
131. You think that the salt is only just at that particular point. Higher up the creek is perfectly fresh? It is fresh where I am, but it is salt a long way up.
132. You know the gate going to Weston's;—is the water salt there? Yes; but not so much as at the springs. Further up it gets better.
133. Whereabouts is your dam—on the 100 or on the 80 acres? It is on the 80 acres.
134. The water there is perfectly fresh? Yes.
135. If your tanks ran out and you had water in the dam, would you use it? I could if the cattle did not go to it. It is fresh enough.
136. You mean it would be good if the cattle did not contaminate it? Yes.
137. Do you think that if the dam is made the water is likely to be contaminated by the cattle running on the catchment area, or by any agricultural operations which may be carried on there? I could not say.
138. We are told that there will be nearly 45 acres of water there—that the reservoir will contain nearly 140,000,000 gallons, do you think that any grazing or agricultural operations could be carried on on the catchment area which would have an appreciable effect upon the quality of the water? I should think so.
139. With an ocean of water like that? I should think so.
140. What would damage the water—the cattle upon the catchment area? The cattle and sheep.
141. You think that they would so pollute the water that it would be unfit for human consumption? I do not say that it would be unfit for human consumption, but I think that they would do it some harm.
142. If 900 acres of land were reserved around the reservoir, and nothing was allowed to go on that land, would contamination be prevented? I think so.
143. If 900 acres were reserved that would be quite sufficient to prevent the contamination of the water? I think it would.
144. *Mr. Trickett.*] Have you had any experience of other creeks of this character? No; I have not. I may be wrong altogether in my opinions.
145. *Chairman.*] Have you had experience in other parts of the country in reference to brackish or salt creeks? Yes; I have had experience of salt creeks.
146. Whereabouts? I have one at the back of my own place.
147. That is on the same ground as we have been referring to? No.
148. Is it further up? Yes.
149. Is it not on the 80 or the 100 acre blocks? Yes.
150. Is it just as salt? Yes; but there is not so much of it
151. Is there a tendency for these salt springs to become fresher as the years go by—does the salt get washed out, or does the water remain as salt as ever? It gets salter.
152. The salt in time is carried away? I believe the water gets salter.
153. Do you know anything of the other proposals to supply Junee with water—the Wantabadgery and the Wagga Wagga schemes? No.
154. You do not know much about works for supplying towns with water? Nothing. This is the first time that I have had anything to say upon such a subject.
155. Do you think there is more rainfall on the hills than there is in the valleys? I think it would be about the same. I should not think that the fall in one place would be heavier than in another.
156. Very often you find that the rain clouds are intercepted by high mountains when the rain has not fallen upon the flats? But sometimes, with these flying showers, rain falls on the flats when none falls on the hills. The experience on either the hills or the flats would be about the same.
157. If the rain clouds are higher than the flats, but not sufficiently high to clear the hills, may not the hills get rain when the flats do not get any? Yes; they might.
158. Have you any idea whether more rain falls on mountainous country than on low country? I have had no experience; I could not tell you

159. You have no idea of the volume of water falling on these watersheds—as to whether it is greater than the rainfall in Bethungra township? No. Mr. E. Carroll.
160. You have never kept a rain-gauge? No.
161. You know the site of the waterfall? I know where it is. 18 Feb., 1893
162. You know the site of the proposed dam? Yes.
163. Do you think that it is good solid rock there—that they could put a dam on it? I think the rock is solid.
164. You do not think that the water would leak through underneath anywhere? I should not think so.
165. If we are informed by the Department that they have traced the rock on each side of the hill, and have found it to be the solid bed-rock, you do not think there is much likelihood of any water percolating through fissures? I do not think there is.
166. You do not think there is any likelihood of the whole mass of rock slipping into the valley, because of the weight of water on it? I do not think so.
167. Is there anything else you would like to say? No; there is nothing else that I could say.
168. Do you know of any other salt springs upon this catchment area besides those near the falls? Yes; there is one further up McLeod's Creek, but that creek runs in below the falls.
169. Then that spring would not be on the catchment area? No; though the creek runs through Mr. Sawyer's property.
170. Do you know of any other salt spring on the catchment area besides those to which we have been referring? No, I do not.
171. Did you or your family ever try to drink the water from what you call Sawyer's salt spring? I have been down there drafting sheep, and doing work of that kind, but I could never drink more than a mouthful.
172. It is unpalatable? Yes.

Mr. Richard Weston, selector, near Bethungra, sworn, and examined:—

173. *Chairman.*] Where is your holding, is it to the north-east of the falls on the Ulandrie Creek? It is a little to the north-east, but I think more to the north of the falls. Mr. R. Weston.
174. You own about 2,000 acres, the greater part of which is situated within the catchment area? Yes.
175. It is proposed to resume some 906 acres immediately around the reservoir—do you know if any of your land is to be included in the resumption? I do not know what land they will take. I suppose they will have to take the 320 and the 600 acre block. 18 Feb., 1893.
176. Your homestead is on portion 3? Yes.
177. That is the 100-acre block? Yes.
178. Have you a dam on that block? No; the dam is on the 40-acre block, portion 6, near the boundary of No. 3.
179. Is the dam always full? It is very nearly dry at times. It is falling very fast now.
180. How much water does it hold when full? In a fair season it will hold water for twelve months.
181. For stock only? For stock only.
182. Where do you get your drinking-water? Out of a well, and we conserve it in iron tanks.
183. Is this water good drinking-water? I do not drink it, and the men who were there repairing the road would not drink it.
184. What is the matter with it—is it salt? I do not know. It is a different colour altogether. It is a muddy colour, while brackish water is very clear.
185. Do you know that Mr. Price took a sample of that water? I know that he did.*
186. Would you be surprised to hear that it is some of the best drinking-water? I know that it would be as good as a dose of salts to a man not accustomed to it. I should not like to drink it. It is very distasteful.†
187. What is the bottom—rock? No; I sank down in the bed of the creek, and I came to a drift-sand about 4 feet wide, and I puddled that up. It did not hold water before.
188. But it holds water now? Yes.
189. There is no leakage underneath? Not for all I know. It does not appear on top.
190. Do you know where the Government propose to put their dam? Yes.
191. Is the country anything similar to what it is there? Somewhat similar.
192. With boulders cropping out of the ground? Yes; granite stone.
193. There is no slate up there? Not that I have seen.
194. It is all granite? Yes.
195. Do you think that if a concrete dam were erected just above the falls, on Mr. Sawyer's land, it would hold water? All through there there are what they call land springs, that is, when the ground is well soaked you can get a supply of water by sinking further down, and the question is, does that sand go under the bed rock. If it does, the water will run right through wherever there are any crevices.
196. Do you think there is any intervening stratum? I am certain of it. That is what supplies Bethungra. All the water here has drained through the drift-sand.
197. But all the Bethungra water does not come from the source of which we are speaking? Most of it comes down that way.
198. There are other creeks as well? There is only the one creek on that side.
199. Do you think there is a possibility of the water, if impounded, finding a subterranean outlet? If there is a good sound bottom it will stand.
200. Do you think there is a good bottom? In some places I have seen the water trickling out through the rock.
201. How far down? Half-way down.
202. When it was not running over the top? Yes.
203. To any extent? No; there was not much water in the creek.
204. One hundred gallons in the day? No.
205. Just damp oozing out? Yes.
206. From that you think there may be some leakage up above? Yes. 207.

* Note *(on revision)*:—I was under the impression that the water taken for analysis was from the holes in the creek above the proposed site of the Junee dam, and not from mine.

† Note *(on revision)*:—I was referring to the water in these holes when I said it would act like a dose of salts on anyone drinking it.

Mr. R. Weston. 18 Feb., 1893.

207. Might not that leakage take place close to the edge of the fall? Yes, it might.
208. You know that the site of the dam is 500 feet further back? I daresay it is. I have seen where they have sunk the holes.
209. Do you know that the bar looks pretty solid? Yes, it looks pretty solid; but the question is, are there any crevices in it.
210. Supposing there are, do you think there would be any appreciable leakage? It depends on what is underneath the rock. There might be drift-sand or loose gravel—wash-dirt.
211. You doubt if the rock is solid right away down; you think that there may be drift sand or other porous substance, which would allow the water to soak away? Yes.
212. You have never seen any serious quantity of water leaking away below the fall? Nothing to speak of. What they call land springs are just the soakage of the ground. Now the trees are rung there are more of them breaking out.
213. Is your dam the only supply of water for your stock? I have other tanks, and dams, too.
214. One on the 900-acre portion? Yes; and I have several other holes about the land.
215. Is there still water in the upper hole? Yes.
216. You have had a dry season during the last few months? Pretty dry.
217. How long do you expect the supply to hold out, if you get no rain? The tanks are about 9 feet deep, and contain about 600 or 700 cubic yards, and they hold water better than the dam in the creek, although there is six times the quantity of water in the creek that there is in the tanks.
218. How long do you suppose the dam water will last if the weather continues dry? About four months.
219. Without any more rain? Yes.
220. What is the depth of the water in your homestead dam? When full?
221. Yes? I suppose about 14 feet.
222. What is there now? About 7 feet.
223. Is the water better when it is 14 feet deep than when it is 7 feet deep? Yes.
224. The lower it gets the less drinkable it is? Yes—the worse it gets.
225. Do the members of your household ever drink the water? No; and they do not wash clothes in it—it is too thick.
226. That is your only objection to it? For washing purposes.
227. When the dam is full, it is immediately after heavy rain, and the water is consequently disturbed? Yes. It looks good water, and the cattle like it very well. It is in no way brackish.
228. Is the water in the other holes better than it? Clearer, but brackish.
229. Are they situated higher up? There was one in a gully, and one on a branch of the Ulandrie Creek.
230. They are both more brackish than the big holes? Yes, and below it.
231. Do the cattle drink the water from them? Yes.
232. You have never tried it for household purposes? No; it is too far away.
233. Did you see Mr. Gipps when he was up here? No.
234. Knowing the catchment area, and being aware of the existence of these salt springs, do you think that this is a good place at which to try and impound water for the supply of Junee? I could not say. It might supply them, and it might not. You might not get sufficient rain to put enough water into the dam.
235. If the town of Junee belonged to you, and it was absolutely necessary for the improvement of your property that it should have a water supply, and this was the nearest catchment area, would you feel justified in expending a large sum of money here for the purpose of improving your estate at Junee? Yes; if they could get a good supply of water here, but I am doubtful of it. My opinion is that you would get a better supply from Wantabadgery, and that you would get better water there.
236. You have also heard of the Wagga Wagga scheme? Yes.
237. You think the Wantabadgery scheme is better than this? Yes; they would get purer water from Wantabadgery.
238. Do you know how they would get it from there? By pumping it.
239. Is it not far easier and less expensive to let water run down hill than to pump it up hill? Yes. I do not know much about the expense.
240. Supposing the Wantabadgery scheme means a cost of £35,000 for erecting a dam in the Murrumbidgee, and pumping the water up to a great height, necessitating an annual cost of £1,000 a year, how then? That is another lookout.
241. Have you ever given much thought to the question of supplying towns with water? I think there is enough water to be had without dams. I believe that there is a sea of water underneath Junee.
242. In working your estate, if you could get water to run down hill the way you want it, would you not adopt such a scheme rather than go to the cost of pumping the water? Yes; but I would try and see if I could dam the water where I wanted it without going to the expense of running it down on to the land. They used to run away with the idea that there was no water out back.
243. Do you think that Junee is in a basin overlying a water-drift? Yes.
244. How far do you think they would have to go in order to get water? About 700 feet.
245. Do you think they would have to go right down as far as that? They might get water before they went half that distance; but it is my belief that the water will gush up in torrents.
246. Is it not the experience that brackish water is obtained at that depth? Yes; but you might get fresh water again.
247. If it were a private speculation, would you go in for sinking 900 feet in preference to getting water off the surface? Well, it is hard to say.
248. Do you think that the rainfall is heavier on the hills than it is in the lower parts of the town? It is somewhere about the same. Sometimes it will rain on the hilltops, but there will be no rain on the flats; and sometimes there will be rain on the flats while there is no rain on the hilltops.
249. That depends upon the extent of the rain-bearing cloud? Yes.
250. Supposing the rain-bearing clouds were passing at a height of 400 feet and were intercepted by high hills, there would be rain on the hills while there would be no rain here? I have seen the rain clouds pass over the flats and over the hills until they got to Brawlin, where they broke. It is low land there. You go right down on to Cootamundra Creek.
251. We have been informed by the engineering authorities that if 2 inches of rain ran off the catchment area into the reservoir it would impound 140,000,000 gallons;—do you think that is likely to be the case? No, I do not. I doubt it very much.

252.

Mr. R. Weston. 18 Feb., 1893.

252. Why? Because I have seen 2 inches of rain hardly make the creek run.
253. Do you keep a rain-gauge? No; but I can generally guess when 2 inches of rain have fallen.
254. How? I put a pint pot out and see what it catches. It is a round pint pot, the same at the top as it is at the bottom.
255. You have never sent any particulars as to the rainfall to Mr. Russell? No. Mr. Ward could give you information as to the rain; he keeps a rain-gauge.
256. How much rain does it take to fill your dam? It takes a very good fall to fill it. I have seen it rain for three days more heavily than it is raining now, and the creek has not run.
257. But you do not call this rain? It has rained for three days constantly, and the creek has not run. At other times a good heavy thunderstorm will make the creek run. If the ground is well soaked the water will run off; but just now the ground soaks up all the rain that falls.
258. A sudden thunderstorm, even if the ground were very dry, would run off? Yes.
259. *Mr. Trickett.*] How much does your dam hold? I have no idea.
260. How big is it? It is about 20 yards wide.
261. And 17 feet deep in the middle? About 100 yards long, but very shallow in the upper end.
262. Does it take long to fill up with ordinary showers? I have seen rain fall and not fill it up, and then one thunderstorm will fill it up.

Mr. Kenneth McLeod, selector, near Bethungra, sworn, and examined:—

Mr. K. McLeod. 18 Feb., 1893.

262½. *Chairman.*] Where is your holding? At the head of the creek.
263. To the south of the proposed catchment area? Yes.
264. You have no land on the catchment area? No.
265. How long have you resided in the district? About twelve years.
266. Do you know Mr. Sawyer's land on top of the falls? Yes.
267. Do you know the character of the country there. Is it good holding ground? I could not say; I have often been past it a little higher up. It is pretty rough where they have been sinking for the reservoir. I have never been down there; I have been all round the place, but never at that particular spot.
268. You could not give us any idea as to whether this is good holding ground? No.
269. Do you know anything of the quality of the water there? Yes.
270. Is it good water for stock? I believe it is good water for stock.
271. Is it good for human beings? I do not think so.
272. Why? It is too brackish.
273. Did you ever try it yourself? Yes.
274. When it was low, or when fresh water was running into it? When it was low.
275. Do you know whether the water far back is brackish? I do not know whether the brackish water goes back further than Weston's.
276. Do you know Carroll's property? Yes.
277. Has he not got good water? I believe he has good water.
278. He is below Weston's? He is not on the same fall.
279. He is on a small creek, while Weston is on part of the main creek? Yes.
280. What about Weston's water? Most of it is caught off the roof.
281. But what he conserves in the creek? That is middling.
282. For stock or for human beings? For stock.
283. What is your experience in regard to brackish waters, do they gradually get sweeter? I do not think so. I feel sure that they are getting worse there.
284. Why is that? I could not say.
285. But your opinion is that they become more brackish? Yes.
286. Is that not rather strange? I do not know. I know places where the water was quite fresh at one time, but you could not use it at present.
287. Where do you mean? In different parts of the country.
288. It was at one time fresh, and now it has become very brackish? Yes.
289. You cannot account for that in any way? No.
290. Supposing this work is carried out, do you think the uses to which the land is put at present will in any way interfere with the purity of the water? I do not think that the purity of the water will be much interfered with.
291. Do you think that if about 900 acres were resumed immediately around the site of the reservoir, that would be sufficient to prevent contamination? I think it would.
292. Whatever the land may be used for in other parts of the catchment area, the purity of the water could not be in any way affected? I do not see how a big body of water like that could be affected.

Mr. Robert Wheeler, engineer, Bethungra, sworn, and examined:—

Mr. R. Wheeler. 18 Feb., 1893.

293. *Chairman.*] You are in charge of the railway pumping plant here? Yes.
294. How long have you held that position? Eight years last December.
295. Did you erect the plant? No.
296. There are two pumps under your charge? Yes.
297. One situated north of the station and on the eastern side of the railway bridge, and the other in a south-westerly direction from the railway station? Yes.
298. Which is most in use? The one close to the railway bridge.
299. That is the one nearest to the Ulandrie Creek? Yes.
300. Do you pump direct from the creek? From wells. One is a brick well, and the smaller one is made of iron cylinders.
301. How far is the well near the railway bridge from the bed of the creek? I should say from 60 to 80 yards—80 yards.
302. It is sunk into the old river drift? I do not know if it goes into the drift. I should think that it was not in the drift there.
303. Have you never been down the well? Yes.
304. Has the well ever been dry? No.
305. Is your suction pipe right down into the water-bearing drift? I cannot say. The well is bricked all the way down. There is sand there, but I do not know if it is the original drift of the creek or not.

Mr. R. Wheeler. 18 Feb., 1893.

306. Have you ever had the well pumped dry? The water has been below the suction pipe, which is about 2 feet from the bottom.
307. How often has that taken place? It has not taken place for between four and five years.
308. What quantity of water do you pump into your tanks each day? It depends on the number of trains running.
309. What is the largest quantity that you have pumped? I should say from 60,000 to 80,000 gallons in the twenty-four hours—that was last month.
310. That was a heavy month? Yes.
311. Why is that? Because of the wheat coming down.
312. Has all that water been pumped from the well near the railway bridge? Principally from there.
313. When do you use the small well? In the evening. In the very busiest time I think I used it four nights a week.
314. What is the necessity for the small well if the big well has never given out? When the well is low the pump does not draw the same quantity of water. We have over 35 feet of suction pipe, and in case the well should go dry, I occasionally use the small well.
315. What water is there now in the tank? The water from the well near the bridge.
316. How long is it since you pumped into the tank from the small well? A week ago.
317. The small well is sunk into a larger drift bed? I cannot say what the formation is.
318. Do you think that a better supply of water is drawn from the small well than from the large well? Yes, I should think so.
319. Do you reduce the water to any appreciable extent after you have been pumping for a good many hours? Yes; if I am pumping all day continually I bring the well down almost until it is dry, and you can hear the pump beating.
320. Then you take to the small well? Yes.
321. What is the least quantity of water that you have pumped in twenty-four hours? I think, on an average, 25,000 gallons.
322. How long does the season last during which you use 60,000 or 80,000 gallons? I have never known so much water required before in the busiest time.
323. Can you give us the quantity of water pumped each year since you have been here? I cannot exactly.
324. Approximately—would 30,000 gallons a day be an average. Do you keep a register? I had such a book, but I lost it. I think they have a return at the office. The number of engines passing through would give you the quantity of water used.
325. Why? They all take on an average the same.
326. Is that how you measure your water? Yes; that is the only way I have of measuring it. Small goods engines are only supposed to take a certain quantity of water, but they take more than that if they blow off.
327. What quantity of water do the engines take? A small goods engine takes 1,600 gallons, and the larger goods engines 2,000 gallons.
328. Are there as many large goods engines as small? The mail engines take 3,000 gallons.
329. What proportion of the passenger engines take 3,000 gallons compared with the large and small goods engines? There are two passenger engines a day.
330. They take 6,000 gallons a day? Yes.
331. Now, for large goods engines? I cannot say how many there are. They have been using a good many of them recently. I think they have been about equal in number to the small engines, but I would not say for certain.
332. Have you any idea how many there are? Recently we had from thirty to forty engines a day; I think there were over forty. I can give you a rough estimate.
333. Can you make out a return showing the quantity of water taken during twelve months or during six months? I could give you a rough estimate. Some engines take less than others.
334. You could on inquiry, and upon reference to others, say how many engines have come through? I could get the information at the office. I will ascertain the number of engines that have passed through.
335. Will you get for us approximately the quantity of water taken during the last six months and send it to us? Yes.*
336. What is the nature of the water. Is it good for steam purposes? I have never heard complaints against it. I have heard the drivers reckon that it was good water.
337. Would they take water from here in preference to anywhere else? I could not say anywhere else. I know that the water is reckoned the best in this district for steam purposes.
338. You use the same water for supplying the boiler of your pumping engine? Yes.
339. How long has that boiler been in use? It has been here for about six years.
340. It is an ordinary vertical boiler? Yes.
341. Do you blow her out pretty often? Once a week.
342. Do you blow her right down and take the manholes and the slush holes off? Once a month.
343. Does she show any signs of weakness? No.
344. Are her plates pitted? No.
345. There is no incrustation? A little.
346. Simply a glassy scale that does not injure the plates? No; Inspector Walker tests her one year and examines her the next.
347. When was he last up? In July.
348. The boiler was in good order then? Yes.
349. There have been no repairs needed during the last six years? No.
350. You have never heard of any ill effects to locomotive tubes or boilers through the use of this water? No.
351. You have had no complaints about the presence of vegetable matter in it? Yes; lately.
352. What pressure is the boiler? Forty to 60 lb.
353. And the locomotives carry what? I think 120 lb. I know that the test is 212—112 for the safety valves.

354.

* Since this evidence was given a return has been received from the witness in which he gives the quantity of water used at Bethungra railway tank as follows: 1892—August, 469,000 gallons; September, 490,000 gallons; October, 519,400 gallons; November, 366,200 gallons; December, 467,600 gallons; 1893—January, 929,600 gallons.

Mr. R. Wheeler. 18 Feb., 1893.

354. What was the nature of the complaint in reference to the vegetable deposits? The only complaint I remember was that the vegetable matter stuck in the injector.
355. Not that it spoilt the water, but that it formed a scum and stuck in the pipes? The vegetable matter stuck in the injector.
356. Which is a very complicated instrument? Yes.
357. There have been no complaints about the vegetable matter damaging the plates? No.
358. There have been no complaints as to minerals in the water in any way affecting the boilers or tubes, either of your own engine or of the locomotives? I have not heard of any.
359. No repairs have been made to your own boiler, which has been in constant use for six years? None whatever. She was an old boiler when she came, and to my knowledge has been in use ten or twelve years. She has been here here about six years. She was driving machinery in Junee, and before that she was in Albury. I shifted her myself from Albury nine years ago.
360. What water do you use yourself? This.
361. You find no ill effects from using it? Well, the family have been ill of late, but I cannot say that it is from the water.
362. Have their ailments been more marked since you have been using the water? No, it is not the water that is affecting the missus, and the children all seem right enough.
363. You would not say that any ailment from which your family are suffering is caused by the water? I should not say that it is.
364. Has the water an unpalatable taste? I have not noticed that, but I have noticed a nasty smell with it. When there is rain water I seldom look at it myself.
365. Has it an iron smell? No, a diseased vegetable smell.
366. The smell may be caused from the vegetable matter which is held in suspension in the sand drift from which the water is drawn? I cannot say what the cause of it is.
367. Is the trade here likely to increase so as to warrant the larger consumption of water? No; I think it is past for the season.
368. But the season will come round again with perhaps a larger demand for water? That is more than I can say. It will depend upon the crops. We are generally busier one part of the year than another, but we have never been anything like so busy before as we have been lately.
369. What is your salary? Eight shillings and eightpence a day.
370. Are you paid for overtime? I have been recently, but I was not before. I have a certain salary, and was paid for seven days up to a few months ago.
371. Do you get a residence? No; I did at one time.
372. You have to rent your own house? I pay rent for it.
373. What overtime do you get? I do not know how I am going to be paid for overtime. I get a certain amount, but I am not getting what I have put in.
374. You get 8s. 8d. for ordinary time, and they are going to allow you something for overtime? Yes; but how much I cannot say.
375. What are your proper hours? Ten hours a day.
376. You have been working twenty-four hours sometimes? Close on that recently.
377. What remuneration have you got for those extra hours? I have received four days extra for the last two pays.
378. Fortnightly pays? Yes; I have received two days a week extra.
379. Is it arranged that you should be paid that in the future? I cannot say what arrangements they have made in the office.
380. They have not said that you will receive so much overtime? I put in the hours I actually worked, but I cannot say how much I am going to be allowed for the overtime. During the two periods to which I am alluding, I have received what I stated.
381. Do you think we can fairly take it that you will be paid for eight days every week, or for seven days every week;—you are paid 8s. 8d. for seven days a week, are you not, as ordinary pay? No, not at present. I was paid for seven days a week until seven or eight months ago. I get paid for six days a week now, and I was led to understand that if I worked overtime I should be paid for it.
382. Can we assume that you work one day a week overtime? Not all the year round. I do not think it would average that.
383. Do you work half a day a week overtime? I put in eight days for one period and seven days for another. That was less than I actually worked, but it was what I put in.
384. Could we say six and a half days a week? It would average that. I am living in hopes of being paid under the old system for seven days a week.
385. Have you any assistants? None. I have had assistance at times but not for the last three years.
386. Not during this rush? For two days I had one man.
387. Where did he come from? Junee.
388. What fuel did you burn—wood? Coal.
389. How do you get it? The fettlers unload it from the trucks for one pump, and it is carted to the other pump by contract.
390. What coal do you use? From 15 cwt. to 1 ton on an ordinary day.
391. Is that for the large or the small pump? For the small pump I would use about 3 cwt. of coal.
392. Could we say 18 cwt. a day altogether? I believe it would come to a ton a day.
393. All the year round? That is a very good average.
394. Do you know what that would cost? I could not say.
395. Where does it come from? The coal has been lying in Junee for some time.
396. Does it come from Lithgow? I do not know.
397. It originally came *via* Sydney? I could not say. It was brought up here during the strike.
398. What other expenses are attached to the work—oil, waste, &c.? Yes.
399. What would that be worth a day or a week? I apply for 1 lb. of waste, 4 lb. of tallow, 2 quarts of colza, and 3 quarts of castor oil.
400. For tallow and engine requisites, it would cost at least 5s. a month? I do not think so.
401. Four shillings? I do not know what they pay for the waste and tallow.
402. Is it safe to assume that it would cost 4s. a month? Then there are springs, and valve seats, and buckets.

Mr. R. Wheeler. 18 Feb., 1893.

403. What do they cost you a month? It would be very hard to say. I have had them in as long as eighteen months, and I have had to put fresh ones in at the end of three months. Seats, of course, are very uncertain things; some of them stand well, and others do not.
404. Repairs in this way could be put down at 30s. a month? I think 5s. a month ought to pretty well cover them. There are only 4 lb. of tallow used.
405. I am talking about the seats, and so on? A set of seats for four or six months would be more than I have used since I came here.
406. What do they come to? I have no idea what the price is. They are composite seats, with india-rubber springs.
407. Would it come to 10s. a month for tallow, waste, oil, and everything connected with the running of the engines? I should think that ought to cover it. The fettlers receive extra pay for unloading the coal.
408. Who paints the tank? It has never been painted since I came here, but it has been talked about. It is cleaned out once a year by the fettlers. Four men get three-quarters of a day for it.
409. Do you know the value of the plant in your engine-house? No, I do not.
410. What are the pumps? Tangye's.
411. In both places? Yes. One is a 5-inch, and the other a 3-inch. It is a pulsometer boiler that I have at present.
412. Say £350 for the two plants? I should think they would be worth more than that.
413. Where do they get the water they use about the station? For the urinals and rough purposes they use the water from the tanks; for drinking purposes they use the water from the roof.
414. And when they have not got water from the roof? Then they have to take it from the tank.
415. Does the station-master do the same? I do not think he takes it from the tank unless it is for slopping.

MONDAY, 20 FEBRUARY, 1893.

[*The Sectional Committee met at the Council Chambers, Junee, at* 10 *a.m.*]

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. JOHN DAVIES, C.M.G.	WILLIAM MCCOURT, Esq.
The Hon. WILLIAM JOSEPH TRICKETT.	EDWARD WILLIAM O'SULLIVAN, Esq.

The Sectional Committee further considered the proposed Waterworks for the Town of Junee.

Mr. George Dobbyns, Mayor of Junee, sworn, and examined:—

Mr. G. Dobbyns. 20 Feb., 1893.

416. *Chairman.*] How long have you held the position of Mayor in this town? Only two days this time, but I occupied the position about two years ago.
417. How long have you been a member of the Municipal Council? Seven years.
418. That is, from the commencement? Yes.
419. The town has been incorporated seven years, and you have been an alderman all that time? Yes.
420. And during two years you were Mayor? Yes; besides my present term of office.
421. You are, therefore, intimately acquainted with the foundation and growth of Junee? Yes.
422. How long have you been a resident of Junee? Fifteen years.
423. Have you been in business during that time? Yes; during the whole of that time.
424. What is the nature of your business? I was a storekeeper, and have conducted a general agency business of late.
425. Has Junee increased very much in size and population since you first knew it? Yes, very much; especially during the last ten years.
426. How long is it since the railway was opened to Junee? About twelve years.
427. Has the progress of the town been much more marked since the railway was opened than it was before? Yes; much more marked.
428. Can you give us the population of the town and the revenue derived during the first municipal year? No; I cannot do that.
429. Would not the Council books show you the revenue for the first year of your existence as a Council? Yes; I can get you that; our first half-year's rates were £288 12s. 9d.
430. The only rate which you charge is the ordinary municipal rate of 1s. in the £ upon nine-tenths of the value of property? Yes.
431. You have no gas rate and no sewerage rate—nothing but the municipal rate? No.
432. Did you ever have any other rate? We have never had any but the one rate up to the present time.
433. Did you begin your existence in the middle of the municipal year? Yes; we were incorporated upon the 25th July, 1886; and between that time and the 31st January, 1887, we received £288 12s. 9d.
434. That is what you received during the first half year of your existence? Yes.
435. I suppose if we doubled that amount we should get at the yearly rates? During the second year we received £648 6s. 3d. That was up to the 5th February, 1888.
436. Have you got the rates for each succeeding year? Yes. The rates for the year 1888–89 were £638 6s. 10d.
437. A little less. How do you account for the falling off? We rated properties within the railway enclosure at that time, but we had a small falling off that year, and two years after we had a very much larger falling off. A few of the houses inside the railway enclosure did not pay us rates that year.
438. During the first eighteen months of your existence you received rates from some of the railway premises? Yes.
439. In the third year—1888–89—some of these rates were not paid? Yes.
440. That accounts for a reduction of some £10 on the income of the previous year? Yes. Our rates for the fourth year—to the 5th February, 1890—were £643 18s. 5d.
441. That is not quite up to the amount you received during 1887–88? No; and next year's rates—to the 5th February, 1891—amounted to £610 5s. 1d.

442.

Mr. G. Dobbyns. 20 Feb., 1893.

442. How do you account for that still greater falling off? We lost about £35 in rates from the refreshment-room. It was decided that we could not any longer levy rates upon the refreshment-room. We also lost about £30 more upon properties within the railway enclosure, which we had to abandon. Our rates for the sixth year—up to the 5th February, 1892—amounted to £634 16s.
443. And for the last year? During last year we received £670 4s. 3d.
444. Do your outstanding rates amount to very much? No; they are very little—they come to about £70.
445. Do you know if the uncollected rates are increasing year by year? No; they are not increasing.
446. People are well off here, and pay their rates? Yes. We have a collector, and we keep them pretty well hunted up. I think that is the reason of it.
447. From your statement it does not appear that the revenue of the Council has increased very largely during its existence? No.
448. In your first full year your rates amounted to £648 6s. 3d., and during last year you only obtained £670 4s. 3d; that does not show a very marked increase? Yes; but you have not considered the loss which we sustained through not being able to collect rates from railway property. We collected rates from that property at first, but during the last three or four years we have not been able to do so, and have lost about £60 in consequence.
449. That would only make your rates £730 for this year. What indebtedness have you; have you borrowed any money? Not any.
450. You have no debt and no overdraft? No; and we never had one.
451. What property do you possess besides your rates? We possess two allotments of land on which the Council Chambers stand; and the Council Chambers themselves.
452. Were they purchased out of rates? Yes; the land was a grant from the Government for a Town Hall site.
453. Has the building been erected out of municipal funds? Yes.
454. What do you value the property you have here at? We value the Council Chambers and land at £650.
455. Have you any other assets? We have furniture and instruments. I put them down at £100.
456. To what instruments do you refer? We have a theodolite, levels, chains, and other things, besides the ordinary corporation tools. We also have a large roller which we have lately purchased, worth £80.
457. Is that exclusive of the £100? Yes.
458. Have you any other property? No; I think that is the principal property.
459. Do you contemplate floating any loans for town improvements? No; we do not.
460. Do you contemplate going in for municipal gasworks or anything of that sort which will compel you to tax the people more than they are taxed at present? Yes; we were intending to distribute a few lamps throughout the borough very shortly, but we will provide kerosene at first. We anticipate that the Government will remove the gasworks from their present site to another shortly. They have promised us that when they are removed they will enlarge them and supply us with gas. We intend to light very shortly some twenty-five kerosene lamps.
461. Will that cause a lighting rate to be struck? Yes, of about 1½d. in the £, if we use kerosene.
462. Have the ratepayers shown by any demonstration on their part that they approve of the scheme? They have made no objections to it. The matter has been put before them, and thoroughly threshed out.
463. Have you any stock of lamp-posts ready for this work? Yes.
464. Iron posts? Yes; the Sydney pattern.
465. What do you value them at? About £150.
466. Are they paid for? Not yet.
467. You are going to pay for them out of your rates? Yes.
468. You are not going to get an overdraft for the purpose of paying for them? We anticipate that the lighting rate will wipe them off.
469. Have you any credit balance in the bank at present? Yes.
470. How much? I do not know, it is not very much.
471. Not enough to pay for the lamp-posts? Yes, we have enough to pay for them.
472. You have a sufficiently large credit balance in the bank to pay for the lamp-posts? No; I cannot say that. I do not know if we have sufficient in the bank to pay for the lamp-posts; but we have something like £45 to come to us from the Justice Department, as their share of the cost of repairs to the front of the Court-house. They promised to contribute half of that cost, but we have not yet received the money. I think we should have something like £50 or £60 to our credit when we receive that money.
473. That is about half what you owe for the lamp-posts? Yes.
474. You do not know what rate would be required if you went in for gas? No, I do not; I think somewhere about 3d. I think the Railway Department have promised to supply us at something like 7s. 9d. a thousand.
475. Do you think the people would be prepared to pay a lighting rate of 3d.? Yes; they are quite willing.
476. How do you deal with your night-soil here; have you cesspits, or dry earth closets? We have both cesspits and pans.
477. What proportion do the cesspits bear to the dry earth-pans? They are about one-fourth.
478. One-fourth are cesspits? No; about three parts are cesspits.
479. How do you carry out the night-pan system? We call for tenders for the emptying of the pans. The closets are emptied by a contractor at so much a cubic yard, or so much a pan. We render the account to the person who incurs the debt, and collect the amount.
480. Does the contractor collect the money, or do you collect it for him? No; the inspector of nuisances collects the money.
481. Do you make any profit from the system? We do not make any profit. We just charge what we are charged.
482. What about bad debts? We do not make any. I think that during the whole period the system has been in operation the debts have only amounted to 11s. 6d. We asked for a return on the subject at the last meeting.
483. Do you contemplate dealing more effectually with the sewage when you get a water supply? Not at present. No doubt it would be a very large undertaking, and I do not think that we should do anything with it for some time to come.

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484. Do you purpose in future to restrict the cesspit system, and increase the number of earth-pans? It is very likely.
485. When a man is building a house is there anything to prevent him from choosing between a cesspit and an earth-pan closet? He has his option, if he makes his arrangements in conformity with the by-laws. If he has a pit it must be bricked—4½-inch work—and cemented, and brought above the surface of the ground 6 inches.
486. And you carry out that by-law? Yes; we look after this matter.
487. Whereabouts do you deposit the excreta? I suppose about a mile outside the municipal boundary.
488. On the Wantabadgery Road? Out at the back of the range, along the Wantabadgery Road.
489. Does the drainage flow into the Commissioners' dam? No; the stuff is deposited on the other side of the ridge. We are making use of a large excavation, which was made for mining purposes.
490. Where does the water drain to? It is all rock where the excavation is. There cannot be any drainage.
491. From the papers that have been put before the Committee I see that your Council have from time to time taken steps to get a water supply for the town? Yes.
492. Amongst the schemes proposed is one to bring water from Wagga Wagga, from the Bomen Lagoon; another to bring it from Wantabadgery, another to bring it from Houlaghan's Creek, and, lastly, the scheme now before us? Yes.
493. Why did your Council, after being furnished with the report recommending a supply from Bomen, employ Mr. Gipps to make an independent survey and report? Because we thought we might get as good a scheme for a much less cost.
494. From Wantabadgery? Yes. We were given to understand that we could get a better scheme at much less cost.
495. Who gave you to understand that? We consulted Mr. Gipps in regard to the matter.
496. Had he any local knowledge? Yes; he told us that he had. I think he had been up previously.
497. Upon that you consulted him, and employed him to furnish a report? Yes.
498. He furnished a report? Yes.
499. Do you remember the main points of his scheme? Yes; I was one of the aldermen who went with him to inspect the site. His idea was to put a turbine in the river at a certain point, near an island, about 2 miles below the "Wantabadgery Hotel," and to pump the water from there by means of this weir, which would be self-acting, to a hill about 2¼ miles from the river. From that point he anticipated it would flow by gravitation into a reservoir somewhere up about 2 miles from the town. He talked about using steel pipes over one or two of the very big gullies, so as to syphon the water across, and he intended to use earthenware pipes for the rest of the work. He gave us to understand that this would do away with the cost of pumping.
500. How would it do away with the cost of pumping, when it was proposed, in the first instance, to pump from the Murrumbidgee into a reservoir, which would command the storage reservoir? It would do away with engines, and boiler, and fuel.
501. The scheme was reported upon adversely by Mr. Price? Yes, afterwards.
502. Did Mr. Gipps then modify his scheme? Yes. Mr. Gipps wrote and told us that if we paid his expenses, he would come up and go over the scheme again, and modify it, because it appeared to him, and to us, that the Department would not have anything to do with the turbine business. He came up again, and altered the scheme, pumping the water 4½ miles to a hill called Hartley's Delight, and letting it run in from there by gravitation.
503. Why did he shift his reservoir site? He stated that he did so in order to meet the wishes of the Department, because they did not believe in the turbine business.
504. But if he could get water up to the first site, and so command Junee, why did he want to shift the site of the reservoir unless there was some difference in the levels? I do not know why he did that.
505. You do not know whether Mr. Price stated that the original site for a reservoir would not command Junee, and that consequently he shifted it to a higher point? I do not know whether that was his reason.
506. Did Mr. Gipps make a further report? Yes.
507. You paid his expenses? Yes.
508. In his further report he shifted the site of the reservoir to Hartley's Delight, and adopted steam pumps in place of turbines, and steel pipes in place of earthenware pipes? Yes.
509. Thus increasing the cost? Yes.
510. Did the Council consider the report and adopt it? They did not adopt it; they considered it, and sent it to Mr. Darley for his opinion.
511. Was any Departmental report furnished upon it? Some time afterwards, I think, Mr. Price came up, and introduced the Bomen scheme, I believe.
512. He compared the two schemes, and said that the Bomen scheme was superior to Mr. Gipps' amended scheme? Yes.
513. Did your Council take any further action? Afterwards, Mr. Price came up, and went into the Bethungra scheme.
514. Did Mr. Gipps furnish you with plans and details? No; a deputation proceeded to Sydney on the turbine business, and Mr. Gipps then had plans in his possession showing the river and the position of the turbines; but we did not get them. They were not given to us.
515. What was the objection of the Department to the turbines—that the river was frequently flooded and would wash them away? That the river in time of flood would wash everything away.
516. The weir, and the turbines, and everything else? Yes. It appeared to us, from Mr. Price's report, that if the weir stood, the island would have to go.
517. What was your opinion? I think Mr. Price was about right.
518. You think that his objections were fatal to the scheme? Yes; I am pretty sure of it.
519. What do you think of the later proposal of Mr. Gipps? I did not go into it. I was not with him, and I do not know anything about the route. I looked upon Mr. Gipps' second report as very good until we got Mr. Price's report. Our object was to get the best scheme possible.
520. When you got Mr. Price's report dealing with the Bethungra proposal, did your Council consider it? Yes.
521. At a special meeting of the Council, or just in odd talks? No; we had a special meeting.

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522. What information had you about the scheme, except that contained in the report? Not any, except that we knew the country between here and the site of the proposed dam.
523. Mr. Price was not present to discuss the matter with you? No.
524. Your Council came to the conclusion that this was the best scheme? Yes; unanimously. There was not a voice against it.
525. Did you convey that resolution to the Department? Yes.
526. Through the senior Member for the district? Yes.
527. Was there any opposition to the Bethungra scheme in the Council? No opposition whatever.
528. There was a full meeting? With the exception of one member, and that alderman wrote a very strong letter, approving of the Bethungra scheme, and stating that he hoped the Council would adopt it.
529. You said that you only had Mr. Price's report before you, and upon that report and your knowledge of the country between here and Bethungra, you came to a conclusion in regard to this scheme? Yes.
530. Had your councillors any local knowledge of the proposed catchment area? Yes; some of them had.
531. Who? Well, Alderman Egan. He is a very old resident of the district.
532. Will you read a resolution of the special meeting called in regard to the Bethungra scheme? Yes; it is as follows:—

Special Council Meeting, 5th December, 1892.

Present:—The Mayor (Alderman Egan), Aldermen Dobbyns, Oswald, Hopkins, Penfold, Kavanagh, and Elliott.

The Mayor explained that this meeting had been called to consider Mr. Price's report on the Bethungra water supply scheme. The report having been read by the Council Clerk, a letter was read from Mr. Gormly, in which he said that if the scheme was approved of by the Council, the Minister would at once take steps to have the work carried out.

A letter was also read from Mr. Aldermen Humphreys, expressing his regret at not being able to be present, through indisposition, and expressing the hope that the Council would adopt the scheme unanimously, and also that a vote of thanks be passed, thanking Mr. Price and the Department for the trouble they had gone to in the matter.

The Mayor said there was no doubt the water was badly wanted in Junee, and he was in favour of the scheme before them, and he considered it most practicable and desirable in every way. He would leave it in the hands of the Council to discuss fully, and would not restrict any alderman to time during the discussion.

Alderman Elliott considered this the most important matter ever brought before the Council. The report was most comprehensive and satisfactory. There was a great deal to be said for it and very little against it. The one objection against the scheme, viz., that poisonous matters were in the water, had been most satisfactorily disposed of; and he moved,—"That the Minister for Works be informed, through Mr. Gormly, that this Council approves of the scheme submitted by Mr. Price, and that the Government be urged to have it carried out at once."

Alderman Dobbyns seconded the motion. The question of water supply had been before the Council for six years, and they had no doubt been the gainers through waiting.

Alderman Oswald supported the motion. He thought, however, that the estimates of receipt from the fettlers (£100) and also from domestic supply, rather high, but as there would be a surplus in other ways, perhaps it was not so far out.

Alderman Hopkins said it afforded him very much pleasure to be there to support the measure.

Alderman Kavanagh also supported the motion. The town would go ahead rapidly, and also the population would largely increase.

Alderman Penfold said he was very much in favour of the scheme. The value of property would increase, and Junee would soon be the largest inland town in the Colony.

The Mayor said he was very glad to see all the aldermen so unanimous on the subject. He thought in a few years they would not want a tax at all, but that the works would be a source of revenue to the town.

The motion was then put, and carried unanimously.

Alderman Elliott wished to move,—"That a special vote of thanks be accorded to Mr. Gormly for the great trouble and interest he has taken to get the matter pushed forward."

Alderman Oswald seconded the motion. The motion was then put, and carried unanimously.

JOHN EGAN,
Mayor.

533. Has a plan been furnished to your Council showing the reticulation proposed for this scheme? You mean Mr. Price's scheme. I do not think we have any plan of it.
534. You have had an opportunity this morning of seeing what it is proposed to do in the way of reticulation, if the scheme is carried out? Yes.
535. Do you think that what is proposed would meet the requirements of Junee, or would it be in excess of your requirements? No; I think it would about meet our requirements. I do not think it is in excess.
536. You do not think that the reticulation could be diminished in any way without lessening the return from your ratable property? No.
537. And you do not think that it is in excess of the requirements? No.
538. Is your municipality divided into wards? No.
539. Then there cannot be any jealousy as to one ward getting too much reticulation? No.
540. You look at this matter from a borough point of view, not from a ward point of view? Yes.
541. You do not think that the reticulation could be curtailed? I have not gone into the matter. If it had to be curtailed for the purpose of keeping down expenses, we could curtail it; but I do not think that could be done very well. It appears to me that the proposed reticulation would just about meet the requirements of Junee.
542. How do the people of Junee at present get water? Just now the tanks are on the point of giving out.
543. The tanks which catch the roof water? Yes; the underground tanks and the galvanized tanks are just about giving out, and the people are going to the springs for water. We have one or two springs in the drift below the railway.
544. The people generally have no means of supplying themselves with water except by catching it on the roofs, and storing it in underground or iron tanks? Yes.
545. When these fail they have recourse to a small bed of drift near the railway? Yes.
546. Does that drift ever give out? Yes; if it comes a very dry summer.
547. Then what do people do for water? We have to get the Commissioners to bring it in tanks from Wagga Wagga. They put the water into an underground tank at the station, and charge us 10s. a 1,000 gallons for it. We have to pay £1 per 1,000 gallons for carting it, because the carters charge just as much to take it from the railway station as from anywhere else.
548. What do the people who own the drift charge for the water? Nothing.
549. Are there many people at present getting their water from the drift? Yes.
550. They are paying £1 per 1,000 gallons? Yes, for cartage.

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551. When the drift fails you will have to get your water by train from Wagga Wagga, paying the Commissioners 10s., and the carters £1 a 1,000 gallons for it? Yes.
552. Why does it cost £1 for cartage alone from the railway, when it only costs £1 for cartage and water when the supply is taken from the drift? It is just the same trouble to pump the water out of the railway tanks into the carts and then cart it, as it is to take the water from the drift.
553. Then you do not give the owners of the drift anything? No; but the water in the drift is not very good.
554. But it belongs to the people whose well it comes from? They do not charge anything for it.
555. Do the men who have the wells cart the water? No; they do not do that. They have been giving it away, generally, I think. They have been letting anyone take the water.
556. How many people are being supplied from the drift at the present time;—have you any idea? I should think that half the town must be carting water at present.
557. How long have you been without rain? I do not think we have had half an inch since last November.
558. And you think that half of the town is now being supplied from the drift? Yes.
559. If this weather continues, how long do you anticipate it will be before the drift is exhausted? It may give out any day.
560. Then you will have to fall back on the Commissioners? Yes.
561. How often have you had to fall back on the Commissioners during the last few years? We had to do so last year and the year before.
562. How long were they supplying you? I think about two months the year before last, and about one month last year.
563. You are aware that under the Country Towns Water Supply Act you can charge up to 1s. in the £ on the ratable value of property? Yes.
564. The calculation of revenue from this scheme given to us is based upon a rate of 9d.? Yes.
565. If your people now pay £1 and sometimes 30s. a thousand for water, do you not think that they would be quite willing to pay 1s. in the £ for a permanent supply? I feel sure they would.
566. I suppose your Council recognise the fact that if it were not for the railway requirements this scheme would be entirely out of the question? Quite so; we recognise that fact.
567. Have you ever approached the railway people in order to get them to carry out a scheme and supply you with water, just as they propose to supply you with gas? No; we have not done that, but in Mr. Goodchap's time they made the offer themselves. They offered to supply us at something like 8d. a thousand gallons, I think, from Houlaghan's Creek. They offered to supply us with water at that rate, and they said that they would be willing to take the water from us at the same rate.
568. The present Commissioners do not look with favour upon the idea of supplying the people with water? No.
569. They would rather that you took the work up yourselves? Yes.
570. Have you had any communication with the present Commissioners? I believe we had at first.
571. Did they show a desire not to be caterers for the public in regard to water? I am not sure, but I think they did. They said that they would sooner the Municipal Council supplied them with water.
572. You are aware that they have proposed to guarantee at least £1,500 a year, at the rate of 1s. 6d. per thousand gallons, for five years, if a proper scheme is carried out? Yes.
573. If at the end of five years they found that they could do without water, and left these works on your hands, you would be in a serious position? I daresay we should; but I do not think there is any fear of that. I think they will at the end of that time be in a worse position in regard to water than they are now. It is not likely that they will turn upon themselves in that way.
574. You do not think that science will advance to such an extent that they will be able to do without water for generating steam? The probability is that we shall be able to make better arrangements with them if the scheme is once decided upon. I think that five years was the time originally named.
575. You think that they might enter upon a longer contract? Yes.
576. Do you think they would save money if they got their water at the price named? I am sure they would.
577. Do you know what it costs them for 1,000 gallons? No; but I have heard that they are spending about £3,500 a year on water. I heard from the borough surveyor at Wagga Wagga that they were drawing 1,000,000 gallons a day out of the river.
578. For Junee requirements? I think they run water to Narrandera and Illabo; they also serve out water to the men on the permanent-way between here and Wagga Wagga.
579. Do you know anything of the watershed which Houlaghan's Creek drains;—is it a large watershed? Yes.
580. Does Houlaghan's Creek run very frequently, or does the water in it drain away rapidly? It is a very large creek.
581. But it soon goes dry? Yes.
582. You do not think that the Houlaghan's Creek scheme would be a good one? I do not think it would be a permanent scheme.
583. *Mr. Davies.*] You stated, in answer to the Chairman, that there had been a great growth in the municipality during the last seven years? Yes.
584. But your revenue returns do not indicate any marked improvement? No.
585. The only explanation you are able to offer in regard to this is that the Commissioners have taken away some portion of your income, amounting to about £30 a year? Somewhere about £60 or £70 a year.
586. You strike a 5 per cent. rate on the assessed value of the property within the municipality? Yes.
587. Part of the municipality will not be reached by the reticulation if this scheme is carried out? Some of it will not.
588. What part of the municipality would be outside the reticulation area? Very little of it.
589. One-third? This scheme of Mr. Price's seems to touch the whole municipality. The water will be within the reach of all the people, although it may not go right up to their doors.
590. You are of opinion that the reticulation provided by Mr. Price's scheme would reach the whole municipality? Yes.

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591. That is, all the buildings in the municipality? Not the whole of the buildings in the municipality; it will reach 70 or 80 per cent. of them.
592. What rates have you besides the ordinary municipal rate? None.
593. If you imposed another rate of 1s. in the £ upon the assessed value of the property in the municipality it would make the annual rates 2s. in the £? Yes.
594. Are the ratepayers fully aware that the rates would be doubled if they had a water supply? Yes.
595. Have they expressed their willingness to bear the additional burden? Yes; they are unanimous about it.
596. It would be much cheaper than any other supply that they could get? Yes.
597. Do you know anything of the locality in which Mr. Price proposes to construct his storage reservoir? Yes; I know pretty well where it is.
598. Do you know the country well? Well, I know where the place is, and that is about all. I have been pretty close to it.
599. Have you heard any other person complain of the quality of water in that district besides Alderman Egan? I have heard nothing against it. I have heard that when it is very low it is a little salt in places.
600. Have you yourself made any test or trial of it? No; I have not.
601. Do you apprehend any serious objection to this scheme, arising from the impurity of the water in that locality? Not any.
602. Have you heard that fish and animal life are destroyed by the impurity of the water in the creek at Bethungra? No; I have not.
603. Has the attention of the Council been called to the probability of the water being impure and poisonous? No; it has not.
604. You have heard no complaint? No.
605. Do you know of any other scheme which would be likely to give you as large a supply of water as this scheme will give, and which would be less expensive? No; we do not.
606. You know the cost of the scheme we are considering? Yes.
607. Are you of opinion that if the Railway Commissioners pay £1,500 or £1,600 a year for water, the municipality ought to pay the balance of the interest on the capital and the cost of management? Yes.
608. Can you tell the Committee what has been the actual increase in the number of buildings in the town during the last five years? I cannot give it to you accurately.
609. Can you give us an approximate idea? I could not.
610. Can you tell us what the increase in the ratable buildings put up in the last two years has been? I I can only show the increase in the number of buildings by the increase of the rates. The people here have been continuously building. There have always been two or three buildings going up during the last four or five years.
611. There have only been two or three buildings in the year? Perhaps 100 buildings have gone up during the last two years.
612. The rates for the last two years do not show that proportion of increase? The increase for the last twelve months has been somewhere about £34.
613. But if you obtained the £60 which you said have been taken from you by the Commissioners, your rates this year would not be much more than equal to what they were at the end of the first year;—can you give the Committee any information as to why there was such a difference between the growth of the rates in the first and second years of the borough and their present increase? The rates for last year amounted to £670 4s. 3d., and for the first year, if we took £60 off, they would only come to about £580.
614. Can you give any other reason why there has not been a larger development and growth in your municipality during the last four years? It has increased more than our anticipations.
615. If the railway workshops, running sheds, and repairing sheds were taken away from here, what would be left? We should lose the railway employees, but I do not think it would crush our town for all that. We are kept going by a large agricultural district. There is a farming population all around. Of course, if the railway sheds were removed, we should lose a great deal of our population.
616. The municipality would suffer very much? No doubt the municipality would suffer.
617. Do you know what number of employees are at present engaged in the workshops? No; I do not know how many there are.
618. It must be a very large number? Yes, there is a large number.
619. Principally residing in the town? Yes.
620. From what you know of Mr. Price's scheme you believe that it will be of great service to the municipality and to the district? I think it would be the means of bringing other industries here at once.
621. And you believe that it would tend to increase the population, and, consequently, the income of the borough? Yes.
622. *Mr. Trickett.*] What is the quality of the water you get from the town wells? It is not very good. No doubt the sewage affects it to some extent. If it is kept for three or four days it is unusable.
623. Does it affect the health of the people? I really believe that it does, although we do not hear much about it. We had a great deal of sickness about here, and it appears to me that when the water is most scarce we have the most sickness.
624. Do you drink the water yourself? No.
625. Why? Because I do not care about it. I use water from the roof.
626. This water is only taken for drinking purposes as a very last resource? Yes.
627. Does it contain any offensive matter besides the sewage—any mineral or saline qualities? No; I think this is the only thing.
628. What is the value of property a foot, in the main street for instance;—is it freehold or leasehold? Some of it is leasehold, and some of it is freehold.
629. That is what is called a private township? No, this is the Government portion. About 46½ acres were cut up by the Government just where we are. The private town is on the other side of the railway line. It is divided into three or four blocks.
630 The private part of the town is very unprogressive? Yes.
631. For what reason? I think the owner wants too high a price for the land, and his idea is to lease rather than sell. A large portion of the land there used to be owned by Mr. Hammond, but he has cut up all near the town, and it has been sold.

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632. You think the township is kept back a good deal because people cannot buy the land? No doubt people who wanted land have got it, but they are all scattered about. If they did not get land from Mr. Crawley, they had to get it from Mr. Hammond.
633. The character of the buildings on the leasehold land is very inferior to that of the buildings on the freehold land? Yes.
634. Do you know the average rainfall here a year? No, I cannot tell you that. The postmaster has a rain-gauge.
635. Do you know the site of the proposed dam and the catchment area at Bethungra? Yes, I know where it is.
636. Have you been on it? Not right on it; I have been pretty close to it. I have been just above where the sawmill is, that is all.
637. You understand that the success of this scheme will depend largely upon the rainfall? Yes.
638. What do you think of the prospects of the reservoir getting full;—what is to fill it with the small rainfall that you have in this locality? I think that the rainfall that we have here would be sufficient if we had the catchment area.
639. You think the rainfall would be sufficient? I think so.
640. What kind of rain do you get here—sudden and heavy downpours, or rainfall of a very light character? We very often get sudden and heavy downfalls.
641. At what period of the year? It is very uncertain, but it is just about this period, January and February, that we get our heavy falls of rains.
642. Have you had any experience as to the holding character of the soil here;—do you know if it is good holding soil? It is very good holding soil.
643. Have you heard anything about the quality of the water in the creek at Bethungra? I have heard that when the creek is very low it is a little brackish in parts.
644. Have you heard any objection to the water that is used at Bethungra for railway purposes on account of its affecting the engines? I do not think so. They have been using the Bethungra water ever since the trains have been running.
645. Have you ever heard anything against the water;—have you ever heard that it contains iron or salt, and that it affects the engines? No.
646. You have never heard any objections of that character? No.
647. You passed a resolution in the Council approving of this water-supply scheme;—have you ever considered the advisiability of putting yourselves under the provisions of the Country Towns Water Supply Act? Yes; we have applied to have that done.
648. In 1888 a resolution of that character was passed? Yes.
649. As far as you can say the Council will be willing to be placed under the provisions of that Act, and to incur all the obligations which they would impose? Yes.
650. If it were determined to carry the scheme out, the Council would pass such a resolution immediately? Yes.
651. Have you any Fire Brigade in this town? No.
652. Why? Because we have no water.
653. If you had a good supply of water do you think that an institution of that kind would follow? Yes.
654. Are your insurance rates high? Yes; we pay as high as 30s.
655. That would be for wooden buildings? Yes.
656. What is the rate for ordinary buildings—brick with iron roofs? As high as 5s. I may say as high as 7s. 6d. in some cases.
657. You, as the municipal head, would look upon it as an advantage to the town to have a good Fire Brigade with a water supply? Yes.
658. Did you not have a fire here recently? Yes.
659. I suppose it was left to burn itself out? Yes; we could not do anything with it. We have had two or three fires lately.
660. Do you know anything of the value of land near the site of the proposed dam? No; I would not attempt to value that land, I have not seen it.
661. Mr. Price's report contains this item of revenue, "Stables, gardens, &c., say 5,000,000 gallons at 1s., £250;"—do you think that amount would be realised? I think it would.
662. What gardens are there round here? There are gardens all round the place. There are vegetable gardens and small orchards. The great drawback has been the want of water to carry these things on. If a dry season, such as this is, comes, everything perishes very fast.
663. Would the people go in for watering their gardens if they got the water? Yes.
664. You have a garden yourself? Yes.
665. Is it merely for private purposes, or do you sell the produce? Some of them sell their produce.
666. Do you? No; I have a small garden and orchard, but I do not sell the produce from it. We have a bit of surplus fruit sometimes.
667. Are there many people in the district who derive their subsistence from the sale of the produce of their gardens? There might be half-a-dozen in the municipality. As far as vegetables are concerned, we are supplied by the Chinese. They have two or three gardens here.
668. Close to the town? Yes; there is one of them here in the middle of the town. They were burnt out two days ago.
669. Can you give the Committee any idea as to how many gardens would take water for the purpose of irrigation? I think I might safely say a dozen.
670. How many large stables are there in the district which would bring in a pronounced amount of revenue? The hotels all have stables. I suppose there are seven or eight of them. Then two or three people who keep racehorses have stables, and they no doubt would avail themselves of this water supply.
671. Are there any dairies? Yes; there are three or four dairies in the place.
672. You are inclined to think that £250 would be realised in this way? Yes; I believe that that amount would easily be realised. I might also mention that there are agricultural implement works just starting here. The people have come from Victoria. One company started six months ago, and now there is another starting. Four families arrived here two or three days ago, and they are putting up works covering an acre of ground. They will want a water supply.

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673. Do you think that the want of water retards the advancement of the district? Yes; I think the stability of the place depends on the water supply. We have the promise of a flour mill from a gentleman who has the machinery all ready. It will be put up as soon as we can tell him that there is water here.
674. You think that factories or mills may possibly be started if you can get water here? Yes; we would also get a brewery here. That would require a quantity of water.
675. At the present time a great deal of the wheat goes away from here in its natural state;—it is not ground in the district? Yes; we have to send it to Cootamundra or Wagga Wagga.
676. Has the production of wheat increased of late years? Yes; very much.
677. Independent of the town itself, the surrounding country is progressing? Yes; very much.
678. Has not your return of wheat this year been almost phenomenal? Yes.
679. Do you know what the average has been per acre? I believe about 17 bushels.
680. Is that good? Yes; it is very good.
681. For this district that is very good? Yes.
682. Do I understand that the Council have now thrown aside all other schemes in favour of the Bethungra scheme? Yes; they have abandoned all other schemes except Mr. Price's last scheme.
683. They considered that that would be the best? Yes.
684. *Mr. McCourt.*] What is the area of your municipality? One and a half miles each way from the post office, I think. It is 9 square miles.
685. Do you know the mileage of the roads within that area? I think somewhere about 19 miles.
686. In estimating your revenue, have you estimated that the owners of these vacant allotments will have to contribute towards the water-rate? No; we have not taken them into consideration.
687. But if the reticulation pipes passed their land they would have to contribute? I believe they will.
688. You have not estimated that? No; we only estimated the amount of water which it is likely will be taken.
689. That is by the house property? Yes.
690. You have not estimated what would be paid by the owners of vacant allotments? No.
691. Would there not be a considerable revenue from the owners of vacant land? Yes.
692. Have you any idea what it would be? I do not know what the revenue will be from vacant land only. I think our water-rate will come to something like £450.
693. £50 would come from vacant land? Yes.
694. Because of the mains passing within 150 feet? Yes.
695. That would be £50 in addition to the amount you have just stated? Yes.
696. Do you not think that that amount is very small considering the number of vacant allotments in the town? Some of the land is not in measured portions. It is in paddocks, and owned in one block by one man.
697. But if roads or streets go through this land, and the water-mains are laid down in them, the owner of the land will have to pay the water-rate? I believe he would.
698. You have not considered that? No.
699. Would there be any extra cost to the Council in collecting the water-rate? Very little. The man who collects the general rate would also collect the water-rate for us. We have a collector to collect the general rate.
700. He would not have to get any extra remuneration for collecting the water-rate? We should have to remunerate him slightly, but the remuneration would not come to very much—about 1 per cent., I suppose.
701. Has the capital value of property within the municipality decreased or increased within the last few years? It has increased. The assessment for the year 1891–92 shows the capital value of property here to be £27,082 10s, and the assessment this year shows it to be £33,214 10s.
702. That is an increase of about £600? Yes.
703. The valuators consider that property here is increasing in value, although it is decreasing in other places? Yes; it is increasing.
704. Mr. Barling, in his evidence, said that the Council were very anxious for Mr. Gipps' proposal to be adopted;—were the Council very anxious that Mr. Gipps' scheme should be carried out? I do not know that we were very anxious about that. A deputation waited upon Mr. Darley to see if he approved of the turbines, but he at once objected to the scheme. We were asked to revise it, and that was how Mr. Gipps came up again.
705. As soon as you knew the full particulars of Mr. Gipps' scheme you dropped it? Yes.
706. *Mr. O'Sullivan.*] For the first five years of your municipal life you received a £ for £ endowment from the Government? Yes.
707. Now you only receive a 10s. in the £ endowment? Yes.
708. Does not that account for a falling off in your revenue? No; we have not taken that into consideration. I have not given you the amount of the endowment; only the amount of the bare rates.
709. You do not include any Government subsidy whatever? Nothing whatever, beyond the bare rates.
710. If this scheme were carried out, and a good supply of water were given to Junee, no doubt the insurance rates would be very considerably reduced? No doubt of it.
711. The people would get a *quid pro quo* for what they paid in water rates? Yes.
712. Do you consider the agricultural settlement here of a permanent character? Yes; I do.
713. Have you heard of anyone selling out their holdings to the large landed proprietors? No; but I have heard of the large landed proprietors cutting up their holdings into smaller blocks.
714. There is a tendency towards cutting up the land for the purpose of leasing it in this district? Yes.
715. There is magnificent land between Junee and Temora? Yes.
716. If that land were cut up it would contribute largely to the trade and commerce of Junee? Yes; I think one agent leased about 12,000 acres of land last year.
717. *Chairman.*] Leased, not sold? Leased; but I think the lessees will have the option of purchasing the land at the end of the term, which is some three or four years.
718. *Mr. O'Sullivan.*] What with the permanent settlement of the district, and the fact that Junee is the junction of a line going into the important Western district, you think that this is likely to remain a progressive town, even if the railway workshops are removed? Yes.
719. You are not dependent upon the railway workshops for stability and prosperity? No.

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720. Did your Council give any close attention to the Bomen scheme? No; I do not think we did. It was left in the hands of the Department. It seemed to us that the scheme would have to be approved of by the Department, and we committed ourselves to nothing pending their reply.
721. The same remark will apply to the Houlaghan's Creek scheme? Yes.
722. If Mr. Price's scheme were not adopted, would you be prepared to take up the Bomen scheme if it were recommended by the Department? Yes.
723. Your need of water is so great that you would be prepared to endorse any reasonable scheme? Yes.
724. In reply to Mr. Trickett, you said that the soil here was good holding ground? Yes.
725. What was the cause of the failure of the Commissioners' dam? It is just a surface excavation on top of a rock, and it is a very big dam for its depth. It is very shallow, and dries up very quickly.
726. So far as your knowledge would allow you to judge, there would be no danger of a failure of that kind in regard to the service reservoir outside the town? No.
727. What depth of water has there been in the railway dam at any other time? I think the water there must be some 8 feet deep. They draw it off very quickly. There are two dams very close to it, and above it, which, I think, have to get full before it is filled, and so it has very little chance.
728. Do you repair the streets in the railway portion of the town? They have been assisting us. I think the Commissioners gave us a grant of something like £500 for the streets.
729. Do you keep them in a state of repair? Yes.
730. You are not allowed to charge any rates whatever? Not to the Railway Department. We have been prohibited since the Railway Commissioners came in from charging them any rates. There has been a test case or two, and it has been decided that we cannot levy rates upon them.
731. Do you know anything about the water in McLeod's Creek, near the site of the proposed storage reservoir? No; I have only been just above the sawmill.
732. From your knowledge of the state of Junee, and its prospects of advancement, you have no doubt that it will be in a position to pay the money required for this scheme? I feel quite sure that we can do so.
733. *Mr. McCourt.*] Your answer to me as to the capital value of property within the municipality only related to the capital value of vacant land? Yes.
734. *Chairman.*] Is there anything else you would like to state? No; I do not think there is anything else.

Mr. Thomas Charles Humphreys, stock and station agent, Junee, sworn, and examined:—

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735. *Chairman.*] You have been an alderman of this borough for some years? Yes.
736. Are you still an alderman? No.
737. You were thrown out on account of some informality? Yes; because of a wrong nomination.
738. How long were you an alderman? About six years.
739. You filled the Mayoral chair during that time? Yes; for four years.
740. You are intimately acquainted with the various proposals for supplying water to Junee? Yes.
741. *Mr. Davies.*] You have had a large experience in connection with the government of this town under the present Municipalities Act? Yes.
742. You are thoroughly conversant with the scheme before the Committee? I am not conversant with the site of the dam.
743. You have not visited it? No.
744. You do not know the source of the proposed supply? No.
745. During your occupation of the Mayoral chair, did any great difficulty arise in connection with the water supply of the town? Yes; the town ran dry, and we had to get water from the Railway Department.
746. Had the Council to pay for that water? Yes.
747. From what funds? We sold it back to the people. We charged the people for the water, and got the money back that way.
748. You recouped whatever you were out of pocket by a levy upon the ratepayers? Yes.
749. What is the total income of your municipality from all sources? £670 4s. 3d. was our income last year.
750. That was simply the income from rates. What was your whole income? In addition to that we received from the Government 10s. in the £ last year and a special grant of 5s. in the £. We received altogether about £1,350 last year.
751. What was your expenditure upon municipal works during the year? Upon works, £900 or £950. The balance of the money was consumed in office and other expenses.
752. What is the annual cost of your staff—what do you pay the Council Clerk and the officers under him? We pay the Council Clerk and Borough Surveyor £150 a year, and we pay £50 to the Inspector of Nuisances.
753. Does he perform a double office? He fills the office of inspector. We pay £200 to the Council officers, and about £50 a year for other expenses—lighting, stationery, and things of that kind.
754. Do you levy rates upon unoccupied land? Yes.
755. What is the difference between the rates on tenements and on unoccupied land? The unoccupied land brought in about £160 last year.
756. What value do you place per acre upon the land in the municipality? It is just according to where it is.
757. What is the general average? I do not think you could strike an average per acre. The land is sold more per foot. The price of the unoccupied land in the principal streets of the town runs from £15 and £20 to £1 per foot.
758. But you must have some miles of vacant land fronting your streets? We have a number of unoccupied blocks.
759. What value do your assessors put on the land a foot or an acre, whichever way they value it? In the business parts of the town they average the land at about £5 a foot, but out on the back parts I should think they would average the block at £25 or £30 a quarter-acre.
760. Is not £160 a very small income from vacant land, some of which is assessed at £5 per foot and other of which is worth £100 an acre? That is all the rate comes to, according to our books.

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761. Does it not strike you as a very small sum? I do not think so.
762. The other £500 comes from dwellings, shops, and other buildings? Yes.
763. Do you anticipate any great increase in the number of buildings here during the next year or two? If we had a water supply I should.
764. You think that would give an impetus to the town? I am sure of it.
765. Are you of opinion that the ratepayers would be willing to pay the additional shilling? Yes; the ratepayers have just elected three aldermen, all of whom advocated that this water supply scheme should be carried out. They were elected last week.
766. You are aware that it has been suggested that a rate of 9d. would be sufficient to pay for this scheme? That is not the suggestion of the municipality.
767. No; it is Mr. Price's suggestion. As an old alderman, you are strongly of opinion that the municipality would be willing to pay 1s.? Yes; if it were required.
768. I suppose you have seen Mr. Price's report? Yes.
769. You know the capital cost of the scheme? Yes.
770. In view of the fact that this scheme will cost some £45,000 to carry out, you feel satisfied that the people of the borough will be quite willing to pay a 1s. rate for it? I am sure they would.
771. You know that if this scheme were carried out simply to meet the requirements of the borough the rates would fall very short of paying anything like the interest on the capital cost? Yes.
772. It is simply because the Commissioners will take such a large quantity of water, and because their rates will go so far towards recouping the Government for the outlay, that the scheme can be made payable? Yes.
773. You have no personal knowledge of the source of the supply? None whatever.
774. You have no knowledge as to the quality of the water? No; except from what I have seen in Mr. Price's report.
775. And no knowledge of the quantity likely to be stored? No other knowledge.
776. Have you anything else to suggest to the Committee, or any information which you would like to impart to us? I should like to draw the Committee's attention to the rates. It was stated by the Mayor that the rates had not increased very much. I would like to point out that our rates for the first half-year amounted to £288, which was equal to £576 for the whole year, and we are now receiving £670 from rates, although we have lost fully £80 from the Railway Department. That statement shows an increase of £180 in our rates.
777. In the seven years? Yes. We have lost fully £80 from the Railway Department. We have lost £35 from the rates of the refreshment room alone, and then there are all the other houses occupied by the railway men.
778. You make this statement in order to show that the town has grown, and is likely to grow? Yes.
779. If you get this water supply the town is likely to grow to still larger proportions? Yes. Then, with regard to the gardens referred to, everyone in the place would have a garden if they could get water. The people start gardens in the winter months, and keep them going for some time; but when the summer comes on they have to be let alone, because we cannot afford to give them water—in fact, we can hardly afford a bath sometimes. I am sure that if we had a permanent supply of water everyone would own gardens and use the water. I know that at my own place I would be only too glad to get the water, and make a good garden.
780. You are aware that that water would be charged for by meter? Certainly.
781. What rates do you strike on unoccupied land? I think rates can be struck on unoccupied land just the same as on occupied land and tenements.
782. Do you strike a rate at the present time upon unoccupied land? We strike a rate of 5 per cent. on the capital value.
783. In imposing rates do you make a distinction between those who own dwellings and shops and those who own unoccupied land, or are the rates the same for both classes? We charge 1s. in the £ all through.
784. Whether the land is occupied or unoccupied? Yes.
785. Have you a pretty good knowledge of the value of land in this and the Bethungra district? Yes; I have a good knowledge.
786. You know Bethungra? Yes.
787. Can you give us any idea of what the value of 900 acres there would be on which there was a homestead, a permanent water supply, and a dam? I should think that £2 an acre was the very outside value of the land up there.
788. Without improvements? With the improvements that are on it.
789. That would be the outside value? Perhaps if you included the homestead it might be worth a little more.
790. Taking into consideration the fact that it contains the only permanent water in the place? I should not think that would make so much difference to it. The homestead and the permanent water might make a shade of difference; but I do not think the land would be worth more than £2 5s. an acre at the very outside, including everything.
791. Do you know anything about the quality of the water that comes from there? I do not. I have never heard anything against the quality of the water; in fact, I do not think that we should have heard anything about its quality at all if Mr. Price had not mentioned it in his report. I do not think that it has been spoken of anywhere else.
792. Is it not a fact that water in most creeks generally gets brackish as it gets very low? Yes.
793. Does the brackishness disappear as the creek gets fuller? Yes.
794. That is your experience? That is my experience.
795. Do you know anything of the holding character of the soil about here? Yes.
796. Does it want puddling as a rule, or does it hold water without being puddled? I think it is good holding ground. I have a dam on some of our land—a 360-acre block. We put it straight down, and it was filled at once with the rain, and it has now held water for four years without there being any soakage at all from it.
797. Is it solid ground or broken ground? Broken ground.
798. Partly granite and partly boulders? It is some of this rotten granite. There are no boulders.
799. Just the broken granite? It is this red soil principally.

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800. *Chairman.*] That is not granite, is it? There is rotten granite when you get further into it.
801. *Mr. Trickett.*] Did you disturb the surface of the soil at all? Yes; it was all taken off. This is an open tank—1,200 yards.
802. Did you get into the broken granite? Yes.
803. Yet the tank holds water well? There has been no soakage whatever from it. I think it is the best tank in the district—or one of them.
804. Do you know of any tanks formed in broken country where there are granite boulders and this granulated soil all round? There is the railway tank.
805. That is of the character I describe? That is in amongst the boulder country.
806. How does it answer? I do not think it answers at all. The water runs away.
807. What depth of water is the tank constructed to hold? I could not tell you. It is a very large dam; but I have no idea what depth it has.
808. It is not of much use for holding water? I do not think so. I have seen it full, and I have seen it empty very quickly.
809. Is that due to absorption rather than to the sun's effect upon it? I think it is due to soakage more than to anything else.
810. Is it in an elevated position? Yes.
811. Is there a lip constructed all around it, or is it in a basin? It is in a basin, with a dam made across. It is in a sort of drop.
812. *Mr. McCourt.*] The cost of this scheme is estimated at £45,000, and provision is made for a sinking fund to pay off the capital and interest at 4 per cent.? Yes.
813. Supposing the money can only be borrowed at 4½ per cent., would you be able to pay the interest then? I think so, because we would increase the charge on the Government. We have not yet agreed to accept their offer of £1,500 a year.
814. Supposing they will not stand an increase? They would be bound to stand it. They are paying £3,000 or £4,000 a year for water now.
815. If the interest were increased to 4½ per cent. you would increase the charge on the Railway Department? If we could not cover the interest with our rates we should have to go to the Railway Department for more.
816. And you think that they would stand an increase? I think so. We have not made any agreement with the Department up to the present. They have simply made an offer of £1,500.
817. You will have to make an arrangement with the Commissioners before you accept this scheme? Yes; I think so.
818. The Council will have to do that? Yes; I think so.
819. It will have to be satisfied that the Railway Commissioners will pay? Yes.
820. You think that the Railway Commissioners will have to increase their offer from £1,500 in order to satisfy the Council? Well, I do not know; I am not an alderman now.
821. Do you think they ought to do that? I think the Department ought to pay more.
822. How much? I think they ought to pay at least £2,000 for the water, and then they would be getting it cheap.
823. You do not think the Council would accept the scheme unless the Commissioners agreed to pay £2,000 a year for water? I do not say that.
824. You think the Council ought to accept this scheme at any hazard? That is another matter. If they can see their way to pay for the scheme I think they ought to accept it. I do not think there is any doubt about our being able to pay for it.
825. That is, provided the Commissioners give you this sum of money? If they gave us £1,500 a year we could pay for the scheme; but I think they ought to give us more.
826. You estimated the vacant land in the municipality at £27,000—that is only unfenced allotments? Yes; £33,000 was the estimate for last year.
827. You reckon that your revenue for water will be £400 a year;—do you take anything from the vacant land in order to get that amount? We did not make the calculation at all.
828. Who made it? It is contained in Mr. Price's report.
829. Do you think that the estimate is a fair one? I do; but I think that thei ncome is under-estimated.
830. How much should it be? I think we could raise £500 a year. We should raise more than that with a shilling rate.
831. That is within the reticulation area? Yes, because that area embraces the whole of the valuable land and all the tenements in the borough.
832. If the rate were increased to 1s., what would it return? About £600, I think.
833. *Mr. O'Sullivan.*] What is the population of Junee? About 2,000.
834. Does that include the railway men and their families? Yes.
835. Can you give us the population of the place at various periods, going back (say) for five years? No, I cannot. An estimate was made at the time we were incorporated, and we had to sign a declaration then that the population was over 1,000. I think it was 1,200 or 1,300 at that time. It had to be over 1,000 in order to provide the nine aldermen.
836. I presume they take the electoral roll for the Junee division? Yes.
837. We can get a very fair estimate of the increase of the population from that? I think so. When I came here eleven years ago the population could only have been 200 at the outside.
838. You referred, just now, to the value of the land round this side of the proposed reservoir, and you said that the land was worth only about £2 5s. an acre, including homestead and water-rights;—do you think you could get these water-rights and the land, bearing in mind that the water-rights are perhaps more valuable than the land, for the price you state? I do not suppose I could now.
839. But before the scheme was mooted? I think so, from my knowledge of the land about that part.
840. We are given to understand that a large number of sheep are watered there every year, and are driven from some distance for that purpose. That being so, the water-rights probably add materially to the value of the land. Do you think that under these circumstances £2 5s. an acre would be a fair compensation for the land? Is it freehold?
841. Yes? Then it is worth more money. I was taking it as ordinary conditional purchase land.
842. Part is freehold, and some of it is conditional purchase land? The freehold land has increased in value by whatever amount has been paid for it. I was taking it as conditional purchase land.

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843. *Chairman.*] How much did you reckon had been paid on the land? If 10s. an acre had been paid on it, that would bring the price up to £2 5s. an acre.
844. *Mr. O'Sullivan.*] Many of the municipalities which have undertaken works of this character have failed to keep their engagements with the Government? Yes.
845. Do you think that Junee is likely to be added to the category? I do not think so. I think we should be able to pay up. There is bound to be a material increase in the population of the town if we get water, and in that way the rates will be increased.
846. If you do not pay up, the Government will have the power to put in a bailiff in the shape of a receiver, and thus pay themselves? Yes.
847. But from your knowledge of Junee you think that is not likely to happen? I think so.
848. Under the new Local Government Bill you will be empowered to levy pretty well what you please in the form of taxation. Do you think you will be able to reach this vacant land then? There is no doubt about it.
849. Under the Local Government Bill you may be able to add to your annual receipts? When we get it.
850. The estimate of cost may increase from £45,000 to £50,000 or more, owing to unforeseen expenses? They seem to have provided for everything.
851. But you know that, as a rule, these estimates are exceeded? There is no doubt about that.
852. If the cost goes to £50,000 it will not frighten the municipality of Junee? No; it will not frighten us.
853. *Chairman.*] You were in office when Mr. Gipps was employed to report on the Wantabadgery scheme? No; that was in November, 1889. I was Mayor in February, 1890. I was not in the Council that year.
854. You know the character of the country between here and Wantabadgery? Yes.
855. And the place at which Mr. Gipps proposes to tap the Murrumbidgee? Yes.
856. As a layman, what do you think of his scheme? When he brought it out first it looked very feasible. It was to cost only a small amount of money, and the water was to be pumped to an elevation by means of a turbine wheel, without there being any expenses at all, and run into Junee by gravitation.
857. Through earthenware pipes? Yes. He was going to start the earthenware industry in the district in order to make these pipes.
858. Is there any land suitable for pipe-making? I daresay we could have found some. When we got Mr. Price's report saying that the scheme could not be carried out, we changed our opinions a great deal, and when the Bomen scheme was brought forward we determined not to decide upon anything, but to leave the whole matter in the hands of the Department. I do not think the Council were in favour of either the Bomen or the Wantabadgery scheme.
859. Having had to give up Mr. Gipps' scheme, and having decided to leave the matter with the Department, why did you go back and pass a resolution in favour of the Bethungra scheme? We never gave up Mr. Gipps' scheme, because we never adopted it.
860. Having resolved to leave yourselves in the hands of the Department, and not to endorse any scheme, why did you go in for the Bethungra scheme? We never resolved that we would not endorse any scheme. We simply left the matter alone, and when Mr. Price's scheme came up, it seemed to us such a good one that we adopted it unanimously.
861. Did you adopt it because you were tired of waiting, and ready to take up any scheme put before you? No.
862. It was not a case of shutting your eyes and opening your mouth, and taking what was sent you? No.
863. You thought this was the best scheme that had yet been proposed? Yes.
864. Do you know anything of Houlaghan's Creek watershed? Yes.
865. It is a large watershed? Yes.
866. Is the creek very frequently dry? Yes.
867. Is it bad country for conserving water? I do not think it is good country.
868. You do not think that the Houlaghan's Creek scheme could be compared even with the Bomen scheme? I do not think that the Houlaghan's Creek scheme would be worth anything at all. The Railway Department offered to supply us with water from there some years ago, for about £330 per annum—8d. a 1,000. We said that we would accept it if they guaranteed a permanent supply of water fit for domestic purposes, but from that time we have heard nothing more about the matter.
869. You know of a dam up towards Butler's Creek? I know that there is a dam there.
870. Do you know if it conserves any quantity of water? I do not think so.
871. The water finds its way into the drift underneath? Yes.
872. Since the dam has been constructed, do you think there has been a more regular supply in the drift below, near the town? That is more than I can tell you. That dam was constructed before I came here. It has been built a good many years.
873. How do you get your water;—from the roof? Yes; it is caught in underground and iron tanks.
874. You said just now that you had constructed a dam some little distance out of the town;—is it situated on a flat depression? Yes.
875. Does the water run quickly into it? It runs off the top of the hills into it. It runs off a road.
876. The more rapid the rainfall the more quickly the dam is filled? Yes.
877. Light showers would merely be absorbed into the ground? Yes.
878. What is the nature of the rainfall here;—does it come in heavy doses, or is it homœpathic? It is very homœpathic sometimes, but we get some good thunderstorms occasionally.
879. Do you go many years without these heavy thunderstorms? No.
880. There is never a year passes but you have them? I do not think there is ever a year passes but we have them.
881. How long have you had the dam to which you have referred? About three years.
882. Have you always had a supply of water during the year? Yes.
883. The dam has never been dry? Never.
884. What do you use it for? Stock.
885. What is its capacity? One thousand two hundred yards.
886. A thunderstorm fills it? Yes.

887.

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887. What stock do you water at it? At the present time about 300 sheep, forty or fifty head of horses, and a few cattle. We have not so many there now as usual, because the grass is just about giving out.
888. Would the water, except for the fact that the cattle have access to it, be fit for human consumption? I think it would.
889. It contains no saline deposits or injurious minerals? I do not think so. I have not noticed any. It has never been low enough to show that.
890. During the time you were Mayor, did you enter into any contract with the railway authorities for bringing water from Wagga Wagga? Yes.
891. They charged you 10s. a thousand for it, and it cost 20s. a thousand to cart it? The carters charged what they thought fit. The Council simply supplied them with water at cost price.
892. The consumer had really to pay about 30s. for the water? Yes; I have tenants at the present moment who are paying 4s. and 5s. a week for water—carting it from the wells.
893. Do the proprietors of the wells charge anything for the water? No; I do not think they charge anything; there is simply the carter's charge.
894. Is there anything else you would like to say? I would like to show you that the town is not dependent solely upon the Railway Department. I have been Mr. Heffernan's agent for some time. He is one of the largest men about here. He lives at Clear Hills and owns pretty well all the land between Junee and that place—about 20 miles. During the last twelve months I have leased 16,000 or 17,000 acres of land for him. It is wheat-growing land, and has been cut up into holdings of 300, 500, and 600 acres. Farmers from Cootamundra, Wallendbeen, South Australia, and Victoria, have applied for the land, and I have sold about 5,000 acres in small holdings. The leasing and sale of this land must bring settlement, and consequently increase the trade of the town.
895. You will not get the trade when the line from Cootamundra to Temora is made? It does not go near the land. The land I am speaking of is within a radius of 7 miles from the town. Mr. Heffernan is still getting inquiries about land, and has had to take tenants 15 miles out.
896. We have had his evidence in connection with the railway from Cootamundra to Temora? I went down with him myself to advocate the construction of a line from Junee to Temora. The Cootamundra to Temora railway does not go near his land; it goes further north.
897. It is not more than 4 miles from some of it? It is about 4 miles.
898. You think the places you have mentioned will bring grist to the Junee mill? Yes.
899. Is the road between Cootamundra and Temora better than the road between Junee and Temora? No; the road from Junee to Temora is the better one.

Mr. Thomas Wardle Hammond, grazier, Houlaghan's Creek, sworn, and examined:—

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900. *Chairman.*] Where do you reside? On Houlaghan's Creek, about 4 miles from here.
901. *Mr. Trickett.*] How long have you resided in the district? About thirty-four years.
902. Do you know the various schemes which have been projected for supplying Junee with water? I have simply heard of them.
903. Do you know sufficient about them to be able to say which is the best? I should certainly say that the Bethungra scheme is the best—that is, providing that the catchment area is large enough. I do not know anything about that.
904. You have not been on the place? No; I have passed near it, but I have never been on it.
905. Do you know that the district suffers at the present time from the want of a proper water supply? Yes; it suffers very much.
906. You have had an opportunity of seeing the progress of the district? I have; in fact, the town has been built on land which was originally part of one of my stations.
907. Do you think the improvement of the district is likely to be permanent? I think so. The land is being cut up every day, and either leased or sold. I sold 7,000 acres myself a very short time ago.
908. Independent of Junee being a railway centre, it is situated in a progressive agricultural district? Yes; I think so.
909. Have you any freehold property in the town? Just adjoining.
910. But in the municipality? Yes.
911. Is it built on? No.
912. It is not within the residential area at present? No; I have sold all I had in the residential area.
913. What do you consider to be the value of the land per acre in the town area now? My first sale was about seven years ago, and I have received from £40 to £200 an acre—that is, including some land I sold about five years ago.
914. Is the land now worth more than that? I have been signing some deeds in connection with the land, which show that its value has increased from double to treble what people paid me for it.
915. That is not actually in the town? No. Unfortunately, one owner owns a lot in the town while my land is outside. I cut up and sold a great deal of it, because I do not believe in population going away.
916. The gentleman who owns the greater part of the unoccupied portion of the town does not care about selling his land? No; I believe he prefers to lease it.
917. How is your station supplied with water? At present we are rather short; but I made a dam in Houlaghan's Creek, about thirty years ago, which has never yet been dry. The creek has not run for about eighteen months; but I have still nearly three-quarters of a mile of water.
918. What is the character of the soil there? It is not good holding soil in the creek as a rule.
919. Will you describe what the creek is like? It is not a constantly running creek by any means, and it is not a very rapid creek. The fall, I suppose, is only about 10 feet to the mile.
920. Is it all soil, or does it run part of the way through granite boulders? It runs through soil principally, and the soil will not hold water until puddled.
921. Is it loose, porous soil, or clay? It is rather porous. All the dams below my place, except one, are dry.
922. Is your dam a clay dam? There is clay at the bottom, but the water used to get away very quickly. It has now, however, been greatly puddled by the stock.
923. Is the water good—is it free from saline matter? Yes; but it is very muddy at present. It gets beautifully clear when the creek runs, but little falls of rain wash all the red soil off the road, and that discolours the water very much.

924. It is proposed to resume 900 acres of land around the reservoir at Bethungra;—do you think that that would be sufficient to keep the water free from the pollution of sheep and cattle? Without seeing the catchment area I could hardly say. If there is high land around the place they ought certainly to resume more, because everything will drain into the dam. Mr. T. W. Hammond. 20 Feb., 1893.

925. Immediately around the reservoir the country is pretty steep? If people had large flocks of sheep camped round near the reservoir they would pollute the water.

926. If you were constructing a dam of this kind, at what distance would you think it advisable to keep stock from the water? It would depend entirely upon the fall of country. If the fall is rapid they should be kept a long distance away.

927. What would you call a long distance? A mile at the least.

928. On all sides? Yes.

929. I suppose the water runs off very rapidly? We have sometimes a very heavy rainfall in the summer time—heavy storms.

930. You told us a little while ago that you kept a record of the rainfall? For the last thirteen years I have done so. I did keep a record for longer than that, but I am not positive about some of the entries. For the last thirteen years, however, I have kept a correct record.

931. Will you tell us the result of your observations for the last ten years? I commenced keeping a record in 1880. The average for the last thirteen years is 20·16 inches. The following is a full return:—

RAINFALL EACH YEAR AT JUNEE.

	1880.	1881.	1882.	1883.	1884.	1885	1886.	1887.	1888.	1889.	1890.	1891.	1892.
January	·81	·36	·17	..	·18	4·10	1·45	1·51	1·33	1·49	·32	5·08	2.38
February	2·88	·84	·71	1·53	·46	2·01	·23	6·85	1·13	2·36	2·04	·60	·3
March	1·55	1·48	·51	·80	1·55	·16	·72	5·28	·43	..	2·03	1·92	·51
April	4·08	·19	3·27	·63	·93	1·34	·68	·95	·11	2·19	·67	2·90	2·27
May	1·61	2·94	2·20	1·46	1·31	·64	1·39	·90	1·61	4·72	2·80	·66	2·55
June	1·27	1·76	1·66	1·31	3·77	1·95	·40	2·46	·77	2·63	3·61	4·07	1·26
July	·82	·66	1·18	1·40	·41	·37	1·22	2·48	1·12	·47	2·16	5·05	1·96
August	1·10	1·30	3·07	·87	·76	1·27	5·48	1·84	·14	2·01	1·78	2·08	2·86
September	·96	2·28	·44	2·37	1·61	1·50	1·87	1·25	1·51	2·48	2·49	1·57	2·44
October	1·91	2·11	2·77	2·69	2·10	1·08	2·96	3·27	·29	1·47	3·67	1·67	2·05
November	·31	1·72	3·12	1·39	2·39	·80	2·52	1·91	1·14	2·83	1·48	1·54	1·76
December	·90	·91	2·28	·11	·51	1·53	2·81	1·79	1·06	·71	1·05	·67	·46
	18·20	16·55	21·38	14·56	15·98	16·75	21·73	30·49	10·64	23·36	24·10	27·81	20·53

Rainfall for thirteen years for each month:—January, 19·18; February, 21·67; March, 16·94; April, 20·21; May, 24·79; June, 26·92; July, 19·30; August, 24·56; September, 22·97; October, 28·04; November, 22·91; December, 14·79. Total, 26·208. Average for thirteen years, 20·16.

932. That record was taken at your station? Yes; at Old Junee.

933. How far is that from here? Four miles.

934. Is it in the direction of Bethungra? No; it is along the Narrandera railway line.

935. Will this be any guide as to the rainfall at Bethungra? From my own knowledge of the rainfall at Bethungra, I should say that they often have storms there which we do not get here.

936. You think that the rainfall there would be as heavy as it is at your station? I should say that it was much more heavy.

937. Bethungra is nearer the sea than you are? Yes.

938. It would be much more likely to intercept the rain than the country where you are? Yes; they have had snow there two or three times.

939. Is your station lower than Junee? About 150 feet lower.

940. If the Bethungra catchment area is 700 feet above Junee, it will, in all probability, have a better rainfall than you have? I should certainly say so.

941. Do you keep these reports merely for your own private information? Yes.

942. You do not send them to Mr. Russell? No; for some short time the manager of the Union Bank here used to send reports to Mr. Russell, but he has left.

943. *Chairman.*] He used to report the rainfall in the town? Yes.

944. *Mr. Trickett.*] What water do you drink at your place? I have an underground tank besides an iron tank, and catch the water from the roof. At present I am drawing water for drinking purposes from a place about 1¼ mile away. I do not use the water from the dam, because the washings from the road go into it.

945. Do you think that the water used here is injurious for drinking purposes? I cannot answer. I have a well about three-quarters of a mile away, the water in which is perfectly good.

946. Is that in the drift? Yes.

947. Below the Chinamen's gardens? Yes; beyond there—down near the brick-kilns.

948. That water is free from traces of iron or salt? Yes; it is very pure, nice water. Down at my place there is a well which was sunk by the railway authorities. It is 125 feet deep. There are 60 feet of water in it now. The water runs in at the rate of 1,500 gallons in the twenty-four hours.

949. Have you had much experience in constructing dams in this country? Yes.

950. Do you generally find that they require puddling? No; you can nearly always depend upon the soil holding water away from the creek. The creek is worst below my place.

951. What is your experience of dams which have as their bottom the bed of an old creek? I should have to puddle them.

952. *Chairman.*] That would depend upon whether the bed of the creek was rock or shingle? If it was clay it would hold well.

953. *Mr. Trickett.*] Would broken country, partly granite and partly boulders, need to be puddled? I would not depend on its holding. It might hold after two or three years, when a sediment had formed.

954. *Mr. O'Sullivan.*] The rainfall at your place is 20·16 inches? Yes; that is the average of thirteen years.

955. Mr. Price states the average fall at Bethungra to be 28·78 inches;—I suppose that would be fairly accounted for by the difference in height between the two places? They have had rain there when we have had nothing.

956.

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956. Are you acquainted with the water at the storage reservoir? I have only seen the water in Billabong Creek, which runs from there.
957. Did you ever hear any bad report about that water before this scheme was mooted? No. I have often drunk the water in the Billabong Creek. I found it very good.
958. You have never heard of people objecting to drink it? No.
959. There have been several outbreaks of anthrax or Cumberland disease in this district, have there not? Yes.
960. Do you think that anything in the vegetation of this watershed may be connected with those outbreaks? In the Bethungra district?
961. Yes? I have never troubled myself about the matter. Since we adopted inoculation we do not lose any inoculated stock from anthrax.
962. There is not likely to be any connection between the vegetation around this saline water and the outbreaks of anthrax? Certainly not.
963. Do you know anything about the Bomen scheme? I know that it was mooted, but I know very little about it.
964. Is the water good there? Yes.
965. Have you ever heard that the fish in the Murrumbidgee have been killed by deleterious matter being run into the stream from shearing-sheds and other places of that kind? I cannot say that I have.
966. In the event of the proposed scheme failing, I suppose you think a very good supply of water could be obtained from Bomen? Certainly.
967. Bomen Swamp is not an overflow from the river? No.
968. It is one of the old ana-branches of the Murrumbidgee? I believe that it is the original course of the Murrumbidgee.
969. *Mr. Davies.*] Have you ever known Houlaghan's Creek to be dry? Not the whole of it. I believe it was dry before I got the place.
970. It has not been dry during the last thirty years? No.
971. What water is there at the present time? Do you mean in my dam?
972. Yes? It is about three-quarters of a mile long, and I suppose the average depth would be 5 feet at the outside.
973. Is the water fairly good? Yes.
974. Soft? Yes; and good water to drink if it were kept clean.
975. You have never been short of water during thirty years? Never. I supplied the railway with water for about five years.
976. Locomotives? Yes; but they said that being so muddy it was not good, and they objected to it at last.
977. Do you know the site of the proposed storage reservoir at Bethungra? I have seen it. I cannot say that I know it.
978. Do you know Sawyer's land? I only know the country; I have not been at his place.
979. Do you know Weston's land? No.
980. Do you know Carroll's land? I do not know any of them except Mr. White. I know him very well.
981. You know the country pretty well? I have been through the country.
982. What would be the approximate value of 900 acres of land which had a good water supply? That is not reckoning any connection with the proposed scheme?
983. Taking it simply as the catchment area for this scheme? Most of the land about there is very inferior to the land about here.
984. Taking its good and bad qualities together, what, as an old resident, would be the value of it? Fifty shillings an acre.
985. That would include all water rights, frontage to creeks, &c.? Yes.
986. Fifty shillings an acre? That would be the outside value.
987. Independent of improvements? I presume that it is simply fenced and probably rung.
988. You do not know the locality exactly, and you have no knowledge of the quality of the water or of the quantity which might be stored? No.
989. *Chairman.*] Did I understand you to say that you have never known Houlaghan's Creek to go dry? I have never known my dam to go dry, and it has been built quite thirty years.
990. If Mr. Gipps has said that you informed him that you knew Houlaghan's Creek not to run for four years, would that be correct? He would not be correct in saying four years. I have known it not to run for three years.
991. In answer to Question 539, he says:—"Mr. Hammond, a grazier, and a very old resident of Junee, informed me that he had known Houlaghan's Creek, which rises on the opposite side of the range, to cease running for four years"—do you remember making that statement? It has ceased running for three years, but I do not think it has ceased for four years—that is, it has not ceased running right through. We could get local water.
992. There is water in ponds, but not running water? No; it does not run.
993. How long is it since it did run? Fully eighteen months.
994. In that case it would not do to depend upon the watershed of Houlaghan's Creek for a large supply of water? Certainly not.
995. Though the watershed in that creek is larger than the watershed of the Ulandrie Creek it could not be so well depended upon? I think so.
996. The Railway Commissioners expended a large sum of money in sinking shafts in Houlaghan's Creek? Yes.
997. They found that the water was not sufficient for their purposes? Nothing like it.
998. You believe that the higher the country is the more likely it is to have a good rainfall? Yes.
999. If, therefore, someone in the district has given it as his opinion that the height does not make any difference you think that he is mistaken? I think so.
1000. You have given the average rainfall at your place as 20 inches, and we have it in evidence that the rainfall at Bethungra, which is about 400 feet higher, is 28 inches. Would you think that the watershed would have even a better average, considering that it is some 400 feet higher still? Houlaghan's Creek catchment area would lose a lot of water. There is a very gradual slope into the creek.

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1001. But I am speaking more particularly in regard to the rainfall. The rainfall at Bethungra is 28 inches;—do you think that if we went up another 400 feet the rainfall would increase? Yes.
1002. Your opinion is that the higher the country the more likely you are to catch the rain clouds? Most decidedly.
1003. That seems to be proved by comparing your records with the Bethungra records? Yes; in one year we had only 10¼ inches.
1004. As a ratepayer of this municipality would you be prepared to pay a rate of 1s. in the £ for a supply of water? Certainly I should.
1005. Do you think that all the other people in the town would be willing to pay that amount? I cannot answer for other people, but I should be willing to pay it. It would put my property up 30 or 40 per cent.
1006. Is it not a fact that a great number of people now draw their supplies from the drift, at a very large expense? Yes.
1007. We are informed that it costs them about £1 a thousand gallons? I do not know what they charge them for it.
1008. And that if the dry weather continues, and they have to get water from the Commissioners, it will cost them 30s. a thousand. Do you not, therefore, think that it is of the greatest importance that a good supply of water should be given to these people, and that they should be prepared to pay for it? I should say so. I should be very glad to pay for it.
1009. We are informed that the Railway Department would be very large customers for this water, and that there would be no justification for the scheme were it not for their requirements. Do you think, from what you know of the surrounding country, that the Commissioners are likely to reduce their establishment here, or are they likely to increase it? I should imagine that if they had a good water supply here they would increase their establishment.
1010. You have heard no rumour of their intended removal of the sheds? No; that matter has been pretty well settled, although the Wagga Wagga people have tried to get the sheds moved there.
1011. On the ground that there was plenty of water at Wagga Wagga, and none at Junee? Yes.
1012. In spite of that pressure, the works still remain here? Yes; I presume the Commissioners knew their business best.
1013. Have you anything else that you would like to say? I am not aware of anything.

Mr. John Egan, Alderman, Junee, sworn, and examined:—

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1014. *Chairman.*] You were Mayor last year? Yes.
1015 *Mr. McCourt.*] Do you know the country about Bethungra where this water supply has to come from? Yes; I have known it for the last seventeen or eighteen years.
1016. What is the value of the land in that locality? About where the proposed reservoir will be the value of the land is not a great deal. It is rocky land, worth 30s. or 35s. an acre.
1017. That is if it is freehold—not being a conditional purchase? Not being a conditional purchase.
1018. And including all the water rights? Not including the water rights.
1019. But I want to know the value including the water rights. If 900 acres there were resumed, including all the water, what, in your opinion, would be the cost of resumption? No doubt the water there is very valuable; but I think £2 5s. an acre would be a good price for it.
1020. What is the nature of the water in that locality, is it brackish? It is brackish at times, but not after rain. During droughts it is brackish, though not out of the way brackish. I have drunk it in the worst times.
1021. If 170,000,000 gallons were stored there, would you have any doubt as to its purity? No.
1022. It would be perfectly pure? Perfectly, I think.
1023. Are the people of Junee unanimously in favour of this scheme? Yes; if we do not get rain now within a fortnight, we shall have to bring water from Wagga Wagga by train.
1024. The people here would not object to pay an extra rate of 1s.? No; it is costing them a lot more than that now.
1025. Do you think that the Commissioners would take water from you if this scheme were carried out? I think so; we have a promise from them on the subject, and they seem anxious to have the scheme carried out.
1026. And there is no chance of the sheds being moved to Wagga Wagga? I believe not.
1027. That matter is settled? I believe so. Some years ago there was a great agitation about it, but I think it was finally settled that the sheds should remain here.
1028. Do you think that £1,500 is a fair thing for them to pay? Yes.
1029. Do you think that it is enough? Yes.
1030. You do not think that they could afford to pay more? Not unless the traffic increased. If the traffic increased they would require more water, and I think they said that if they required more water they would increase their subsidy.
1031. At present £1,500 a year is a fair thing for them to pay? Yes.
1032. If they pay that amount the municipality can pay the balance and provide a sinking fund to wipe off the principal? Yes; easily.
1033. You are aware that the debt will have to be paid off in sixty years? Yes.
1034. The town will not become a defaulter in the matter of paying after the scheme is carried out? No, not according to my experience. The town is growing fast, and gaining in popularity every year.
1035. If there were a water supply you would have more people here? Yes; we should have factories here, and a mill. We are the centre of a very large agricultural district—one of the best districts in the Colony.
1036. I suppose it has been stated that if you had a water supply you would have a mill? Yes.
1037. What other factories will there be? There are two starting now in the town—machine factories.
1038. They would only be small works? One of them, I believe, is going to be of some importance. Robertson and Co., of Melbourne, have started a place here, which is likely to be enlarged. They have been here about twelve months.

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1039. What is the other firm? I heard the name, but it is a strange one; I could not give it to you. The man was here this morning to get the alignment and levels of his place. He has a German name.
1040. The second firm has not actually started? They have the timber and an engine on the ground.
1041. They would use a considerable quantity of water? No doubt of it.
1042. It is reckoned that £250 a year will be derived from gardens and stables;—do you think that estimate is correct? I should think you would get that and more.
1043. Water would be largely used for gardens? Largely. At present the people are struggling with their gardens, but the plants are burnt out every year. If a tree were dying we could not afford a bucket of water for it now.
1044. *Mr. O'Sullivan.*] Do you know of any better scheme for the requirements of this town than the one under discussion? No; I do not.
1045. If the railway is made from Jerilderie to Deniliquin, this place will be a still larger railway centre than it is now? Yes.
1046. As that railway has been recommended, the probability is that the Commissioners will in the future require more instead of less water here? Yes; I think so. As the railway extends they will get more traffic.
1047. I heard you say that you had drunk the water at the site of the Bethungra reservoir in the worst times? Yes; I have drunk some of it in very dry times.
1048. Did you feel any ill effects from drinking it? No.
1049. Did you find it salt or brackish? A little brackish; I have drunk worse water.
1050. Much worse water is drunk out in the west in dry times? Yes.
1051. You have no doubt whatever about the progress of Junee? I have not.
1052. In your opinion, is the agricultural settlement of the district likely to be permanent? Yes; I think it is only in its infancy.
1053. What occupation do you follow? I have followed several occupations. I have been a landowner, and I have followed grazing, hotel-keeping, and storekeeping. I have been nearly twenty years in this district.
1054. You have had a good opportunity of seeing the people of the district, and you feel confident that the agricultural settlement will last? Yes. I think it is only in its infancy, and that it will greatly extend. Some of the old residents laughed when wheat was first sown here. They said the country was too dry to grow anything, but since then they have turned to it themselves.
1055. There are a number of very large wheat-farmers around here? Yes; very large.
1056. This year the yield has been exceptionally good? Yes; but I have seen as good, and better. I have had a great deal of experience in wheat; I have been buying wheat for the last five years.
1057. Do you know the land between here and Temora? Yes.
1058. Is it suited for agriculture? Yes; the whole way.
1059. Is there any demand for that land? Yes.
1060. Have you heard of any applications for land for farming purposes? Yes; you can hear of them every day.
1061. Then you have a good reason for your belief that the agricultural interest is well established, and likely to extend in this district? Yes; I am certain of it.
1062. *Mr. Davies.*] How long were you connected with the Municipal Council? I have been an alderman since the municipality was incorporated—nearly eight years.
1063. Has any other water supply scheme been submitted to the Council? Yes; there was Mr. Gipps' scheme to bring water from Wantabadgery; another scheme to bring water from Wagga Wagga, and a third scheme to bring water from Houlaghan's Creek.
1064. Were any of those schemes submitted to your Council? Yes; but not by the Government. The Wantabadgery scheme was a private scheme, submitted by Mr. Gipps.
1065. Was Mr. Gipps employed by the Council? Yes.
1066. And he reported to the Council? Yes.
1067. His report embraced the Wantabadgery scheme? Yes.
1068. Was it a pumping scheme? Yes; I think it was first a turbine, and afterwards a steam-pumping scheme.
1069. What action did the Council take upon receiving Mr. Gipps' report? A deputation waited upon the Secretary for Public Works, Mr. Bruce Smith, and submitted the report to him, but it was not approved of.
1770. Was it approved of at any time by the Council? No.
1071. How much did the survey cost the Council? I could not exactly say from memory, but not a great amount. It was done very cheaply.
1072. But it was paid for by the Council? Yes.
1073. So that Mr. Gipps has no further claim? No.
1074. He was employed and paid by the local Council? Yes.
1075. You say that you know the locality in which it is proposed to construct a storage reservoir for the present scheme? Yes.
1076. You know it well? Yes.
1077. You know the character of the water in those creeks? Yes.
1078. What is the general character of the water, taking a dry season and a wet season? During droughts it is almost always brackish; but I have seen it running for a good time in the winter, and then it is perfectly pure and good.
1079. Has it ever been so brackish that you could not drink it? No.
1080. Do you think that if a dam were erected at the proposed site the rainfall would be sufficient to give an abundant supply of water? Yes; I have often seen the creek running. I have seen the Bethungra flat covered with water, mostly from that creek.
1081. What was the largest body of water you ever saw coming over the waterfall? I have never been at the waterfall during flood-time, but I have several times seen the creek running a banker, so that it would not be crossable. It spread all over the Bethungra flat, almost from one hill to the other.
1082. Although in dry weather the water is brackish, if a large volume were stored in the catchment area that would dispel the salt? Yes; I think so. It is only when the water is very low that it gets brackish. I do not think there can be a great amount of salt in the water there.

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1083. Do you know that there will be 174,000,000 gallons of water stored there? Yes.
1084. Any salt taste that the water in the creek may have will disappear in that volume? I do not think that it will be noticeable in that great amount of water.
1085. You regard the present scheme as the most practicable that has been submitted to the Council? Yes.
1086. Do you, as an alderman and late mayor, think that the townspeople would be willing to pay an additional shilling in the £ for water? Yes.
1087. They would gladly pay it? Yes.
1088. You are also aware that if it were not for the requirements of the Railway Commissioners the Government could not undertake a scheme of this magnitude? I think that.
1089. The townspeople could not bear the cost of it? I think not.
1090. You stated that a permanent supply of water would tend to establish factories here, and largely increase the population and settlement of the district? It would give the town stability. The want of water has been greatly felt ever since the foundation of the town.
1091. Having had the proposed reticulation described to you on the plan, do you think it would be sufficient to meet the requirements of the ratepayers? Yes; I think it would. Of course, there are several streets built upon to which there is no reticulation provided, but I think that in the present state of the town the reticulation provided would be very suitable.
1092. You think it would meet the requirements of the town at the present time? I think it would.
1093. And would give a supply of water to all the resident ratepayers? Yes, to the principal parts of the town.
1094. Is there anything you would like to add to your evidence? No; I do not know of anything else.
1095. *Mr. Trickett.*] You know the locality of the proposed dam site well? Yes; I was managing an adjoining station for some years.
1096. Whose station was it? Bethungra Station—Mr. Cowley's; I used to be mustering sheep there very often, and I was there more often during droughts than when there was rain. I know the place well.
1097. It is a well-known watering-place? Yes.
1098. Is it the only place in the district where you can get water in time of drought? You can get water on the flats. There were some small wells on the Bethungra flats where you could get water.
1099. The water would have to be pumped up? Yes.
1100. Do you know Weston's place? Yes.
1101. What are its improvements? I could not say what they are now. It is about six years since I saw it last.
1102. Were his house and dam erected then? Yes.
1103. What is about the value of those improvements? I could not say; it is so long since I saw them.
1104. It is proposed to resume and fence in about 900 acres around the site of the dam—do you think that would be sufficient to prevent the water from being polluted? I think so, in the present state of the country. Stock would be likely to create a nuisance if they were allowed to run at large there as they do now.
1105. You think that would be sufficient to prevent pollution? Yes.
1106. They would only come in large quantities if they were let down to the water itself? Yes.
1107. The country up there is broken, with granite boulders and a kind of granulated soil? Yes.
1108. What do you think of it for holding water? Unless there is a bed-rock there, I do not think the rock showing on the top of the ground would be likely to hold water.
1109. Does that statement of yours apply to the spot at which the dam is to be erected? No; I was speaking of higher up. It appears to be a bed-rock where the dam is to be.
1110. You think that where the dam is to be erected the country would hold water? Yes; I think so.
1111. But do you think the broken country above it would hold water? Not for a certain depth; but I think the bed-rock must be under there as well as where the dam is to be constructed.
1112. Do you think the sides of the hill would hold water? I could not say.
1113. You have had no experience in building dams on similar ground? I could not form an opinion as to this dam, unless I saw a trial made.
1114. Is broken country like that good for holding water? In some parts it holds water well.
1115. Without puddling? Without puddling.
1116. Do you think the rainfall in this district would be sufficient to fill the dam? Yes.
1117. Do you think that the rainfall in that district would be sufficient? Yes.
1118. There is a great rush of water there sometimes? Yes; a great rush. I have seen enough water coming down there to fill the dam in an hour.
1119. Have you seen that more than once? Yes; several times.
1120. In one season? I have seen it several times in one season, and I have seen it in other seasons.
1121. There are sudden, heavy downpours in that locality sometimes? Yes.
1122. It has been stated by Mr. Hammond that the average rainfall at his station is about 20 inches a year;—from your knowledge of the country would you say that the rainfall at Bethungra is more or less than that? From my knowledge, I should say it was less.
1123. Bethungra being so much higher than this place, I suppose the rainfall would naturally be greater? Yes.
1124. You are of opinion that if the dam were constructed there would be no doubt as to its being filled? I have not the slightest doubt of it.
1125. *Chairman.*] Do you know what the rainfall at Bethungra is? Not for a given period of time. In some years I have known 28 inches of rain to fall there.
1126. That is the Bethungra average? Yes.
1127. The proposed catchment area is considerably higher than Bethungra? Yes.
1128. Will that have a beneficial effect upon the rainfall? Yes.
1129. Then the rainfall will be larger there? Yes. Many times thunderstorms fall there when no rain falls in the rivers.
1130. If 20 inches fall at Houlaghan's Creek, and 28 inches at Bethungra, which is 400 feet higher, how many inches could we calculate upon at the catchment area, which is about 400 feet higher still? I could not say, but I think that the rainfall there would be more than at Bethungra.
1131. Very much more? Yes.

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1132. Have you ever known rain to fall on the watershed under consideration which has not fallen at Bethungra? Yes.
1133. Where do you think there is a greater rainfall—on the watershed under consideration, or on McLeod's Creek? I think the rain follows the range. Some years ago, at the time of the washaway at Cootamundra, we had 7 inches here, while 10 fell on the range.
1134. That rain fell on the catchment area? Yes.
1135. How do you get your supply of water? I buy it. I pay 1s. a cask for it.
1136. How much does a cask hold? About 50 gallons.
1137. You draw the water from the drift down here? Yes; from the springs.
1138. You expressed an opinion just now, that if the dry weather continued it would stop that supply? Yes; the water is going down.
1139. Then you will have to look to the Commissioners for water? Yes.
1140. How much will you pay them for it? We had to get water from them once before, and I think we paid 1s. a cask.
1141. It has been stated that you paid 10s. a 1,000 gallons? We pay the water-carters. I do not know what the Commissioners were paid.
1142. The Mayor stated that the Commissioners were paid 10s. a thousand, and the cartage came to £1;—will you bear out that statement? I cannot contradict it. I know that I have always paid 1s. a cask for water carted to the house. The water we are using at present is hardly fit to use.
1143. Is there anything else you would like to state? No; I do not think there is anything else.
1144. Have you been on the watershed since the trials were sunk for the proposed line of dam? No.
1145. You know that there are rocky bars just above the fall? Yes.
1146. Do you think that the rock is of such a solid character that the water is not likely to find its way through crevices below? Not from what I have seen of the place.
1147. Do you think that the rock extends into the side of the hills? Yes; I think so. I think that causes the springs. The drainage of the hills runs underneath, and comes up near the waterfall.
1148. I think you expressed the opinion that if the land were put to ordinary uses the water in the reservoir would not be polluted? Yes.
1149. Do you think it would be necessary to resume 900 acres of land immediately around the reservoir? I do not think it would be necessary to resume so much. I have noticed that in this country it is not a good thing to allow the grass to grow too strong where you want water to run into a dam or tank. Coarse kangaroo-grass will generally grow up, and it prevents the water from running away so quickly as if the ground were clear.
1150. But you could burn the grass off? Yes; but I have noticed that when it is allowed to grow up in its wild natural state it prevents the water from running to the dam.
1151. You know the Commissioners' dam on the Wantabadgery Road? Yes.
1152. Did you see it when it was being constructed? Yes.
1153. Do you think they made a mistake in excavating so much? I thought they made a mistake. I thought it would not hold water.
1154. Did they cut through a layer of better holding soil? No; I think not.
1155. Do you think that the surface of the ground would have been better left untouched? Yes.
1156. Would you have constructed the dam without disturbing the surface of the ground? That is not the place where I would construct a dam at all. There is another dam about fifty yards higher up, and it will hold water like a bottle. This dam is on a rotten clay, and the water oozes out.
1157. Was the other dam constructed before this? No; since.
1158. The engineers at that time did not take into consideration the practical experience of men like yourself? I think not.

Mr. John Love, Locomotive Inspector, Junee, Department of Railways, sworn, and examined:—

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1159. *Chairman.*] How long have you been stationed here? About two years and six months.
1160. The whole of the arrangements for the locomotives are under your charge? Yes.
1161. *Mr. O'Sullivan.*] You obtain the water for your locomotives from Wagga Wagga? Yes.
1162. That water has not been found to be injurious to their parts? No; it is the best water we have.
1163. I presume the locomotives which water at Bethungra are also under your care? Yes.
1164. Have you noticed any injury to the parts of those locomotives because of the water they use? No; that water is considered good.
1165. No complaint about it has been made to you? None whatever.
1166. I presume that a great deal of the water you require here is used for the trains running along the Hay line? Yes; and for the little washing out we do here.
1167. It is essential to your department to have a permanent supply at Junee? Yes.
1168. The quantity of water used here, I presume, is likely to increase rather than to decrease? Yes.
1169. Especially if the railway is extended from Jerilderie to Deniliquin? Yes.
1170. Do you know anything about the locality from which it is intended to obtain the water supply now under our consideration? I do not. I have seen it at a distance, but that is all I know about it.
1171. If the water contains saline matter, would it prove injurious to the engines? If there were a large quantity of saline matter in the water it would be injurious. It would be expensive to get the salt out of the boilers. We should have to wash them out oftener than we do now if we used salt water.
1172. In a large reservoir containing 170,000,000 gallons of water the proportion of saline matter would not be very large? I do not suppose it would, if the water had properly settled.
1173. The creek in which this saline water is found runs into the creek from which your engines water at Bethungra, but you have not found them to be affected at all by the salt? Not at all. The only time that the water there has been affected has been in extremely dry weather. It gets slightly brackish then, but the brackishness is very very slight.
1174. You say it does not injure the engines? Not very much.
1175. If there is no perceptible injury in using the water at ordinary times, after it has mixed with the water from McLeod's Creek, it is possible that there would be no injury at all from using it if it were stored in a large reservoir? The brackishness would be imperceptible.
1176. It is not likely that your engines would be injured by it? No.

1177. *Mr. Davies.*] You say that the water you are using now, which practically comes from the same watershed as that from which it is intended to draw the supply for Junee, does not injure your tubes or boilers? No. Mr. J. Love. 20 Feb., 1893.
1178. It is good water for steam purposes? It is good water. It does not affect the boilers in any way.
1179. How many water-trains do you run to Wagga Wagga? The average is six trains a week. We have run as many as nine, and as few as five.
1180. Taking the whole year round, you averaged six trains a week? Yes.
1181. What quantity of water is conveyed by those trains? About 34,000 gallons a train. In a year we use 10,608,000 gallons.
1182. Is the quantity of water used by you increasing, or does it remain stationary? There was a slight increase this year over last year.
1183. Taking the tonnage of the water-trains at the ordinary rate, what would be the cost per train? I have not run it out like that. The cost at Wagga Wagga is 6d. a thousand gallons, which for a year comes to £265 4s. The wages in connection with the haulage—drivers', firemen's, guards', and pumpers'—run up to £698 2s. Then there are the stores—coal, oil, waste, &c.—which run up to £687 15s. 1d. These amounts total £1,642 1s. 1d., which is what the water supply costs the locomotive department at Junee.
1184. That includes the whole cost of the water supply for the traffic and goods department at Junee? It does not include the permanent-way.
1185. What have we to add for the permanent-way? Of course, that cannot very well be included in the cost to the locomotive department. It would be incurred under any circumstances, because water has to be supplied to the fettlers on the road, and it is very likely that it would under any circumstances be supplied from Wagga Wagga to places adjacent to that town.
1186. Notwithstanding that you might have a supply here? Notwithstanding that we might have a supply at Junee. They take about 2,232,000 gallons for the year, which cost £58 16s.
1187. That is the cost of the water itself, without the haulage? Yes; I have not the cost of the haulage.
1188. Taking the usual freight rates for the haulage of goods, it would cost about 3s. 6d. a ton for 20 miles? Yes; but it is not classed as goods in any way.
1189. We want to know what the cost of the haulage would be? Mr. Day might be able to give you that; I have not got it at hand.
1190. How many tons would this quantity of water weigh? About 150 tons a train.
1191. You do not know the usual rates per ton? I do not know the haulage rates between here and Wagga Wagga.
1192. Does this water-train go back empty? They sometimes take a waggon or two of goods—perishables left here by other trains.
1193. They simply add on to the empty train some trucks of goods? Yes. Sometimes they add a couple of carriages to come back with No. 12 in the morning.
1194. What is the cost of the pumping-station at Bethungra? The pumper's wages at Bethungra would be about £130 a year.
1195. *Chairman.*] Does that include his overtime? That does not include any overtime at all.
1196. As a matter of fact, he has been getting overtime? Yes; we have had to pay him overtime lately.
1197. *Mr. Davies.*] What other expenses are there? Coal, wear and tear, and repairs.
1198. Would the total cost come to £300 a year? It would be rather more than that if you included the price of coal.
1199. I want an approximate estimate of the annual cost of that pumping-station? As near as may be, £300—that is, including coal and repairs.
1200. That amount has to be added to the cost of the supply brought from Wagga Wagga? Yes. Of course the Bethungra supply is not entirely confined to Junee. It would supply the Harden engines, and other engines passing through.
1201. But it is a supply that would not be required if this scheme were carried out? Oh, yes.
1202. Would you still keep the pumping-station there? We would not have a pumping-station—we should take the water from a pipe.
1203. You would be able to dispense with an expenditure of £300 a year? Yes.
1204. This scheme would do away with the pumper and the pumping-plant? Yes.
1205. Giving the wages and incidental expenses, you make out that over £2,000 a year is at present paid by the Commissioners for water? Very near that.
1206. What, in your opinion, is the cost of the supply to this station? I think that is about as near as I can give it. Of course I cannot tell you what the traffic branch charges for the haulage.
1207. You have only given the wages and the out-of-pocket expenses? That is all.
1208. Do you think your department could afford to pay £2,000 a year for a supply of water? I think that would be rather much.
1209. Do you not think it would cost you very much more than that at the present time? No, I do not.
1210. Do you not think it would cost you between £3,000 and £4,000 a year, taking into account the haulage. It is usual for one Department to debit another with the expenses incurred by it. If you were hauling for a contractor, you would charge him so much for the haulage, and do you not debit the traffic department with expenses incurred in the haulage and transit of stock from one place to another. Is not that the usual practice in all the Departments? Yes, I believe so; but I have never seen what is charged for hauling the water-trains.
1211. Assuming that the usual, or even a reduced, rate is charged for the haulage of water—a tonnage rate;—would it not cost you between £3,000 and £4,000 a year? I do not think so.
1212. You have shown that it costs £2,000 in actual wages? I do not think it would cost £500 more.
1213. You think that £2,500 is the outside cost? Yes.
1214. Then if this scheme is carried out, and an abundant supply of water provided, do you not think that the Department could afford to pay at least £2,000 a year for their water? I should not like to say.
1215. Would not that enable them to make a large saving? There would be a saving no doubt.
1216. Do you not think that the saving would be very large and important to the department? It would be a very important saving; no doubt about that.
1217. And it would be of very great advantage to the working of the traffic? It would be a very great advantage in every way.

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1218. The whole system would be very much improved if you had an abundant supply of water here? It would be very much improved, no doubt.
1219. Is there anything else that you would like to tell the Committee in connection with the water supply? Nothing that I am aware of.
1220. *Mr. Trickett.*] How many railway employees are there resident in Junee? I could not tell you. I know how many locomotive employees there are; but I do not know how many householders there are.
1221. How many people connected with the railways are there resident in Junee;—how many are there in your own department? One hundred and three altogether.
1222. Do they live in houses of their own? Some of them do.
1223. How many? I cannot say how many married men there are.
1224. There are some who live in the barracks provided by the Department? No; they live outside.
1225. They all live outside the railway-fence? Yes.
1226. They contribute to the general rate of the borough? Yes.
1227. They would have to pay water-rates? Yes.
1228. No locomotive employees live within the railway triangle? Yes; but they all would require water, and they will have to pay for it, too.
1229. They would not be supplied with water by the Department? They would have to be.
1230. They would not pay rates? Those in the triangle do not pay rates.
1231. If this scheme were carried out, would they get their water free of cost? I do not think they would get it free of cost. The Commissioners would have to supply them with water.
1232. The Commissioners have offered to pay £1,500 as a minimum for a supply of water. I want to know if these employees would receive water for that amount, or if they would have to pay water-rates? I am afraid they would have to pay water-rates, unless the Commissioners agreed to lay the water on for them. If they did that they would raise the rents. The men would pay for the water all the same.
1233. Are the Commissioners supplying them with water at the present time? Yes. They are supplied with water during dry times only.
1234. In a wet season they get their water from their own roofs? Yes.
1235. In the estimate of revenue for this scheme, £100 is set down for the supply of water to fettlers along 16 miles of line, and to Illabo Station;—do you think that that is a fair sum to put down? I should say so. There would be sixteen fettlers.
1236. Do you think that that revenue could be derived from the fettlers there? I think so.
1237. It seems a large amount? For sixteen fettlers?
1238. For water supplied to fettlers along 16 miles of line? Is Bethungra Station included?
1239. No—Illabo Station? It seems a bit stiff.
1240. You know the tank which the Railway Department constructed? I have seen it often enough.
1241. It is no good? It holds a six months' supply when we get it filled.
1242. Do you mean the bottom or the top tank? I am speaking of the only one we have up here. When we get it full to overflowing it lasts six months.
1243. What would it hold in the deepest part? It is 12 feet deep.
1244. It must be a pretty good holding tank? It did not hold very well at first, until the bottom was puddled, as it were, by the sheep.
1245. Do you know what kind of bottom it has? It is in auriferous country, and it has bastard slate sticking up on edge.
1246. No soil? Very little.
1247. It holds water pretty well since it has been trampled down? Yes; and it has been silted up to some extent. It is dry at present.
1248. What is it used for? There is a 4-inch pipe from it into our tank.
1249. Is the water good? Fairly good. Just the same as all surface water.
1250. *Mr. McCourt.*] In estimating the cost of your water supply, did you take into account the expense of running an empty train? Yes; we took into consideration the time it takes to run the train.
1251. Did you take into consideration the cost of pumping the water into tanks? Yes.
1252. What did you allow for that 1,000 gallons? I gave it by the year. I allowed £124 16s. for the pumping.
1253. Mr. McLachlan told us that it cost 4d. a thousand gallons to pump the water from the train into the tank? He may have got that from my statement. I have given a weekly or a daily statement.
1254. If he says that it cost 4d. a thousand gallons to pump the water into your tanks, would that be a fair estimate of the cost? Yes, pretty fair.
1255. That is how you would estimate it? I am simply taking it from my estimate. I gave him an estimate last week.
1256. *Chairman.*] You told us that the total amount paid for water at Wagga Wagga last year was £265 4s.? Yes.
1257. And that the cost of running your water-trains, including the cost of the pumper here, came to £698? Yes.
1258. Does a guard travel with these water-trains? Yes.
1259. Have you included his wages? Yes.
1260. Is the guard usually included in the locomotive expenses? I included him in this case, to get at the full value of the train.
1261. You put down stores at £678;—does that include repairs to trains? Repairs to trains, coal, oil, waste, and waggon-oil—axle-oil.
1262. When I speak of trains I do not mean merely the locomotives, but the cost of everything? Yes; that includes everything—pumper's coal as well.
1263. You have not charged anything for interest for the capital expended in running these trains? No.
1264. How many do you run a day? One.
1265. What is the value of a water-train—the engine and as many trucks as you take;—how many trucks do you take? Fifteen.
1266. What is the capital value of them? I could not very well say.
1267. Approximately, I do not want it very closely? I have not got the price the waggon has been built for.
1268. Have you only fifteen altogether? No; there are a lot of them here.

1269.

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1269. What is the total plant used in connection with this work? One engine and fifteen trucks.
1270. That forms the train? That is all I require for the locomotive service; the permanent-way also require a train.
1271. Then you have more than fifteen trucks? No: I do not require any more. The permanent-way use them.
1272. The total plant in connection with this water supply from Wagga Wagga is fifteen trucks and one engine? I only require one engine to haul the train. That must not be said to be the total plant in connection with the work.
1273. I want to know approximately the value of the plant used in connection with this work;—do you think we should be well within the mark in estimating it at £5,000, including the pump;—your engine is worth what? £2,500.
1274. Then there are fifteen trucks at £300 each? A little more than that.
1275. A brake-van? I think you ought to get this information in Sydney.
1276. I want to get it from you;—I do not want to place you in conflict with your superior officers, but you are the man from whom this information must be got? The information could be got more easily in Sydney, because they are the buyers. I am not a buyer; I am only a servant.
1277. You know the value of this rolling-stock a good deal better than anybody in Sydney can possibly know;—I must have the information;—would a brake-van cost £300? It might cost more than that.
1278. Then there are the underground tanks? I think the whole thing would cover about £70.
1279. As we have gone low on the others, we will put the tanks down at £100. How do you get the water into your train? We are supplied by the Council. They put the water into our tanks.
1280. At 6d. a 1,000 gallons? Yes.
1281. Then the plant employed in this service is worth at least £7,000? Yes.
1282. The permanent-way department do not charge you anything for running over the permanent-way? No; I do not think so. I expect there is a debit on account of it, but I do not know of it.
1283. Does the estimate for stores—£678—include all repairs? Yes.
1284. To the trucks and engine? Yes.
1285. Your estimate totals £1,642. You have allowed nothing for wear and tear on the permanent-way? No.
1286. If Bethungra Station were supplied from this scheme you would save £300 in pumping expenses there? Yes.
1287. You gave us the pumper's wages there at £130 a year, working ordinary hours; but as a matter of fact has he not, during the last season, on some occasions worked nearly twenty-four hours in a day, and been paid overtime for it? I do not know of his working twenty-four hours. He has not reported such matters to me. He has been paid overtime, however.
1288. What would be a fair thing to allow for last year's overtime? I do not think that overtime has covered more than £5 or £6 altogether.
1289. What is the value of the two pumping plants at Bethungra? I do not think it would cover £120 altogether.
1290. For the two Tangye pumps? Yes; in their present state; I do not include the tank.
1291. Is the Bethungra water considered by the drivers to be very good? Yes; it is considered good water.
1292. Better than the Murrumbidgee water? Not better, but it is considered very good.
1293. Have there been any complaints about a scum on it? I have not had any complaints with regard to it except on account of the vegetable matter in it, which gets in about the valves.
1294. It does not hurt the water; it only gets in about the injector? That is all.
1295. How often is the boiler at the Bethungra pumping-station looked to by anyone besides the driver? It is examined by the boiler inspector once a year.
1296. It has been there for some years? Yes; nine or ten years.
1297. It had a long experience before that? I could not say.
1298. There have been no repairs done during the time it has been there? Very few.
1299. That shows that the water must be pretty good? The water is pretty good.
1300. When dry weather comes there is a little saline matter in it? Yes; it shows a little round the cocks of the boiler.
1301. Does the same thing occur in connection with the Murrumbidgee water? No.
1302. It is only in dry weather that this saline matter shows up round the cocks? That is all.
1303. Is there an interchange of locomotives? This district is a very large one, and there is a great deal of mileage connected with it. It extends 168 miles to Hay, 60 miles to Jerilderie, 100 miles to Albury, and 59 miles to Harden.
1304. You have never been able to trace any bad effects to the boilers from the use of Bethungra water? No.
1305. Have you heard any complaints from other districts when engines have watered at Bethungra? No.
1306. They would always be careful to remind you if anything went wrong? If they took bad water they would tell me of it pretty quickly.
1307. Have you supplied the townspeople with water since you have been here? No.
1308. They have not had a dry season? No.
1309. Do you know what they were charged for it last time? No, I have no idea.
1310. It would come under your department; the supply of water being entirely in your hands;—you would have to make the charge? The matter might be handed over to the traffic branch.
1311. There is nothing in your office to show that your predecessor had any anything to do with it? There are no records there.
1312. The farming out of the water may be left to the traffic branch? Yes. They have to do with it in other places, such as Corowa.
1313. They are the middle men there? Yes.
1314. Do you think that Junee is likely to be discontinued as a centre for railway operations? I do not know that that is premeditated at all. I do not see what benefit we could gain by shifting the sheds.
1315. The Wagga Wagga people have agitated to have them shifted? That would not work very well.
1316. But there have been agitations? Yes, I have heard of such a thing.

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1317. In spite of the disabilities under which you suffer in regard to water, it paid you better to stay at Junee? Junee is the most central place.
1318. Junee has a fairly long life before it, from a railway point of view? I think so.
1319. It is likely to grow? I think so.
1320. As the railway traffic grows the demand for water will increase? Yes.
1321. What has been the increase in the consumption of water during the time you have been here? I could not give you that. Our average is spoiled by perhaps a six months' supply from our temporary dam.
1322. When was the last time you got water from that dam? We got water from there about twelve months ago, and it kept us going for seven or eight days. It was just a partial supply.
1323. That water is not so good as the Murrumbidgee water? No, it is not so good We have to wash the boilers out oftener.
1324. Have you had a six months' supply during the time you have been here? Just when I came here we had a thunderstorm, which filled the dam to overflowing.
1325. Can you tell us what quantity of water you got from the Murrumbidgee during the year before last? I did not make it up.
1326. Was it less than last year? Yes, it was bound to be.
1327. If you could obtain water at 1s. 6d. a 1,000 gallons, would you use more than you are using now? I do not think it would make a great deal of difference.
1328. You have to be very careful now with water because of its cost? Exactly.
1329. If it were cheaper it would be to your interests to use more? It would be an advantage to the Department to use a little more, and time would be saved sometimes. They have to blow down their boilers at Bethungra sometimes, because they cannot get enough water to blow them down here.
1330. If you could get water for 1s. 6d. a 1,000 gallons, do you think you would be justified in using 10 per cent. more than you use now? I should think we would use 6 per cent. more, but I can scarcely say what the increased consumption would be.
1331. The consumption would increase? Yes.
1332. It would be to the interest of the Department to use more water? It would be an advantage sometimes.
1333. Excepting for a phenomenal fall of rain, which might replenish your dam on the Wantabadgery Road, you are likely to buy more water in the future than you have bought in the past? Yes; there is no doubt about that.
1334. The permanent-way men also obtain a supply of water from Wagga Wagga? Yes.
1335. For that purpose they have a train similar to yours? Yes.
1336. How many trucks do they run? Six, and sometimes eight.
1337. How often do they run from Wagga Wagga? They have rather a peculiar service. They have to supply water between Albury and Goulburn, and down to the Blayney road, and the Gundagai road, as well as to Hay.
1338. The supply of water to Junee would not do away with that train altogether? No.
1339. If they could get water at Junee at 1s. 6d. a 1,000 gallons, would it not pay them better to take it from here or Bethungra, if they were going to Harden, than to go 40 miles further to Wagga Wagga and buy it at 6d. a 1,000 gallons? It would not pay then. They would take the water from Junee or Bethungra.
1340. Some of the water which is now taken from Wagga Wagga for the supply of the permanent-way people north and north-west of Wagga Wagga, would be taken from Junee or Bethungra? Yes; they generally fill their tanks here, and run along until they are empty, and they then go to the nearest eligible water. Every watering depôt is not eligible for drinking purposes. They run to the nearest point, according to the tablet or ticket they are carrying.
1341. We may reasonably expect that some of the permanent-way trains, which now water at Wagga Wagga, will take their water from Junee or Bethungra: but you cannot tell how much they will take? No, I cannot.
1342. Who is in charge of the permanent-way watering arrangements? Mr. Shellshear.
1343. He is the district engineer at Goulburn? Yes.
1344. Do you know under what arrangements the Commissioners obtained water from Wagga Wagga—does the contract extend over a long period? I could not say. I know that they have a contract to take water at so much a 1,000 gallons.
1345. Have you ever been put to any delay in going for water, or is it always ready? We have only had two little hitches. On one occasion I had to start our own private pump.
1346. Have you anything else you would like to tell us? I have not.

Mr. John Day, Traffic Superintendent, Junee District, Department of Railways, sworn, and examined:—

Mr. J. Day. 20 Feb., 1893.

1347. *Chairman.*] You are aware that the Commissioners bring water from Wagga Wagga to Junee for locomotive purposes? Quite so.
1348. If that water-train were run for the convenience of private individuals, or a municipality, what would be charged per ton? Four shillings and twopence.
1349. How many tons does a train of 15 trucks carry? About 135 tons of water.
1350. You would charge 4s. 2d. a ton? Yes.
1351. Is that the lowest rate? It is the lowest rate we have for water in tanks. It is what we call our B class. If we were hauling water in tanks that cost would be 4s. 2d. a ton. That is the mileage rate.
1352. Between here and Wagga Wagga? Yes; the distance is 22 miles. It would cost about £28 2s. 6d. a train.
1353. Do you know if your department is credited with anything from the locomotive department or the locomotive department debited for this running? The locomotive people debit the traffic department with part of the cost of working the water-trains, because they assist me in working the traffic. On the down journey to Wagga Wagga they have nothing but empty tanks, and if we have any goods for Wagga Wagga, we attach them to the train. We cannot do that on the up journey, because fifteen full trucks is an engine load.
1354. The locomotive people supply you with water? The permanent-way branch deliver water to our employees.

1355.

Mr. J. Day. 20 Feb., 1893.

1355. The locomotive people do not give you any water? No.
1356. The *quid pro quo* for running over your permanent-way is that they take a few trucks for you on the down journey? That is what they do for the traffic department. What their proportion of cost is to wear and tear, I cannot say. We arrange the charges for each department. If they do work for me, they charge me for it, and if I do work for them I charge them. If I supply them with a guard I charge them.
1357. You have no charges against them? Excepting the guard.
1358. They have a charge against you by taking some of your trucks down? Yes.
1359. You are not aware whether the permanent-way department charge them anything? I am not aware.
1360. What did you credit the locomotive department with last year for running your goods down to Wagga Wagga? £282; that is what they debited me with.
1361. What number of railway employees connected with the traffic branch are there in Junee? About fifty, I think.
1362. There are about 100 in connection with the locomotive department, and about fifty in connection with your branch? Yes.
1363. You do not know how many there are in connection with the permanent-way department? There are not very many. This is part of the length. The men are scattered along certain lengths.
1364. Would twenty cover the lot? Yes; about ten or a dozen.
1365. So that there are only about 170 railway employees in Junee? About that number.
1366. Who are the men living in the cottages inside the triangle—traffic people? Locomotive employees. There are one or two traffic employees within the fence, but they have their own houses, and just pay us a ground rent.
1367. The men in the cottages pay rent? Those in the Government cottages pay rent.
1368. To whom? Either to the traffic or to the locomotive branch, according to which they belong to. We deduct from their wages.
1369. Where does the sewage from the refreshment room go to? Right through the drains.
1370. Where does it go to? Two and a half miles down the old Junee Road.
1371. Is there a sewage farm there? There is a large pit out there. The place is away from all habitation.
1372. No nuisance has been created so far? No.
1373. The sewage is taken outside the bounds of the municipality? Yes.

Mr. Maurice Howard Davies, auctioneer and stock and station agent, Junee, sworn, and examined:—

Mr. M. H. Davies. 20 Feb., 1893.

1374. *Chairman.*] You are valuer to the local Council? Yes.
1375. Did you hold that position last year? I have held it during the last two years.
1376. *Mr. Davies.*] Have you made any recent valuations of the properties within the municipality? I valued them this time last year.
1377. Was your valuation an increase upon previous valuations? There was a slight increase.
1378. Arising from the increase in the number of buildings, or from an increase in the value of the property? Both.
1379. What was the difference between your last and previous valuations? I cannot tell you from memory. I was one of those who made the previous valuations.
1380. There was a substantial increase? Yes; property here is increasing slightly in value.
1381. Do you regard the properties at present within the borough as increasing in value? Yes.
1382. You think the town is improving? Yes.
1383. Do you know anything of the property which it is proposed to resume for the purpose of this water supply? Yes.
1384. Do you know the land belonging to Mr. Sawyer? Yes.
1385. Do you know Mr. Carroll's land? I do not know Mr. Carroll's place.
1386. Do you know Mr. Weston's land? Yes.
1387. Do you know the waterfall close to the site of the proposed dam? Yes.
1388. What do you regard as the value of the land at that place, taking from the site of the dam away back through Sawyer's property, on both sides of the creek;—give me an approximate idea of the value of that land as freehold, with all the water rights attaching to it? About £2 15s. I think that would be a very good price for it.
1389. You do not regard it as very valuable land? No; there is a lot of rough country upon it.
1390. Have you seen Mr. Weston's dam and homestead? No; I do not know his property intimately. I have not seen the improvements.
1391. You could not say what the value of the improvements is? No; I have not been over the ground.
1392. From what you know of the site of the proposed dam, are you of opinion that it will afford a permanent supply of a good quality of water to the town of Junee? I think so.
1393. Have you seen the creeks there when they have been very low? Yes; I have seen them dry.
1394. Did you ever taste the water? No; I do not think I have tasted it. I do not remember doing so.
1395. I suppose you have heard, as a matter of public notoriety, that it is very brackish? I have heard that it is brackish.
1396. You do not think any ill effects would arise from its use if 170,000,000 gallons were stored there? No.
1397. You think that the water would be pure and wholesome? I think so, though, of course, I am not competent to speak. The rainfall is heavy there, and they would get freshes more often than we get them here.
1398. You are of opinion that the scheme before the Committee will supply the town of Junee with abundant water? As far as I know I think it will.
1399. It is the best scheme that has yet been submitted to the Municipal Council? Yes.
1400. *Mr. Trickett.*] Did you make the municipal valuations for 1892? Yes.
1401. Did you have many appeals? Only about four or five.
1402. From householders or from landholders principally? From householders, I think. The appeals in most cases were dismissed, but in one or two instances the valuation was slightly reduced.

Mr. M. H. Davies. 20 Feb., 1893.

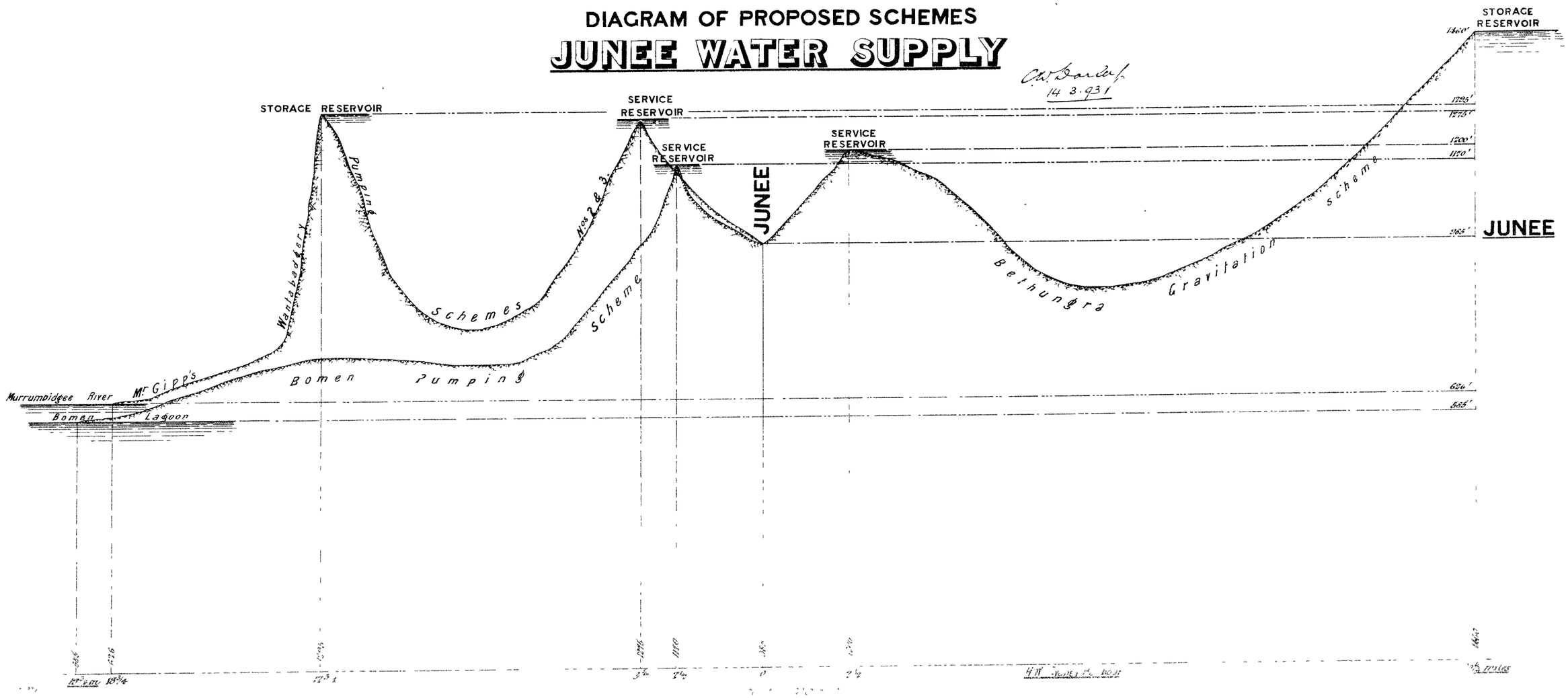
1403. How much an acre did you value Mr. Crawley's land at? It would depend upon where it was situated.
1404. The vacant land near the Presbyterian Church? It is subdivided into allotments, which we valued at about £35 or £40 each.
1405. What is the frontage? Sixty-six feet. In some cases we valued the blocks at £50 each. The valuation depended upon the situation.
1406. The land there is not nearly so valuable as that on this side of the line? It depends upon the position. The land on this side of the line has brought more money. The allotments here are worth from £90 to £100 in the business parts of the town. That is what they were sold for during the Government land sales.
1407. *Mr. O'Sullivan.*] Do you find that land is increasing in value here? Yes; slightly. If we had water it would increase far more.
1408. Is there much competition when there are land sales? Yes; there has been a good competition so far.
1409. There is every indication of the future stability of the place? Yes; at the last large land sale 270 allotments were sold. These allotments have doubled in value since then. They were sold cheaply at the time.

[Two plans.]

Sydney: Charles Potter, Government Printer.—1893.

DIAGRAM OF PROPOSED SCHEMES

JUNEE WATER SUPPLY

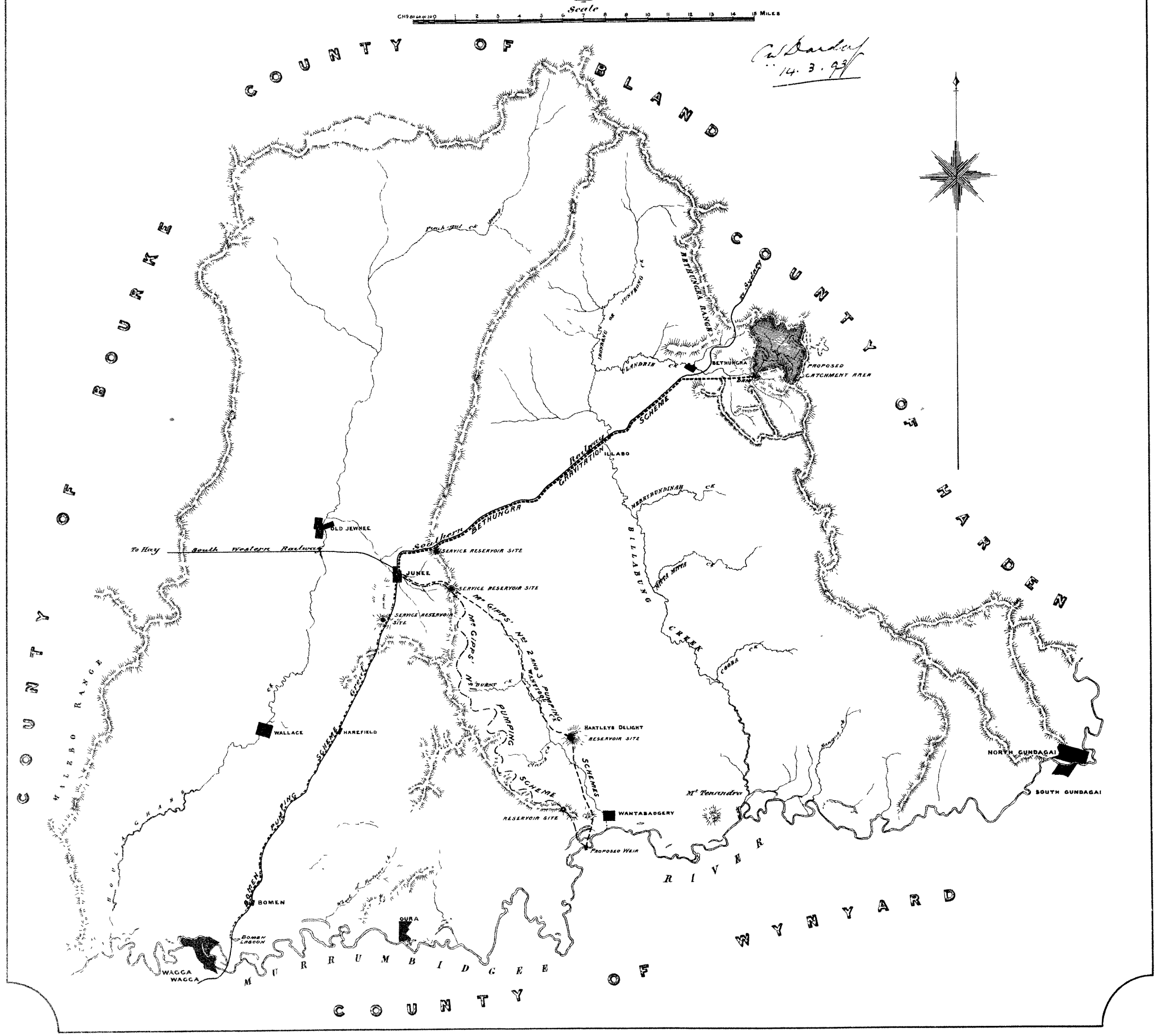


COUNTY OF CLARENDON

SHEWING VARIOUS SCHEMES FOR THE SUPPLY OF WATER

TO

JUNEE



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SYDNEY NEW SOUTH WALES

1892-3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

WATER SUPPLY FOR JUNEE.

(REPORT AND PLANS BY MR. E. B. PRICE ON THE BETHUNGRA GRAVITATION SCHEME FOR)

Ordered by the Legislative Assembly to be printed, 10 *January*, 1893.

The Engineer-in-Chief, Harbours and Rivers, to The Under Secretary for Public Works.

Mr. E. B. Price's Report on Junee Water Supply—Bethungra Gravitation Scheme.

Sydney, 15 November, 1892.

FORWARDED for the information of the Minister.—I have no hesitation in recommending this gravitation scheme to the favourable consideration of the Minister. I have personally inspected the ground, and am satisfied that an abundant supply of pure water can be collected and stored near Bethungra at a high elevation, and so command Junee at a good pressure by gravitation.

C. W. DARLEY.

E. B. Price, Esq., to The Engineer-in-Chief for Harbours and Rivers.

Junee Water Supply—Bethungra Gravitation Scheme.

Sir, Harbours and Rivers Branch, Sydney, 11 November, 1892.

I have the honor to submit my report on the proposed gravitation water supply for Junee.

Last year—when acting as Examiner of Public Works proposals—I reported on the rival merits of the Wagga, or Bomen, and the Wantabadgery pumping schemes, and reported in favour of the former. On resumption of my ordinary duties I received instructions to make complete plans of the Bomen scheme and a flying survey of the Wantabadgery.

Not being satisfied with the impossibility of obtaining a gravitation supply for Junee, although such has been the expressed opinion of all those who have previously reported on the subject, I obtained permission to investigate the whole question, and, on the arrival of an assistant to carry on the other surveys, thoroughly examined the Dividing Range and the sources of the creeks some 20 miles to the north of Junee.

I was successful in discovering a basin near Bethungra, at an elevation of 470 feet above Junee, where a dam 40 feet high would impound over 140,000,000 gallons, while the catchment area is nearly 5½ square miles.

This basin forms the principal source of the Ulandrie Creek, which crosses the railway at Bethungra, and shortly afterwards, by its junction with Ironbong Creek, forms the Billabong Creek, which recrosses the railway at Illabo, and flows into the Murrumbidgee near Gundagai.

About 2 miles above the railway crossing at Bethungra two main branches of the Ulandrie Creek join, one flowing in a deep rocky gorge, and the other falling over the edge of a granite cliff 170 feet high. At the top of this cliff is an admirable site for a storage reservoir, which will catch the entire drainage off 3,447 acres. The watershed is surrounded by granite mountains and hills, some of which rise to an elevation of 2,500 feet above sea-level. The country here is little known, and appears as a blank on the map, none of the mountains except the Dividing Range having been surveyed.

Most of the land is very poor, though a little fairly good land occurs along the creek above the proposed reservoir, where good crops have been obtained, but the land now appears exhausted. There are only two occupied houses on the entire watershed. Though originally taken up as selections and conditional leases, most of the land is now held for grazing purposes by the adjoining stations. The two settlers now remaining appear to have been the only *bonâ fide* selectors, one, however, is by occupation a teamster, and only uses his land for grazing, and the other cultivates about 100 acres.

It will be seen, therefore, that the population on the catchment area is very small, and judging from the number of abandoned homesteads it is not likely to increase. Nevertheless, I think it would be advisable to resume a considerable area of land so as to prevent future pollution. It would be cheaper to do this now than to construct filter beds. I also think, that in view of the future requirements of Junee and Bethungra, and towns which must eventually spring up in the district, it is well worthy of consideration whether the whole 3,000 and odd acres of alienated land, contained in the watershed, should not be resumed, and thus secure for all time a valuable source of water supply. This

This same remark applies to the three other watersheds shown on the watershed plan. I have succeeded in having portions of these areas reserved; and as the greater part of the remaining land is almost worthless it would not cost much to resume, especially as it is held under very recent conditional purchases and leases, and is generally incapable of improvement.

If, therefore, after the lapse of years, Junee should become a very large city, or extensive settlements spring up anywhere on the plains between Bethungra and Wagga, by the construction of two or three additional dams on these other branches of the Ulandrie Creek, the drainage off an additional area of over 7 square miles could be conserved at an elevation sufficient to command Junee—the total area then available being over 12½ square miles, and the greater part of it barren mountain.

As this portion of the country had never been surveyed, I had the whole of the creeks traversed, and cross sections taken where good dam sites occurred.

Complete plans and sections have also been prepared, with contours of the present proposed reservoir, and the pipe-line pegged out the whole distance to Junee. I also have a complete traverse of the first watershed.

At several points just above the waterfall, series of trial shafts and trenches were sunk until solid granite was reached, and the entire foundation laid bare at the site adopted by me for the dam, and shown on plans and sections; owing to the expensive character of this sinking, I did not like to increase the already high preliminary expenses by further investigation. The site selected is a magnificent one; it is seldom that such an opportunity occurs for the conservation of water, and especially in the south-western districts of the Colony.

The proposed concrete dam would be founded on solid granite rock, advantage being taken of one of the natural dykes which cross the valley above the falls. These dykes form, as it were, weirs, and stop all loss by soakage from the upper basin, and, in consequence, the creek continues to flow over the falls during the driest season.

In fact the upper basin is at present a natural reservoir, which it is simply intended to improve by raising the height of the outlet.

During last summer, which was one of the driest known in the district, I frequently gauged the stream and found the minimum flow was about 250 gallons per hour, while the maximum, after a thunderstorm, amounted to over 2,500,000 gallons per hour.

As to the quality of the water, statements have been made by interested persons to the effect that when low the water becomes poisonous and undrinkable. Even if true these objections to the water in its present state when low would have little weight, as once the dam is constructed the water could never become low. It is, however, perfectly untrue to say that the water is ever poisonous. It is quite true it becomes brackish and unpleasant to drink for half a mile above the falls, but never poisonous. Out of all the samples submitted to the Government Analyst, not one was found to contain a trace of poisonous minerals, yet all were taken in an extremely dry season when the creek had been very low for a long period.

During the whole of last summer I myself frequently drank the water and never suffered any ill effects.

Like most creeks and rivers in the interior this creek becomes brackish when low, the salt being derived by percolation from the saline deposits in the bed and at the bottom of the banks.

These deposits rise about 2 feet over the bed of the creek, and are found for half a mile above the falls, where they cease, and the water always remains fresh. It is interesting to compare the analysis of water from different points, and to notice how the chlorides gradually become less as one goes up the creek, until at half a mile above the falls the amount is much less than that contained in the Sydney water supply—one of the purest supplies in the world.

When sinking our trial shafts near the falls we found brackish water near the edge of the creek, and perfectly fresh water a few feet back. As the proposed dam will be 40 feet high, it will submerge the saline deposits 35 feet, and will back water up nearly a mile, or far beyond where the last trace of salt is found.

Once the deposits are submerged soakage from the saline soil will cease, so that there will be nothing to wash the salt into the reservoir, and it will always remain fresh.

Of course it is intended to fill the reservoir, in the first instance, with fresh rain water from the hills, and not to close the scour valve until there is a good fresh in the creek.

Anyone familiar with the river Darling during droughts will no doubt have noticed the brackish water issuing from the lower strata of the banks. At these times many of the water-holes become strongly impregnated with salt, while others remain fresh. One might as well contend, because portions of the Darling become brackish when very low, that water conserved in its bed by a dam would be undrinkable, as to assert that because the Ulandrie Creek is brackish in places when low, the flood waters caught in a reservoir thereon would also become brackish.

After a heavy shower the Ulandrie Creek runs perfectly fresh and pure, but owing to the rapid get away at the falls, it soon runs low, and soakage from the banks sets in; for this reason it is difficult to obtain a sample for analysis. In fact I have been unable to procure one when there was a flood in the creek. Those which I had analysed were taken when the creek was low, for the purpose of testing for injurious properties under the most adverse circumstances, and also to show that the salt only occurred near the falls.

Of course I never expected any of them to pass the stringent tests of the Government Analyst with regard to ammonia, as it would be impossible for the water to escape contamination from the numbers of sheep, cattle, fowls, and wild animals using it during a dry season, when every other creek in the district was dry. Such impurity is simply temporary, as of course the bed of the creek will be cleared from dead animals and the watershed fenced.

I have gone thus fully into the question of the purity of the supply, as it is on this point alone that any objection can be taken to the scheme, and I think I have shown clearly that any impurities which exist at present are of a temporary nature and easily removed, provision having been made in the estimate for the purchase of about two square miles of watershed if thought necessary.

The experience, however, of other water supplies goes to show that provided a large storage reservoir is available a little settlement on the catchment area is of no detriment to the quality of the water. Orange is an instance of this, there being six times the amount of settlement on Gosling Creek

as

as on Ulandrie Creek. The same is the case at Goulburn, while in Great Britain it would be impossible to construct any gravitation water supply if settlement on the catchment area was allowed to stand in the way.

It is a well-known and generally acknowledged fact that a river will purify itself, even from sewerage, within a very short distance; the same has been found to occur in large reservoirs. For instance, I have frequently seen the Vartry River in Ireland so discoloured from the number of sheep washed in it that it was impossible to fish in it, while on the same day the lower end of the reservoir at Roundwood was perfectly clear and bright. There are also many farms on the Vartry River, and in some instances the cow-sheds are built right on the bank of the river.

Analysis of the water near one of these sheds showed it to be greatly contaminated, while samples lower down were pure, and even in the Roundwood Reservoir a sample taken near the village was contaminated, while one at the far end was pure.

As the Vartry supply to Dublin is acknowledged to be very good, I think it may be taken for granted that with a reservoir at Bethungra, covering nearly 45 acres and 40 feet deep, containing over 140,000,000 gallons, the sun and wind will be capable of removing the slight impurities which are now found by analysis in the creek during periods of drought. It must also be borne in mind that the mineral components found in the water near the falls are antagonistic to the animal impurities found higher up, chlorine and alum especially. This is proved by the analysis sheets, which show that as the chlorides increase the ammonia decreases, so that any slight addition of these minerals which may take place, in spite of the saline deposits being submerged, will prove advantageous rather than the reverse.

As to the permanence of the supply, there can be little doubt. The average rainfall at Bethungra Village is nearly 29 inches, while on the mountains it is much more, and comes in more sudden showers, which, of course, are better for our purpose.

The only fresh which occurred in the creek last summer was caused by a shower which lasted about an hour, and fell only on a portion of the catchment area, while not a drop fell at our camp, a short distance below the falls, or at Bethungra Village, yet this shower caused about 2,500,000 gallons per hour to flow over the falls (in a stream 52 feet wide and 18 inches deep), and the creek to run a banker for miles lower down.

The catchment area is nearly 5½ square miles. Taking it as 5½, 1 inch of rain flowing off would yield over 75,000,000 gallons, and surely we may rely on getting a few heavy showers once in a twelvemonth. Taking the rainfall returns for 1890, the total fall at Bethungra Village was 28·78 inches, while at Bethungra Park, 10 miles away on the plain, it was only 25·48. In every month during the year except three, showers of 1 inch and over fell. On one day 1·50 inches were registered, and on two other occasions 1·40, while at Bethungra Park during only one day in the year did 1 inch of rain fall. This clearly shows the beneficial effect of the mountains, and it must be remembered that the proposed reservoir will be 2 miles further into the mountains, and at an elevation 500 feet greater than the rain gauge at Bethungra Village.

Two inches of rainfall flowing off the watershed will more than fill the reservoir, and produce a lake covering nearly 45 acres, the sheet of water being more than three-quarters of a mile long, 520 feet wide at the dam, and 750 feet at the widest place, which occurs about a quarter of a mile higher up, the total capacity being over 140,000,000 gallons, of which 137,000,000 can be drawn off and still leave a depth of 10 feet at the dam.

The population of Junee is about 2,000, and allowing 30 gallons per head per diem, the daily consumption would amount to 60,000 gallons. The railway would require about 50,000, so the total maximum consumption, exclusive of gardens, &c., would amount to about 110,000 per diem.

If, therefore, we allow for 200,000 gallons per day on an average all the year round, it will permit of a large revenue being derived from the sale of water to gardens and for other than domestic purposes, and also allow for the growth of Junee and its increase of railway traffic, and it must be remembered that an increase of water used does not imply a corresponding increase of working expenses, as in the case of any pumping scheme.

But the proposed scheme, even without constructing additional reservoirs as has previously been shown can be done, will allow of a much greater consumption than even this. 200,000 gallons per diem amounts to 73,000,000 gallons per year.

One inch of rain flowing off the catchment area will provide 75,000,000 gallons, while the reservoir will yield almost 2 years' supply, even supposing no more rain fell during that period than would make up for the evaporation from the reservoir—which will not be great, owing to the depth of water.

I do not, however, think it would be advisable to reduce either the capacity of the reservoir or the area of the watershed. There is nothing like having a good provision against extended droughts, and, as has been shown, a large and deep reservoir assists in the natural purification of water and keeps down evaporation and the growth of weeds, except those of the lily family, which grow on deep water and keep it cool and pure.

From the proposed reservoir a steel pipe will be laid directly to a point on the railway about one mile south-west of Bethungra Station. If desired by the people, or if the Railway Commissioners wish to save the cost of pumping at Bethungra, a branch pipe—with a relief tank—can be laid into the village from a point where the main is within 500 yards of the railway station, and additional revenue derived, or by a slight lengthening of the pipe-line, and by passing through half a mile of alienated land, the main could be brought through Bethungra, easier ground being passed en route.

After reaching the railway the pipe will be laid about 10 feet outside the railway fence, on the south-eastern side, passing for the whole distance, with the exception of three-quarters of a mile, along a surveyed road or through reserves. In this position it will be easily accessible and under supervision, and will supply the settlers' houses and Illabo Village.

The service reservoir will be at the summit of the range, 2½ miles from the railway tank at Junee Station (which I have adopted as the point of termination in every scheme), and will be concrete and brick in cement, with a capacity of over 350,000 gallons. The water-level will be 260 feet below that of the storage reservoir at Bethungra, and the length of connecting main 18·12 miles. The diameter of the main need not exceed 7 inches, as by Kutter's formula this size would deliver 302,000 gallons in 24 hours under a head of 14 feet per mile—or over 100,000 more than will satisfy the daily requirements of Junee for many years to come. The greatest pressure the pipe will have to bear will be 600 feet, near Illabo, and the pipe will be strong enough to stand over 3,000. The service reservoir will be 200 feet over the railway station at Junee, or 70 feet higher than the highest house in the town. The

The service main to the town need not be larger than 6 inches in diameter, but I think it would be preferable to continue the steel pipes as far as the railway tank, and thence use cast-iron for the reticulation. The greater the quantity of one kind and size of pipe used the lower will be tenders received per ton.

The reticulation would be carried out with 6-inch, 4-inch, and 3-inch cast-iron pipes, with the usual hydrants, stand-pipes, and troughs.

The capital cost of this gravitation water supply will be about the same as that of a properly constructed pumping scheme from the Murrumbidgee, but the annual working expenses will be trifling in comparison.

Fuel, drives, and firemen's wages, wear and tear and maintenance of expensive high duty pumping plant will be saved, a saving which, even in the present time, would amount to fully £1,000 per annum.

I have gone carefully into the cost of carrying out the work, allowing for the best materials and workmanship being used all through, and estimating for the present resumption of a large portion of the watershed which, as a matter of policy, I would recommend, and find the estimate works out as follows:—

Summary of Estimate.

	£
Storage reservoir	10,000
Main service to reservoir (7″)	17,953
Service reservoir	1,380
Service main to town centre (7″)	2,833
Reticulation, &c. (6″, 4″, and 3″)	4,000
Land at watershed, with fencing	1,860
Contingencies, 5 per cent.	1,901
Engineering, 5 per cent.	1,901
Total cost of new works	£41,828

To this must be added the cost of all preliminary surveys on this and all other schemes and previous reports, which will probably amount to £2,000.

To this I would also like to add, say, £1,172, to be spent on resuming a larger area of the watershed, which would bring the total liability up to £45,000, on which Junee would easily pay interest.

The annual cost would be made up as follows:—

		£
Interest on £45,000 at 4 per cent.		1,800
Working Expenses.		
Caretaker at Bethungra (5s. per day)	£78	
Turncock at Junee (6s. per day)	93	
Sundries (say)	29	
		200
Total annual liability		£2,000

The revenue would be as follows:—

	£
Water supplied to railway at Junee, as per Commissioners' offer (minimum)	1,500
Water supplied to fettlers along 16 miles of line and Illabo Station (say)	100
Stables, gardens, and other than domestic supplies (say 5,000,000 gallons at 1s. per 1,000 gallons)	250
Water rate at 9d. in £1 on all houses in Junee served (say 80 per cent. of whole town)	400
Total annual revenue	£2,250

This will leave a surplus of £250 per annum, which might be applied to reducing the 9d. rate to 6d, or go to form a fund for future extension of the works.

I have put down the price of water at only 1s. per 1,000 gallons, to encourage its extensive use for gardens and orchards; as, where water is plenty and costs nothing for pumping, it may as well be used.

I have taken no credit for water which may be supplied to Bethungra Village or to the railway at that place, the sale of which would go towards reducing the rates chargeable at Junee.

In conclusion, I may state that I know of no town that is in greater need of a water supply than Junee, or no water supply that is as certain of paying interest on construction as this Bethungra gravitation scheme.

I have, &c.,

EDWD. B. PRICE.

[Two Plans.]

Sydney: Charles Potter, Government Printer.—1893.

[1s. 9d.]

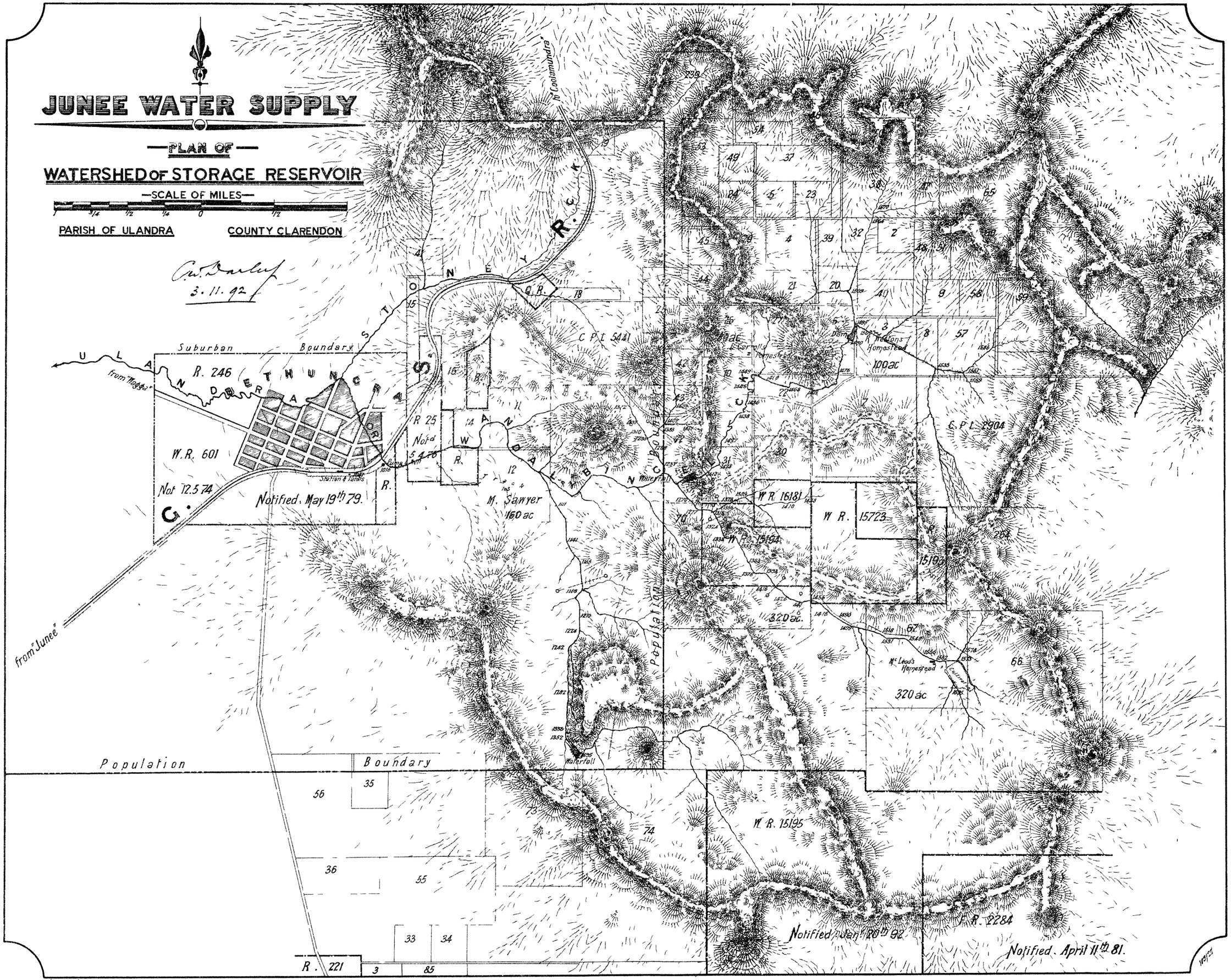


PHOTO LITHOGRAPHED AT THE GOVT PRINTING OFFICE SYDNEY NEW SOUTH WALES

Plan

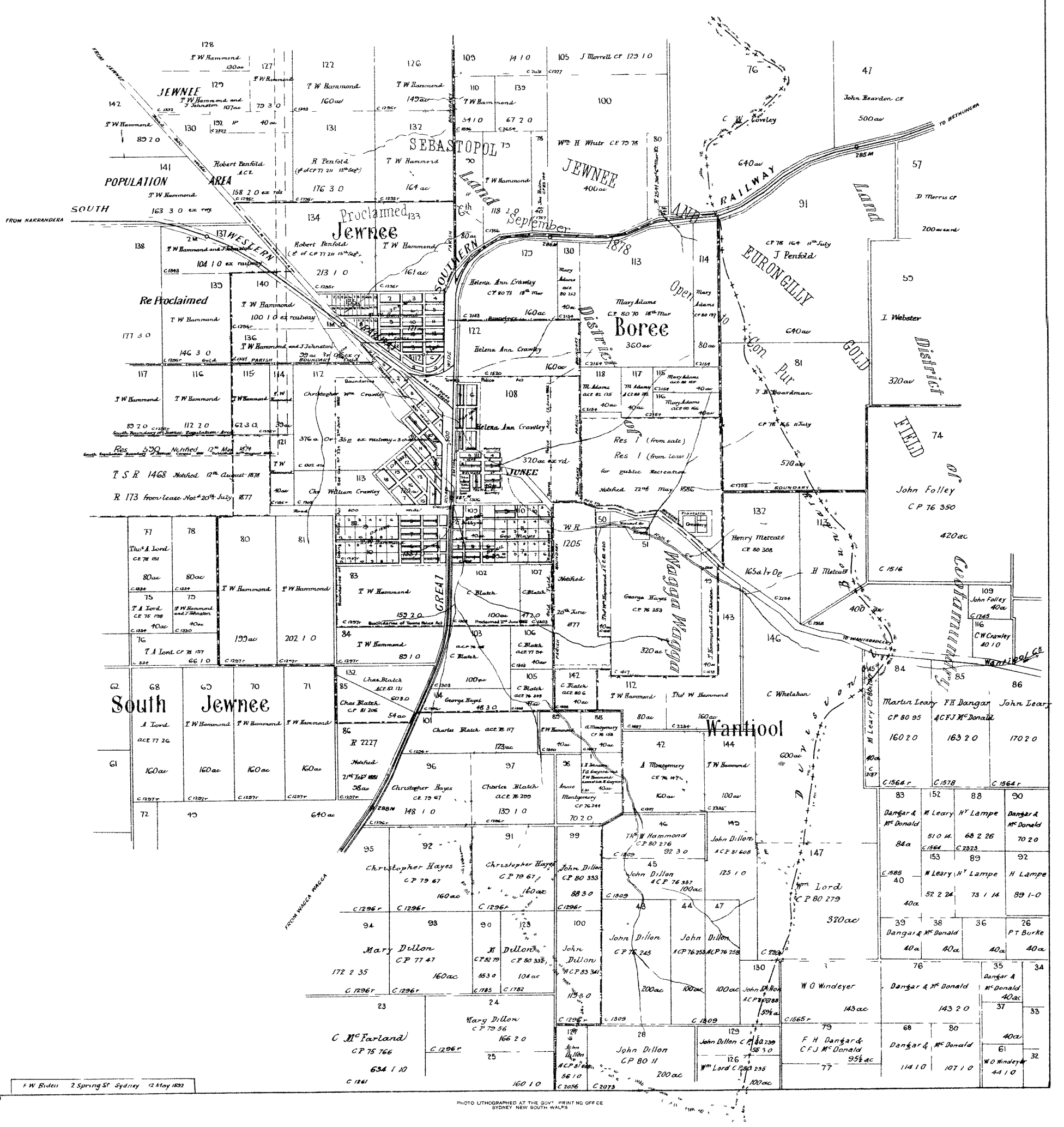
OF THE

BOROUGH OF JUNEE

COUNTY OF CLARENDON

SCALE

0 10 20 40 60 80 Chains


JEWNEE
SEBASTOPOL
POPULATION AREA
SOUTH
Proclaimed Jewnee
Re Proclaimed
Land 6th September 1878
Open to Purchase
Boree
JUNEE
EURONGILLY
GOLD FIELD
Land District
SOUTHERN RAILWAY
GREAT WESTERN
WAGGA WAGGA
Wantiool
South Jewnee
Res 550 Notified 12th May 1874
T S R 1468 Notified 12th August 1878
R 173 from lease Not.d 20th July 1877
Res 1 (from sale)
Res 1 (from lease)
for public Recreation
Notified 12th May 1880
R 2227
Notified 21st July 1881
Boundaries of Towns Police Act
Proclaimed 2nd June 1885
Notified 20th June 1877
FROM JUNEE
FROM NARRANDERA
FROM WAGGA WAGGA
TO BETHUNGRA
TO WANTABADGERY
Plantation
Creamery
Cemetery
Parish Boundary
Police Boundary
Gold Field Boundary
Land District Boundary
Boundaries of Towns Police Act
Boundaries of Junee Population Area
Boundaries of Junee Municipality
Boundaries of Junee Municipality Extension
Boundaries of Junee Municipality Extension No 2
Boundaries of Junee Municipality Extension No 3
Boundaries of Junee Municipality Extension No 4
Boundaries of Junee Municipality Extension No 5
Boundaries of Junee Municipality Extension No 6
Boundaries of Junee Municipality Extension No

1892.

NEW SOUTH WALES.

METROPOLITAN WATER AND SEWERAGE ACTS. 1880-1889.

(AMENDED BY-LAW NO. 5.)

Presented to Parliament pursuant to the Metropolitan Water and Sewerage Acts, 1880-1889.

Department of Public Works, Sydney, 16th May, 1892.

His Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the following amended By-law, which has been prepared under and in accordance with the provisions of the Metropolitan Water and Sewerage Acts, 1880-1889, and which is intended to be substituted for By-law No. 5 of the By-laws under the said Act, published in the *Gazette* of 1st February, 1892.

WILLIAM JOHN LYNE.

BOARD OF WATER SUPPLY AND SEWERAGE.

Amended Metropolitan Water By-law.

Whereas, by the Metropolitan Water and Sewerage Acts, 1880-1889, the Board of Water Supply and Sewerage is authorised and empowered from time to time to make, alter, and repeal By-laws: Now the Board of Water Supply and Sewerage, under and by virtue of the powers contained in the above-mentioned Acts, do hereby repeal Metropolitan Water By-law No. 5, of the Metropolitan Water By-laws published in the *Gazette* of the 1st day of February, 1892, and do hereby make the By-law following in substitution therefor, that is to say:—

Building charges, &c.

5. The charge for water supplied for building and plastering purposes, for buildings to be used either wholly or partly as dwelling-houses, shall be at the rate of one half-penny per cubic yard on the cubical contents of each building. The Board will supply water for all other buildings either by meter or at the rate above mentioned per cubic yard on the cubical contents of each building as the Board shall determine: Provided that before any water shall be used through meter for building purposes such meter shall be submitted to the Board in each case for examination, and must pass the sensitive test; and the minimum charge in each case for water so supplied through meter shall be ten shillings.

(1.) The charge for water supplied for plastering rooms only shall be two shillings and sixpence for each room, and for the building of wash-houses, water-closets, coppers, and chimneys only, two shillings and sixpence each.

(2.) The charge for water supplied for the making and mixing of concrete for foundations of wooden blocks, stone cubes, or other form of permanent roadway or pavement, shall be at the rate of one pound ten shillings per 1,000 square yards, by superficial measurement of road surface; and for all other concrete, brickwork, or masonry, at the rate of three pence per cubic yard, as measured on the work.

1892-3.

NEW SOUTH WALES.

METROPOLITAN WATER AND SEWERAGE ACTS.

(REPORT OF COMPLETION OF WORKS FOR WATER SUPPLY AT MANLY.)

Presented to Parliament pursuant to the provisions of the Metropolitan Water and Sewerage Acts, 1880-89.

To His Excellency the Governor.

Your Excellency, Sydney, 20 December, 1892.

Pursuant to the provisions of the Metropolitan Water and Sewerage Acts, 1880-89, I, the Minister for Public Works, and we, the Board of Water Supply and Sewerage, do hereby report to your Excellency the completion of the works for a water supply at Manly, in accordance with the said Acts.

WILLIAM JOHN LYNE,
Minister for Public Works.

C. W. DARLEY,
President.

B. PALMER.

J. GRAHAM.

[3d.] 1013—

1892–3.

NEW SOUTH WALES.

METROPOLITAN WATER AND SEWERAGE ACTS, 1880-89.

(BY-LAWS FOR THE MUNICIPAL DISTRICT OF MANLY AND AMENDED BY-LAWS IN CONNECTION WITH THE METROPOLITAN WATER SUPPLY UNDER.)

Presented to Parliament, in pursuance of the Metropolitan Water and Sewerage Acts, 1880-89.

Department of Public Works,
Sydney, 29th December, 1892.

METROPOLITAN WATER AND SEWERAGE ACTS, 1880-89.

It is hereby notified that His Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the following By-laws in connection with the Water Supply of the Municipal District of Manly.

WILLIAM JOHN LYNE.

WATER SUPPLY BY-LAWS FOR THE MUNICIPAL DISTRICT OF MANLY.

WHEREAS upon the transfer to the Municipal Council of the Municipal District of Manly of the works constructed for the purpose of supplying water to the Municipal District of Manly under the authority of the Metropolitan Water and Sewerage Acts, 1880–1889, His Excellency the Governor, with the advice of the Executive Council, by Proclamation dated the twenty-ninth day of December, and published in the Gazette of the thirtieth day of December, declared that certain powers contained in the said Acts, and amongst others the powers conferred by Section 34 of the Metropolitan Water and Sewerage Act of 1880, of making, altering, and repealing By-laws so far as relates to Water Supply, should be exercised by the Municipal Council of the Municipal District of Manly, and be in force within such Municipal District to the intent that such powers should take effect as if they had been made specifically applicable to such Municipal Council by express enactment in the said Acts.

Now the Municipal Council of the Municipal District of Manly, under and by virtue of the powers contained in the Metropolitan Water and Sewerage Acts, 1880–1889, and the said Proclamation, and of every other power in that behalf, do hereby make the By-laws following, that is to say :—

1. The following rates and charges are those which the owners and occupiers of tenements, lands, and premises shall pay in respect of water supplied by the Municipal Council, that is to say :—

For water supplied for domestic purposes otherwise than by measure.

Houses, &c.

(I.) On every house, tenement, or land of £10 assessed annual value and under, 10s. per annum.

(II.) On every house, tenement, or land above the assessed annual value of £10, a rate of 1s. for each pound sterling on the amount of the valuation.

Vacant lands.

(III.) Vacant lands of the assessed annual value of £30 and over shall be subject to a rate of 4d. for each pound sterling on the amount of the valuation.

Unfinished houses, &c.

(IV.) The like rates as those above mentioned shall be charged on all lands, tenements, and hereditaments, not included in any valuation by any Borough or Municipal District, and on all lands for the time being valued by any such Borough or Municipal District at a sum less than the true value thereof.

For water supplied by measure.

Stand pipes.

(V.) The charge for water supplied from stand pipes shall be one shilling and sixpence per 1,000 gallons.

Supply by measure.

(VI.) The charge for water supplied from the mains by measure shall be one shilling and sixpence per 1,000 gallons.

(VII.) The charge for water supplied to shipping will be one shilling and sixpence per 1,000 gallons. Her Majesty's Navy will be supplied free of charge.

For water for other than domestic purposes otherwise than by measure.

Water troughs.

(VIII.) The charge for water-troughs shall be twenty shillings per annum each.

Gas engines.

(IX.) The charge for water supplied to gas engines shall be five shillings per annum for each engine of two horse-power and under, and for every additional horse power beyond two-horse power an additional charge of two shillings and sixpence per annum for each horse power.

Steam boilers.

(X.) The charge for water supplied to steam boilers shall be one pound per annum for each steam boiler up to three-horse power. And for every additional horse power beyond three-horse power an additional charge of five shillings per annum for each horse power.

Organ motors, &c

(XI.) The charge for water supplied for organ motors and such like mechanism, shall be two pounds per annum for each motor up to one half-horse power, and for every additional one half-horse power beyond one half-horse power an additional charge of twenty shillings per annum for each one half-horse power.

(*a*) The charge for water supplied for ventilating and refrigerating motors, used for trade purposes, shall be two pounds per annum for each motor, and for private purposes, one pound per annum for each motor.

(*b*) The charge for water supplied for dentists' lathes motors shall be one pound per annum for each motor. No person shall use water in connection with any motor unless the nozzle supplying such motor has been first approved of by the Municipal Council. The waste-pipe from each motor shall be so fixed that the waste water can be measured at any time.

Water for trade purposes, &c.

(XII.) The charge for water supplied for purposes of the undermentioned or other trades shall be at such rates upon such terms and subject to such conditions as may be agreed upon by the Municipal Council and the person requiring to be supplied, provided, however, that for any year or part thereof, the minimum charge for water supplied for the undermentioned trades shall be that in each hereunder case set opposite the trade, viz. :—

Photography, and any like process . .	5s. per annum.
Tripe cleaning	5s. per annum.
Tyring purposes	5s. per annum.
Laundries	5s. per annum.
Dyers	10s. per annum.
Condiment making	5s. per annum.
Bottle washing	5s. per annum.
Small goods (sweets)	5s. per annum.
Waterfalls and fountains	5s. per annum.
Shop fronts, by hose	5s. per annum.

Washing vehicles.

(XIII.) The Municipal Council may supply water for the washing of vehicles with a hose, without meter, at the rate of 5s. per annum for each vehicle.

In all cases where special fees are charged, the Municipal Council reserve to themselves the right of insisting upon a meter being fixed at any time, notwithstanding the fact that the special fee may have been paid. All special fees are in addition to the assessed annual rate of the premises on which such fees are charged, and are payable in advance. All premises on which water is used for other than domestic purposes, and upon which special fees are paid shall be open for inspection by the Inspectors of the Municipal Council at any reasonable hour.

2. Assessed rates shall be paid half-yearly in advance, whether a meter is used or not. In the case when a meter is used, the meter account will be rendered only when it is in excess of the assessment. Cheques and Post Office Orders will be received in payment of rates; but if the cheque tendered by any person as payment for rates due is dishonoured the Municipal Council may cut off his service, and proceed for the recovery of the amount by Warrant for Distress or otherwise. Cheques and Post Office Orders must be crossed in favour of the Municipal Council.

Minimum charge by meter or otherwise is the assessed rate.

3. The minimum charge for water, whether supplied through meter or otherwise, for domestic purposes and for purposes other than domestic, is the assessed annual rate. If the water is supplied by meter, and the meter account exceeds the assessment (calculated at the rate of one shilling and sixpence per 1,000 gallons) then such excess shall be charged in addition to the assessment.

One meter for several tenements.

4. One meter may be allowed to supply several tenements, when such tenements are occupied by one person or firm as a place of business or abode, and the meter account will be credited with the assessments of all such tenements. One service only will be allowed under these conditions, upon which the meter will be fixed, and all the water for such tenements must pass through such meter. Where peculiar circumstances entail a departure from the above, and two services are absolutely necessary, then there shall be a meter on each service pipe.

Building charges, &c,

5. The charge for water supplied for building and plastering purposes generally shall be at the rate of one half-penny per cubic yard on the cubical contents of each building, and the minimum charge in each case for such purpose shall be two shillings and sixpence. The Municipal Council will not supply water for building purposes through meter, excepting in cases where additions are being made to premises which are then supplied by meter for domestic purposes.

(1.) The charge for water supplied for plastering rooms only, shall be two shillings and sixpence for each room, and for the building of wash-houses, water-closets, coppers, and chimneys only, two shillings and sixpence each.

(2.) The charge for water supplied for the making and mixing of concrete for foundations of wooden blocks, stone cubes, or other form of permanent roadway or pavement, shall be at the rate of one pound ten shillings per 1,000 square yards, by superficial measurement of road surface; and for all other concrete, brickwork, or masonry, at the rate of threepence per cubic yard, as measured on the work.

Horses and cows.

6. Any person who maintains horses or cows may be supplied with water, without meter, from the domestic service for the sum of five shillings per annum for each animal, in addition to the assessed annual rate of the premises on which such animal is maintained or supplied with water.

Premises where horses and cows kept liable to extra rate.

7. All lands or premises actually supplied with water by the Municipal Council, on which any one or more head of horses or cattle shall be kept or maintained, shall be liable to an extra rate or charge (beyond and in addition to the assessed annual rate of the premises) of five shillings per head for each head of horses or cattle kept or maintained on such lands or premises. And where such lands or premises are not actually supplied with water by the Municipal Council they shall be liable to an extra rate or charge (beyond and in addition to the assessed annual rate of the premises) of two shillings and sixpence per head for each head of horses or cattle kept or maintained on such lands or premises.

Gardens.

8. The Municipal Council may supply water for gardens (and for such purpose may permit a hose and standpipe to be used) without meter, at the rate of ten shillings per annum for every 750 square feet superficial area, or part thereof, in addition to the assessed annual rate of the premises to which such garden belongs or is attached.

Municipal Council may require any premises to take the whole supply of water through meter.

9. If the Municipal Council shall in any case be of the opinion that the owner or occupier of any premises is wasting or misusing or otherwise illegally dealing with water, or that the whole supply of water to any premises should for any reason be by meter, they may give to the owner or occupier a notice directing him, within a given time to be therein mentioned, to fix a meter to such premises, and to receive the whole supply of water to such premises through such meter; and after the expiration of such notice, whether a meter has been fixed in accordance therewith or not, the Municipal Council may cut off any supply of such premises which is otherwise than by meter.

Before affixing service-pipes, &c., licenses to be obtained from Municipal Council.

10. Before any person shall affix any service-pipe to any pipe of the Municipal Council, or alter, repair, or in any manner interfere with any pipe of the Municipal Council, or any service-pipe, cock, or fitting connected with any pipe of the Municipal Council, he shall obtain from the Municipal Council a license in that behalf to execute any such work; and any unlicensed person affixing, altering, repairing, or in any manner interfering with any such pipe, service-pipe, cock, or fitting as aforesaid, shall be liable to a penalty not exceeding ten pounds.

Licensed plumber.

11. Before any such license shall be granted by the Municipal Council the person applying for the same shall satisfy the Municipal Council that he is a competent plumber.

Before pipes can be uncovered two days' notice to Municipal Council must be given.

12. Any person, whether licensed as aforesaid or not, who shall offend by opening any ground so as to uncover any pipe or pipes, the property of the Municipal Council, or any pipe communicating therewith, without giving two days' notice to the Municipal Council of his intention so to do, or who shall in any way tamper, interfere with, or alter any pipe, the property of the Municipal Council, or any pipe communicating therewith, without the printed permit of the Municipal Council being first obtained, or who shall wilfully or negligently break, injure, or open any lock, cock, valve, pipe, work, or engine, the property of the Municipal Council, or whereby the water of the Municipal Council may be wasted or misused, shall be liable for each such offence to a penalty not exceeding twenty pounds.

Municipal Council or licensed plumber only empowered to tap mains, &c.

13. The Municipal Council only, or a plumber duly licensed by the Municipal Council, under the superintendence and according to the directions of the officer appointed by the Municipal Council for that purpose, is empowered to tap the main in the streets or elsewhere and attach service-pipes thereto, or extend the same generally as the case may be. Any person infringing this clause shall be liable to a penalty not exceeding twenty pounds.

Penalty for communicating with pipes of the Municipal Council without notice.

14. Any person, whether licensed as aforesaid or not, who shall lay any pipe so as either directly or indirectly to communicate with the pipe or pipes of the Municipal Council without giving two days' notice of the day and hour when such pipe is intended to be made to communicate with the pipe or pipes of the Municipal Council, and without having obtained the official printed permit of the Municipal Council, or who shall make such communication, except under the superintendence and according to the directions of some officer of the Municipal Council, or who shall lay any leaden or other pipe to communicate as aforesaid with a pipe of the Municipal Council of a strength and material not sanctioned by the Municipal Council, shall be liable for each such offence to a penalty not exceeding five pounds; and, in the event of continuing the offence, to a further penalty of two pounds for each day after the notice of the offence from the Municipal Council, until proper pipes are laid.

Fee for tapping main

15. Every application for water must be accompanied by the payment of a fee of three shillings for the tapping of any main, and every application for reconnection with a main, after the water has been cut off for non-payment of rates or other charges, shall be accompanied by the payment of a fee of two shillings and sixpence.

Municipal Council may compel owner to connect premises with the water-mains

16. Every owner or occupier of any house, tenements, or lands, shall, for the purpose of obtaining a supply of water to such house, tenements, or lands (after receiving from the Municipal Council the prescribed notice so to do), construct such connections and fittings from and in connection with such house, tenements, or lands to communicate with the water-main of the Municipal Council as are prescribed by the By-laws and Regulations of the said Municipal Council.

Penalty for using unauthorized fittings

17. Any person who, being an owner or occupier of lands or premises supplied with water under the said cited Act for the purpose of taking, in a manner not authorized by such Act, or these By-laws, any such water, uses in or places on, or affixes or attaches to, such land or premises or to any prescribed fitting, or wilfully permits to be used in or placed on, or affixed or attached to, such lands or premises, or to any prescribed fitting, any fitting, instrument, or thing not authorised in that behalf by the Municipal Council, or who alters, misuses, injures, or removes any prescribed fitting, except for the purpose of necessary repair, shall, upon conviction thereof, forfeit and pay to the Municipal Council a sum not greater than ten pounds, without prejudice to the right of the Municipal Council to recover from him damages in respect to any injury by such owner or occupier done, or wilfully permitted to be done, to the Municipal Council's property, and without prejudice to the Municipal Council's right to recover from him the value of any water wasted, misused, or unduly consumed.

Owner to lay and maintain services.

18. The owner or occupier of any house, tenement, or lands must, at his own expense, lay down and maintain all the pipes and apparatus upon his premises, and upon any street, lane, or land lying between his premises and the Municipal Council's mains. All pipes must be of galvanised wrought-iron, where possible, and where lead pipes are used they must be of equal thickness throughout, and of at least the respective weights following, viz.:—

Weight of lead pipes.

⅜-in.	5 lb	per yard.
½-in.	6 lb.	,,
¾-in.	9 lb.	,,
1-in.	12 lb.	,,
1¼-in.	16 lb.	,,
1½-in.	20 lb.	,,

Where wrought-iron pipes are used, they must be of the kind known as galvanised wrought-iron lap-welded steam tubes, unless otherwise permitted by the Municipal Council.

Defective fittings to be removed.

19. Any consumer's pipe, cock, cistern, or other fitting laid, fixed, or used otherwise than in accordance with these By-laws and with the provisions of the Act, or which shall in the opinion of the Municipal Council, be or become of bad or defective quality, or shall conduce to the waste, misuse, or contamination of the water, shall, upon the Municipal Council giving notice in writing, be discontinued and disused: and the Municipal Council may require the same to be removed, replaced, or repaired, and may stop the supply of water to the said consumer until such pipe, cock, cistern, or other fitting shall have been removed, replaced, or repaired, to the satisfaction of the Municipal Council.

Quality of fittings for iron pipes

20. No person shall use, in connection with the water of the Municipal Council, any iron pipe, tee, thimble, bend, reducing coupling, plug, &c., unless it be of the best manufacture, true in section, straight, and of equal thickness, properly and truly cut with Whitworth's standard gas thread, and perfectly sound and new, and free from all defects. Every such tee, bend, tube, &c., shall be capable of withstanding a hydrostatic pressure equal to a column of water 600 feet in height.

Joints.

21. Every person shall make all joints between tees, bends, thimbles, couplings, elbows, and cocks, &c., with white or red lead and flax. All joints on lead pipes, and lead pipes with brass unions shall be of the kind known as "wiped joints."

Depth of pipe.

22. No person shall lay any service pipe on private property, below the ground surface, at a less depth than 10 inches in situations where it may be liable to injury from foot or other traffic, and in any public place, or in any roadway, whether public or private, at a less depth than 18 inches, unless with the special permission of the Municipal Council first obtained. In situations where there is no traffic such service-pipe may be on the surface.

Pipes through drains to be properly protected.

23. No person shall lay any pipe or other apparatus through any sewer, drain, ash-pit, cistern, or manure tank, or through, in, or into any place where, in the event of the pipe becoming unsound, the water of the Municipal Council conveyed through such pipe would be liable to be fouled, or to escape without observation—unless such pipe or apparatus be laid to the satisfaction of the Municipal Council through an exterior cast-iron pipe or box of sufficient length and strength to afford due protection to the same, and to bring any leakage or waste within easy detection.

Approved fittings.

24. No person shall use any tap, stop-cock, bib-cock, ball-cock, valve, closet cistern, service-box, waste-not regulator, bath tap or valve, or other fitting in connection with a supply of water of the Municipal Council which is not of the best quality, and approved by and bearing the stamp of the Board of Water Supply and Sewerage.

Cocks.

25. No person shall use any stop or bib-cock which is not loose-valve, screw-down, high-pressure cocks, made of hard brass or gun-metal, and in every respect of best quality and workmanship, and approved by and bearing the stamp of the Board of Water Supply and Sewerage.

Cisterns.

26. No person shall use any cistern or tank that is not provided with an equilibrium ball-valve, and the overflow-pipe laid and fixed in a suitable manner, open to inspection, and in a position approved by the Municipal Council.

Service not to communicate with rain-water receptacles or underground tanks.

27. No person shall fix or use any service-pipe which communicates with any cistern, tank, or vessel intended or used for the reception of rain-water below the surface of the ground, except where a meter is used, and otherwise in accordance with these By-laws.

Meter to be fixed where water supplied without charge, except in case of public urinals.

28. Every institution or place receiving water without charge shall provide and fix a meter on the service-pipe to indicate the amount of consumption at such institution or place, as a check against waste or undue use, provided that this By-law shall not apply to public urinals, which will receive water without charge, and without meter, provided a cistern with a ball-valve shall be provided to receive the water in the first instance in each case.

Baths.

29. The Municipal Council will not supply any water to any bath, the outlet of which is not distinct from and unconnected with the inlet or inlets; and the inlet or inlets shall be placed above the highest water level of the bath. The outlet of such bath shall be provided with a perfectly water-tight plug, valve, or cock. No such bath shall have any overflow waste-pipe that is not laid and fixed in a suitable manner, open to inspection, and in a position approved by the Municipal Council. No bath shall exceed in dimensions 6 ft. 6 in. long by 2 ft. 6 in. wide by 2 ft. deep unless supplied by meter. The Municipal Council will not supply water to any bath unless the same shall be so constructed as to prevent a waste of water.

Service connection.

30. Except by the permission of the Municipal Council, every tenement shall have an independent service pipe connected with the water-main, and such service shall be stop-cocked outside of the premises on footpath; and no person shall connect more than one tenement with the main of the Municipal Council from one service except by permission of the Municipal Council. Where such permission is given to connect more than one tenement by one service, each such extra service shall have a separate stop-cock on the footpath or other convenient place outside of the premises, so that every such tenement can be shut off from the main without necessitating the operative shutting off the water entering or trespassing on private land.

Urinals.

31. No person shall fix or have fixed a service-pipe so as to communicate directly with any urinal, and every urinal shall be supplied only through a cistern or service-box, fitted with waste-preventing apparatus approved by the Municipal Council.

Water for other than domestic purposes.

32. No person shall use water supplied by the Municipal Council for other than domestic purposes, except the supply is by meter or excepted in the manner hereinbefore provided.

Dial of meters to be capable of registering 1,000,000 gallons.

33. No person, except with special consent of the Municipal Council, shall affix a meter, the dial of which is not capable of registering one million (1,000,000) gallons.

Meters registering incorrectly.

34. If any meter shall not correctly indicate the water passing through it, the Municipal Council may charge for the supply according to the average daily consumption for any month preceding the date upon which such meter shall have been examined and found to be in order; or at the request of the consumer, or by direction of the Municipal Council, the said meter shall be tested, and the charge for water supplied regulated accordingly.

Meters not to be interfered with.

35. No person not duly authorised by the Municipal Council shall disconnect any meter or other apparatus from the service pipes, or in any way interfere with the same.

Steam boiler to have self-acting valve.

36. If any person shall connect any service pipe, or branch service pipe, with any steam boiler for the purpose of feeding or supplying the same with water, without first affixing a self-acting valve for preventing the pressure of the steam reversing or affecting the dial of the meter, he shall be liable to a penalty not exceeding five pounds, and a further penalty of two pounds for each day after notice of the offence from the Municipal Council to such offender.

No hose to be attached to any pipe for watering garden, &c., without meter.

37. Except as hereinbefore provided, no person shall use a hose attached to any tap or pipe (used for the purpose of supplying the water of the Municipal Council for domestic purposes to any house or premises) for watering any garden, laying dust, or for any other purpose whatsoever, unless where a water meter is fixed, and the water supplied by measure, or unless the special fee (if any) fixed by the Municipal Council has been paid; and any person offending against this by-law shall be liable to a penalty not exceeding five pounds.

No tap to be in garden without meter.

38. Except as hereinbefore provided, no person shall have, maintain, or place any tap in any garden or screwed tap in any yard or to or outside of any dwelling or premises supplied with the water of the Municipal Council to which a hose could be attached, unless a water meter is fixed and the water supplied by measure, or unless the special fee (if any) fixed by the Municipal Council has been paid; and any person offending against this by-law shall be liable to a penalty not exceeding five pounds.

Large services to terraces and connections

39. Where the owners of terraces require a large service or sub-main to feed more than one tenement it shall be competent for such owners to lay such large service or sub-main in back lanes, but every house service from it shall be ¾-inch, having a ¾-inch stop-cock so arranged that any one house can be shut off without interfering with the supply to the remaining houses and the stop-cock must be so placed that the Municipal Council's operative can have access to it without entering private land or otherwise becoming a trespasser on private land. Provided that such large service shall be first submitted to the Municipal Council for approval, and in order to determine its dimensions.

Pipes, &c., to be kept in proper repair.

40. Any person using water supplied by the Municipal Council shall keep all pipes and other appliances in connection with the supply of water to such person in a proper state of repair.

Inspection of work.

41. All work at any time done or to be done on private land or premises in connection with the water supply, whether such work consist in the laying and fixing of new services, or in the extension or alteration of existing services and fittings, shall be inspected by the proper officer of the Municipal Council, and no such work shall be commenced until after the expiration of two days' notice thereof first given to the Municipal Council, and the necessary printed permit obtained. In no case shall the water be turned on to any lands or premises where any such work shall have been executed until the said work shall have been inspected by the said officer and certified by him on the prescribed form. No underground or enclosed work shall on any account be covered up or concealed from view until the same shall have been duly inspected and passed by the inspector; and any person offending against this by-law shall be liable to a penalty not exceeding five pounds.

Supply and use of water open to inspection.

42. The supply and use of water, whether for domestic purposes or under special agreement, shall be open to inspection and admeasurement whenever required; and such information must from time to time be afforded as will be sufficient to enable the Municipal Council to obtain a satisfactory account of the quantity of water actually consumed, and of the pipes, taps, cisterns, and other apparatus and conveniences for receiving and delivering such water. Any officer of the Municipal Council may at all reasonable times in the day-time enter on the premises of any person using water supplied by the Municipal Council, for the purpose of inspecting the service-pipes or other appliances on such premises.

Municipal Council may repair

43. If the service-pipes or other appliances of any such person shall on any inspection be found to be out of repair, the Municipal Council may forthwith, without notice, repair the same in such manner as may be deemed necessary, and the cost of any such repairs may be recovered by the Municipal Council from the owner or occupier of such premises.

Municipal Council have control of water supplied to public parks, &c.

44. The water supply to the public parks and gardens shall be by meter, and shall be exclusively under the control and direction of the Municipal Council; and any person turning on the water, other than the person or persons duly authorised, or otherwise interfering with such water supply, shall be liable to a penalty not exceeding five pounds.

Notices and applications to be made upon printed forms.

45. All notices and applications required by these By-laws are to be made upon printed forms, to be obtained at the Municipal Council's office. Notices sent by post must be prepaid. Any sums paid by the Municipal Council on account of notices sent by post and not prepaid will be charged against and recovered from the sender.

Municipal Council may discontinue supply.

46. The Municipal Council shall be at liberty to discontinue and cut off the supply of water immediately on the discovery of any breach of these By-laws.

Interpretation of terms.

47. In the construction of these By-laws, the word "person" shall be deemed to extend to and include a corporation, or any body or number of persons, and the masculine shall include the feminine gender.

Penalties.

48. Any person committing a breach of any By-law to which no specific penalty is attached, or who shall refuse or neglect to obey any injunction in any such By-law, shall, upon conviction, be liable to pay a penalty not exceeding twenty pounds, and, in case of a continuing offence, a further penalty not exceeding five pounds for each day after notice of such offence shall have been given by the Municipal Council to such offender.

49. The following shall be the form of notice to connect to water-mains, prescribed under Section 16, Metropolitan Water and Sewerage Act Amendment Act of 1889 and By-law No. 16:—

NOTICE TO CONNECT TO WATER-MAINS.

Manly Water Supply,
Manly, 189

To the Owner or Occupier.

NOTICE is hereby given that a water-main has been laid in (as the case may be) and is ready to distribute water. The Manly Municipal Council hereby demand and require that the owner or occupier of the house, tenement, or lands, at or on which this notice is left or exhibited, shall construct such connections or fittings from or in connection with such house, tenement, or lands, to communicate with such main, as are prescribed by the By-laws and Regulations of the said Municipal Council.

For the Manly Municipal Council.

Mayor.

Council Clerk.

These are the By-laws passed by the Municipal Council of Manly.

W. H. GERMAN, Mayor.

23 December, 1892

Public Works Department,
Sydney, 29th December, 1892.

METROPOLITAN WATER AND SEWERAGE ACTS, 1880–1889.

It is hereby notified that His Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the following amended By-laws in connection with the Metropolitan Water Supply.

WILLIAM JOHN LYNE.

BOARD OF WATER SUPPLY AND SEWERAGE.

Altered Metropolitan Water By-laws.

WHEREAS by the Metropolitan Water and Sewerage Acts, 1880–1889, the Board of Water Supply and Sewerage is authorised and empowered from time to time to make, alter, and repeal By-laws. Now the Board of Water Supply and Sewerage, under and by virtue of the powers contained in the abovementioned Acts, do hereby alter the By-laws following, namely :—

Sub-clauses V, VI, VII, and VIII of By-law No. 1 of the Metropolitan Water By-laws published in the *Gazette* of the 1st day of February, 1892, are hereby repealed, and the following sub-clause to the said By-law is hereby made in substitution therefor, that is to say :—

Supply by Measure.

5. The charge for water supplied by measure shall be one shilling per 1,000 gallons for all water consumed up to twenty million gallons per annum, and ninepence per 1,000 gallons for all water consumed in excess of twenty million gallons per annum.

Her Majesty's Navy will be supplied free of charge.

Sub-clause (*a*) of sub-clause XI of the said By-law No. 1, is hereby repealed, and the following sub-clause to the said sub-clause XI is hereby made in substitution therefor, that is to say :—

Ventilators and Refrigerators.

(*a*) The charge for water supplied for actuating ventilators or refrigerators shall be by special fee, according to the following scale, namely :—

Class A.—Passing 60 gals. per hour at 65 lb. pressure—

1 nozzle, £6 per annum.
2 „ £4 10s. per annum each.
3 „ £3 10s. per annum „
4 „ and upwards, £3 per annum each.

Class B.—Passing 40 gals. per hour at 65 lb. pressure—

1 nozzle, £3 15s. per annum.
2 „ £3 „ each.
3 „ £2 10s. „ „
4 „ and upwards, £2 per annum each.

Supply for twelve hours only in each day.

Provided, however, that the supply of water under this By-law shall be for twelve hours only in each day, and no person having such supply shall continue to use the same for more than twelve hours in any one day.

Building charges, &c.

Sub-clause 2 of Amended Metropolitan Water By-law No. 5, published in the *Gazette* of the twentieth day of May, 1892, is hereby repealed, and the following sub-clause to the said amended By-law is hereby made in substitution therefor, that is to say :—

2. The charge for water supplied for the making and mixing of concrete for foundations of wooden blocks, stone cubes, or other form of permanent roadway or pavement, shall be at the rate of twenty-one shillings per 1,000 square yards by superficial measurement of road surface, and for all other concrete, brickwork, or masonry, at the rate of three half-pence per cubic yard, as measured on the work.

C. W. DARLEY,
President.

Reginald Bloxsome,
Secretary.

Sydney : Charles Potter, Government Printer.—1893.

1893.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

METROPOLITAN WATER AND SEWERAGE ACTS, 1880-89.

(PROCLAMATION DECLARING THE MUNICIPAL DISTRICT OF MANLY A WATER DISTRICT, IN TERMS OF THE).

Ordered by the Legislative Assembly to be printed, 10 *January*, 1893.

NEW SOUTH WALES, to wit. (L.S.) JERSEY, *Governor.*

Proclamation by His Excellency the Right Honorable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

WHEREAS I, the Governor of the Colony, with the advice of the Executive Council of the said Colony, on the sixteenth day of July, one thousand eight hundred and eighty-nine, duly approved of the construction of certain works for the purpose of supplying water to the Municipal District of Manly, in the county of Cumberland: Now I, the Governor aforesaid, with the advice of the Executive Council of the said Colony, in pursuance of the powers in this behalf given to or vested in me by the Metropolitan Water and Sewerage Acts of 1880-1889, do, by this Proclamation, declare that the said Municipal District of Manly shall, as from the said sixteenth day of July, one thousand eight hundred and eighty-nine, come under the operation of the said Acts, and that such Municipal District shall be a Water District under the said Acts.

Given under my Hand and Seal, at Government House, Sydney, this twenty-ninth day of December, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,
WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892-3.

NEW SOUTH WALES.

METROPOLITAN WATER AND SEWERAGE ACTS, 1880-89.

(PROCLAMATION TRANSFERRING THE MANLY WATER SUPPLY WORKS TO THE CARE OF THE MUNICIPAL COUNCIL OF MANLY.)

Presented to Parliament, in pursuance of the Metropolitan Water Supply and Sewerage Acts, 1880-89.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

I, the Governor of the Colony, with the advice of the Executive Council of the said Colony, upon the recommendation of the Board of Water Supply and Sewerage, made to me in writing, bearing date the 13th day of December, and in pursuance of the powers in this behalf, given to or vested in me by the "Metropolitan Water and Sewerage Acts of 1880-1889," do by this Proclamation declare that the works constructed by the Minister for Public Works for the purpose of supplying water to the Municipal District of Manly, in the county of Cumberland, together with the conduit, reservoirs, engines, buildings, mains, sewers, cisterns, pipes, drains, and all machinery, plant, and materials connected therewith shall be transferred, together with all the property and interest of the said Minister therein, and all obligations lawfully attaching to the Minister in connection therewith, to the Municipal Council of the said Municipal District of Manly, and that the powers and provisions contained in the sections of the said Acts which are specified in the Schedule hereto, which in my opinion ought to be brought into force upon such transfer, shall be exercisable by the said Municipal Council of the said Municipal District, and be in force within such Municipal District to the intent that such powers and provisions shall take effect as if they had been made specifically applicable to such Municipal Council by express enactment in the said Acts.

THE SCHEDULE REFERRED TO.

Metropolitan Water and Sewerage Act of 1880, section 34, so far as relates to Water Supply.
Metropolitan Water and Sewerage Act of 1880, section 35.
Metropolitain Water and Sewerage Act of 1880, part 2, sections 40 and 90, both inclusive.
Metropolitan Water and Sewerage Act Amending Act, 1889, section 16.
Metropolitan Water and Sewerage Act Amending Act, 1889, section 18.
Metropolitan Water and Sewerage Act Amending Act, 1889, section 27.
Metropolitan Water and Sewerage Act Amending Act, 1889, section 30.
Metropolitan Water and Sewerage Act Amending Act, 1889, section 31.
Metropolitan Water and Sewerage Act Amending Act, 1889, section 32.
Metropolitan Water and Sewerage Act Amending Act, 1889, section 34.

Given under my Hand and Seal, at Government House Sydney, this twenty-ninth day of December, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,
WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892–3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

CONTRACTS FOR CAST-IRON PIPES.

(RETURN RESPECTING.)

Ordered by the Legislative Assembly to be printed, 9 *March*, 1893.

[*Laid upon the Table of the House in answer to Question No.* 12, *of* 1 *February*, 1893.]

Question.

12. CONTRACT FOR CAST-IRON PIPES:—MR. MOLESWORTH *asked* THE SECRETARY FOR PUBLIC WORKS,—
(1.) Have the contracts for the cast-iron pipes been signed?
(2.) Who are the sureties for the several contracts, and in what amounts are they severally bound?
(3.) Will he be good enough to lay upon the Table of this House copies of all these documents?

Answer.

Messrs. Pope, Maher, & Co.'s Contract.

SCHEDULE.

1. Advertisement of invitation of tenders.
2. Specification and General Conditions.
3. Tender of Messrs. Pope, Maher, & Co., dated 19 October, 1892.
4. Letter from the Under Secretary for Public Works to Messrs. Pope, Maher, & Co., dated 12 January, 1893, notifying acceptance of tender.
5. Bond of Messrs. Pope, Maher, & Co., and sureties, dated 1 February, 1893.
6. Agreement of Messrs. Pope, Maher, & Co., dated 1 February, 1893.

No. 1.

Advertisement of Invitation of Tenders.

TENDERS FOR PUBLIC WORKS.

Department of Public Works, Sydney, 14 October, 1892.

TENDERS will be received at this office for the public works specified in the schedule hereunder, up to 11 o'clock a.m., of the various dates set forth in the second column.

All envelopes containing tenders must be addressed to the President of the Tender Board, and have legibly endorsed upon them the name of the work for which the tender is submitted.

Tenderers may be in attendance when the tenders are opened, and the name of the lowest tenderer will be announced, if possible, before the duties of the Board have terminated.

The following conditions will have to be strictly complied with, otherwise the tenders will not be taken into consideration:—

1st. Each tender must state the time within which it is proposed to complete the work, and in every instance the full name or names of persons tendering, also the names in full, occupations, and addresses of proposed bondsmen.

2nd. At the foot of every tender there must be a memorandum, signed by the party tendering and two responsible persons as sureties, agreeing to be answerable for the due performance of the contract, in the event of the tender being accepted; and undertaking, in that event, that they will severally execute and deliver a bond to Her Majesty, in the penal sum mentioned in the specification, or otherwise arranged, for securing such performance.

3rd. No tender will be considered which shall have been received after 11 o'clock a.m. on the day upon which tenders are to be received, unless there are circumstances which, in the opinion of the Board, render it desirable that it should be received.

4th. Every tender must, as a guarantee of good faith, be accompanied by a preliminary deposit, calculated according to the following scale, viz.:—

For amounts up to £500 inclusive	£5	0	0
For amounts exceeding £500, and not exceeding £1,000 ...	10	0	0

For all sums over £1,000 1 per cent. on the amount of tender up to a maximum deposit of £500. Such deposit to be in the form of a cheque in favour of the President of the Board, endorsed by the Manager of the Bank upon which it is drawn, or a bank draft. 5th.

5th. Any tender which may be received without such preliminary deposit shall, unless otherwise directed by the Board, be deemed to be informal and rejected accordingly.

6th. In the event of any tenderer failing to take up his tender, complete the bond, and proceed with the contract, within the time specified, or withdrawing his tender after it shall have been opened, whether such tender shall have been accepted or not, all moneys deposited by him on account of such contract shall be absolutely forfeited to the Crown, and shall be paid to the credit of the Consolidated Revenue of the Colony.

7th. Whenever a tenderer shall fail to proceed with a contract as aforesaid, fresh tenders shall be invited at short notice for the work, unless in the opinion of the President there are circumstances which make it desirable for another tender in the same series to be accepted, but the tenderer by whose default such a course has been rendered necessary, shall be excluded from the competition, and from any competition for other works, at the pleasure of the President.

8th. In the event of any contract being tendered for at a schedule of rates, the approximate quantities as given of each item must be worked out and a total sum shown.

All deposits, with the exception of that of the lowest tenderer, when practicable, will be returned to the persons entitled thereto immediately after the Board shall have adjourned; and the deposit made by the successful tenderer shall be returned to him on executing the bond for the fulfilment of the contract. When the contract is for a less sum than £200, the deposit with tender will not be returnable until the service is satisfactorily completed.

It is to be understood that the Government does not bind itself to accept the lowest or any tender; and no tender will be accepted until the head of the branch under whose directions the work is to be carried out has reported upon the whole of the tenders received.

WILLIAM JOHN LYNE.

Description of work or supplies to be tendered for.	Dates up to which Tenders will be received.	Where plan, specification, and form of tender may be seen.	Remarks.
* * *	*	* * *	*
HARBOURS AND RIVERS.			
Supply of a probable quantity of 20,000 tons of straight cast iron pipes of standard lengths and special castings to be manufactured in New South Wales, for the various branches of the Public Works Department.	19 Oct., 1892..	Office of the Engineer-in-Chief for Harbours and Rivers, Sydney, on and after the 29th instant.	See also Special Notice.
* * *	*	* * *	*

This is the copy notice referred to in our annexed bond to Her Majesty the Queen, dated the 1st day of February, A.D. 1893.

WILLIAM MAHER.
ARTHUR S. SEARLE.
JOSEPH GERMAN.
JAMES M'MAHON.

Witness: HAROLD F. NORRIE, J.P.

This is the copy notice referred to in our agreement with Her Majesty the Queen, dated the 1st day of February, A.D. 1893.

WM. MAHER.
JOSEPH GERMAN.

Witness: HAROLD F. NORRIE, J.P.

No. 2.

Specification and General Conditions.

(A)

Department of Public Works.

CAST-IRON PIPES AND SPECIAL CASTINGS FOR WATER SUPPLIES GENERALLY.

SPECIFICATION for the supply of a probable quantity of 20,000 tons cast-iron socket and spigot straight pipes and special castings, to be made in the Colony of New South Wales.

THIS contract is for the supply and delivery where required on any of the Government or private wharves in Sydney Harbour, or on the railway trucks at Redfern or Darling Harbour railway stations, or at any of the depôts as follows:—Crown-street, Paddington, Park Road, Darlington, and Leichhardt, or at any place within the city boundary that may be pointed out by the officer taking delivery of a probable quantity of 20,000 tons of cast-iron straight pipes of standard 9-feet and 12-feet lengths and special castings, in accordance with this specification and the general conditions attached thereto, or to additional descriptions or drawings hereafter to be furnished from time to time to the contractor by the superintending officer on the order of the engineer.

Quality of Cast-iron.

All the cast-iron shall be of the best grey metal, remelted in the cupola, strong, tough, close, hard, and uniform in texture, easy to cut or drill, of approved mixture and quality, and of such strength that a bar 3 ft. 6 in. long, having a section of 2 in. x 1 in., and weighing not more than 22 lb., will, when supported at points 3 feet apart, and loaded in the middle, sustain a test weight of not less than 28 cwt. It shall also be capable of withstanding a tensile strain of 10 tons suspended from a test piece turned to a diameter of 1·125 inches.

Cast-iron Test Bars.

The contractor shall make and provide from time to time, or as often as may be required by the superintending officer, three test bars to each of the before specified dimensions and weight, to be cast from the same running as that from which the pipes or specials are at the time being cast; he shall also provide

provide suitable machines and all workmen for proving the bars, and shall subject three bars to the specified transverse and three to the tensile test in the presence of the superintending officer whenever required. If more than one of the three bars tested transversely or of the three tested in tension fail to endure the strain without fracture, then the whole of the castings made from that melting shall be rejected and broken up, or entirely removed from the works.

Wrought-iron.

All the wrought-iron used in this contract shall be of an approved brand, equal in quality to good Staffordshire bars. It shall be capable of bearing a tensile strain of 23 tons per square inch of original section with an elongation of not less than 15 per cent. of the length tested, which shall be 12 inches; and any wrought-iron used shall be tested at the contractor's expense, he providing suitable appliances, labour, and material, whenever required by the superintending officer. All iron failing to withstand the specified test shall be rejected and removed from the contractor's premises.

Castings.

The straight pipes shall be cast vertically, in dry sand moulds, without the use of core nails, chaplets, or thickness pieces; or in green sand on the bank, at an angle of not less than 30 degrees, as may be hereafter determined or ordered from time to time; they shall be truly straight in the axis, cylindrical, concentric, and of uniform cross sectional area throughout the barrel.

Each pipe, both socket and flanged, is to have a sufficient head of metal to secure solidity, which head is to be subsequently cut off in a suitable machine.

All the straight pipes shall be cast with the socket end downwards.

All the pipes and other castings shall be square at the ends and in the sockets, have a smooth surface within and without, and be sound, free from air-bubbles, scoriæ, and all other imperfections.

They shall be of the full diameter specified internally; and any pipe or casting in which the thickness of the metal varies in any one place more than one-sixth of the specified thickness shall be rejected.

The curved pipes and other special castings shall be cast in loam or dry sand. They must, as far as possible, be cast vertically with the sockets downwards; they shall be truly circular in bore, concentric, and of uniform cross-sectional area. All flanges shall be quite square with the axis of the pipe or branch, and shall be perfectly true and out of winding. Each cross, tee, and hydrant pipe shall have the entrance to the branch neatly rounded off. No pipe will be received which shows a fin on the inner side at the junction of the branch with the body.

The pipes and all other castings shall be properly fettled and cleaned, and the runners carefully cut off.

Special Castings.

The special castings shall include all usual T, Y, and cross-pipes, ¼, ⅛, ⅙, and other bends of various radii, hydrant flanged branch-pipes, hydrant risers, reducing pipes, collars, end-caps, &c. Hydrants, valves, and surface boxes will be separately tendered for. The contractor will be supplied with detailed dimensioned drawings of the specials required from time to time, and he must furnish the castings in strict accordance with the drawings so supplied.

Facing.

All flanges for joints are to be faced by turning or planing, and sufficient allowance shall be made on all flanged castings to allow of their being turned or faced up true without reducing the thickness below the dimensions shown or specified, or making the lengths more or less than is specified. All faced work to be covered with white lead and tallow to prevent rusting.

Flanges and Bolt-holes.

All the bolt-holes in the pipe flanges shall be drilled to a true pitch from standard templets; the diameter of the holes shall in all cases be at least ⅛ in. larger than the diameter of the bolts to be placed in them.

The flanges of the hydrant pipes shall be drilled so that the centre line of the pipe shall pass exactly between the holes. The holes in the flanges of the hydrant risers (or lengthening pieces) shall be exactly opposite to each other, and shall match the holes in the hydrant pipe flange.

Bolts and Nuts.

The connecting and flange bolts shall be forged with the heads solid and not welded on, and the nuts shall be punched hot. The bolts shall be true to the specified diameter, parallel, and without fillets to the necks. The threads of the screws shall be cleanly cut to Whitworth's standard gauge, and the bolts shall be fitted with screwed nuts hand-tight on them. All bolt heads and nuts to be hexagonal. Five per cent. extra of bolts and nuts of each respective size are to be supplied.

Spigot and Socket Gauges.

In order to ensure that the sockets shall in all cases fit the spigots, a pair of turned and bored iron gauges shall be made to the exact dimensions of the outside of the spigot, and the inside of the socket of each size of pipe, to which they shall in all cases be applied by the contractor; and any pipe or casting of which the spigot, or socket, or both, when tested by the gauges, are found not to be true to the required shape and dimensions, will be rejected.

Hydrostatic Testing.

The whole of the pipes and special castings shall be proved to a hydrostatic pressure of 300 lb. to the square inch before being accepted. The proving in all cases is to be done by the contractor, and at his expense, in the presence of the superintending officer. The pressure to be indicated by an approved and corrected pressure gauge connected with a force pump proving machine, and the strain is to be maintained for at least three minutes. During the time each pipe, &c, is undergoing the proof it shall be repeatedly struck in various parts of its length and circumference with a suitable hammer, and be kept externally dry, so as to exhibit more perceptibly any escape of water resulting from the pressure applied. All pipes or other castings which are found by testing or on examination to be defective or unsound in

any

any respect, shall be forthwith destroyed or removed from the contractor's premises, so there may be no risk of their being placed with the material to be supplied under this contract. When the superintending officer shall so request, a pipe shall be selected and submitted to a further test for quality of metal by being struck and broken by hammering, and should undue brittleness be exhibited, all pipes cast of that particular mixture will be condemned.

Hooping Pipes, &c.

After testing and before coating, wrought-iron hoops, 1 inch by $\frac{5}{8}$ inch, shall be tightly shrunk on the spigots of all pipes and specials of and over an internal diameter of 12 inches. The hoops shall be closed with a perfect weld, the sizes being regulated so that they will just go on when at a red heat.

After coating, the inspector shall test the welding, tightness, and fit of each hoop with the hammer, and any which he may find defective shall be taken off and perfectly fitting hoops substituted.

The price per ton for pipes and specials must cover the cost of the hoops; each pipe, &c., must weigh the schedule weight exclusive of hoop. No special payment is to be made for hoops.

Coating Castings.

Every pipe and special casting must be properly dressed and made clean and free from earth, sand, or other impurities, hard steel-wire brushes being used to remove the sand, &c.

All the pipes, &c., shall, after testing and before rust has set in, be coated in accordance with Dr. Angus Smith's process, the pipes, &c., to be dipped in the hot solution, and kept there till the pipe and solution are of the same temperature, namely 300 degrees. The coating to be done in the presence of the superintending officer. The coating shall form a crust of at least $\frac{1}{16}$ inch over the whole surface.

If the pipes, &c., cannot be tested and coated directly after being cleaned, the surfaces must be oiled with linseed oil, and stored in a dry and suitable house to prevent oxidation, until they can be coated. No pipes or other castings will be accepted which have been dipped after rust has made its appearance.

The pipes, &c., when drawn from the bath shall be suspended or placed in a vertical position, and allowed to remain so until the coating is sufficiently hard to resist injury from rolling.

Length and Weight of Pipes.

Every standard pipe shall measure when in work the length given in the schedule, *i.e.*, exclusive of the length of the socket, and shall be as nearly as possible the weight set forth in the schedule; any pipe deviating more than the allowance specified below the prescribed weight shall be rejected, and for any excess above the deviation allowed no payment will be made.

Weight of Special Casting.

In order to determine the weights of specials, a sample of any given special shall be carefully measured as to its being true to drawing, and, if found of the proper dimensions, its weight, as ascertained by the scales, shall be deemed its proper weight, but the specified deviation will also be allowed on specials as well as on pipes.

Patterns, &c.

All patterns used shall be made of iron, truly turned and of the proper form and dimensions; the cores for the sockets for all pipes shall be made in suitable iron moulds, turned to the proper forms and dimensions.

All callipers, gauges, and straight edges to be supplied by contractor for the inspector's use.

Marking.

Each pipe and special casting shall have moulded on the outside of the socket letters indicating for what work it is intended to be used (as the contractor will be from time to time instructed) in projecting block type 1 inch long. The thickness of each pipe and special is also to be moulded in projecting figures near the letters. Each pipe and other casting shall be carefully weighed, and each standard pipe of 8 inches in diameter and over, and all special castings, shall have the weight legibly marked on with white oil-paint on each in plain figures; above the weight shall also be painted a diamond, within which shall be the letters NSWG. The contractor's distinguishing mark, or brand, shall also be cast on each pipe.

Omissions in Specification.

Should it appear that any matters have been omitted in this specification which are obviously necessary for the proper construction and stability of any of the work herein described, all such omissions shall be supplied by the contractor, and shall be considered as included in his contract.

Breakage.

The contractor must deliver the whole of the pipes and special castings at the places hereinafter named in a perfectly sound condition, as no pipe or special casting which is cracked or broken will be accepted, and the contractor is bound to replace any damaged pipes, &c., with perfect ones, entirely at his own cost.

Rate of delivery and penalty for delay.

The contractor shall, if required so to do, commence the delivery of pipes, &c., under this contract on and after the tenth week from the date of the acceptance of his tender, and shall continue the delivery over a period of five years from that date, being the term over which the contract is to be in force, unless the contractor shall fail in the fulfilment of any of the terms and conditions of contract, as set forth in this specification and general conditions attached, in which case the Government is to have the power wholly to terminate the contract.

The contractor shall, on the receipt of an order signed by the Engineer-in-Chief for Harbours and Rivers, or by the Engineer for Water Supply of the Metropolitan Board of Water Supply and Sewerage, or other head of any branch of the Works Department, deliver pipes or special castings of such diameters, lengths, and thicknesses, and at such place or places as are stated in the order, at the rate of 200 tons per week, or at such less rate as the superintending officer may determine, until such orders are completed.

In the event of the contractor failing to commence delivery of pipes, &c. (if required to do so), at the expiry of the tenth week from the acceptance of his tender, he shall forfeit to the Government the sum of £20 for each week, or part of a week's delay, in such delivery. And

And in the event of the contractor, when required to deliver up to the full extent of 200 tons per week, failing to do so, he shall forfeit to the Government the sum of £1 for every ton, or part of a ton, delivered short of such weight. The amount of such forfeitures may be deducted by the Government from any money due, or to become due, to the contractor under the contract.

Place of Delivery.

The whole of the pipes and special castings shall be delivered and neatly stacked at Crown-street depôt, Paddington depôt, Park Road depôt, Darlington depôt (Newtown Road), or Leichhardt depôt (Balmain Road), or at any place within the city boundary that may be pointed out by the receiving officer, or at any of the Government or private wharves in Sydney Harbour, and neatly stacked thereon, if required, or on railway trucks at Redfern and Darling Harbour railway-stations, as will be stated in the various orders for the pipes; or should the engineer require any portion of the pipes, &c., to be delivered at the depôt, Carlow-street, North Sydney, or any other place outside the city boundary, the contractor shall deliver them wheresoever directed, either neatly stacked or laid along the streets in an approved manner, and for this delivery outside the city boundary (except to Paddington, Leichhardt, or Darlington depôts) the contractor will be allowed 1s. 3d. per ton per mile for each mile beyond the city boundary, also tolls and ferry dues.

At each delivery of pipes, &c., the contractor must hand to the officer appointed to receive them a delivery note, on which shall be stated the number and description of the pipes and special castings delivered, and the contractor must forward, addressed to the head of the branch ordering the pipes, &c., an invoice showing in detail the size, number, and weight of the pipes and specials in the delivery.

Cash Deposit.

A cash deposit or marked cheque for £200 must accompany each tender; all other regulations for tendering to be complied with.

Size of Pipes, &c.

The larger bulk of the pipes, &c., are to be of from 3 up to 9 inches in diameter, and the balance of from 10 up to 18 inches diameter.

Mode of Tendering.

Tenderers shall send in their tenders on the printed form of tender attached, and in accordance with the regulations for tendering annexed, and they are invited to submit tenders for the whole of the standard pipes cast vertically in dry sand, in accordance with this specification; and also an alternative tender for casting all standard pipes up to and inclusive of the 8-inch in green sand on the bank, and the balance in dry sand vertically, as specified.

SCHEDULE—CAST-IRON PIPES.

Internal diameter in inches.	Thickness in inches.	Length of each pipe in feet.	Weight of each pipe.	Permitted deviation in weight	Description of Pipes.
			cwt. qr. lb.		
3	⅜	9	1 0 14	2½ per cent.	Spigot and socket.
4	⅜	9	1 1 22	,, ...	,, ,,
5	7/16	9	2 0 8	,, ...	,, ,,
6	7/16	9	2 1 27	,, ...	,, ,,
6	½	9	2 3 7	,, ...	,, ,,
7	½	9	3 1 0	,, ...	,, ,,
7	⅝	9	4 0 12	,, ...	,, ,,
8	½	9	3 2 23	,, ...	,, ,,
8	⅝	9	4 2 16	,, ...	,, ,,
9	½	9	4 0 18	,, ...	,, ,,
9	⅝	9	5 0 26	,, ...	,, ,,
10	9/16	9	5 0 22	,, ...	,, ,,
10	⅝	9	5 3 2	,, ...	,, ,,
12	9/16	12	8 0 4	,, ...	Spigot and socket, with 1-in. x ⅝-in. W.I. spigot hoop.
12	⅝	12	8 3 18	,, ...	,, ,, ,,
12	¾	12	10 3 6	,, ...	,, ,, ,,
14	⅝	12	10 1 11	,, ...	,, ,, ,,
14	¾	12	12 1 25	,, ...	,, ,, ,,
15	⅝	12	11 0 12	,, ...	,, ,, ,,
15	¾	12	13 1 14	,, ...	,, ,, ,,
15	⅞	12	15 2 20	,, ...	,, ,, ,,
16	⅝	12	11 3 7	,, ...	,, ,, ,,
16	¾	12	14 0 23	,, ...	,, ,, ,,
16	⅞	12	16 2 18	,, ...	,, ,, ,,
18	⅝	12	13 0 23	,, ...	,, ,, ,,
18	¾	12	15 3 17	,, ...	,, ,, ,,
18	⅞	12	18 2 13	,, ...	,, ,, ,,

This is the specification marked (A) referred to in our annexed bond to Her Majesty the Queen, dated the 1st day of February, A.D. 1893.

WILLIAM MAHER.
JAMES M'MAHON.
ARTHUR S. SEARLE.
JOSEPH GERMAN.

Witness: HAROLD F. NORRIE, J.P.

This is the specification referred to in our agreement with Her Majesty the Queen, dated the 1st day of February, A.D. 1893.

WILLIAM MAHER.
JOSEPH GERMAN.

Witness: HAROLD F. NORRIE, J.P.

(B)

(B)

GENERAL CONDITIONS.

Interpretation Clause.

1. The words "Superintending Officer" in these conditions shall mean any person who may from time to time be appointed by the engineer to supervise the works or buildings, and the words "Engineer-in-Chief" or "Engineer" shall mean the Engineer-in-Chief for Harbours and Rivers for the time being, or the Engineer for Water Supply under the Metropolitan Board of Water Supply and Sewerage, or the head of any other branch of the Works Department. The words "Minister for Works" shall mean the Secretary for Works for the time being. The word "Government" (where used) to mean the Government of New South Wales promoting this undertaking. The word "Schedule" to mean the adjusted schedule of prices settled by the engineer and contractor previous to commencing the work. Words importing the singular number only shall include the plural number, and words importing the plural number only shall include the singular number.

Dismissal of Workmen, removal of improper Materials, &c.

2. The engineer shall have the power of immediately dismissing any agent or workman employed by the contractor, and of having removed off the works any materials, plant, or implements which in his opinion are insufficient for the purpose intended, or at variance with the meaning and intention of this specification; and the cost of the removal of any such plant, materials, or implements shall be paid by the Contractor.

Instructions to be obeyed.

3. Should the contractor refuse or neglect to carry out the instructions of the engineer or the superintending officer, the engineer shall have the power of suspending the usual monthly certificate until such instructions have been complied with.

Drawing, Specifications, &c.

4. The plans, sections, and drawings represent generally the form and dimensions of the several works. Where any discrepancy exists between the dimensions as indicated by the scale and those marked in figures, the figures are to be considered as correct, and are to be taken in all cases in preference to the scale measurements; and if there should be any discrepancy between the figures or dimensions, or the form of construction, or the material as indicated in the drawings, and the dimensions, form of construction, and materials given in the specification, the directions of the specification shall be adopted; and in all cases of defective description or any ambiguity, the explanation given by the engineer shall be binding upon the contractor. Also, anything contained in the drawings and not in the specification, or anything contained in the specification and not shown in the drawings, shall be equally binding as if it were contained in both.

Extra Works, Omissions of Works, &c.

5. If at any time while the works are in hand it shall be deemed expedient by the engineer to order material or work of a different description to that specified, or to increase or diminish the dimensions or extent of any works to be done under this contract, or to alter their situation, or to vary the form or dimensions of any of the said works, or of any part thereof, or to substitute one class of work for another, he shall have full power to do so, and to order and direct any such increase, diminution, alteration, or substitution, which shall be executed by the contractor, and if of the class of works provided for in the schedule of prices, at such schedule prices; and no such increase, diminution, alteration, or substitution of works shall in any way annul or set aside this contract, or extend the time for the completion thereof, unless the Minister for Works shall see fit to grant such extension; but such additions or alterations shall be measured and allowed and paid for, or deducted from the contractor's account, as the case may require, according to the schedule of prices; provided that if any portion of the works so ordered to be done shall not be of the class of works provided for in the schedule of prices, the same shall be executed by the contractor at such prices as may be agreed for with the Engineer-in-Chief; but if the contractor and the Engineer-in-Chief cannot agree as to the price to be paid, the engineer aforesaid may order and direct the same to be done by such person or persons as he may think fit. Before any extra work or work of an altered class is undertaken by the contractor, it shall be imperative for him to procure an order in writing from the Engineer-in-Chief or his superintending officer for carrying out such extra or variation of work, and the contractor shall not be entitled to any payment for such extras or variations, unless he produce the written order for the same as aforesaid, and he shall not be entitled to plead that the Engineer-in-Chief, or his officer, omitted to give such written order, as it is to be distinctly understood that the onus of obtaining such order shall be left on the contractor. The contractor shall not be entitled to any rate other than schedule rate on any plea that the work was in a different or more difficult position, or of a different class than shown on plan or specified, or carried out under circumstances not contemplated in the specification, unless an agreement entitling him to payment by other than schedule rates shall have been previously made and signed by the Engineer-in-Chief and the contractor.

Net Measurements.

6. All measurements of the works shall be made according to the actual dimensions, notwithstanding any general or local custom to the contrary.

Labour, Materials, Plant, &c.

7. The contractor shall provide at his own costs and charges all materials, labour, tools, plant, tackle, machinery, scaffolding, &c., for the proper completion of the works, at the prices stated in his schedule or tender.

Contractor liable for Injury to adjoining Lands, Properties, &c.

8. In executing the several works herein specified, or conveying materials thereto, the contractor must be careful to do as little damage or injury to the adjoining lands or properties as possible, and he will be held answerable for the whole amount of such damage or injury, which may be deducted out of the moneys he may have in the hands of the Government.

Contractor to take the whole risk of executing the Works properly.

9. The contractor shall take upon himself the whole risk of executing the works to the satisfaction of the Engineer-in-Chief, and in accordance with the plans, sections, and specifications, of the correctness of which he must satisfy himself.

Setting out Works.

10. The works will be set out for the contractor, but he must satisfy himself of their accuracy, as no work incorrectly set out or improperly executed will be paid for by the Government.

Contractor to be represented.

11. The contractor at all times during the progress of the works, when he is not personally superintending them, must have a responsible agent or overseer stationed on them to receive instructions from the superintending officer or Engineer-in-Chief, and to represent the contractor for all the purposes of this contract.

Progress of Works.

12. Should the engineer be at any time dissatisfied with the mode of proceeding, or at the rate of progress of the works, or any part thereof, he shall have full power, without vacating this contract, to take the works wholly or in part out of the hands of the contractor, and to procure, employ, and make use of any of the contractor's horses, plant, implements, or material on the ground, as well as all labour or materials which he may deem necessary for completing the works, the cost of such labour and materials to be deducted from any money that may be then due or may thereafter become due to the contractor; and if the money then due or thereafter becoming due to the contracter shall not be sufficient for that purpose, the balance remaining unpaid may be recovered in an action for damages for breach of contract, or as money paid for the use of contractor.

Cancellation of Contract.

13. The Government or the Engineer-in-Chief shall have the option, and full power and authority, in lieu of proceeding under the last preceding clause of these conditions, if the contractor fail to proceed in the execution of, and to carry on the works in the manner and at the rate of progress required by the engineer, of cancelling this contract, so far as relates to the works remaining to be done; and in such case the moneys which shall have been previously paid to the contractor on account of the works executed shall be taken by him as full payment for all works done under the contract; and upon notice in writing under the hand of the Engineer-in-Chief that he, under the authority of this condition, cancels the contract, being served upon the contractor, or left at his last known place of abode, the contract shall be cancelled, and thereupon all sums of money that may be due or unpaid to the contractor, together with all implements in his possession, and all materials provided by him upon the ground upon which the work is being carried on, or adjacent thereto, shall be forfeited; and all sums of moneys named as penalties for the non-fulfilment of the contract within the time specified shall also be forfeited and become payable to the Government; and the said implements and materials shall become and be the absolute property of the Government, and with the moneys so forfeited and payable as aforesaid shall be considered as ascertained damages for breach of contract.

Time of Completion, &c.

14. The contractor shall complete the whole of the works comprised in this contract, as provided for in the specification, from the date of the acceptance of his tender; and in the event of their non-completion at the specified times, should the Engineer-in-Chief not have proceeded under clauses Nos. 12 and 13 of these conditions, or either of them, the contractor shall forfeit and pay such fines as are named in the specification, and which sum or sums may be deducted from any money payable to the contractor under this or any other contract. No certificate will be given after the date specified for the completion of the contract until the whole of the works shall have been properly completed to the satisfaction of the Engineer-in-Chief, unless the time for the completion of the contract shall have been extended by the Minister for Works, in which case such extended time shall become the time for the completion of the contract; and it is to be expressly understood that the fact of the time having been so extended shall not in any way be taken as a waiver of the contract, or as annulling or setting aside the contract in any respect, or be taken as releasing the contractor or his sureties from any of the responsibilities or obligations of the contract, which, in all other respects, shall remain the same as if the time had not been extended.

The like liability also shall hold good as to the obligations of contractor and sureties in the event of any advance to the contractor being made from the retention money, or on material on the ground and not *in situ*; and for the purposes of this contract it shall not be necessary to apprise the sureties of any extensions of time having been granted, or advances and payments made, as contemplated in this or other clause or clauses of these general conditions or of the specification.

Copies of Drawings, &c.

15. All copies of drawings or specifications required by the contractor for carrying on the works must be made at his expense; but should any copies of drawings or specifications be furnished to him at the expense of the Government, they must be returned to this office before a final certificate for the work shall be given.

Liability of Contractor.

16. The care of maintenance of all works under this contract shall remain with the contractor until their completion; and until the Engineer-in-Chief for Harbours and Rivers shall, by notice in writing under his hand, inform the contractor that he has taken charge thereof; and until such notice shall have been given, the contractor shall be responsible for all accidents from whatever cause arising, and shall make good all damage thereto.

Contractor not to sub-let Works or assign Moneys.

17. The contractor shall not assign over or under-let this contract or any part thereof, or assign all or any of the moneys payable, or to become payable under the contract, or all or any part thereof, or any other benefit whatsoever arising, or which may arise under this contract, to any other person without the

the consent in writing of the Engineer-in-Chief first obtained. The contractor, for each and every breach of this condition, shall pay to the Government the sum of £50 as and for liquidated damages; and the sum or sums payable as such damages may be deducted from any sum or sums due to the contractor under this or any other contract with the Government. And any permission to assign over or underlet works to be done under this contract shall not discharge the contractor from liability to see that the works so assigned or underlet are executed and completed in terms of this contract.

Truck System not allowed.

18. The workmen, tradesmen, and labourers of every class employed on the works to which these conditions refer, shall be paid their wages in full, in money, current coin of the Colony, at least once in every month, and no ticket or other system of payment by provisions, liquors, or goods, will on any pretence be allowed; nor shall the contractor, or any person or persons employed by him, or in any way connected with him, establish any shop for the supply of provisions, liquors, or goods; nor shall the contractor oblige his workmen to take provisions, liquors, or goods of any kind from any person in particular. The workmen of every class shall be paid in the works if it be possible, or in some building adjoining; and in no case shall they be paid at a public-house or other place where liquors or refreshments are sold.

Power to the Government to pay Workmen's Wages.

19. Before the payment of any money to the contractor, the Engineer-in-Chief may require from him a statutory declaration that the tradesmen and labourers of every kind employed on the works to which these conditions refer have been paid their wages and claims of every kind in full, in money, in current coin of the Colony, and to the latest date at which such wages or claims are due; and the Engineer-in-Chief may withhold the payment of any money that may be due, or may become due to the contractor, until such declaration has been made and delivered to him.

If the contractor shall fail or omit to pay the wages of any workman employed upon the works in the current coin of the Colony, it shall be lawful for the Government, or the Engineer-in-Chief, as often as the same shall happen, upon complaint of such failure or omission made by any such workman, and upon production or other satisfactory proof of any judgment or order of a Court of Petty Sessions, or of any other court of competent jurisdiction, to pay the amount mentioned in such order to such workman, and to deduct the same amount from any money then due or owing, or thereafter to become due or owing, to the contractor under this contract.

Bankruptcy or Insolvency.

20. If the contractor shall become insolvent, have his estate placed under sequestration, or shall make an assignment of his estate for the benefit of his creditors, it shall be lawful for the Government, without previous notice to the contractor, or the official or other assignee or assignees of his insolvent estate, or to the trustee or trustees under the assignment, to take the works out of the hands of the contractor, and of the assignee or trustees of his estate, and to recontract with any other person or persons to proceed with and complete the same, upon such terms, stipulations, and conditions as shall be deemed expedient; and all the then remaining materials, implements, and plant aforesaid may be used in and applied for the purposes of the works; but, on the final completion of the works, the surplus of such materials, implements, and plant shall cease to belong to the Government, and shall become the property of the said assignees or trustees, without any allowance for or payment by the Government, or on account of any loss or diminution, wear, tear, or injury they may have sustained in the meantime.

Security.

21. The contractor will be required to provide two approved persons as sureties, to enter with him into a bond to the Government, jointly and severally, in the penal sum of £2,000 for the proper performance and completion of the contract. The names of the persons proposed by him as sureties must be stated in his tender, the Government reserving to itself the power of rejecting such proposed sureties, should it deem it advisable to do so.

It shall be optional with the Government, in lieu of the nominal security before specified, to require the contractor to provide a cash security, in which event, within fourteen days after notice of the acceptance of his tender shall have been given to the contractor, or posted to the address of his last known place of business or residence, the contractor shall deposit with the Secretary for Public Works, or at the option of the Secretary for Public Works in some bank or banks in Sydney, upon fixed deposit, in the name of the Secretary for Public Works, the sum of £2,000, to be held by the said Secretary for Public Works as security for the due and proper performance and completion of the contract until the Engineer-in-Chief has certified that the whole of the work in the said contract has been completed to his satisfaction, or until the contract has been cancelled by the Secretary for Public Works under the power given to him in that respect under clause 13 of these conditions—which last-mentioned event happening the money so deposited will become forfeited. If, however, the contract shall not be declared to be cancelled under the said 13th clause, and if the works comprised in this contract are not completed within the time referred to in clause 14 of these conditions, the weekly or other penalties which under the last-mentioned clause will be payable to the Secretary for Public Works may be deducted and taken from the money so deposited or from any other moneys, as more particularly provided in the 14th clause of these conditions.

Should the contractor fail to secure such persons as may be deemed by the Government to be eligible sureties, or in the event of a cash security being required, fail to deposit the said sum of £2,000 as hereinbefore provided, within fourteen days from the acceptance of the tender, or should the contractor fail to execute the contract for the due performance of the works mentioned in the said tender, the Secretary for Public Works will have the option of and full power and authority to declare such acceptance to be annulled, in which case the preliminary cash security (if such were given) which was deposited with the tender, shall be absolutely forfeited to the Crown.

The contractor will be entitled to receive any interest that may be payable upon the fixed deposit of the money, if the money shall be placed in a bank at fixed deposit, as such interest becomes payable, unless the deposit shall have become forfeited as hereinbefore provided; but it is expressly declared that the Secretary for Public Works is not to be held liable or answerable in any way for any loss of the money so deposited by reason of the same having been deposited in a bank as fixed deposit, or for any loss of interest from the fixed deposit not being renewed.

It

It is hereby declared that, for all or any work done or material found and provided by the contractor before the due execution of this contract, he shall not have any right of action, claim, or demand against the Government; and he shall not be entitled to plead in answer to this that the Government permitted him to proceed with the work before the said bond and contract were executed.

Progress Payments without prejudice, &c.

22. No certificate given to the contractor for the purpose of any progress payment shall prevent the Engineer-in-Chief from, at any future time before the termination of the contract, rejecting all unsound materials and improper workmanship discovered subsequently to the giving of the last previous certificate; and, notwithstanding the giving of any certificate that portions or the whole of the works have been satisfactorily performed, the Engineer-in-Chief may require the contractor to remove and amend at any future time previously to the final payment on account of the construction or maintenance of the works, any work that may be found not to have been performed in accordance with the contract; and the contractor must remove and amend at his own cost all such work when so required, notwithstanding any approval made or given by the superintending officer; and the Government shall have power, on the report of the Engineer-in-Chief that the work approved of as aforesaid is not in accordance with the contract, to deduct from any moneys that may be due, or that may become due to the contractor, the whole amount that has been paid on account of the work.

If, in the opinion of the Engineer-in-Chief, further inquiry is necessary or desirable before any certificate be given, he shall have power to withhold such certificate for any period which he may consider necessary for the purposes of such inquiry from the date at which, in the ordinary course, the certificate would have been given.

None of the conditions of this contract shall be varied, waived, discharged, or released, either in law or in equity, unless by the express consent of the Government testified in writing.

Payments.

23. Payments may be made monthly for all pipes delivered, less 10 per cent., which shall be retained until the completion of each order, unless such payments shall become not payable by reason of anything contained in these conditions, up to the date specified for the completion of the contract, on the engineer's certificate as the work proceeds; and it is expressly declared that the obtaining a certificate from the engineer that the work done by the contractor has been satisfactorily executed or completed to his satisfaction, shall be a condition precedent to the contractor having any right or cause of action in respect of any work done or materials provided, and to the contractor having any right of action or claim to the payments from time to time to be made hereunder, as well as to the final payment upon the whole of the work being finished.

Miscellaneous.

24. The Engineer-in-Chief shall have full power to decide in what order in point of time the various parts of the work or works comprised under this contract shall be carried out; and he shall likewise have full authority to stay or delay, for such time as he thinks fit, the carrying out of any part or parts, or of all parts, of the said works; and the contractor in such case shall only be entitled to such extension of time as the Engineer-in-Chief shall think sufficient under the circumstances, and the said Engineer-in-Chief shall also have the power to direct the omission of the carrying out of any part or parts of the said works, and the value of such work, so omitted in each case, calculated at the schedule rates, or in the event of there being no schedule rates, calculated on the basis of the proportionate value which such work bears to the lump sum, as ascertained by the Engineer-in-Chief, whose decision on that point shall be final, shall be deducted from the contract sum.

The Engineer-in-Chief shall further have the power, at his discretion, without vacating this contract, to enter upon, by himself or his agents, and make use of any part or parts of the work comprised under this contract, and his doing so shall in no wise be held as a waiver of the responsibility of the contractor in respect to his contract, except in so far as any injury may accrue to such work so entered upon, by reason of any proved carelessness of any employee of the Government, in which event the contractor shall be free from liability on account thereof, but not otherwise.

Maintenance.

25. The contractor will be bound to maintain the works for a period of
after their final completion and use by the Government; and if any part should, within that period, show signs of weakness or of giving way, or should any defective workmanship or materials be detected, the contractor, when called upon to do so, shall make good the same at his own cost, to the satisfaction of the Engineer-in-Chief, before the reserve balance will be paid. It is to be distinctly understood that the Government shall have the full, free, and unrestricted use of the said works, without any interference whatever on the part of the contractor, during the currency of this period of maintenance; and such use of the said works on the part of the Government shall not be held as relieving the contractor of any liabilities or obligations whatever in respect of his contract.

C. W. DARLEY,
Engineer-in-Chief for Harbours and Rivers.

Department of Public Works, Harbours and Rivers Branch,
Engineer's Office, Sydney, 29th August, 1892.

REGULATIONS for the conduct of Tendering under the Public Works Department.

1. The Tender Board shall meet every alternate Wednesday, at 11 a.m., unless otherwise arranged.
2. Three members of the Board shall form a quorum. The senior member present shall preside in the absence of the President or Vice-President.
3. In no case shall tenders be opened except in the presence of a quorum of the Board.
4. No tender shall be received after 11 a.m. on the day named for the receipt of such tender unless there are circumstances which, in the opinion of the members of the Board then sitting, render it desirable to do so.

5. Each member of the Board must attend personally when called upon, but in the event of circumstances precluding his attendance at any time, the authority of the President must be obtained for another representative from the same Department to act in his place.

6. The tender box shall be secured with two locks, each lock to have wards diverse from the other, one key to be in the possession of the Under Secretary, and the other in that of another member of the Board, who shall be selected by the President.

7. It shall be the duty of the President, Vice-President, or the senior member present, as the case may be, as soon as the tenders shall have been opened and the necessary particulars ascertained, to publicly announce the number of tenders received for each work, and the name of the lowest tenderer; but no tender shall be accepted until the head of the branch under whose directions the work is to be carried out has reported upon the whole of the tenders received.

8. The Secretary shall, as soon as practicable after the Board has adjourned, exhibit in a conspicuous position in the Public Works Office a full statement of the tenders received, showing the work, the name of the tenderer, and the amount of each tender.

9. All envelopes containing tenders must be addressed to the President of the Board, and have legibly indorsed upon them the name of the work for which the tender is submitted.

10. Every tender must, as a guarantee of good faith, be accompanied by a preliminary deposit, calculated according to the following scale, viz.:—

For amounts up to £500 inclusive £5 0 0

For amounts exceeding £500 and not exceeding, £1,000 ... ... 10 0 0

For all sums over £1,000, 1 per cent. on the amount of tender up to a maximum deposit of £500. Such deposit to be in the form of a cheque in favour of the President of the Board, indorsed by the manager of the bank upon which it is drawn, or a bank draft.

11. All deposits, with the exception of that of the successful tenderer, shall be returned by the Secretary to the person entitled thereto as soon as possible after the Board shall have adjourned, and the deposit made by the successful tenderer shall be returned to him on his executing the bond for the fulfilment of the contract. When the contract is for a less sum than £200 the deposit with tender shall not be returnable until the service is satisfactorily completed.

12. Any tender which may be received without such preliminary deposit shall, unless otherwise directed by the Board, be deemed to be informal, and rejected accordingly.

13. In the event of any tenderer failing to take up his tender, complete the bond, and proceed with the contract within the time specified, or withdrawing his tender after it shall have been opened, whether such tender shall have been accepted or not, all moneys deposited by him on account thereof or in connection therewith shall be forfeited to the Crown, and in such case be paid to the credit of the Consolidated Revenue of the Colony.

14. Whenever a tenderer shall fail to proceed with a contract as aforesaid, fresh tenders shall be invited at short notice for the work, unless in the opinion of the President there are circumstances which make it desirable for another tender in the same series to be accepted; but the tenderer by whose default such a course has been rendered necessary shall be excluded from the competition, and from any competition for other works, at the pleasure of the President.

15. In the event of any contract being tendered for at a schedule of rates, the approximate quantities as given of each item must be worked out and a total sum shown.

16. In submitting a tender the full Christian name of the tenderer must be given, or when the offer is in the name of a firm, the names in full of each member. When bondsmen are required, the names in full, occupations, and addresses must be stated in the tender. The omission of this information will render the tender liable to be declared informal.

17. The Board shall not be bound to accept the lowest or any tender.

18. The Board-room shall be open for the admission of the public while the tenders are being opened and declared.

FORM OF TENDER.

Department of Public Works.

Cast-iron pipes, &c., for water supplies generally.—Supply of cast-iron water-pipes and special castings.

The undersigned do hereby undertake and agree to execute and perform the whole of the works in connection with the manufacturing in the Colony of New South Wales, and delivering in Sydney and suburbs, at the various places specified, cast-iron water-pipes and special castings of the several sizes and thicknesses enumerated in the schedule contained in the specification, and in accordance with drawings to be hereafter supplied, and complete the same according to the true meaning and intent of the specification and general conditions, at the schedule of prices hereunder; also agree to deliver the whole of the pipes and special castings that may be ordered, up to 20,000 tons in quantity, at the rate and manner specified, during the term of five years from the date of the acceptance of tender.

enclose herewith a cash deposit of, or marked cheque for the sum of, £200, which agree shall be dealt with in accordance with the regulations for tendering attached to the specification.

(*Signature*)

Dated (*Address*)

SCHEDULE of prices for cast-iron pipes and special castings made in the Colony of New South Wales.

No.	Items.	Probable quantity, tons.	Rate per ton.	Amount.
			£ s. d.	£ s. d.
1	All pipes to be cast vertically in dry sand, as specified ...	As may be ordered, quantity unknown, probably 20,000 tons.		
2	Pipes from 3 inch diameter up to 8 inch diameter, both sizes inclusive, cast on the bank in green sand			
3	Pipes from 9 inch diameter up to 18 inch diameter, both sizes inclusive, cast vertically in dry sand.....			
4	Special castings, all sizes and kinds			

The

The prices in the preceding schedule include labour, material, and workmanship of every kind necessary for the full and perfect completion of the work to the satisfaction of the Engineer-in-Chief for Harbours and Rivers. Contractors in framing their tenders must adhere to the above form of schedule.

The Government reserves the right to accept either one tender for schedule item No. 1 or separate tenders for schedule items 2 and 3, in which latter case the Government will be in no way bound to order any given quantity under either contract, but the aggregate order will probably amount to 20,000 tons.

The quantity of each class and size of pipe, &c., must depend wholly on the requirements of the service.

(*Signature*)

These are the general conditions marked (B), referred to in our annexed bond to Her Majesty the Queen, dated the 1st day of February, A.D., 1893.

WM. MAHER.
JAMES M'MAHON.
ARTHUR S. SEARLE.
JOSEPH GERMAN.

Witness: HAROLD F. NORRIE, J.P.

These are the general conditions referred to in our agreement with Her Majesty the Queen, dated the 1st day of February, A.D., 1893.

WM. MAHER.
JOSEPH GERMAN.

Witness: HAROLD F. NORRIE, J.P.

No. 3.

Tender of Messrs. Pope, Maher, & Co., dated 19th October, 1892.

FORM OF TENDER.

Department of Public Works.

Cast-iron Pipes, &c., for Water Supplies Generally.—Supply of Cast-iron Water-pipes and Special Castings.

WE, the undersigned, do hereby undertake and agree to execute and perform the whole of the works in connection with the manufacturing in the Colony of New South Wales, and delivering in Sydney and suburbs, at the various places specified, cast-iron water-pipes and special castings of the several sizes and thicknesses enumerated in the schedule contained in the specification, and in accordance with drawings to be hereafter supplied, and complete the same according to the true meaning and intent of the specification and general conditions, at the schedule of prices hereunder given. We also agree to deliver the whole of the pipes and special castings that may be ordered, up to 20,000 tons in quantity, at the rate and manner specified, during the term of five years from the date of the acceptance of our tender.

We enclose herewith a cash deposit of, or marked cheque for, the sum of £200, which we agree shall be dealt with in accordance with the regulations for tendering attached to the specification.

POPE, MAHER, & CO.,
Darlington Ironworks,
Sydney.

19th October, 1892.

SCHEDULE of prices for cast-iron pipes and special castings made in the Colony of New South Wales.

No.	Items.	Probable quantity, tons.	Rate per ton.	Amount.
			£ s. d.	£ s. d.
1	All pipes to be cast vertically in dry sand as specified.	As may be ordered, quantity unknown, probably 20,000 tons.	8 5 0	
2	Pipes from 3 inch diameter up to 8 inch diameter, both sizes inclusive, cast on the bank in green sand.....		7 10 0	
3	Pipes from 9 inch diameter up to 18 inch diameter, both sizes inclusive, cast vertically in dry sand....		8 0 0	
4	Special castings, all sizes and kinds		13 0 0	

The prices in the preceding schedule include labour, material, and workmanship of every kind necessary for the full and perfect completion of the work to the satisfaction of the Engineer-in-Chief for Harbours and Rivers. Contractors in framing their tenders must adhere to the above form of schedule.

The Government reserves the right to accept either one tender for schedule item No. 1 or separate tenders for schedule items 2 and 3, in which latter case the Government will be in no way bound to order any given quantity under either contract, but the aggregate order will probably amount to 20,000 tons.

The quantity of each class and size of pipe, &c., must depend wholly on the requirements of the service.

POPE, MAHER, & CO.

We are further prepared to commence deliveries in the ten weeks specified in the contract.

The above rates include the duty on pig-iron, but if this is remitted each rate would be reduced by 7s. 6d. per ton.

POPE, MAHER, & CO.

This is the tender referred to in our annexed bond to Her Majesty the Queen, dated the 1st day of February, 1893.

WM. MAHER.
ARTHUR S. SEARLE.
JOSEPH GERMAN.
JAMES M'MAHON.

Witness: HAROLD F. NORRIE, J.P.

This is the tender referred to in our agreement with Her Majesty the Queen, dated the 1st day of February, A.D. 1893.

WM. MAHER.
JOSEPH GERMAN.

Witness: HAROLD F. NORRIE, J.P.

No. 4.

The Under Secretary for Public Works to Messrs. Pope, Maher, & Co.

Gentlemen, The Department of Public Works, 12 January, 1893.

I have the honor, by direction of the Secretary for Public Works, to inform you that your tender, dated the 19th October last, is accepted for item No. 2 on the schedule attached to the specification for the supply of cast-iron water pipes, viz.:—Pipes from 3 inches to 8 inches in diameter, both sizes inclusive, cast on the bank in green sand, at the rate of £7 10s. per ton, with a reduction at the rate of 7s. 6d. per ton if the present duty is not charged by the Government.

It is to be distinctly understood that the Government are not bound to take any given quantity of pipes, but only such quantity or quantities as are required and ordered from time to time.

If, during the continuance of this contract, pig-iron is produced in the Colony of New South Wales, out of iron ore raised in the said Colony, or principally raised in the Colony, which can be shown, to the satisfaction of the Engineer-in-Chief for Harbours and Rivers will produce castings of the quality specified, you shall be bound to use such pig-iron in the manufacture of the said pipes; provided, however, that such iron can be obtained at a price not in excess of the market price—then ruling in the said Colony—of imported pig-iron, with all charges added thereto of delivery at your furnaces.

The work to be carried out in strict accordance with the plans and specification from this date.

I have to refer you to the Engineer-in-Chief for Harbours and Rivers for further information, and to request that you will call upon the officer in charge of bonds and contracts at this office for the purpose of signing the necessary bond for the due observance of this contract.

I am, &c.,
J. BARLING,
Under Secretary.

No. 5.

Bond of Messrs. Pope, Maher, & Co. and Sureties, dated 1st February, 1893.

Know all men by these presents, that we, William Maher and Joseph German, of Darlington, in the Colony of New South Wales, contractors, carrying on business together under the name, style, or firm of "Pope, Maher & Co." (and hereinafter called the said contractors), James M'Mahon, of Redfern, in the Colony aforesaid, carrier, and Arthur Stenning Searle, of Sydney, in the Colony aforesaid, merchant (hereinafter called "the said sureties") are jointly and severally held and firmly bound unto Her Most Gracious Majesty Queen Victoria in the penal sum of £1,500 sterling, to be paid to Her said Majesty, her heirs or successors, for which payment well and truly to be made we bind ourselves and each of us, our and each and every of our heirs, executors, and administrators, jointly and severally firmly by these presents.

Sealed with our seals, dated the 1st day of February, in the year of Our Lord 1893.

Whereas the said contractors made the tender hereunto annexed, under the terms and conditions of a notice dated and published in the New South Wales *Government Gazette*, of the 14th day of October now last past, of which notice a copy signed by the said contractors and the said sureties is also hereunto annexed, to execute and perform the whole of the works in connection with the manufacturing in the said Colony, and delivering in Sydney and suburbs at the various places specified, cast-iron water-pipes and special castings of the several sizes and thicknesses enumerated in the schedule contained in the specification, hereinafter more particularly referred to, and in accordance with drawings to be thereafter supplied and complete the same according to the true meaning and intent of the specification and general conditions hereunto annexed marked respectively (A) and (B) at the prices in the schedule in the said tender mentioned and to deliver the whole of the pipes and castings that may be ordered, up to 20,000 tons in quantity, at the rate and in manner specified during the term of five years from the date of acceptance of the said tender: And whereas the said sureties have severally offered to become and be bound to Her Majesty, her heirs and successors for the due performance and fulfilment of the said tender within the period mentioned in that behalf, according to the terms and conditions of the said notice: And whereas the said tender was duly accepted on the 12th day of January, 1893, by the Minister for Public Works, on behalf of the Government of the said Colony in part, that is to say that it was accepted for item number 2 on the Schedule attached to the said specification for the supply of the said pipes, namely pipes from 3 inches to 8 inches in diameter, both sizes inclusive, cast on the bank in green sand, at the rate of £7 10s. per ton, with a reduction at the rate of 7s. 6d. per ton if the present duty is not charged by the said Government. It being distinctly understood that the said Government was not and is not bound to take any given quantity of pipes, but only such quantity or quantities as are required and ordered from time to time; and that if pig-iron is produced in the said Colony out of iron ore raised in the said Colony or principally raised therein, which can be shown to the satisfaction of the Engineer-in-Chief for Harbours and Rivers will produce castings of the quality specified, the said contractors shall be bound to use such pig-iron in the manufacture of such pipes; provided, however, that such iron can be obtained at a price not in excess of the market price then ruling in the said Colony of imported pig-iron with all charges of delivery added thereto at the said contractors' furnaces and on condition that this bond should be entered into by them the said contractors and the said sureties: And whereas such acceptance has been duly assented to by the said contractors and the said sureties as they hereby severally and respectively admit and acknowledge: And whereas it has since been agreed that the said specification shall be further modified in manner following, that is to say that the said contractors shall not be called upon to deliver more than 150 tons of the said pipes per week as the maximum amount, and that the said general conditions shall be modified in manner following, that is to say, that the security required for the due performance of this contract shall be a bond in the sum of £1,500, and not £2,000, as therein set out: Now the condition of the above written bond and obligation is such that if the said contractors do and shall well and truly perform and fulfil the said tender, and the contract arising out of such tender and the acceptance thereof as aforesaid, and all and every the terms, conditions, and stipulations thereof within

within the period hereinbefore in that behalf mentioned, then this obligation will be void and of none effect, otherwise to remain in full force and virtue.

Signed, sealed, and delivered by the said William Maher, in the presence of,— (L.S.) WM. MAHER.
HAROLD F. NORRIE, J.P.

Signed, sealed, and delivered by the said Joseph German, in the presence of,— (L.S.) JOSEPH GERMAN.
HAROLD F. NORRIE, J.P.

Signed, sealed, and delivered by the said James M'Mahon, in the presence of,— (L.S.) JAMES M'MAHON.
HAROLD F. NORRIE, J.P.

Signed, sealed, and delivered by the said Arthur Stenning, Searle, in the presence of,— (L.S.) ARTHUR S. SEARLE.
HAROLD F. NORRIE, J.P.

No. 6.

Agreement of Messrs. Pope, Maher, & Co., dated 1st February, 1893.

AGREEMENT made this 1st day of February, in the year of our Lord 1893, between William Maher and Joseph German, of Darlington, in the Colony of New South Wales, carrying on business together as contractors under the name, style, or firm of "Pope, Maher, & Co." (hereinafter styled or referred to as the contractors) of the one part, and Her Most Gracious Majesty Queen Victoria of the other part. Whereas the contractors with two sureties entered into a bond to Her said Majesty, and bearing even date herewith, as security for the due performance by them, the contractors, of the whole of the works in connection with manufacturing in the said Colony and delivering in Sydney and suburbs of cast-iron water pipes of the sizes set out in the said bond, and at the rate and in manner in the tender of the said contractors to do the said work mentioned, and in the specification annexed to the said bond, in accordance with the said specification and the general conditions also annexed to the said bond: And whereas the acceptance of the said tender as recited in the said bond being a modification of the said specification, it has been agreed that the contractors shall enter into and execute these presents in manner hereinafter appearing. Now this agreement witnesseth that in consideration of the premises the contractors do hereby, for themselves, their heirs, executors, and administrators, covenant with and to Her said Majesty the Queen, her heirs and successors, that they the contractors shall and will perform the various works required in and about the full and proper manufacture within the said Colony and delivery of the said 3-inch to 8-inch pipes, in accordance with the said specification and general conditions, at the rate of £7 10s. per ton, with the reduction at the rate of 7s. 6d. per ton if the present duty is not charged by the Government of the said Colony; and it is hereby agreed and declared between and by the said parties here that the said specification, general conditions, and tender, marked as in the said bond is recited, shall be read as incorporated in and forming part and parcel of these presents, in like manner as if the same had been herein written and set forth at length and that the said specification, general conditions, tender, and these presents shall together be taken to be the contract between the said parties in respect of the said works, modified in manner following, that is to say:—

Firstly.—That the Government of the said Colony shall not be bound to take any given quantity of the said pipes, but only such quantity or quantities as may be required and ordered from time to time.

Secondly.—That if, during the continuance of this contract, pig-iron is produced in the said Colony out of iron ore raised in the said Colony, or principally raised therein, which can be shown to the satisfaction of the Engineer-in-Chief for Harbours and Rivers will produce castings of the quality specified, the contractors shall be bound to use such pig-iron in the manufacture of the said pipes. Provided always that such iron can be obtained at a price not in excess of the market price then ruling in the said Colony of imported pig-iron, with all charges added thereto of delivery at the Contractors' furnaces.

Thirdly.—That the contractors shall not be called upon to deliver more than 350 tons of the said pipes per week as the maximum amount.

In witness whereof the said parties to these presents have hereunto set their hands and seals the day and year first before written.

Signed, sealed, and delivered by the abovenamed William Maher, in the presence of— WM. MAHER.
HAROLD F. NORRIE, J.P.

Signed, sealed, and delivered by the abovenamed Joseph German in the presence of— JOSEPH GERMAN.
HAROLD F. NORRIE, J.P.

Messrs.

Messrs. G. and C. Hoskins' Contract.

SCHEDULE.

1. Advertisement inviting tenders.
2. Specification and General Conditions.
3. Tender of Messrs. G. and C. Hoskins, dated 19th October, 1892.
4. Letter from the Under Secretary for Public Works to Messrs. G. and C. Hoskins, dated 25th January, 1893, notifying acceptance of tender.
5. Agreement of Messrs. G. and C. Hoskins, dated 20th February, 1893.

No. 1.
Advertisement of Invitation of Tenders.

TENDERS FOR PUBLIC WORKS.

Department of Public Works, Sydney, 14 October, 1892.

TENDERS will be received at this office for the public works specified in the schedule hereunder, up to 11 o'clock a.m. of the various dates set forth in the second column.

All envelopes containing tenders must be addressed to the President of the Tender Board, and have legibly endorsed upon them the name of the work for which the tender is submitted.

Tenderers may be in attendance when the tenders are opened, and the name of the lowest tenderer will be announced, if possible, before the duties of the Board have terminated.

The following conditions will have to be strictly complied with, otherwise the tenders will not be taken into consideration :—

1st. Each tender must state the time within which it is proposed to complete the work, and in every instance the full name or names of persons tendering, also the names in full, occupations, and addresses of proposed bondsmen.

2nd. At the foot of every tender there must be a memorandum, signed by the party tendering and two responsible persons as sureties, agreeing to be answerable for the due performance of the contract, in the event of the tender being accepted; and undertaking, in that event, that they will severally execute and deliver a bond to Her Majesty, in the penal sum mentioned in the specification, or otherwise arranged, for securing such performance.

3rd. No tender will be considered which shall have been received after 11 o'clock a.m. on the day upon which tenders are to be received, unless there are circumstances which, in the opinion of the Board, render it desirable that it should be received.

4th. Every tender must, as a guarantee of good faith, be accompanied by a preliminary deposit, calculated according to the following scale, viz. :—

For amounts up to £500 inclusive... ... ... £ 5 0 0
For amounts exceeding £500 and not exceeding £1,000 ... ... 10 0 0

For all sums over £1,000, 1 per cent. on the amount of tender up to a maximum deposit of £500. Such deposit to be in the form of a cheque in favour of the President of the Board, endorsed by the manager of the bank upon which it is drawn, or a bank draft.

5th. Any tender which may be received without such preliminary deposit shall, unless otherwise directed by the Board, be deemed to be informal, and be rejected accordingly.

6th. In the event of any tenderer failing to take up his tender, complete the bond, and proceed with the contract within the time specified, or withdrawing his tender after it shall have been opened, whether such tender shall have been accepted or not, all moneys deposited by him on account of such contract shall be absolutely forfeited to the Crown, and shall be paid to the credit of the Consolidated Revenue of the Colony.

7th. Whenever a tenderer shall fail to proceed with a contract as aforesaid, fresh tenders shall be invited at short notice for the work, unless in the opinion of the President there are circumstances which make it desirable for another tender in the same series to be accepted; but the tenderer by whose default such a course has been rendered necessary, shall be excluded from the competition, and from any competition for other works, at the pleasure of the President.

8th. In the event of any contract being tendered for at a schedule of rates, the approximate quantities as given of each item must be worked out and a total sum shown.

All deposits, with the exception of that of the lowest tenderer, when practicable, will be returned to the persons entitled thereto, immediately after the Board shall have adjourned; and the deposit made by the successful tenderer shall be returned to him on executing the bond for the fulfilment of the contract. When the contract is for a less sum than £200, the deposit, with tender, will not be returnable until the service is satisfactorily completed.

It is to be understood that the Government does not bind itself to accept the lowest or any tender; and no tender will be accepted until the head of the branch under whose directions the work is to be carried out has reported upon the whole of the tenders received.

WILLIAM JOHN LYNE.

Description of work or supplies to be tendered for.	Dates up to which Tenders will be received.	Where plan, specification, and form of tender may be seen.	Remarks.
* * * *	* *	* * * * * *	* *
	HARBOURS AND RIVERS.		
Supply of a probable quantity of 20,000 tons of straight cast-iron pipes of standard lengths and special castings to be manufactured in New South Wales, for the various Branches of the Public Works Department.	19 Oct., 1892	Office of the Engineer-in-Chief for Harbours and Rivers, Sydney, on and after the 29th instant.	See also Special Notice.
* * * *	* *	* * * * * *	* *

This is the copy notice referred to in our annexed agreement with Her Majesty the Queen, dated the 20th day of February, A.D. 1893.

G. J. HOSKINS.
C. H. HOSKINS.

Witness: HAROLD F. NORRIE.

No. 2.

No. 2.

Specification and General Conditions.

(A)

Department of Public Works.

CAST-IRON PIPES AND SPECIAL CASTINGS FOR WATER SUPPLIES GENERALLY.

SPECIFICATION for the supply of a probable quantity of 20,000 tons cast-iron socket and spigot straight pipes and special castings, to be made in the Colony of New South Wales.

THIS contract is for the supply and delivery, where required, on any of the Government or private wharves in Sydney Harbour, or on the railway trucks at Redfern or Darling Harbour railway stations, or at any of the depôts as follows :—Crown-street, Paddington, Park Road, Darlington, and Leichhardt, or at any place within the city boundary that may be pointed out by the officer taking delivery of a probable quantity of 20,000 tons of cast-iron straight pipes of standard 9 feet and 12 feet lengths, and special castings, in accordance with this specification and the general conditions attached thereto, or to additional descriptions or drawings hereafter to be furnished from time to time to the contractor by the superintending officer on the order of the engineer.

Quality of Cast-iron.

All the cast-iron shall be of the best grey metal, remelted in the cupola, strong, tough, close, hard, and uniform in texture, easy to cut or drill, of approved mixture and quality, and of such strength that a bar 3 ft. 6 in. long, having a section of 2 in. x 1 in., and weighing not more than 22 lb., will, when supported at points 3 feet apart, and loaded in the middle, sustain a test weight of not less than 28 cwt. It shall also be capable of withstanding a tensile strain of 10 tons suspended from a test piece turned to a diameter of 1·125 inches.

Cast-iron Test Bars.

The contractor shall make and provide from time to time, or as often as may be required by the superintending officer, three test bars to each of the before specified dimensions and weight, to be cast from the same running as that from which the pipes or specials are at the time being cast ; he shall also provide suitable machines and all workmen for proving the bars, and shall subject three bars to the specified transverse, and three to the tensile test, in the presence of the superintending officer whenever required. If more than one of the three bars tested transversely, or of the three tested in tension, fail to endure the strain without fracture, then the whole of the castings made from that melting shall be rejected and broken up, or entirely removed from the works.

Wrought-iron.

All the wrought-iron used in this contract shall be of an approved brand, equal in quality to good Staffordshire bars. It shall be capable of bearing a tensile strain of 23 tons per square inch of original section, with an elongation of not less than 15 per cent. of the length tested, which shall be 12 inches ; and any wrought-iron used shall be tested at the contractor's expense, he providing suitable appliances, labour, and material, whenever required by the superintending officer. All iron failing to withstand the specified test shall be rejected and removed from the contractor's premises.

Casting.

The straight pipes shall be cast vertically, in dry sand moulds, without the use of core-nails, chaplets, or thickness pieces ; or in green sand on the bank, at an angle of not less than 30 degrees, as may be hereafter determined or ordered from time to time ; they shall be truly straight in the axis, cylindrical, concentric, and of uniform cross sectional area throughout the barrel.

Each pipe, both socket and flanged, is to have a sufficient head of metal to secure solidity, which head is to be subsequently cut off in a suitable machine.

All the straight pipes shall be cast with the socket end downwards.

All the pipes and other castings shall be square at the ends and in the sockets, have a smooth surface within and without, and be sound, free from air-bubbles, scoriæ, and all other imperfections.

They shall be of the full diameter specified internally ; and any pipe or casting in which the thickness of the metal varies in any one place more than one-sixth of the specified thickness shall be rejected.

The curved pipes and other special castings shall be cast in loam or dry sand. They must, as far as possible, be cast vertically, with the socket downwards ; they shall be truly circular in bore, concentric, and of uniform cross-sectional area. All flanges shall be quite square with the axis of the pipe or branch, and shall be perfectly true and out of winding. Each cross, tee, and hydrant-pipe shall have the entrance to the branch neatly rounded off. No pipe will be received which shows a fin on the inner side at the junction of the branch with the body.

The pipes and all other castings shall be properly fettled and cleaned, and the runners carefully cut off.

Special Castings.

The special castings shall include all usual T, Y, and cross-pipes, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, and other bends of various radii, hydrant flanged branch-pipes, hydrant-risers, reducing-pipes, collars, end-caps, &c. Hydrants, valves and surface boxes will be separately tendered for. The contractor will be supplied with detailed dimensioned drawings of the specials required from time to time, and he must furnish the castings in strict accordance with the drawings so supplied.

Facing.

All flanges for joints are to be faced by turning or planing, and sufficient allowance shall be made on all flanged castings to allow of their being turned or faced up true without reducing the thickness below the dimensions shown or specified, or making the lengths more or less than is specified. All faced work to be covered with white lead and tallow to prevent rusting.

Flanges

Flanges and Bolt-holes.

All the bolt-holes in the pipe-flanges shall be drilled to a true pitch from standard templets; the diameter of the holes shall in all cases be at least $\frac{1}{16}$ in. larger than the diameter of the bolts to be placed in them.

The flanges of the hydrant pipes shall be drilled so that the centre line of the pipe shall pass exactly between the holes. The holes in the flanges of the hydrant risers (or lengthening pieces) shall be exactly opposite to each other, and shall match the holes in the hydrant pipe-flange.

Bolts and Nuts.

The connecting and flange bolts shall be forged with the heads solid and not welded on, and the nuts shall be punched hot. The bolts shall be true to the specified diameter, parallel, and without fillets to the necks. The threads of the screws shall be cleanly cut to Whitworth's standard gauge, and the bolts shall be fitted with screwed nuts hand-tight on them. All bolt heads and nuts to be hexagonal. Five per cent. extra of bolts and nuts of each respective size are to be supplied.

Spigot and Socket Gauges.

In order to ensure that the sockets shall in all cases fit the spigots, a pair of turned and bored iron gauges shall be made to the exact dimensions of the outside of the spigot, and the inside of the socket of each size of pipe, to which they shall in all cases be applied by the contractor; and any pipe or casting of which the spigot or socket, or both, when tested by the gauges, are found not to be true to the required shape and dimensions, will be rejected.

Hydrostatic Testing.

The whole of the pipes and special castings shall be proved to a hydrostatic pressure of 300 lb. to the square inch before being accepted. The proving in all cases is to be done by the contractor, and at his expense, in the presence of the superintending officer. The pressure to be indicated by an approved and corrected pressure gauge connected with a force pump proving machine, and the strain is to be maintained for at least three minutes. During the time each pipe, &c., is undergoing the proof it shall be repeatedly struck in various parts of its length and circumference with a suitable hammer, and be kept externally dry, so as to exhibit more perceptibly any escape of water resulting from the pressure applied. All pipes or other castings which are found by testing, or on examination, to be defective or unsound in any respect, shall be forthwith destroyed or removed from the contractor's premises, so there may be no risk of their being placed with the material to be supplied under this contract. When the superintending officer shall so request, a pipe shall be selected and submitted to a further test for quality of metal by being struck and broken by hammering, and should undue brittleness be exhibited, all pipes cast of that particular mixture will be condemned.

Hooping Pipes, &c.

After testing, and before coating, wrought-iron hoops, 1 inch by $\frac{3}{8}$-inch, shall be tightly shrunk on the spigots of all pipes and specials of and over an internal diameter of 12 inches. The hoops shall be closed with a perfect weld, the sizes being regulated so that they will just go on when at a red heat.

After coating, the inspector shall test the welding, tightness, and fit of each hoop with the hammer, and any which he may find defective shall be taken off and perfectly fitting hoops substituted.

The price per ton for pipes and specials must cover the cost of the hoops; each pipe, &c., must weigh the schedule weight, exclusive of hoop. No special payment is to be made for hoops.

Coating Castings.

Every pipe and special casting must be properly dressed and made clean and free from earth, sand, or other impurities, hard steel-wire brushes being used to remove the sand, &c.

All the pipes, &c., shall, after testing, and before rust has set in, be coated in accordance with Dr. Angus Smith's process, the pipes, &c., to be dipped in the hot solution, and kept there till the pipe and solution are of the same temperature, namely 300 degrees. The coating to be done in the presence of the superintending officer. The coating shall form a crust of at least $\frac{1}{16}$-inch over the whole surface.

If the pipes, &c., cannot be tested and coated directly after being cleaned, the surfaces must be oiled with linseed oil, and stored in a dry and suitable house to prevent oxidation, until they can be coated. No pipes or other castings will be accepted which have been dipped after rust has made its appearance.

The pipes, &c., when drawn from the bath shall be suspended or placed in a vertical position, and allowed to remain so until the coating is sufficiently hard to resist injury from rolling.

Length and Weight of Pipes.

Every standard pipe shall measure when in work the length given in the schedule, *i.e.*, exclusive of the length of the socket, and shall be as nearly as possible the weight set forth in the schedule; any pipe deviating more than the allowance specified below the prescribed weight shall be rejected, and for any excess above the deviation allowed no payment will be made.

Weight of Special Casting.

In order to determine the weights of specials, a sample of any given special shall be carefully measured as to its being true to drawing, and, if found of the proper dimensions, its weight, as ascertained by the scales, shall be deemed its proper weight, but the specified deviation will also be allowed on specials as well as on pipes.

Patterns.

Patterns, &c.

All patterns used shall be made of iron, truly turned and of the proper form and dimensions; the cores for the sockets for all pipes shall be made in suitable iron moulds, turned to the proper forms and dimensions.

All callipers, gauges, and straight-edges to be supplied by contractor for the inspector's use.

Marking.

Each pipe and special casting shall have moulded on the outside of the socket letters indicating for what work it is intended to be used (as the contractor will be from time to time instructed) in projecting block type 1 inch long. The thickness of each pipe and special is also to be moulded in projecting figures near the letters. Each pipe and other casting shall be carefully weighed, and each standard pipe of 8 inches in diameter and over, and all special castings, shall have the weight legibly marked on with white oil-paint on each in plain figures; above the weight shall also be painted a diamond, within which shall be the letters NSWG. The contractor's distinguishing mark, or brand, shall also be cast on each pipe.

Omissions in Specification.

Should it appear that any matters have been omitted in the specification, which are obviously necessary for the proper construction and stability of any of the work herein described, all such omissions shall be supplied by the contractor, and shall be considered as included in his contract.

Breakage.

The contractor must deliver the whole of the pipes and special castings at the places hereinafter named in a perfectly sound condition, as no pipe or special casting which is cracked or broken will be accepted, and the contractor is bound to replace any damaged pipes, &c., with perfect ones, entirely at his own cost.

Rate of delivery and Penalty for delay.

The contractor shall, if required so to do, commence the delivery of pipes, &c., under this contract on and after the tenth week from the date of the acceptance of his tender, and shall continue the delivery over a period of five years from that date, being the term over which the contract is to be in force, unless the contractor shall fail in the fulfilment of any of the terms and conditions of contract, as set forth in this specification and general conditions attached, in which case the Government is to have the power wholly to terminate the contract.

The contractor shall, on the receipt of an order signed by the Engineer-in-Chief for Harbours and Rivers, or by the Engineer for Water Supply of the Metropolitan Board of Water Supply and Sewerage, or other head of any branch of the Works Department, deliver pipes or special castings of such diameters, lengths, and thicknesses, and at such place or places as are stated in the order, at the rate of 200 tons per week, or at such less rate as the superintending officer may determine, until such orders are completed.

In the event of the contractor failing to commence delivery of pipes, &c. (if required to do so), at the expiry of the tenth week from the acceptance of his tender, he shall forfeit to the Government the sum of £20 for each week, or part of a week's delay, in such delivery.

And in the event of the contractor, when required to deliver up to the full extent of 200 tons per week, failing to do so, he shall forfeit to the Government the sum of £1 for every ton, or part of a ton, delivered short of such weight. The amount of such forfeitures may be deducted by the Government from any money due, or to become due, to the contractor under the contract.

Place of Delivery.

The whole of the pipes and special castings shall be delivered and neatly stacked at Crown-street depôt, Paddington depôt, Park Road depôt, Darlington depôt (Newtown Road), or Leichhardt depôt (Balmain Road), or at any place within the city boundary that may be pointed out by the receiving officer; or at any of the Government or private wharves in Sydney Harbour, and neatly stacked thereon, if required, or on railway trucks at Redfern and Darling Harbour Railway Stations, as will be stated in the various orders for the pipes; or should the engineer require any portion of the pipes, &c., to be delivered at the depôt, Carlow-street, North Sydney, or any other place outside the city boundary, the contractor shall deliver them wheresoever directed, either neatly stacked or laid along the streets in an approved manner, and for this delivery outside the city boundary (except to Paddington, Leichhardt, or Darlington depôts) the contractor will be allowed 1s. 3d. per ton per mile for each mile beyond the city boundary, also tolls and ferry dues.

At each delivery of pipes, &c., the contractor must hand to the officer appointed to receive them a delivery note, on which shall be stated the number and description of the pipes and special castings delivered, and the contractor must forward, addressed to the head of the branch ordering the pipes, &c., an invoice showing in detail the size, number, and weight of the pipes and specials in the delivery.

Cash Deposit.

A cash deposit or marked cheque for £200 must accompany each tender; all other regulations for tendering to be complied with.

Size of Pipes, &c.

The larger bulk of the pipes, &c., are to be of from 3 up to 9 inches in diameter, and the balance of from 10 up to 18 inches diameter.

Mode of Tendering.

Tenderers shall send in their tenders on the printed form of tender attached, and in accordance with the regulations for tendering annexed, and they are invited to submit tenders for the whole of the standard pipes, cast vertically in dry sand, in accordance with this specification; and also an alternative tender for casting all standard pipes up to and inclusive of the 8 inch in green sand on the bank, and the balance in dry sand vertically, as specified.

SCHEDULE—CAST-IRON PIPES.

Internal diameter in inches.	Thickness in inches.	Length of each pipe in feet.	Weight of each pipe.	Permitted deviation in weight.	Description of pipes.
			cwt. qr. lb.		
3	$\frac{3}{8}$	9	1 0 14	2½ per cent.....	Spigot and socket.
4	$\frac{3}{8}$	9	1 1 22	,, ...	,, ,,
5	$\frac{7}{16}$	9	2 0 8	,, ...	,, ,,
6	$\frac{7}{16}$	9	2 1 27	,, ...	,, ,,
6	$\frac{1}{2}$	9	2 3 7	,, ...	,, ,,
7	$\frac{1}{2}$	9	3 1 0	,, ...	,, ,,
7	$\frac{9}{16}$	9	4 0 12	,, ...	,, ,,
8	$\frac{1}{2}$	9	3 2 23	,, ...	,, ,,
8	$\frac{9}{16}$	9	4 2 16	,, ...	,, ,,
9	$\frac{1}{2}$	9	4 0 18	,, ...	,, ,,
9	$\frac{9}{16}$	9	5 0 26	,, ...	,, ,,
10	$\frac{7}{16}$	9	5 0 22	,, ...	,, ,,
10	$\frac{9}{16}$	9	5 3 2	,, ...	,, ,,
12	$\frac{7}{16}$	12	8 0 4	,, ...	Spigot and socket, with 1-in. x ⅝-in. W.I. spigot hoop.
12	$\frac{9}{16}$	12	8 3 18	,, ...	,, ,, ,,
12	$\frac{5}{8}$	12	10 3 6	,, ...	,, ,, ,,
14	$\frac{5}{8}$	12	10 1 11	,, ...	,, ,, ,,
14	$\frac{11}{16}$	12	12 1 25	,, ...	,, ,, ,,
15	$\frac{5}{8}$	12	11 0 12	,, ...	,, ,, ,,
15	$\frac{3}{4}$	12	13 1 14	,, ...	,, ,, ,,
15	$\frac{7}{8}$	12	15 2 20	,, ...	,, ,, ,,
16	$\frac{3}{4}$	12	11 3 7	,, ...	,, ,, ,,
16	$\frac{3}{4}$	12	14 0 23	,, ...	,, ,, ,,
16	$\frac{7}{8}$	12	16 2 18	,, ...	,, ,, ,,
18	$\frac{3}{4}$	12	13 0 23	,, ...	,, ,, ,,
18	$\frac{7}{8}$	12	15 3 17	,, ...	,, ,, ,,
18	$\frac{7}{8}$	12	18 2 13	,, ...	,, ,, ,,

This is the specification, marked (A) referred to in our annexed agreement with Her Majesty the Queen, dated the 20th day of February, A.D. 1893.

G. J. HOSKINS.
C. H. HOSKINS.

Witness: HAROLD F. NORRIE, J.P.

(B)

GENERAL CONDITIONS.

Interpretation Clause.

1. The words "Superintending Officer" in these conditions shall mean any person who may from time to time be appointed by the engineer to supervise the works or buildings, and the words "Engineer-in-Chief" or "engineer" shall mean the Engineer-in-Chief for Harbours and Rivers for the time being, or the Engineer for Water Supply under the Metropolitan Board of Water Supply and Sewerage, or the head of any other branch of the Works Department. The words "Minister for Works" shall mean the Secretary for Works for the time being. The word "Government" (where used) to mean the Government of New South Wales promoting this undertaking. The word "schedule" to mean the adjusted schedule of prices settled by the engineer and contractor previous to commencing the work. Words importing the singular number only shall include the plural number, and words importing the plural number only shall include the singular number.

Dismissal of Workmen, removal of improper Materials, &c.

2. The engineer shall have the power of immediately dismissing any agent or workman employed by the contractor, and of having removed off the works any materials, plant, or implements which, in his opinion, are insufficient for the purpose intended, or at variance with the meaning and intention of this specification; and the cost of the removal of any such plant, materials, or implements shall be paid by the contractor.

Instructions to be obeyed.

3. Should the contractor refuse or neglect to carry out the instructions of the engineer or the superintending officer, the engineer shall have the power of suspending the usual monthly certificate until such instructions have been complied with.

Drawings, Specifications, &c.

4. The plans, sections, and drawings represent generally the form and dimensions of the several works. Where any discrepancy exists between the dimensions as indicated by the scale and those marked in figures, the figures are to be considered as correct, and are to be taken in all cases in preference to the scale measurements; and if there should be any discrepancy between the figures or dimensions, or the form of construction, or the material as indicated in the drawings, and the dimensions, form of construction, and materials given in the specification, the directions of the specifications shall be adopted; and in all cases of defective description or any ambiguity, the explanation given by the engineer shall be binding upon the contractor. Also, anything contained in the drawings and not in the specification, or anything contained in the specification and not shown in the drawings, shall be equally binding as if it were contained in both.

Extra Works, omission of Works, &c.

5. If, at any time, while the works are in hand it shall be deemed expedient by the engineer to order material or work of a different description to that specified, or to increase or diminish the dimensions or extent of any works to be done under this contract, or to alter their situation, or to vary the form or dimensions of any of the said works, or any part thereof, or to substitute one class of work for another, he shall have full power to do so, and to order and direct any such increase, diminution, alteration, or substitution

substitution, which shall be executed by the contractor, and if of the class of works provided for in the schedule of prices, at such schedule prices; and no such increase, diminution, alteration, or substitution of works shall in any way annul or set aside this contract, or extend the time for the completion thereof, unless the Minister for Works shall see fit to grant such extension; but such additions or alterations shall be measured and allowed and paid for, or deducted from the contractor's account, as the case may require, according to the schedule of prices: Provided that if any portion of the works so ordered to be done shall not be of the class of works provided for in the schedule of prices, the same shall be executed by the contractor at such prices as may be agreed for with the Engineer-in-Chief; but if the contractor and the Engineer-in-Chief cannot agree as to the price to be paid, the engineer aforesaid may order and direct the same to be done by such person or persons as he may think fit. Before any extra work or work of an altered class is undertaken by the contractor, it shall be imperative for him to procure an order in writing from the Engineer-in-Chief or his superintending officer for carrying out such extra, or variation of work, and the contractor shall not be entitled to any payment for such extras or variations, unless he produce the written order for the same as aforesaid, and he shall not be entitled to plead that the Engineer-in-Chief, or his officer, omitted to give such written order, as it is to be distinctly understood that the onus of obtaining such order shall be left on the contractor. The contractor shall not be entitled to any rate other than schedule rate on any plea that the work was in a different or more difficult position, or of a different class than shown on plan or specified, or carried out under circumstances not contemplated in the specification, unless an agreement entitling him to payment by other than schedule rates shall have been previously made and signed by the Engineer-in-Chief and the contractor.

Net Measurements.

6. All measurements of the works shall be made according to the actual dimensions, notwithstanding any general or local custom to the contrary.

Labour, Materials, Plant, &c.

7. The contractor shall provide, at his own costs and charges, all materials, labour, tools, plant, tackle, machinery, scaffolding, &c., for the proper completion of the works, at the prices stated in his schedule or tender.

Contractor liable for injury to adjoining Lands, Properties, &c.

8. In executing the several works herein specified, or conveying materials thereto, the contractor must be careful to do as little damage or injury to the adjoining lands or properties as possible, and he will be held answerable for the whole amount of such damage or injury, which may be deducted out of the moneys he may have in the hands of the Government.

Contractor to take the whole risk of executing the Works properly.

9. The contractor shall take upon himself the whole risk of executing the works to the satisfaction of the Engineer-in-Chief, and in accordance with the plans, sections, and specifications, of the correctness of which he must satisfy himself.

Setting out Works.

10. The works will be set out for the contractor, but he must satisfy himself of their accuracy, as no work incorrectly set out or improperly executed will be paid for by the Government.

Contractor to be represented.

11. The contractor at all times during the progress of the works, when he is not personally superintending them, must have a responsible agent or overseer stationed on them to receive instructions from the superintending officer or Engineer-in-Chief, and to represent the contractor for all the purposes of this contract.

Progress of Works.

12. Should the engineer be at any time dissatisfied with the mode of proceeding, or at the rate of progress of the works, or any part thereof, he shall have full power, without vacating this contract, to take the works wholly or in part out of the hands of the contractor, and to procure, employ, and make use of any of the contractor's horses, plant, implements, or material on the ground, as well as all labour, or materials which he may deem necessary for completing the works, the cost of such labour and materials to be deducted from any money that may be then due or may thereafter become due to the contractor; and if the money then due or thereafter becoming due to the contractor shall not be sufficient for that purpose, the balance remaining unpaid may be recovered in an action for damages for breach of contract, or as money paid for the use of contractor.

Cancellation of Contract.

13. The Government or the Engineer-in-Chief shall have the option, and full power and authority, in lieu of proceeding under the last preceding clause of these conditions, if the contractor fail to proceed in the execution of, and to carry on the works in the manner and at the rate of progress required by the engineer, of cancelling this contract, so far as relates to the works remaining to be done; and in such case the moneys which shall have been previously paid to the contractor on account of the works executed shall be taken by him as full payment for all works done under the contract; and upon notice in writing under the hand of the Engineer-in-Chief that he, under the authority of this condition, cancels the contract, being served upon the contractor, or left at his last known place of abode, the contract shall be cancelled, and thereupon all sums of money that may be due or unpaid to the contractor, together with all implements in his possession, and all materials provided by him upon the ground upon which the work is being carried on, or adjacent thereto, shall be forfeited; and all sums of money named as penalties for the non-fulfilment of the contract within the time specified shall also be forfeited and become payable to the Government, and the said implements and materials shall become and be the absolute property of the Government, and with the moneys so forfeited and payable as aforesaid shall be considered as ascertained damages for breach of contract.

Time of Completion, &c.

14. The contractor shall complete the whole of the works comprised in this contract, as provided for in the specification, from the date of the acceptance of his tender; and in the event of their non-completion at the specified times, should the Engineer-in-Chief not have proceeded under clauses Nos. 12

and

and 13 of these conditions, or either of them, the contractor shall forfeit and pay such fines as are named in the specification, and which sum or sums may be deducted from any money payable to the contractor under this or any other contract. No certificate will be given after the date specified for the completion of the contract until the whole of the works shall have been properly completed to the satisfaction of the Engineer-in-Chief, unless the time for the completion of the contract shall have been extended by the Minister for Works, in which case such extended time shall become the time for the completion of the contract; and it is to be expressly understood that the fact of the time having been so extended shall not in any way be taken as a waiver of the contract, or as annulling or setting aside the contract in any respect, or be taken as releasing the contractor or his sureties from any of the responsibilities or obligations of the contract, which, in all other respects, shall remain the same as if the time had not been extended.

The like liability also shall hold good as to the obligations of contractor and sureties in the event of any advance to the contractor being made from the retention money, or on material on the ground and not *in situ;* and for the purposes of this contract it shall not be necessary to apprise the sureties of any extensions of time having been granted, or advances and payments made, as contemplated in this or other clause or clauses of these general conditions or of the specification.

Copies of Drawings, &c.

15. All copies of drawings or specifications required by the contractor for carrying on the works must be made at his expense; but should any copies of drawings or specifications be furnished to him at the expense of the Government, they must be returned to this office before a final certificate for the work shall be given.

Liability of Contractor.

16. The care of maintenance of all works under this contract shall remain with the contractor until their completion, and until the Engineer-in-Chief for Harbours and Rivers shall, by notice in writing under his hand, inform the contractor that he has taken charge thereof; and until such notice shall have been given, the contractor shall be responsible for all accidents from whatever cause arising, and shall make good all damage thereto.

Contractor not to sublet Works or assign Moneys.

17. The contractor shall not assign over or under-let this contract or any part thereof, or assign all or any of the moneys payable or to become payable under the contract, or all or any part thereof, or any other benefit whatsoever arising or which may arise under this contract, to any other person, without the consent in writing of the Engineer-in-Chief first obtained. The contractor for each and every breach of this condition shall pay to the Government the sum of £50 as and for liquidated damages; and the sum or sums payable as such damages may be deducted from any sum or sums due to the contractor under this or any other contract with the Government. And any permission to assign over or under-let works to be done under this contract shall not discharge the contractor from liability to see that the works so assigned or under-let are executed and completed in terms of this contract.

Truck System not allowed.

18. The workmen, tradesmen, and labourers of every class employed on the works to which these conditions refer, shall be paid their wages in full, in money, current coin of the Colony, at least once in every month, and no ticket or other system of payment by provisions, liquors, or goods, will on any pretence be allowed; nor shall the contractor, or any person or persons employed by him, or in any way connected with him, establish any shop for the supply of provisions, liquors, or goods; nor shall the contractor oblige his workmen to take provisions, liquors, or goods of any kind from any person in particular. The workmen of every class shall be paid on the works if it be possible, or in some building adjoining; and in no case shall they be paid at a public-house or other place where liquors or refreshments are sold.

Power to the Government to pay Workmen's Wages.

19. Before the payment of any money to the contractor, the Engineer-in-Chief may require from him a statutory declaration that the tradesmen and labourers of every kind employed on the works to which these conditions refer have been paid their wages and claims of every kind in full, in money, the current coin of the Colony, and to the latest date at which such wages or claims are due; and the Engineer-in-Chief may withhold the payment of any money that may be due or may become due to the contractor until such declaration has been made and delivered to him.

If the contractor shall fail or omit to pay the wages of any workman employed upon the works in the current coin of the Colony, it shall be lawful for the Government or the Engineer-in-Chief, as often as the same shall happen, upon complaint of such failure or omission made by any such workman, and upon production or other satisfactory proof of any judgment or order of a Court of Petty Sessions, or of any other Court of competent jurisdiction, to pay the amount mentioned in such order to such workman, and to deduct the same amount from any money then due or owing, or thereafter to become due or owing, to the contractor under this contract.

Bankruptcy or Insolvency.

20. If the contractor shall become insolvent, have his estate placed under sequestration, or shall make an assignment of his estate for the benefit of his creditors, it shall be lawful for the Government, without previous notice to the contractor or the official or other assignee or assignees of his insolvent estate, or to the trustee or trustees under the assignment, to take the works out of the hands of the contractor and of the assignee or trustees of his estate, and to re-contract with any other person or persons to proceed with and complete the same upon such terms, stipulations, and conditions as shall be deemed expedient; and all the then remaining materials, implements, and plant aforesaid may be used in and applied for the purposes of the works; but, on the final completion of the works, the surplus of such materials, implements, and plant shall cease to belong to the Government, and shall become the property of the said assignee or trustees, without any allowance for or payment by the Government, or on account of any loss or diminution, wear, tear, or injury they may have sustained in the meantime.

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Security.

21. The contractor will be required to provide two approved persons as sureties, to enter with him into a bond to the Government, jointly and severally, in the penal sum of £2,000 for the proper performance and completion of the contract. The names of the persons proposed by him as sureties must be stated in his tender, the Government reserving to itself the power of rejecting such proposed sureties, should it deem it advisable to do so.

It shall be optional with the Government, in lieu of the nominal security before specified, to require the contractor to provide a cash security, in which event, within fourteen days after notice of the acceptance of his tender shall have been given to the contractor, or posted to the address of his last known place of business or residence, the contractor shall deposit with the Secretary for Public Works, or at the option of the Secretary for Public Works in some bank or banks in Sydney, upon fixed deposit, in the name of the Secretary for Public Works, the sum of £2,000, to be held by the said Secretary for Public Works as security for the due and proper performance and completion of the contract until the Engineer-in-Chief has certified that the whole of the work in the said contract has been completed to his satisfaction, or until the contract has been cancelled by the Secretary for Public Works under the power given to him in that respect under clause 13 of these conditions—which last-mentioned event happening, the money so deposited will become forfeited. If, however, the contract shall not be declared to be cancelled under the said 13th clause, and if the works comprised in this contract are not completed within the time referred to in clause 14 of these conditions, the weekly or other penalties which under the last-mentioned clause will be payable to the Secretary for Public Works may be deducted and taken from the money so deposited, or from any other moneys, as more particularly provided in the 14th clause of these conditions.

Should the contractor fail to secure such persons as may be deemed by the Government to be eligible sureties, or in the event of a cash security being required, fail to deposit the said sum of £2,000 as hereinbefore provided, within fourteen days from the acceptance of the tender, or should the contractor fail to execute the contract for the due performance of the works mentioned in the said tender, the Secretary for Public Works will have the option of and full power and authority to declare such acceptance to be annulled, in which case the preliminary cash security (if such were given) which was deposited with the tender shall be absolutely forfeited to the Crown.

The contractor will be entitled to receive any interest that may be payable upon the fixed deposit of the money, if the money shall be placed in a bank at fixed deposit, as such interest becomes payable, unless the deposit shall have become forfeited, as hereinbefore provided; but it is expressly declared that the Secretary for Public Works is not to be held liable or answerable in any way for any loss of the money so deposited by reason of the same having been deposited in a bank as fixed deposit, or for any loss of interest from the fixed deposit not being renewed.

It is hereby declared that, for all or any work done or material found and provided by the contractor before the due execution of this contract, he shall not have any right of action, claim, or demand against the Government; and he shall not be entitled to plead in answer to this that the Government permitted him to proceed with the work before the said bond and contract were executed.

Progress Payments without prejudice, &c.

22. No certificate given to the contractor for the purpose of any progress payments shall prevent the Engineer-in-Chief from, at any future time before the termination of the contract, rejecting all unsound materials and improper workmanship discovered subsequently to the giving of the last previous certificate; and, notwitstanding the giving of any certificate that portions or the whole of the works have been satisfactorily performed, the Engineer-in-Chief may require the contractor to remove and amend at any future time previously to the final payment on account of the construction or maintenance of the works, any work that may be found not to have been performed in accordance with the contract; and the contractor must remove and amend at his own cost all such work when so required, notwithstanding any approval made or given by the superintending officer; and the Government shall have power, on the report of the Engineer-in-Chief that the work approved of as aforesaid is not in accordance with the contract, to deduct from any moneys that may be due, or that may become due to the contractor, the whole amount that has been paid on account of the work.

If, in the opinion of the Engineer-in-Chief, further inquiry is necessary or desirable before any certificate be given, he shall have power to withhold such certificate for any period which he may consider necessary for the purposes of such inquiry from the date at which, in the ordinary course, the certificate would have been given.

None of the conditions of this contract shall be varied, waived, discharged, or released, either in law or in equity, unless by the express consent of the Government, testified in writing.

Payments.

23. Payments may be made monthly for all pipes delivered less 10 per cent., which shall be retained until the completion of each order, unless such payments shall become not payable by reason of anything contained in these conditions, up to the date specified for the completion of the contract, on the engineer's certificate as the work proceeds; and it is expressly declared that the obtaining a certificate from the engineer that the work done by the contractor has been satisfactorily executed or completed to his satisfaction shall be a condition precedent to the contractor having any right or cause of action in respect of any work done or materials provided, and to the contractor having any right of action or claim to the payments from time to time to be made hereunder, as well as to the final payment upon the whole of the work being finished.

Miscellaneous.

24. The Engineer-in-Chief shall have full power to decide in what order in point of time the various parts of the work or works comprised under this contract shall be carried out; and he shall likewise have full authority to stay or delay, for such time as he thinks fit, the carrying out of any part or parts, or of all parts, of the said works; and the contractor in such case shall only be entitled to such extension of time as the Engineer-in-Chief shall think sufficient under the circumstances, and the said Engineer-in-Chief shall also have the power to direct the omission of the carrying out of any part or parts of the said works, and the value of such work so omitted in each case, calculated at the schedule rates,

rates, or in the event of there being no schedule rates, calculated on the basis of the proportionate value which such work bears to the lump sum, as ascertained by the Engineer-in-Chief, whose decision on that point shall be final, shall be deducted from the contract sum.

The Engineer-in-Chief shall further have the power, at his discretion, without vacating this contract, to enter upon, by himself or his agents, and make use of any part or parts of the work comprised under this contract, and his doing so shall in no wise be held as a waiver of the responsibility of the contractor in respect to his contract, except in so far as any injury may accrue to such work so entered upon, by reason of any proved carelessness of any employee of the Government, in which event the contractor shall be free from liability on account thereof, but not otherwise.

Maintenance.

25. The contractor will be bound to maintain the works for a period of after their final completion and use by the Government; and if any part should, within that period, show signs of weakness or of giving way, or should any defective workmanship or materials be detected, the contractor, when called upon to do so, shall make good the same at his own cost, to the satisfaction of the Engineer-in-Chief, before the reserve balance will be paid. It is to be distinctly understood that the Government shall have the full free, and unrestricted use of the said works, without any interference whatever on the part of the contractor, during the currency of this period of maintenance; and such use of the said works on the part of the Government shall not be held as relieving the contractor of any liabilities or obligations whatever in respect of his contract.

C. W. DARLEY,
Engineer-in-Chief for Harbours and Rivers.

Department of Public Works, Harbours and Rivers Branch,
Engineer's Office, Sydney, 29th August, 1892.

REGULATIONS for the conduct of tendering under the Public Works Department.

1. The Tender Board shall meet every alternate Wednesday, at 11 a.m., unless otherwise arranged.
2. Three members of the Board shall form a quorum. The senior member present shall preside in the absence of the President or Vice-President.
3. In no case shall tenders be opened except in the presence of a quorum of the Board.
4. No tender shall be received after 11 a.m. on the day named for the receipt of such tender, unless there are circumstances which, in the opinion of the members of the Board then sitting, render it desirable to do so.
5. Each member of the Board must attend personally when called upon, but in the event of circumstances precluding his attendance at any time, the authority of the President must be obtained for another representative from the same Department to act in his place.
6. The tender box shall be secured with two locks, each lock to have wards diverse from the other, one key to be in the possession of the Under Secretary, and the other in that of another member of the Board, who shall be selected by the President.
7. It shall be the duty of the President, Vice-President, or the senior member present, as the case may be, as soon as the tenders shall have been opened and the necessary particulars ascertained, to publicly announce the number of tenders received for each work, and the name of the lowest tenderer; but no tender shall be accepted until the head of the branch under whose directions the work is to be carried out has reported upon the whole of the tenders received.
8. The Secretary shall, as soon as practicable after the Board has adjourned, exhibit in a conspicuous position in the Public Works Office, a full statement of the tenders received, showing the work, the name of the tenderer, and the amount of each tender.
9. All envelopes containing tenders must be addressed to the President of the Board, and have legibly indorsed upon them the name of the work for which the tender is submitted.
10. Every tender must, as a guarantee of good faith, be accompanied by a preliminary deposit, calculated according to the following scale, viz.:—

For amounts up to £500 inclusive	£5 0 0
For amounts exceeding £500 and not exceeding £1,000	£10 0 0

For all sums over £1,000, 1 per cent. on the amount of tender up to a maximum deposit of £500. Such deposit to be in the form of a cheque in favour of the President of the Board, indorsed by the manager of the bank upon which it is drawn, or a bank draft.

11. All deposits, with the exception of that of the successful tenderer, shall be returned by the Secretary to the person entitled thereto, as soon as possible after the Board shall have adjourned, and the deposit made by the successful tenderer shall be returned to him on his executing the bond for the fulfilment of the contract. When the contract is for a less sum than £200 the deposit with tender shall not be returnable until the service is satisfactorily completed.
12. Any tender which may be received without such preliminary deposit shall, unless otherwise directed by the Board, be deemed to be informal, and rejected accordingly.
13. In the event of any tenderer failing to take up his tender, complete the bond, and proceed with the contract, within the time specified, or withdrawing his tender after it shall have been opened, whether such tender shall have been accepted or not, all moneys deposited by him on account thereof or in connection therewith shall be forfeited to the Crown, and in such case be paid to the credit of the Consolidated Revenue of the Colony.
14. Whenever a tenderer shall fail to proceed with a contract as aforesaid, fresh tenders shall be invited at short notice for the work, unless in the opinion of the President there are circumstances which make it desirable for another tender in the same series to be accepted; but the tenderer by whose default such a course has been rendered necessary shall be excluded from the competition, and from any competition for other works, at the pleasure of the President.
15. In the event of any contract being tendered for at a schedule of rates, the approximate quantities as given of each item must be worked out and a total sum shown.

16. In submitting a tender the full Christian name of the tenderer must be given, or when the offer is in the name of a firm, the names in full of each member. When bondsmen are required, the names in full, occupations, and addresses must be stated in the tender. The omission of this information will render the tender liable to be declared informal.

17. The Board shall not be bound to accept the lowest or any tender.

18. The Board-room shall be open for the admission of the public while the tenders are being opened and declared.

FORM OF TENDER.

Department of Public Works.

Cast-iron Pipes, &c., for Water Supplies Generally.—Supply of Cast-iron Water pipes and Special Castings.

the undersigned do hereby undertake and agree to execute and perform the whole of the works in connection with the manufacturing in the Colony of New South Wales, and delivering in Sydney and suburbs, at the various places specified, cast-iron water-pipes and special castings of the several sizes and thicknesses enumerated in the schedule contained in the specification, and in accordance with drawings to be hereafter supplied, and complete the same according to the true meaning and intent of the specification and general conditions, at the schedule of prices hereunder; also agree to deliver the whole of the pipes and special castings that may be ordered, up to 20,000 tons in quantity, at the rate and manner specified, during the term of five years from the date of the acceptance of tender.

enclose herewith a cash deposit of or marked cheque for the sum of £200, which agree shall be dealt with in accordance with the regulations for tendering attached to the specification.

(*Signature*)

(*Address*)

SCHEDULE of prices for cast-iron pipes and special castings made in the Colony of New South Wales.

No.	Items.	Probable quantity, tons.	Rate per ton.	Amount.
			£ s. d.	£ s. d.
1	All pipes to be cast vertically in dry sand as specified	As may be ordered, quantity unknown, probably 20,000 tons.		
2	Pipes from 3 in. diameter up to 8 in. diameter, both sizes inclusive, cast on the bank in green sand			
3	Pipes from 9 in. diameter up to 18 in. diameter, both sizes inclusive, cast vertically in dry sand			
4	Special castings, all sizes and kinds			

The prices in the preceding schedule include labour, material, and workmanship of every kind necessary for the full and perfect completion of the work to the satisfaction of the Engineer-in-Chief for Harbours and Rivers. Contractors in framing their tenders must adhere to the above form of schedule.

The Government reserves the right to accept either one tender for schedule item No. 1 or separate tenders for schedule items 2 and 3, in which latter case the Government will be in no way bound to order any given quantity under either contract, but the aggregate order will probably amount to 20,000 tons.

The quantity of each class and size of pipe, &c., must depend wholly on the requirements of the service.

(*Signature*)

These are the general conditions marked (B), referred to in our annexed agreement with Her Majesty the Queen, dated the 20th day of February, A.D. 1893.

G. J. HOSKINS.
C. H. HOSKINS.

Witness: HAROLD F. NORRIE, J.P.

No. 3.

Tender of Messrs. G. and C. Hoskins, dated 19th October, 1892.

(C)

FORM OF TENDER.

Department of Public Works.

Cast-iron Pipes, &c., for Water Supplies generally.—Supply of Cast-iron Water Pipes and Special Castings.

WE, the undersigned, do hereby undertake and agree to execute and perform the whole of the works in connection with the manufacturing in the Colony of New South Wales, and delivering in Sydney and suburbs, at the various places specified, cast-iron water pipes and special castings of the several sizes and thicknesses enumerated in the schedule contained in the specification, and in accordance with drawings to be hereafter supplied, and complete the same according to the true meaning and intent of the specification and general conditions, at the schedule of prices hereunder; we also agree to deliver the whole of the pipes and special castings that may be ordered, up to 20,000 tons in quantity, at the rate and manner specified, during the term of five years from the date of the acceptance of our tender.

We enclose herewith a cash deposit of or marked cheque for the sum of £200, which we agree shall be dealt with in accordance with the regulations for tendering attached to the specification.

G. & C. HOSKINS,

19th October, 1892. Sydney.

This is the tender marked (C) referred to in our annexed agreement with Her Majesty the Queen, dated the 20th day of February, A.D. 1893.

G. J. HOSKINS.
C. H. HOSKINS.

Witness: HAROLD F. NORRIE, J.P.

SCHEDULE

SCHEDULE of Prices for cast-iron pipes and special castings made in the Colony of New South Wales.

No.	Items.	Probable quantity, tons.	Rate per ton.	Amount.
			£ s. d.	£ s. d.
1	All pipes to be cast vertically in dry sand as specified.....	As may be ordered; quantity unknown—probably 20,000 tons.	8 2 6	
2	Pipes from 3 in. diameter up to 8 in. diameter, both sizes inclusive, cast on the bank in green sand		7 14 3	
3	Pipes from 9 in. diameter up to 18 in. diameter, both sizes inclusive, cast vertically in dry sand		7 19 6	
4	Special castings, all sizes and kinds		10 5 0	

The prices in the preceding schedule include labour, material, and workmanship of every kind necessary for the full and perfect completion of the work to the satisfaction of the Engineer-in-Chief for Harbours and Rivers. Contractors in framing their tenders must adhere to the above form of schedule.

The Government reserves the right to accept either one tender for schedule item No. 1 or separate tenders for schedule items 2 and 3, in which latter case the Government will be in no way bound to order any given quantity under either contract, but the aggregate order will probably amount to 20,000 tons.

The quantity of each class and size of pipe, &c., must depend wholly on the requirements of the service.

G. & C. HOSKINS.

This is the schedule of prices referred to in our annexed agreement with Her Majesty the Queen, dated the 20th day of February, A.D. 1893.

G. J. HOSKINS.
C. H. HOSKINS.

Witness: HAROLD F. NORRIE, J.P.

No. 4.

The Under Secretary for Public Works to Messrs. G. & C. Hoskins.

Gentlemen, Department of Public Works, Sydney, 25 January, 1893.

I have the honor, by direction of the Secretary for Public Works, to inform you that your tender, dated the 19th October last, is accepted for item No. 3 on the schedule attached to the specification for the supply of cast-iron water pipes, viz.:—Pipes, from 9 inches diameter up to 18 inches diameter, both sizes inclusive, cast vertically in dry sand, at the rate of £7 19s. 6d. per ton; also for item No. 4, viz.:—Special castings, all sizes and kinds, at the rate of £10 5s. per ton, with a reduction at the rate of 7s. 6d. per ton, if the present duty on imported pig-iron is not charged by the Government.

It is to be distinctly understood that the Government are not bound to take any given quantity of pipes or castings, but only such quantity or quantities as are required and ordered from time to time.

If, during the continuance of this contract, pig-iron is produced in the Colony of New South Wales, out of iron ore raised in the said Colony, or principally raised in the Colony, which can be shown to the satisfaction of the Engineer-in-Chief for Harbours and Rivers, will produce castings of the quality specified, you shall be bound to use such pig-iron in the manufacture of the said pipes and castings; provided, however, that such pig-iron can be obtained at a price not in excess of the market price then ruling in the said Colony of imported pig-iron, with all charges added thereto of delivery at your furnaces.

The work to be carried out in strict accordance with the plans and specification from this date.

I have to refer you to the Engineer-in-Chief for Harbours and Rivers for further information, and to request that you will call upon the officer in charge of bonds and contracts at this office, for the purpose of signing the necessary bond for the due observance of this contract.

I am, &c.,
J. BARLING,
Under Secretary.

No. 5.

Agreement of Messrs. G. and C. Hoskins.

AGREEMENT made this 20th day of February, in the year of Our Lord 1893, between George John Hoskins and Charles Henry Hoskins, of Sydney, in the Colony of New South Wales, carrying on business together as contractors, under the name, style, or firm of "G. and C. Hoskins," hereinafter styled or referred to as the contractors, of the one part and Her Most Gracious Majesty Queen Victoria of the other part: Whereas the said contractors made the tender hereunto annexed, marked (C), under the terms and conditions of a notice dated and published in the New South Wales *Government Gazette*, of the 14th day of October now last past, of which notice or copy signed by the said contractors is also hereunto annexed, to execute and perform the whole of the works in connection with the manufacturing in the said Colony and delivering in Sydney and suburbs at the various places specified cast-iron water pipes and special castings of the several sizes and thicknesses enumerated in the schedule contained in the specification, hereinafter more particularly referred to, and in accordance with drawings to be thereafter supplied, and complete the same according to the true meaning and intent of the specification and general conditions hereunto annexed, marked respectively (A) and (B), at the prices in the schedule in the said tender mentioned, and to deliver the whole of the pipes and castings that may be ordered up to 20,000 tons in quantity, at the rate and in manner specified during the term of five years from date of acceptance of the said tender: And whereas the said tender was accepted on the 25th day of January, 1893, by the Minister for Public Works on behalf of the Government of the said Colony in part, that is to say that it was accepted for item number 3 on the schedule attached to the said specification for the supply of the said

said pipes, namely, pipes from 9 inches in diameter up to 18 inches in diameter, both sizes inclusive, cast vertically in dry sand, at the rate of £7 19s. 6d. per ton; also for item number 4, namely special castings all sizes and kinds, at the rate of £10 5s. per ton, with a reduction at the rate of 7s. 6d. per ton if the present duty on imported pig-iron is not charged by the said Government, it being distinctly understood that the said Government was not and is not bound to take any given quantity of pipes, but only such quantity or quantities as are required and ordered from time to time, and that if pig-iron is produced in the said Colony out of iron ore raised in the said Colony or principally raised therein, which can be shown to the satisfaction of the Engineer-in-Chief for Harbours and Rivers will produce castings of the quality specified, the said contractors shall be bound to use such pig-iron in the manufacture of such pipes; provided, however, that such iron can be obtained at a price not in excess of the market price then ruling in the said Colony of imported pig-iron, with all charges added thereto of delivery at the said contractors' furnaces: And whereas the contractors have deposited the sum of £500 with the Commercial Banking Company of Sydney, at its Haymarket branch, Sydney aforesaid, in the name of the Under Secretary for Public Works, at interest upon fixed deposit, No. 4,050, dated the 7th day of February, 1893, for twelve months, and has handed the receipt for same to the said Minister, to be held by him as such Minister or the Minister for Public Works for the time being of the said Colony, on behalf of Her Majesty, as security for the due performance of this contract and all other matters and things herein contained, and which on the part of the contractors are to be done and performed: Now this agreement witnesseth that in consideration of the premises the contractors do hereby, for themselves, their heirs, executors, and administrators, covenant with and to Her said Majesty the Queen, her heirs, and successors, that they, the contractors, shall and will perform the various works required in and about the full and proper manufacture within the said Colony and delivery of cast-iron waterpipes, 9 inches in diameter up to 18 inches in diameter, both sizes inclusive, cast vertically in dry sand in accordance with the said specification and general conditions, at the rate of £7 19s. 6d. per ton, also special castings, all sizes and kinds, at the rate of £10 5s. per ton, with a reduction at the rate of 7s. 6d. per ton if the present duty on imported pig-iron is not charged by the Government of the said Colony. And it is hereby agreed and declared between and by the said parties hereto that the said specification and general conditions and tender marked as aforesaid, all being hereunto annexed as aforesaid, shall be read as incorporated in and forming part and parcel of these presents, in like manner as if the same had been herein written and set forth at length, and that the said specification, general conditions, tender, and these presents shall together be taken to be the contract between the said parties in respect of the said works modified in manner following, that is to say:—

Firstly.—That the Government of the said Colony shall not be bound to take any given quantity of the said pipes or castings, but only such quantity or quantities as may be required and ordered from time to time.

Secondly.—That if during the continuance of this contract pig-iron is produced in the said Colony out of iron-ore raised in the said Colony, or principally raised therein, which can be shown to the satisfaction of the Engineer-in-Chief for Harbours and Rivers will produce castings of the quality specified, the contractors shall be bound to use such pig-iron in the manufacture of the said pipes. Provided always that such iron can be obtained at a price not in excess of the market price then ruling in the said Colony of imported pig-iron, with all charges added thereto, of delivery at the contractors' furnaces.

Thirdly.—That the contractors shall not be called upon to deliver more than 80 tons of the said pipes and castings per week, as the maximum amount of which quantity not more than 25 tons shall be special castings.

Fourthly.—That the security to be taken for the due performance of the said contract shall be a cash deposit of £500.

In witness whereof the said parties to these presents have hereunto set their hands and seals the day and year just before written.

Signed, sealed, and delivered, by the said George John Hoskins, in the presence of,— HAROLD F. NORRIE, J.P. — G. J. HOSKINS.

Signed, sealed, and delivered, by the said Charles Henry Hoskins, in the presence of,— HAROLD F. NORRIE, J.P. — C. H. HOSKINS.

Sydney: Charles Potter, Government Printer.—1893.

[1s. 3d.]

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1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE AND PLAN

RELATING TO THE

PROPOSED SECOND PIPE-LINE FROM WALKA TO BUTTAI

FOR

HUNTER RIVER DISTRICT WATER SUPPLY.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

[1s. 9d.] 87—a 1892.

MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable William Henry Sutton, Vice-Chairman.
The Honorable James Hoskins.
The Honorable Frederick Thomas Humphery.
The Honorable Andrew Garran, LL.D.
The Honorable John Davies, C.M.G.

LEGISLATIVE ASSEMBLY.

Jacob Garrard, Esquire, Chairman.
Thomas Thomson Ewing, Esquire.
William Chandos Wall, Esquire.
William McCourt, Esquire.
John Cash Neild, Esquire.
Edward William O'Sullivan, Esquire.
Charles Collins, Esquire.
Henry Dawson, Esquire.

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Minutes of Evidence taken by the Committee.
Plan.

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Second Pipe-line from Walka to Buttai, H.R.D.W.S. Plan showing lines of proposed duplicate suction-pipe and rising main.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SECOND PIPE-LINE FROM WALKA TO BUTTAI, FOR HUNTER RIVER DISTRICT WATER SUPPLY.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of laying a second pipe-line from Walka to Buttai in connection with the Hunter River District Water Supply," have, after due inquiry, resolved that it is expedient the proposed pipe-line should be laid; and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

Description of the proposed pipe-line.

1. The proposed pipe-line will consist of about 6 miles of 20-inch diameter wrought-iron pipes, extending from the pumping station of the Hunter River District Water Supply at Walka to the reservoir at Buttai, from which the water flows by gravitation to Newcastle and the adjacent mining townships. The object in laying a second line of pipes is to provide duplicate rising and suction mains in connection with the water supply system of the Hunter River District.

Estimated cost.

2. The estimated cost of the work is £50,000, which is made up as follows:— £31,000 for a second rising main, £3,100 for a 20-inch suction main, £400 to defray the cost of connections, &c., and £15,500 for further reticulation.

The provision for reticulation.

3. The provision for reticulation is somewhat outside the particular work referred by the Legislative Assembly to the Committee, but its inclusion in the estimate is explained to be due to a desire to provide the newly appointed Hunter River District Board of Water Supply and Sewerage with the means for obtaining reticulation pipes as may for some time hence be required, and to have one sum rather than two voted for what is deemed necessary to put the district water supply in proper order. The Committee regarding reticulation as a matter which should be dealt with by the Local Board made little inquiry concerning this portion of the estimate, confining themselves to the proposal for the laying of the second pipe-line.

Evidence respecting the proposal.

4. Very few witnesses were examined by the Committee in their inquiry respecting this proposed work, but the evidence obtained is complete. No witnesses volunteered any evidence, though the usual notification inviting it from any source was published by the Committee in the local newspaper, and written notice of the inquiry was sent to the mayors of the local municipalities. The departmental officers responsible for the proposal to construct the pipe-line, and the President of the Hunter River District Board of Water Supply and Sewerage, to which the pipe-line when constructed will be handed over, were examined, and a portion of the Committee visited Maitland and by personal inspection acquainted themselves with the route along which it is proposed the pipes shall be laid, and with the water supply system operating in the Hunter River District. The necessity for the duplicate pipe-line is undeniable. At present the population of the Hunter River District supplied with water,

consisting

consisting of the people of East and West Maitland, Morpeth, Newcastle, and neighbouring coal-mining townships, is dependent upon a cast-iron pipe-line or main, which may at any moment be disabled by fracture. Four miles of this main are laid on low-lying land below flood-level, and being a pumping main it is subject to unequal strains. Fractures have occurred, and joints have been "blown," and care has to be taken that its strength is not over-tested. The importance of providing a duplicate main was brought under the notice of the Department of Public Works early in 1891, and again at the beginning of the present year, when action was taken. Since the existing main was laid the population it supplies has almost doubled, and a second main is regarded as indispensable to an uninterrupted supply. In the opinion of Mr. C. W. Darley, Engineer-in-Chief for Harbours and Rivers and President of the Metropolitan Board of Water Supply and Sewerage, it is unwise in the extreme for such a large district as that of the Hunter to depend any longer on one pipe, and that cast-iron, and the President of the Hunter River District Board approves of the proposed duplication. Properly the proposal for the additional main should have emanated from the local Board, but at the time the work was referred to the Committee for inquiry the Board had not been formed. When constructed the new pipe-line will be placed under the control of the Board. The work will be carried out by the Department of Public Works, and then passed over to the Board to manage. Had the present main been made of wrought instead of cast iron pipes the proposed duplication would not have been necessary for some time to come, but at the date the water supply system was designed and the present main was laid, wrought-iron pipes had not been introduced into the colony, and very little was known here respecting them. The water supply scheme as it exists in the Hunter district, it may be mentioned, was designed by the late Mr. W. Clark, hydraulic engineer, who was brought from England in 1876 to report on the several plans then proposed for supplying water to Sydney, and it was carried out at the time to the extent necessary for meeting the wants of the existing population only.

Repayment of cost.

5. The President of the Local Board states his belief that the district will be able to bear the extra cost which the new main will add to the total expenditure on the district water supply. Under the Hunter River District Water Supply and Sewerage Act people living within a certain distance of a water-main will be compelled to pay a water-rate, and this rate fixed by the Board will, it is expected, bring in 4 per cent. on the expenditure, and thus for the present provide a sufficient return. Ultimately it will, it is considered, not only fully meet expenses and interest, but also provide the necessary sinking fund. Mr. C. W. Darley is of opinion that there will be no difficulty in making the water-supply scheme of the district pay. At present the rate struck for the supply of water there is 1s. in the £ as the maximum assessed rate, and 1s. 6d. per thousand gallons for the use of water by meter.

The Committee's decision.

6. From the nature of the evidence and their visit of inspection the Committee have no difficulty in concluding that the proposed second pipe-line is indispensable to making the water supply system of the district trustworthy, and they are therefore of opinion that the work should be carried out. The evidence in the inquiry was taken into consideration on the 2nd August, and the Committee arrived at the following resolution, which was moved by Mr. Davies, seconded by Mr. Dawson, and passed unanimously:—

> "That, in the opinion of this Committee, it is expedient the proposed second pipe-line from Walka to Buttai, for Hunter River District water supply, as referred to the Committee by the Legislative Assembly, be carried out."

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 16th August, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

SECOND PIPE-LINE FROM WALKA TO BUTTAI, FOR HUNTER RIVER DISTRICT WATER SUPPLY.

THURSDAY, 28 *JULY*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	The Hon. John Davies, C.M.G.
The Hon. James Hoskins.	Thomas Thomson Ewing, Esq.
The Hon. Frederick Thomas Humphery.	William Chandos Wall, Esq.
The Hon. Andrew Garran, LL.D.	William McCourt, Esq.

Henry Dawson, Esq.

The Committee proceeded to consider the proposed Second Pipe-line from Walka to Buttai, for Hunter River District Water Supply.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

1. *Chairman.*] You are Under Secretary for Public Works? Yes.
2. You desire to make a statement to the Committee in connection with this work? Yes.
3. Will you kindly do so? The necessity for this work was first brought under the attention of the Department by an official report from Mr. Walsh, the Supervising Engineer of the Harbours and Rivers Department at Newcastle, dated 10th February, 1891. I do not think, however, I need read this report, or refer to it further, because the information given is embodied in a later report from the same officer, dated 26th February, 1892, on which the action was taken which led to the matter being referred to this Committee. I do not think I can do better than read the following extract from this paper, which practically gives all the information necessary for me to supply:—

J. Barling, Esq. 28 July, 1892.

> I would again bring under your notice the necessity which exists for increasing the capabilities of this scheme. These works were designed some ten years ago to supply a population of 36,000. According to the returns, made in April last year, the population had increased to 61,000, so that it is now practically doubled. In my report of 10th February, 1891, I recommended that a new 20-inch main be laid from Walka pumping-station to Buttai, and I feel sure that very great inconvenience will be experienced if this work is not taken in hand at once. Even with the comparatively small consumption at present, we cannot do more than keep the reservoirs supplied during the ordinary working hours, and when the whole population is using the water, as will be the case when the Board is appointed, it will not be possible to keep Buttai Reservoir full with our present plant. The largest consumption we have had in one day in Newcastle, was 454,000 gallons or 35 gallons per head. Allowing that the maximum average consumption in the mining townships, will be somewhat less than that in the city, and taking 30 gallons per head as the quantity consumed by the 48,747 persons supplied through Buttai, this would give 1,462,200 gallons per day, or 50 per cent. more than the pumping-engines were originally designed to deliver in ten hours. In my report on the pumping-main I showed that the most we could do, with the present rising-main, was 76,000 gallons per hour, so that, with the present plant, it will be necessary to pump for nineteen hours a day into Buttai, and in addition to this 390,000 gallons will be required in East Maitland Reservoir to supply East Maitland, West Maitland, and Morpeth.

There is a pumping-station and three pumps. A large dam has been made at a place called Walka, just off the Hunter River, and the water is pumped from the Hunter River into the Walka Reservoir. It is then pumped into the filtering tanks, and the clear-water tank, and then it is pumped up through the rising main to Buttai, something like 6 miles from Newcastle. From Buttai, it flows by gravitation to Newcastle and to the mining townships, but there is a separate reservoir, into which water is pumped to supply East Maitland, West Maitland, and Morpeth.

4. The same pumps that pump the main supply in the rising main pump the water into the subsidiary reservoirs for East and West Maitland? One reservoir. The filtering-tanks and the clear-water tank are common to the whole scheme. What is before the Committee is really a duplication of what is called the rising-main.

5. Which supplies East and West Maitland and all the district? No; there is a separate rising main for East and West Maitland. It will be seen that, in order to supply the estimated population, who will no doubt take the water immediately, as they will have now to pay for it, it will be necessary to pump 1,852,200 gallons per day—on the basis of 30 gallons per head per diem. This will necessitate the engines, with existing rising-main, being kept pumping the whole twenty-four hours, and it will be seen that no allowance is made for any increase of population, or break-down of the engines, or leakage of pipes, and Mr. Darley will emphasise this as a very grave danger. It is apparent, therefore, that, unless additional pipe capacity is provided, a very serious difficulty is involved. The pumps are capable of

 delivering

J. Barling, Esq. 28 July, 1892.

delivering 115,714 gallons per hour, as against 76,000 gallons per hour, which the present rising-main is capable of carrying. The necessity, therefore, for this additional main, becomes apparent. The estimated cost of the rising-main is £31,000, the balance of the £50.000 being required for duplicating the suction main, extra reticulation, &c. I may mention, that when the river is clear, they pump direct from the river, but, that when the river is not clear, it is necessary for them to pump into the Walka Reservoir, and to strain the water in the filtering-beds and clear-water tank. The official description of the work is as follows:—

The proposed works consist of a line of wrought-iron pipes, 20 inches in diameter, about 6 miles in length, to duplicate the cast-iron suction and rising mains now in use for supplying the high-level reservoir at Buttai, from which the water gravitates to Newcastle; also further reticulation.

Estimated cost.	£
Twenty-inch rising main	31,000
Twenty-inch suction main	3,100
Connections, &c.	400
Further reticulation	15,500
Total	£50,000

Of course it will be necessary to have a stock of pipes in hand, as the water supply will now be largely increased. This matter was brought under the attention of Mr. Young, when Minister for Works, and after conferring with the Engineer-in-Chief, it was decided that it was safe to allow the matter to stand over for a year. But the conditions of the case have since altered, inasmuch as the Water and Sewerage Board for the district has been formed, and the people, having to pay for the water, will no doubt take it, and hence the necessity for the additional main. The conditions are now different, because of the operation of the recently passed Hunter River District Water Supply and Sewerage Act, under which the Board has been formed. It is hardly possible to give a very accurate estimate in connection with the financial aspect of the whole question. The Board of Water Supply and Sewerage for the Hunter District has just been formed, and it will be the business of that Board to make up the estimates. But Mr. Darley and I went into the matter roughly this morning, and he will give you the figures. We went into a calculation as to the debt per head on account of water supply, comparing the Hunter River District with Sydney. The Sydney debt, roughly speaking, on account of water, is something like £3,700,000. I do not bind myself to those figures exactly. The population served in Sydney is 365,000. This makes the debt per head, roughly speaking, about £10 2s. 8d. The Hunter River District debt, taking into account the cost of the Newcastle reticulation, which we shall have to take over, and also adding interest on the debt which has already accrued—we have added 3½ per cent. with yearly rests from the date when the expenditure began—amounts to something like £507,231, and reckoning the population at 61,000, that gives a debt per head of £8 6s. 3d. On looking at the last report of the Metropolitan Water and Sewerage Board it will be found that with a debt of £3,306,649, the percentage of revenue on the capital debt is 5·01, and the interest on capital debt after paying expenses, 3·85. That gives an idea of what Sydney pays, and it will give some idea as to what may be the result of the Hunter River District water scheme. Of course, we must all be aware that the ratable value of property is very much greater in Sydney than in the Hunter River District, because a number of the townships are mining townships, where there are very small tenements. But it must also be remembered that in all probability the Hunter River people will have to pay more than the Sydney people, who are paying now at the rate of 6d. in the £, with a sliding scale to 3d. in the £, up to £1,000 assessment. The meter rate is 1s. We have been charging the Newcastle corporation 1s. 6d. per 1,000 gallons, and the other corporations, and persons who have been supplied outside the corporations, 2s. per 1,000 gallons. The reason will at once be seen, Newcastle providing its own reticulation, which the Board has now taken over, whilst the other boroughs have been reticulated by the Government. Hence the difference.

6. Then this scheme before us is more than the title of the resolution leads one to infer; it is not merely a Second Pipe Line from Walka to Buttai Reservoir, but it is also reticulation to the extent of some £15,000? Yes; there is no question about it that immediately the Board set to work they will have to provide a great deal of additional reticulation, and they must have a stock of pipes.

7. But has any work ever been referred to this Committee, dealing with the reticulation of the water (say) in connection with the Sydney water supply? I do not think there has been any necessity for that. No doubt what you say is perfectly right—it has not been referred to the Committee before. A stock of pipes has been obtained from time to time, as required, but here we shall enter into a lot of fresh reticulation, and I suppose that it was thought desirable to put the whole thing before you.

8. The only point is that it very much enlarges the inquiry if we have to consider whether this £15,000 worth of reticulation should be done. So far as the Metropolitan Board of Water Supply and Sewerage is concerned, the question of reticulation has always been left to it as a department? I am quite aware that that has been so, but I suppose that it was thought desirable to put the whole thing before you. Some of the pipes will, no doubt, have to be laid down soon, and some kept in stock.

9. You do not, in the future, intend to ask this Committee to consider every piece of fresh reticulation? No; I think not.

10. Otherwise, you will be making this Committee a Board of Water Supply and Sewerage? Quite so. Strictly speaking, I suppose there was really no necessity to put that matter before you.

11. This is really the first time that the main pipe line or the main works have been mixed up with reticulation in any project put before this Committee? I think it is.

12. Can you tell us where this reticulation to cost £15,000 will be principally? Mr. Darley can explain that better than I can; but it is clear that more reticulation will be required, for we shall have to supply double the population that we now have to supply. At the present time, East Maitland and West Maitland and Morpeth have been reticulated, also Minmi, Plattsburg, Wallsend, Lambton, Waratah, New Lambton, Merewether, Hamilton, Wickham, Carrington, and Newcastle, but, of course, a great deal more will have to be done when a larger number of people take the water.

13. The matter referred to us is the duplication of the pipe line, and this is the first time that we or the House, I presume, know anything at all about the proposal for the extension of reticulation? Well, as a matter of fact, I do not know that it was absolutely necessary, indeed, I hardly think it was necessary to bring it before the Committee.

14.

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14. The resolution passed by the Assembly was as follows:—

Mr. Lyne moved, pursuant to notice, "That it be referred to the Parliamentary Standing Committee on Public Works, to consider and report upon the expediency of laying a Second Pipe-line from Walka to Buttai, in connection with the Hunter River District Water Supply."

That is our charter? The Committee can excise that portion referring to the reticulation if they like. There is no harm done in bringing before the Committee what we intend to do in the matter.

15. If we are to give an expression of opinion on the question of this reticulation, it means a close investigation of it everywhere where it may be proposed to extend it? Of course it does.

16. And it seems to me that that is part of the work that has always been done by the Metropolitan Board, and can be done, as necessity arises, by the Hunter District Board? I think your view of the case is correct, but no harm is done in giving you the whole estimate of what we propose to do at the present time.

17. But it seems to me that we shall have to confine ourselves to the question of the Pipe-line? Yes, I think so.

18. That is the instruction from Parliament? Quite so.

19. Who is the officer in charge of the water-works down there on behalf the Government—Mr. Walsh? Since the Board has been formed that body has assumed charge.

20. They would be under the charge of the Water and Sewerage Board? Yes.

21. But this work will be carried out by the Department? Yes.

22. And then passed over, as in the case of the Metropolis, to the Water and Sewerage Board to manage? Yes. If you refer to the 4th section of the Hunter District Water Supply and Sewerage Act you will see that it provides:—

For the purposes of carrying out and completing any approved schemes of water supply or sewerage, for which executive authority shall have been or be given, the powers, authorities, duties, and obligations respectively conferred and imposed on the Board by this Act shall be held to be also conferred and imposed on the Minister, until the said works shall, in each case, be transferred to the Board, as hereinafter provided.

The 114th section of the Act refers to the sewerage in similar terms.

23. Mr. Walsh—that is, the officer of the Public Works Department there—will be responsible for carrying out this work, and, when completed, it will be passed over to the Board? Mr. Darley; but Mr. Walsh will be his officer there.

24. Mr. Walsh will be available for us down there as an officer of the Department? Undoubtedly; as an officer of the Department.

25. *Mr. Ewing.*] How do you reckon 30 gallons per head, when in every other inquiry 20 gallons per head has been regarded as the quantity required? Simply because experience has shown that that quantity may be required.

26. Because people have been using more water when they did not pay for it? That may be; but I think that the assessment will be such as to make it quite safe for them to use up to 30 gallons per head.

27. You are only using your pumps for ten hours out of the twenty-four now? That is all.

28. *Mr. Hoskins.*] This is actually a Departmental inquiry—we are actually now engaged in an inquiry as to the propriety of laying down these pipes? Yes, certainly; that is to say, there has been no public pressure brought to bear.

29. Seeing that it is proposed by this scheme to supplement the existing means of delivering water to the different townships in the Hunter District, and inasmuch as thew hole management of the water supply to the Hunter district has been transferred to a Board, did not the Minister consider that this Board ought to have been consulted before this proposition was submitted to this Committee? The answer, I think, is very plain; the Board was not in existence when the matter was referred to the Committee. The Board has been in existence only about three weeks.

30. This is not a new work, but is to supplement an existing work, which Parliament has placed under the control of a special Board, for the management of the water supply for the Hunter District? If the Board, after looking into it, were to inform the Minister that they did not think the proposed work necessary, I do not suppose that the Minister would press it further.

31. Supposing, for instance, that the Hunter District Water and Sewerage Board were advised by their responsible officers that this work was unnecessary, or that the water supply for Newcastle might be supplemented without that being done in this particular way—would the Minister then withdraw this proposal? I should think the Minister would not care about pressing the matter, but such a possibility has never presented itself to the minds of any of us. However, if the Board chose to take such a serious responsibility on themselves as to tell the Minister that it is not necessary, I daresay the Minister would be quite willing to let the thing pass over. But Mr. Darley, I think, will give you such cogent reasons for it, that you will come to the conclusion, even without asking the Board, that there can be no question about their concurring in it.

32. Do you not think that it will be politic for you to report to the Minister what has been suggested in this Committee-room, namely, that the Water and Sewerage Board of the District ought to be consulted before this work is undertaken? I have no doubt they ought to be, and this Committee, I have no doubt, will consult the Board. It has been so recently established that there has not been a Board to consult until now.

33. *Dr. Garran.*] When was the water first applied from this Buttai Reservoir? I think in 1886.

34. Did the consumers begin to pay from that date? The consumers have paid, I think, from the first, but in a very desultory sort of manner. I may mention that when we first started there was no Act at all to regulate this matter, and we saw the necessity at once, for an Act to be passed to enable us to deal with this water supply, because it was a water supply for a very large number of Municipalities, and there was no Act that exactly met the case. We, therefore, got an Act passed called the "Country Towns Water and Sewerage Extension Act of 1887." That enabled us to enter into arrangements with the different Municipalities as to the supply of water. The consequence has been, that we have entered into arrangements with the various Municipalities and persons outside Municipalities by special agreements, to supply water.

35. Then your contract was made with the Municipal authorities? Yes; we made a contract with the Municipal authorities of East Maitland, West Maitland, and Newcastle, but there was no object, on their part, to compel people to pay for the water. The consequence was that only those who took the water paid, as far as I am aware.

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36. In treating with the Municipalities, did you contract to supply a certain quantity of water? No, we did not contract to supply any particular quantity, but to supply them at 2s. per 1,000 gallons, run through a meter.
37. You measured it by meter? Yes.
38. And they paid according to that? Yes.
39. Did they all pay? I know there is an outstanding account with the Newcastle Municipality, amounting to something over £4,000, at the present time. They contended that they were not able to pay 1s. 6d. per 1,000 gallons, so the accounts have run on and increased.
40. They were able, however, to take the water? Yes.
41. Did any of the other mining Municipalities commit default? I am not perfectly certain, for Mr. Darley has kept the accounts; but I think they pretty well paid up.
42. Are you aware whether they levied a special water-rate on their ratepayers? I think they must have done so, though I am not certain. We got the money, and I suppose they levied a rate.
43. What I want to get at is, whether the people who are the consumers at present, have felt exactly the pinch of the taxation necessary to pay the interest? I think they have not yet done so, for those who have water supplies of their own, from tanks, and so on, would not take the water. I have no doubt they will feel it is a very different thing from what they did before, taking the population as a whole.
44. We are proposing now to put an extra debt of £50,000 on to the concern, and we do not know at present whether the tax-payers have been brought closely into touch with the policy of these water-works at all? But the Act will compel them to be.
45. But that has been in force, practically, only three or four weeks? No doubt. But the first thing that the Board will have to do will be to pass their by-laws, which will include a water-rate, and then everyone within a certain distance of the main, will be compelled to pay.
46. There is no doubt that the net has now a much finer mesh, and will catch more fish than before? I should say double.
47. Therefore, some people who have already paid may, under this new Act, have to pay more? I have no doubt they will.
48. And some who have never paid at all will have to pay as much as others? Quite so.
49. What I said before was that they have not yet felt the pinch? No, they have not.
50. How are we to get at the willingness of the people to bear an increase of the capital, when they do not, at present, know what it is at all to pay on the old debt? No matter what this will cost, they cannot be made to pay more than 5 per cent. on the assessed annual value of their properties, and it is certain that as they will have to pay, they will take the water—it is hardly likely that they will pay for nothing.—and when that comes about, the present condition of things will not enable us to meet the demand, and therefore, whether it does or does not pay, it is necessary to do this work.
51. But, according to your evidence, this is a case where there has been no demand from the people themselves, whereas most of the works that come before the Committee originate really in the wish of the people for some public works? True. But I may mention that it was the demand of the people in the early days that we should carry out this water supply. Deputation after deputation waited on the Minister during a period of drought, and, no doubt, when the pinch of drought is felt severely, people will express their willingness to pay even two or three times what the Act prescribes. But since then, we have had a succession of wet seasons, and that part of the Colony has not felt the pinch of drought for years, and there has been quite enough water to supply them—but when we have the anticipated larger number taking the water we shall not have means to supply them.
52. What I want to get at is this—there is no direct evidence, that you can produce, that the people themselves want this additional expenditure, or have asked for it, or are willing to pay the interest—they know nothing about it? No; except what they have read in the papers,
53. We are supplying something in their interest altogether apart from their knowledge of the matter? Quite so. But may I emphasise another point. It is not wished merely to give them sufficient water, but Mr. Darley will point out that there is the greatest possible danger of the present work breaking down, and the whole supply being stopped.
54. I am not discussing the desirableness of the project, nor the defects of the existing system, but the undertaking of this work without reference to the wishes of the consumers? The people now cannot know anything about it, but unless we, knowing the facts of the case, did anticipate their wants, they would have reason for censuring us for not providing for them.
55. We are planning for their benefit behind their backs? Without their full knowledge of the facts.
56. How much capital is invested in the concern at present? Roughly speaking, about £507,231, but this includes the cost of the Newcastle reticulation works, which we shall take over, and is also made up by adding 3½ per cent. from the time the expenditure began, with yearly rests.
57. It is only proposed now to add £50,000 to that? That £507,000 includes the £50,000.
58. Then it is only about £450,000? Yes; it was £457,231, and adding the £50,000 makes £507,231.
59. We have to add this £50,000 to make the existing system thoroughly trustworthy? Yes.
60. *Mr. McCourt.*] The people interested in this matter do elect the majority of the members of the Board, do they not? They do. The Government appoint three, and the people elect four.
61. Therefore, they have a say in all matters connected with the carrying out of these works? Undoubtedly.
62. *Mr. Hoskins.*] I gather from what you have stated that the Municipalities of the Hunter River District, who will benefit by this scheme, a few years ago had the existing waterworks transferred to them for management? No; I did not say that.
63. What did you say? That a Bill was passed to enable the Government to make contracts with the Municipalities for the supply of water to them.
64. What became of those contracts? We have been receiving water revenue ever since. We have received something like £23,000, I think.
65. Can you tell us what percentage of profit that yielded on the amount invested? Very small indeed, simply because, comparatively speaking, very few people took the water.
66. Did it ever occur to the Department that these Municipalities, having had control of this water supply for a number of years, may feel themselves aggrieved if it is handed over to a Central Board without

without their being consulted? They have not had the control of it. We have simply supplied them with water by meter. They have not had the slightest control of the waterworks. We merely sold them water at so much per 1,000 gallons. J. Barling, Esq. 28 July, 1892.

67. *Chairman.*] As a temporary thing? Yes; waiting for the passing of the Act which is now in operation.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, sworn, and examined:—

68. *Chairman.*] You are Engineer-in-Chief for Harbours and Rivers and Water Supply? Yes. C. W. Darley, Esq. 28 July, 1892.

69. You were connected with the Department when the Hunter River Water Supply Works were originally carried out? Yes.

70. Were they carried out under your supervision? The Hunter River works were commenced under my supervision, and were carried out to a certain extent under my personal supervision up there, and then I was moved down to Sydney.

71. Who originated the scheme for supplying the Hunter River towns? The late Mr. William Clark, hydraulic engineer, proposed the scheme.

72. The same gentleman who was brought out to devise a scheme for supplying the Metropolitan area? Yes.

73. Did Mr. Moriarty, who was then Enginner for Water Supply, concur in Mr. Clark's recommendations? He did.

74. Under Mr. Clark's scheme was it anticipated that sooner or later would arise the necessity for a larger pipe or a Second Pipe-line between these two reservoirs? He only provided for the population then in the district.

75. As population increased, facilities for supplying a larger quantity of water would have to be provided? Yes.

76. Has there been any serious danger of the water supply of these Hunter River District towns failing through there being only one pipe-line between these two reservoirs? There has, not from the insufficiency of the pipe to carry the quantity required, for, of course, we could make it carry more by pumping longer hours, but from the fact that quite 4 miles of this pipe is laid on low-lying land below flood level—a thing that could not be avoided—and it being a pumping-main it is subject to unequal strains, and, therefore, cast-iron pipes are subject to fracture, and there has been a great deal of trouble with it from time to time, in consequence of joints blowing and pipes breaking, and if we attempt to force the water through very rapidly to replenish the reservoir, we shall blow the joints.

77. Fracture your joints or pipes? Yes.

78. It is not the immense strain on the water main from Buttai reservoir, but possible fractures, or leaky joints, on your present pipe-line? That is the reason entirely. There is no reason why the engines should not run twenty-four hours continuously, but it is unwise in the extreme, for that large district to depend any longer on one pipe. I may mention that a short time ago a fracture occurred at a certain place, and there was 11 feet of water over the pipe, and we had to send up divers first of all to explore and find where it was under water, and it took us three days to make it good again. Fortunately, the demand for the water is not very large now. On account of the absence of any power to compel people to take the water, the draught has not been very great up to this time, but now that the Board has been formed with full powers, we must look to the consumption increasing very rapidly.

79. The passing of the Hunter District Water Supply and Sewerage Act, and, in the near future, the compelling of the people to take the water, constitute another reason why this pipe-line should be duplicated? Yes.

80. Were there any means of avoiding this flood land which has placed you in the difficulty you have mentioned, by going a little further round perhaps? We might have gone many miles round, but the cost would have been prohibitory. I have seen the land near the Hunter River for fully 10 miles back 20 feet under water. We are obliged to cross that country.

81. The pipe-line you propose to lay down will be wrought-iron pipes? Yes.

82. Which will not be so subject to fracture, nor to have bad joints? No. Every care will be taken.

83. If you continued with one pipe-line it would necessitate your working longer with your engines in the twenty-four hours? Longer hours; yes.

84. And if you worked three shifts, what would you do for repairs to your engine; could you duplicate the engines? We have two engines and pumps. By working long shifts we can do the work with one and lay by the other.

85. Will you briefly describe to the Committee the nature of your works from their intake on the Hunter down to the Buttai Reservoir;—will you kindly tell us, first of all, by what means you get the water into the Walka Reservoir? We pump, in the first instance, from the Hunter River.

86. You have a pumping-station at the Hunter River? No; the water is drawn, in the first instance, from the Hunter River. But it was pointed out by Mr. Clark that as the Hunter was subject to very heavy floods, and at times the water would be very impure—would carry so much sediment—it would be unfit to pass into the main. Knowing that fact, he designed the storage reservoir, which holds about 70,000,000 gallons. It is a natural lagoon, formerly known as Walka Lagoon. We simply threw an earthen and puddled dam across one portion of it. It has a very small catchment area, and there is no fear of local contamination. We resumed the whole of the possible catchment area and fenced it in, and there is no fear of contamination. The consequence is, that when the river is clear we pump and keep that reservoir full. When the river is muddy, the pumps draw from the reservoir, and then the water is pumped to a settling tank on the hill. When the river is clear we pump direct into the settling tanks. There is one engine kept for that special purpose.

87. Your storage reservoir is virtually a large settling tank? Yes.

88. If that is so, and if your catchment area leading to that reservoir cannot be polluted in any way, where is the necessity for passing that water into the settling-tanks afterwards, before sending it into use? We have to pass it into the settling-tank to let it gravitate slowly down to the filtering-beds. The water from the tank gravitates through four filtering-beds. As a rule, two are kept in use, while the other two are let off for cleaning. The top 2 inches of sand have to be removed after a few weeks, or sometimes months, according to the nature of the water passing through, and it gravitates into what is called the clear-water tank, from which the suction is taken to the engines. From the river to the engine-house, a distance of nearly half a mile, there is a long suction pipe.

The

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The pipes are laid part of the way through two tunnels, one through the river bank and the other through high land. The water is pumped through a 15-inch main, and there is a branch 10-inch main laid parallel with it for the first portion of the way till it crosses the main street of West Maitland, and then the 10-inch pipe carries the water to the reservoir on the top of the hill at East Maitland, which reservoir supplies East Maitland, West Maitland, and Morpeth. When notice is received that the Buttai Reservoir is full, the pumps fill the East Maitland Reservoir.

89. What is the capacity of that? Five hundred thousand gallons.

90. What supply is that equal to for the three towns you have mentioned? Just now it is five or six days' supply, I think; but I should prefer you to get the information locally from my officer. The consumption is so small at present, owing to the absence of compulsory powers, that the draught on the reservoir is not very large.

91. What is the capacity of Buttai Reservoir? One million gallons. From Buttai the water gravitates through a 15-inch pipe down to Newcastle, filling a series of reservoirs on the way—the first at Minmi—a small one to supply the Minmi township—the next at Plattsburg, the next at Wallsend, the next at Lambton, the next at Hamilton—which supplies Hamilton, Merewether, and Burwood Junction, and that district—and then it gravitates into a reservoir which will contain 500,000 gallons at the top of the hill at Newcastle, at the top of Church street. There is also a high-level reservoir, called the Obelisk Reservoir containing about 140,000 gallons, into which the water also gravitates by shutting it off from the lower level. If we put it all on that level the main would not deliver enough to Newcastle. Newcastle is really supplied from three sources. For the low portion of the town there is ample pressure from the main 500,000-gallon reservoir. What we may call the middle zone is supplied from the Obelisk Reservoir, and a somewhat limited area on a very high level is supplied from an iron tank on the top of Shepherd's Hill, containing about 20,000 gallons, filled by a small steam pump on the roof of the Newcastle Reservoir.

92. Of course the present Water and Sewerage Board for the Hunter River District has had no say in this matter at all? None whatever—they have only just been formed.

93. Have they yet appointed any engineer of their own? That appointment is vested in the Minister and I am not aware whether an engineer has yet been appointed or not.

94. Has the Minister any control over him after he has been appointed? Not over the engineer.

95. Do you not think that, perhaps, the Water and Sewerage Board will be liable to challenge your opinion as to the necessity for a work like this, or do you think that the need is so patent that they can only come to one conclusion? I do not think that they would challenge it, if they gave it any consideration. I do not know their opinions, but only the opinion of one member—Mr. Walsh,—who has been our assistant engineer in that district, and it is on his very strong representations that I have advanced this proposal. He is acquainted with the subject, and knows the great danger that is being run, and he has called my attention to it for a considerable time.

96 *Mr. Ewing.*] Mr. Barling stated, in giving his evidence, that your pumping-power is about 1,000,000 gallons in ten hours? Two engines together; yes.

97. This is a 15-inch pipe? The present one.

98. When you speak of duplicating it, do you propose the same kind? No; a wrought iron pipe 20-inch in diameter.

99. You deliver by this pipe something like 76,000 gallons per hour? Yes; but we can enlarge the engines. The matter will be brought under the notice of the Board, and the proper thing to do would be to enlarge the pumps, rather than double the staff when there is a demand for an increased quantity of water. I have looked into the matter, and I find that we could put larger pumps to the present engines, and that the larger main will safely carry the water. That will be the next step to do, rather than work with a double staff, which would cause considerable extra expense.

100. It appears that your pumping power is 1,000,000 gallons in ten hours; if your second main is the same as the present one, you could deliver 1,500,000 gallons in ten hours; therefore, you would have more delivering power with this new pipe, even if only the same size as the present one, than you could pump for—is that not so? Yes.

101. Therefore, this provides more power of delivery than your present pumping-station can utilise? Yes; but by adding larger pumps to the present engines we can utilise the full extent of the proposed main.

102. But there is another way suggested—if you pump thirteen hours instead of ten, you send as much water along as your pipes can carry; you would have to increase your hours of working three hours a day—is that not so? Yes; but that is an inconvenient thing to do. It is really easier to work sixteen hours than thirteen. It puts on a second staff at once.

103. You have stated that you can pump and deliver enough, but your pipes would not stand it? At present—yes.

104. You are pumping for ten hours; if you increase your power of pumping, you do not increase the pressure on your pipes? No. We could pump longer no doubt.

105. And if you pumped fourteen hours, you could supply as much water as is wanted at present? Yes.

106. Without any additional strain on the pipes? Yes.

107. If that be so, would it not, perhaps, be wiser to work another shift every second day? No. I think I have explained that before. The sole reason, even if the supply is ample, is the possibility of a fracture of the pipe depriving the whole district of water, perhaps for a month. When once the water supply is laid on, the present arrangements will all go out of use.

108. If this pipe-line had been made of wrought-iron in the first instance, and of the same size, we would not have had to discuss this matter at all? Not at present, I think. It might have been better to double the working hours.

109. In point of fact, what we are dealing with now is the remedying of a mistake that has been made? I do not call it a mistake, for wrought-iron pipes were not used then; but we have had more experience of wrought iron. Such a thing as a wrought-iron main was not made in the Colonies, nor had it been introduced in England. Mr. Clark proposed the right thing at that time, so I would not call it a mistake.

110. It is simply a relieving or emergency pipe that you are proposing to lay now? Yes; it is a necessary pipe to meet the wants of the district.

111. You said there had not been very much water wanted hitherto, in consequence of the absence of compulsory powers under the Act? Yes.

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112. It is not so much that you want it now, as that you think you will want it at some future time? When the Act comes into force the people will have to take the water.
113. The quantity that will be required is merely estimated at 30 gallons per head? Yes.
114. If they only want 20 gallons per head, you will not want this extra service? Yes; we shall want it, even for 20 gallons per head.
115. There are 40,000 people living in Newcastle—below Maitland—and at 20 gallons per head that is about 900,000 gallons? Yes.
116. Then your pumps can supply that in ten hours—your pipes can take 760,000 gallons in ten hours? Not quite. They can do it at that rate per hour; but you are not allowing anything for one engine to pump to West Maitland, nor for one to be laid up for repairs. You are going on the basis of two engines constantly pumping.
117. But you can get relief, because you can fill your Newcastle reservoirs, and have a few days' grace in case anything happens to your engines? I would not like to risk it for a few days.
118. At all events, increasing the pumping hours from ten to thirteen hours, would meet it? Yes.
119. *Mr. Davies.*] What is the storage capacity of your reservoirs? Buttai, 1,000,000 gallons, Minmi—I am speaking from memory—I think about 63,000 gallons; Wallsend, about 380,000 gallons; Lambton, about 380,000 gallons; Hamilton, 380,000 gallons.
120. Those are all distributing reservoirs? Yes.
121. Has any estimate been made of the probable income to be derived from the rates to be levied? That is a matter which the Board would have to look into. I am not in a position to give you actual facts as to what the rates in the District will be.
122. You do not know what revenue has been collected from the different Municipalities in connection with these works? The sum collected last year by our Department from all the Municipalities in the District for water was £5,867, and there was an additional sum of £4,500 owing by Newcastle in respect of that year. Of course, that will now be written off against money that we have to pay to Newcastle, so the money is not lost; it will really be refunded.
123. In what way will it be refunded? Newcastle laid its own reticulation, and the Board will take it over. Newcastle spent about £13,700 on reticulation, and the £4,500 will now, according to the Act, be deducted from that, and the balance only will be paid to Newcastle, so really the collections for the year came to about £10,500. I think it will be safe to say that that will be doubled, or perhaps more than doubled, when the people take the water, for the £5,800 which we collected was largely collected in little driblets from people who had a meter service. Up to the present time we have had no power of assessment, consequently a man wanting a little water could have a meter, and in many cases the amount received would not pay for the reading, amounting to only 3s. or 4s. in the year. Under the new arrangement the assessment will be the minimum.
124. The amount, which you stated was collected last year, was collected by meter? Chiefly by meter. I might say that the Sydney revenue comes to £·456 per head of the population served. At the same rate the Hunter district would produce £27,816. The rates in Sydney which produced that revenue are based on an assessment of 6d. and 1s, as a meter rate, but in the Hunter District, I believe, they have struck 1s. as the assessed rate maximum, and 1s. 6d. as a meter rate, so they have, practically, doubled the rate. Therefore, I think it is quite safe to suppose that £28,000 or £29,000 will be collected there, when the works once get into full swing, in the course of a year or so.
125. Has that rate been struck by the present Sewerage and Water Board for the Hunter River District? I am informed that that rate has been struck—1s. in the £ and 1s. 6d. meter rate. That would bring in 4 per cent. on the whole value.
126. On the gross expenditure? Yes.
127. *Dr. Garran.*] Your estimate is, of course, conjectural to some extent? Quite. I have no actual figures before me.
128. So far as experience goes you have only had in round numbers £10,000 a year? That is so.
129. To pay 4 per cent. on £500,000 you would want £20,000, exclusive of administrative expenses? Yes.
130. And you think you will get from £25,000 to £29,000? I think there is a good prospect of the revenue reaching that.
131. Have you any idea what the administrative expenses in connection with this water supply will be? The maintenance charges—for pumping staff, maintenance men, and men in charge of reservoirs—have been covered by £4,000 a year. I do not know what the expenses of the Board will be, but from what I have been informed as to the number of officers that have been appointed, I should say that the cost of management will be from £3,000 to £3,500 a year—I have put it down at £4,000. That would make £4,000 for maintenance, £4,000 for Board of Management, and £20,000 for interest.
132. So that anything that you collect less than £28,000 will be a loss? Yes.
133. And your maximum estimate is only £29,000? The thing is growing, and I think they ought to get £28,000 next year.
134. That is rather finely calculated, allowing so small a margin? Well, if there is a little deficiency for a few years I think that the district being a growing one it will soon be made up.
135. But that is a correct statement of the financial aspect of the matter? Yes.
136. What is the elevation of your first reservoir—from the river to the reservoir into which you pump at Walka? The top water level is about 58 feet
137. Do you know the elevation at Buttai? I think it is 297 feet over the river.
138. Then, practically, the engines have to force the water up 300 feet? Yes; roughly speaking.
139. I understand that the principal difficulty is where you have the pipes on the lowest ground? Yes.
140. That is where the fractures take place most? Yes.
141. If you could replace these cast-iron pipes with wrought-iron pipes, would not that of itself somewhat mitigate the difficulty? That is what we are asking leave to do.
142. Without duplicating the whole main, I mean? No; I do not think it would be a wise thing when you force the water through a 15 in. main. It would be better to have a larger main at once.
143. Still it is the material of which the pipe is made that constitutes the danger of fracture? That, and the form of the socket. It does not hold the lead well.
144. A better shaped pipe, and of more suitable material, would diminish the risk of fracture? Yes.
145. And you could put greater pressure on your pipes? Yes.

C. W. Darley, Esq. 28 July, 1892.

146. So that, if you could do nothing else but that, you would be able to deliver a larger quantity in a day into the Buttai Reservoir? Yes; but the length of this pipe which is on high ground is so small, and there are 5 miles below flood level.
147. Can you indicate the point where the low ground lies? Starting from the engine-house at Walka, close up to what is called the Mount Vincent Road.
148. That is all low? Yes.
149. How much of that is liable to be covered with water in flood time? Practically the whole distance from the pumping-station to within half a mile of the Mount Vincent Road.
150. You mean to say that you have sometimes a pipe-track with 11 feet of water over it? Yes.
151. And you have to mend that with 11 feet of water over it? Yes.
152. And you have 5 miles with that risk? Yes.
153. That is a very unusual thing, is it not? There has been, practically, no means of avoiding it in this case. You may, of course, go for years, and have no water over it, but in 1870 there was nearly 20 feet of water over it, a good portion of that distance.
154. That is all on land bordering on the river subject to flood rises? The country near what is called Wallis Creek is quite 20 feet lower than the banks of the Hunter River. In 1870 the river broke over its banks above Oakhampton, and filled the whole of that water district.
155. How long did it remain under water? We had five floods on that occasion in three months—February, March, and April, and it remained under water four to five months, in the aggregate.
156. As a matter of fact, if we replace the present main with a new pipe of wrought iron we shall, practically, get over all the difficulty? I think so.
157. Would you still use the old main? Yes.
158. Would you use them both? Pump through both. That would reduce the friction on the engine.
159. What is the value of your pumping-plant, including engines? The pumping-plant, that is the building, boilers, and everything complete, cost £49,800.
160. You will not want to increase that at all? No.
161. What you, as an engineer, fear, is that this pipe is liable to fracture at any moment? That is so.
162. And you cannot rely on mending it within a reasonable time? If the pipe were to break during flood time it might take us many weeks to replace it. On the occasion to which I have referred, it only happened to be a joint that blew out under 11 feet of water, and a diver was sent up to recaulk it.
163. Suppose a pipe cracked, and you had to put in a new pipe? That did occur, but, fortunately, at a depth of only 2 or 3 feet, and we had to construct a coffer dam.
164. It would be so difficult, that you would, practically, have to wait until the water ran down? Yes.
165. So that the matter, from an engineering point of view, is really very pressing? It really is. There is a serious risk run every day there. It is all very well in fine weather: but in flood the risk is very serious.
166. This reservoir at Buttai will only hold three or four days' supply? If all the reservoirs were full, and a break down took place, and if we used every economy, the supply would only last, at the outside, a week.
167. So that unless you could get the repairs effected within a week the people would have to go without water? Yes.
168. The country has been thoroughly examined, to see if there is any possibility of having a pipe-line in another direction? It requires very little examination; the flood water goes back about 10 miles.
169. Still, as you go south the area of flood land increases very much, does it not? To some extent; but it is very wide everywhere.
170. You, as an engineer, think that you are confined to this route? The expense of going further round would be prohibitory.
171. There is nothing to do but take this route, and have sufficient piping? Yes.
172. *Mr. Ewing.*] It was only during flood time that you were troubled about the pipe in 1870;—it does not matter about a pipe bursting in fine weather? No.
173. Therefore, the trouble is limited to flood time? Yes; and during heavy rain. In a great deal of this country the water cannot get away, and there are large swamps in ordinary wet weather.
174. Will your engineer in Newcastle be able to show us a section showing the depth to which each portion of the line is sometimes flooded? I think so.
175. Some parts of it would be much longer under flood than others? Of course.
176. Therefore, if you had good pipes where the greatest danger is you would get over part of the difficulty—where the flood water lies the deepest, there is the greatest necessity? I think it would be rash to patch the thing—I would never dream of it.
177. Why? You would have to stop pumping while you broke the connection, and I would not think of it.
178. You have a week's supply in the reservoirs? It would be more costly than laying pipes straight out of hand at once.
179. *Mr. Humphery.*] Do we understand that you prefer a 20-in. main to a 15-in. main, similar to that laid? Yes; I prefer to lay a larger main.
180. Is the present main, in your opinion, sufficient for the Hunter River Water Supply? I think that when we are laying another main it will be be better to look ahead more to the probable increase in the District rather than to lay another small main.
181. It is not because the main is too small that you are now recommending this duplication, is it? Not so much because it is too small, as because of the risk attending the continuance of depending on one main.
182. But, as a matter of fact, you think it is too small to meet the probable increased demand for water supply? I think it is too small to meet any increase.
183. So on more grounds than one it is desirable to carry out this proposed work? Yes.
184. *Chairman.*] How long is it since this pipe-line was laid? The main was laid about the year 1882.
185. How long has it been in use—all the time? I think they commenced pumping through it about 1883.
186. I suppose that, at that time, comparatively little was know as to the capabilities of wrought-iron pipes, their cost and so forth? No.
187. They were in their infancy at that time? Wrought-iron pipes had not been introduced into this country at all.
188. There is no doubt that if you were laying down that pipe-line, as you proposed, there would be wrought-iron pipes used? For a rising-main I would certainly recommend wrought-iron pipes.

FRIDAY, 29 *JULY*, 1892.

[*The Committee met at the Court-house, Newcastle.*]

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Sutton.	Thomas Thomson Ewing, Esq.
The Hon. Frederick Thomas Humphery.	William Chandos Wall, Esq.
The Hon. John Davies, C.M.G.	William McCourt, Esq.

Henry Dawson, Esq.

The Committee further considered the proposed Second Pipe-line from Walka to Buttai, for Hunter River District Water Supply.

Hon. Alexander Brown, M.L.C., President of the Hunter River District Board of Water Supply and Sewerage, sworn, and examined:—

Hon. A. Brown, M.L.C. 29 July, 1892.

189. *Chairman.*] You are President of the Hunter River Water Supply and Sewerage Board? Yes.
190. Has the Board had under its consideration the necessity of duplicating this particular Pipe-line? The Board particularly, has not. The matter was initiated before the Board was constituted, and it has been referred to me as President, upon a report from the engineer, Mr. Walsh, who had charge of the business, and with the knowledge I have of the circumstances connected with the question, Mr. Walsh's proposal with regard to the Second Pipe-line has my cordial support.
191. You anticipate that as soon as you get into working order and charge rates, many people who are not taking water will have to do so? No doubt. Originally the scheme was based upon a supply for 35,000 people, and if it has increased twice, and we get into working order, they will commence to take a supply, and the pipe itself is not sufficient for the work.
192. We have been informed, that owing to the risk of breakages and so on, it is desirable to have two strings to your bow? Yes.
193. You quite concur in that view? Yes.
194. And you think the districts will be enabled to bear the extra cost? Yes. Unless we get something of the kind the water supply will be a failure.
195. And although it will increase the cost to the extent of some £50,000 more, the districts can bear it, and it must be carried out to make the system complete? I think the district will have to bear it. I should like to point out that I recently clipped the following paragraph from the *Times*, which appears to be very *apropos*:—

The Future Water Supply of London.

The Royal Commission on the Metropolitan Water Supply having, as stated in the report of the Special Water Committee, expressed a wish to be furnished with some indication of the views of the Council on the subject of the inquiry, a memorandum had been prepared by the deputy-chairman of the Council, and carefully considered by the Committee, who recommended that the Council confirm and adopt the opinions and conclusions expressed therein, viz.:—(1) That in making any estimates having reference to the future water supply of London, such estimates should be based on a period of fifty years from the present time. (2) That in dealing with the question of a source or sources of water which shall meet the requirements of London and its neighbourhood for fifty years, provision should be made for supplying a population of at least 12,500,000. (3) That in calculating the quantity of water required per head per day, the amount at present supplied by the companies should be increased by at least 10 per cent., and in no case should it be less than 35 gallons. The recommendation of the Committee was agreed to, and the Council adjourned.

If our present basis of water supply is based upon that it will be almost infinitesmal.
196. Although this matter has not been formally before the Board, you think you are voicing the opinion of the Board in reference to the desirability of the work? Most assuredly.
197. *Mr. Ewing.*] You have considered the whole matter and are quite at one with the proposal? Yes. In these things it is necessary for us to rely on the evidence of the engineers, which is conclusive. They say it is absolutely necessary, and I have not the slightest doubt about it.

SATURDAY, 30 *JULY*, 1892.

[*The Committee met at the Court-house, West Maitland.*]

Present:—

JACOB GARRARD, Esq. (Chairman.)

The Hon. William Henry Sutton.	Thomas Thomson Ewing, Esq.
The Hon. Frederick Thomas Humphery.	William Chandos Wall, Esq.
The Hon. John Davies, C.M.G.	William McCourt, Esq.

Henry Dawson, Esq.

The Committee further considered the proposed Second Pipe-line from Walka to Buttai, for Hunter River District Water Supply.

Henry Deane Walsh, Esq., B.E., M Inst. C.E., Supervising Engineer, Department of Harbours and Rivers, sworn, and examined:—

H. D. Walsh, Esq., B.E., M. Inst. C.E. 30 July, 1892.

198. *Chairman.*] You are a civil engineer in connection with the Harbours and Rivers Department? Yes.
199. You are in charge of the Hunter River District? Yes.
200. You are also a member of the recently appointed Water and Sewerage Board? Yes.
201. How long have you been connected with this particular branch of the Harbours and Rivers Department? Fourteen years.
202. You have been here from the initiation of the water works? Yes; I made the first surveys upon it.
203. And you have been in sole charge since Mr. Darley's transfer to Sydney? After Mr. Darley left Mr. Hickson was in charge of Newcastle for a time, but I have been engaged on the water supply all through.

H. D. Walsh, Esq., B.E., M. Inst. C.E. 30 July, 1892.

204. We understand that it was upon your recommendation that this project was put before Parliament and the Committee? Yes.
205. Was it foreseen, when the works were first constructed, that there would be a necessity for a Second Pipe-line within ten years? I am not in a position to say. The plans were made in the head office.
206. Has any other portion of the water supply system for these various towns been duplicated already or increased? No; none of them as yet.
207. This is really the first duplication? Yes. The only part which was laid out for increasing was the suction from the river. Of course, it was always contemplated to increase the scheme as required; but in the case of the tunnel provision had to be made for the two pipes at once, because we would have had to build a new tunnel otherwise.
208. The time has arrived when, owing to the growth of population, and the demand on your water supply, there should be an increase in the pipe-line? Yes.
209. Is it true there have been a number of fractures in your rising-main? The joints have blown out.
210. That is incidental to a service of that kind? Yes.
211. The present rising-main is cast-iron? Yes.
212. And the one you propose is of larger diameter, namely 20 inches as against 15 inches, and of wrought-iron? Yes.
213. Owing to its being made of wrought-iron it will be less liable to fracture? Yes. Instead of making the new pipes in 9-foot lengths, as in the case of a cast-iron pipe, we shall make it of 27-foot lengths. As the blowing out of the joints have been our chief trouble, the chance of an accident will thus be reduced considerably.
214. At the time the first pipe-line was laid down the profession knew very little as to wrought-iron pipes? I do not think one had ever been used out here, and they were only coming in in America at the time.
215. What is the difference between the cost of wrought-iron and cast-iron pipes? My estimate for a 20-inch wrought-iron pipe was £31,000, and for cast-iron £25,900.
216. Of course, the wrought-iron will be considerably less in weight? Yes; the difference in weight is 1,200 tons as against 2,920 tons.
217. What process do you go through with the pipes to prevent corrosion? They are coated with a patent composition inside and out. They are heated up to a certain temperature, and then dipped.
218. Have there been any similar pipes used in this Colony a sufficient time to enable you to judge how long they will last? I do not think so. The first pipes were made by Hoskins, for the North Shore Water Supply.
219. What is supposed to be the life of a cast-iron main? I could not say—a good deal will depend on the water.
220. You think that the wrought-iron will have as long a life as the cast-iron? Yes.
221. Especially in view of the fact that it is not so liable to sudden fracture? No, it is not.
222. Then there are two reasons for this proposed duplication—the growth of population, and the liability to interruption of the service, by only having one main? Yes.
223. What is the capacity of the Buttai Reservoir? One million and fifty-one thousand gallons.
224. Are you pumping continually at Walka to supply that? No; at present we are pumping about fifty-six hours a week.
225. That is to supply not only Buttai, but the reservoir at East Maitland, which commands West Maitland and Morpeth? Yes; but, of course, there is a very small percentage going to East Maitland.
226. The Committee this morning, during their visit to Walka, saw that one of your engines had been under repair. Is there any time during the year when you have to employ the whole of your three engines? Yes. No. 3 engine pumps from the river into the settling tank, and Nos. 1 and 2 engines, which were working this morning, pump to the reservoirs.
227. Mr. Barling, in his evidence, told us that this project was started by a memorandum of yours on the 10th February, 1891? Yes; I have a copy of that report here.
228. And it was brought under notice again more fully on the 26th February, 1892? Yes.
229. In which you stated that the works were designed ten years prior to that, for the supply of 36,000 people, and that the present population was 61,000? Yes.
230. But you have not been supplying the whole of these people? No; only a small portion up to this. We have been supplying the whole of Newcastle.
231. What is the population of Newcastle itself? Twelve thousand nine hundred and thirteen, according to the last census.
232. The Newcastle Borough carried out their own reticulation? Yes.
233. And you supply them with water in bulk, which they farm out? Yes. We charge them for everything which goes into the reservoir.
234. And the other towns have been reticulated by the Department? Yes.
235. But not fully? Fully, up to present requirements.
236. You have also charged a meter-rate for some, and have allowed them to farm it out in the same way? No. We have not been able to arrange meters satisfactorily through the mining townships. They charge by meter to other people. My man usually went round with the Council's man, and took the meter readings, and charged the Council accordingly, and they collected. That is, with the exception of one or two places. West Maitland, and East Maitland, we have charged by meter. Only one person has taken any water in Morpeth up to the present.
237. East and West Maitland are charged by meter, and farm out the water themselves? Yes.
238. The same as Newcastle? Yes.
239. The only difference being that the Department did the reticulation work for East and West Maitland? Yes.
240. The recently-appointed Water and Sewerage Board, of which you are a member, has taken over the water supply? Yes; it is in a state of transition at present. We hope to get the staff to work next week.
241. And will all the staff at present in your employ at Walka be transferred to them? Yes.
242. Has the Board taken any steps in connection with the appointment of an engineer? No; the appointment rests in the hands of the Minister.
243. On the nomination of the Board? No; we have no power even to nominate.
244. You expect to have an engineer and other officers appointed during the next few weeks? Yes; we are getting offices and everything ready now.

245.

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245. In your report which has been referred to, you estimate that there are 48,747 persons to be supplied from the Buttai Reservoir? Yes.
246. And you allow them at the rate of 30 gallons a day at present? Yes.
247. Which is equal to a possible consumption of 1,462,200 gallons per day?
248. You say also in your report that this is 50 per cent. more than the engines were designed to supply in ten hours? Yes.
249. Is ten hours your ordinary working shift? Eight hours is the ordinary working shift. The reason I put in the ten hours was, that in the design of the engines the calculations were made out for a ten-hours' shift.
250. Is that pumping with two engines? No; one engine would pump, theoretically, 500,000 gallons in the ten hours.
251. If you are going to supply that 48,000 people you will want your two engines going more than ten hours? Yes.
252. Would it not be better to continue to work your engines longer, and do away with the Second Pipe-line? I do not think so; because, if a leak occurred in the pipe it would stop the supply altogether.
253. It is a matter of safety, then, for the people dependent upon it as much as anything else? Yes.
254. If there were two pipe-lines down it is possible that, instead of putting a third pipe down, you would go in for working longer hours with a pump? Yes. The second pipe from Walka to Buttai would be the only pipe necessary for many years to come.
255. We are told that the estimate for the new 20-inch main is £31,000; suction, £3,100, and connections, £400; total, £34,500; then there is a sum of £15,500 for further reticulation? Yes.
256. Will your Department carry out the reticulation, or the Water and Sewerage Board? The Water and Sewerage Board; but the money would have to be provided for somehow, for supplying the pipes.
257. I suppose this estimate of £15,500 for further reticulation was for the purpose of giving the Water and Sewerage Board a good start, with sufficient pipes for immediate reticulation? Yes. We have a small stock of pipes in hand, but we are completely out of 6-inch and 4-inch pipes.
258. Do you think that the people of these districts will be able to bear the burden which will be placed upon them? It is in this way: if we charge the district a certain rate for water, we are bound to supply them, or we cannot charge them. I do not see my way, with the present main, to supply them with water.
259. And you think that, with the powers under the Act, whereby you can compel these people to take water and to pay for it even if they are not taking it, you will be able to meet the expenses, the interest on capital, and also to provide a sinking fund, as suggested? I think so, after a short time.
260. Do you anticipate a big jump in the revenue owing to more extended powers? Yes.
261. All these agreements you have entered into with the various Municipalities are merely temporary matters? Yes.
262. Now that this Water Supply and Sewerage Board has come into operation they become null and void? I think that to-day's paper contains the names of the water districts and streets. We shall charge rates from the 16th of next month, and then all previous agreements will be null and void.
263. The people with whom you made agreements knew that the agreements were temporary, pending the bringing into power of some central body to govern the supply? Yes.
264. They will have no right of action against you? No. The form of our agreement is, that the water is to be charged at such rates as may be decided upon by the Minister for Works, or the body having control of the water supply.
265. Was that draft agreement submitted to the Crown Solicitor before being used? The draft agreement to the Council was, and the other was submitted to the Engineer-in-Chief.
266. At all events, you do not consider there is the slightest danger of any complications arising? No.
267. What is the capacity of the Walka Reservoir? Two hundred and ten million gallons.
268. What have you in it now? About 150,000,000 gallons—hardly that.
269. Why has not a greater quantity of water been put in? We only put it in when we have a spare engine for a day or so, but the main body of that water has been put in from the catchment or rainfall.
270. For how many months in the year do you pump direct from the river without calling on your Walka Reservoir to contribute? It depends on the state of the river. We pumped from the storage reservoir for about a month during the last heavy fresh; and some years, of course, the river will be in fresh for a couple of months.
271. But supposing there were flood upon flood, and you were to come upon your water stored in the reservoir, if it were only about one-third full you would soon exhaust it? No; because the inlet from the pumps is at the far corner of the reservoir. We draw out, probably, three-quarters of a mile from the inlet, so that, if the worst came to the worst, we could pump into the reservoir at the one end pea-soup almost, and yet draw out clean water at the other end. It was designed with that intention in case of accident.
272. In the event of there being a drought, and the river giving out, and you not having your full supply in the reservoir, what then? The river has never been known to be dry.
273. But where is the necessity of providing, in the Walka Reservoir, such a large holding capacity unless you were prepared to use it? Of course we do use it whenever the river is in flood or dirty, or whenever it is very low.
274. What is the greatest quantity of water you have had in your Walka Reservoir? About 18 inches above what it is now.
275. At all events, you have never yet filled your Walka Reservoir to its fullest capacity? No.
276. And you do not think there are likely to be interruptions from drought or flood, which would necessitate your exhausting even your present supply? I do not think so.
277. Where was the necessity, therefore, of making the Walka Reservoir so deep? Of course we had to go across the lagoon.
278. It is a matter of raising your dam then;—what was the cost of that dam? I could not say exactly.
279. Was it intermixed with the other works? If we had not built that dam we should have had to run a large quantity of the material from the excavations to spoil.
280. Supposing you had taken 10 feet off the dam—or supposing, in other words, you impounded 1,000,000,000 gallons less water—what difference would it have made in the cost? I would not like to give an opinion, without working out the quantities.

281.

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281. There seems to me to have been some waste there? No; because, even with the size of dam we have there now, we had to run some 10,000 yards to spoil. The whole of that large embankment in the front of the engine-house was spoil from the tanks and other excavations.
282. How much longer would a pipe-line have to be to enable you to escape the worst of your flooded area, going round by the hills? Probably 2 or 3 miles longer, and going along the Newcastle road would necessitate heavy rock cuttings. From the top of East Maitland, on the north, down to Woodford, it is all rock.
283. Of course if you went round, on higher ground, unless you kept to the road, it would mean resumption of land? Yes.
284. And if you keep to the road you have to contend with rock cuttings? Yes.
285. Under those circumstances, do you think it would be far better to continue along your land, which is already resumed for your pipe-line, although it may be subject to inconvenience in breaking away at flood time? I think so.
286. As a matter of fact, you had considerable trouble a short time ago, owing to a break when the land was flooded? Yes; we had a diver at work two or three days trying to find the leak, and caulking it.
287. I suppose, if you get a second pipe-line, you will only use one main at a time? Yes.
288. You will have one in reserve? The new pipe-line would probably be used with the two engines working fifteen revolutions, which is our maximum speed.
289. Will you say good-bye to your old pipe-line? No; we should keep it in case anything should go wrong.
290. But it will be the weakest line after all if you are depending upon it if anything goes wrong with the other one? If we used both lines, both might go.
291. As the officer in charge of the work, and having upon you the responsibility of supplying the districts with water, you have come to the conclusion that the work ought to be carried out in the interests of the people? Yes.
292. *Mr. Davies.*] What is West Maitland's daily consumption of water in twenty-four hours? If the whole population were taking it, it would be over 180,000 gallons.
293. Your pumping mains and distributing mains are all cast-iron with socket connections? Spigot and socket joints.
294. Have the fractures you have referred to been fractures of the pipe or socket? Chiefly joints blowing out.
295. What sort of joints do you propose to make in connection with your wrought-iron pipes—flanges or rivets? Spigot and socket-joints.
296. Of the same character? Yes.
297. *Chairman.*] In your report to Mr. Barling, you said that the highest consumption had been at Newcastle—some 36 gallons per head on one occasion? Thirty-five gallons.
298. Is not that a very large amount? Yes, it was a very hot day.
299. Was any of that drawn off by shipping? No. The water used for shipping at that time would come from a different main altogether—from the Hamilton Reservoir.
300. Is not 20 gallons a day looked upon as the ordinary consumption per head of population? I think nearly all the water companies now, even in England, provide 30 gallons a day.
301. *Mr. Ewing.*] You tell us that the line is absolutely necessary, and that, in your opinion, it is best to follow the present route? Yes.
302. The present line you say cost £34,000—and, taking 3 miles longer by your alternative route, it will cost about £56,000? Yes; but the cost of laying would be very much greater on account of the rock-cutting.
303. We may say it would cost between £50,000 and £60,000? Yes.
304. And your two pipes would carry three times as much as the present pipe? Yes.
305. Twice as much as you can pump? No; the new main will just take as much as we can pump with the two engines.
306. Are you going to maintain the two pipe-lines? There would be no more trouble in maintaining two than one.
307. *Chairman.*] Have you anything else you would like to state? In my report I pointed out the amount of water supplied to the various population centres from various reservoirs. I find that the Lambton and Hamilton Reservoirs together only hold 762,000 gallons, and they have to supply the whole of Lambton, New Lambton, Hamilton, Adamstown, Waratah, Wickham, Merewether, and Carrington—a total population of 27,600 people, and with that capacity, and an allowance of 30 gallons per day per individual, it only gives us twenty-two hours supply, and that is not sufficient for a scheme of this kind. If it can be arranged, instead of the £15,000 all going in reticulation pipes, it would be better to provide for 2 miles of 6-inch pipes, 6 miles of 4-inch pipes, and 10 miles of 3-inch pipes. This, with the pipes we have on hand, will be sufficient to keep us going, for all reticulation purposes, up to the end of next year. That would leave a sufficient sum out of that £15,000 to provide an extra reservoir of about 500,000 gallons at the top of the hill at Waratah. It would give us a good storage for that portion of the district, which is a most important portion. We have 15-inch pipes enough in stock to connect a reservoir with our present main, and I have estimated £750 for the laying of those pipes.
308. Is that already in your report? I merely stated the fact that the capacity was too small for that place.
309. However, the money could be used better than in ordinary reticulation? It could. We will say £5,000 for the new reservoir, and the connecting of the main with the reservoir, which would leave £10,000 for reticulation.
310. This is the first time that suggestion has been made? It has never been made to the Department further than that the capacity of the reservoir was too small.
311. You think that in the future although the extension of reticulation would be left to the Water and Sewerage Board, yet the duplication of reservoirs, or any permanent work of that character, would still be carried out by the Minister? Yes.
312. If the £15,000 referred to is spent in reticulation, it will all be spent by the Board, and you think it would be better to spend £10,000 for reticulation and £5,000 for a reservoir? Yes; that is up to the end of next year. It would allow for 19 miles of reticulation pipes between this and next year. The length of reticulation pipes I have at present, exclusive of Newcastle, is 92 miles.

TUESDAY,

TUESDAY, 2 *AUGUST*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	The Hon. JOHN DAVIES, C.M.G.
The Hon. JAMES HOSKINS.	THOMAS THOMSON EWING, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM CHANDOS WALL, Esq.
The Hon. ANDREW GARRAN, LL.D.	WILLIAM MCCOURT, Esq.

HENRY DAWSON, Esq.

The Committee further considered the proposed Second Pipe-line from Walka to Buttai, for Hunter River District Water Supply.

Cecil West Darley, Esq., Engineer-in-Chief for Harbours and Rivers, sworn, and further examined:—

C. W. Darley, Esq. 2 Aug., 1892.

313. *Chairman.*] Are all the reservoirs in connection with the Hunter River Water Supply covered reservoirs, similar to Buttai? All below Buttai.

314. What was the object in covering Buttai Reservoir? That was one of the first reservoirs designed after Mr. Clark was here, and as advised by him we covered it, but we have given up that practice lately.

315. Except where reservoirs may become contaminated you leave them uncovered? Yes.

316. And the probability is, that if Buttai Reservoir had been constructed now, it would have been left uncovered? Yes. It was recommended by Mr. Clark to be covered, but we have had more experience since then. Mr. Moriarty thought it was better to adhere to Mr. Clark's recommendation, but of late years we have given up constructing covered reservoirs, except near towns.

317. Since you were examined, I suppose your Department has had no communication with the Hunter River District Water and Sewerage Board? No.

318. So far as correspondence is concerned, they have not officially given in their adherence to this proposal? No; I have seen nothing.

319. No further steps have been taken with reference to the appointment of an engineer for that Board? I have not heard.

320. That is entirely in the hands of the Minister? Yes.

321. Subject to nomination or recommendation by the Board? No; I think it rests entirely with the Minister. The Act provides that the Minister shall appoint the engineer and the secretary.

322. I presume that the salary that will be offered to the engineer of the Hunter River District Water Supply and Sewerage Board will not be sufficient to command a first-class man? They cannot afford to pay a very high salary.

323. *Mr. Davies.*] I suppose there is no doubt in your mind as to the absolute necessity for this second pipe service? None at all. If I had anything to do with the district—in fact, having the interests of the district still at heart, after a long connection with it—I must say that I should always be very uneasy if I depended on that one pipe. My mind would never be at rest. If I were one of the Board my mind would never be at rest, I knowing professionally the risk that would be run.

324. It is one of the most important works that should be undertaken right away, in order to secure permanent supply of water for that district? In past years the houses in the district have had their own water supply; they have depended on tanks and wells; but once they have a permanent supply the tanks and wells will be allowed to fall into disrepair; and if the service from the reservoir is cut off the people will be absolutely without water.

325. And while depending on this one pipe the whole system is liable to stop? It is liable to break down.

326. It is altogether dependent on this reservoir? That would not last long when all the houses in the district are drawing water. Up to the present time we have known that it would last about a week, for comparatively few houses have been connected with the water supply, but now that the Board has been formed all the houses will have to be connected with the water supply.

327. Do you propose, in addition to your duplication of pipe service, to make any provision in the future, for enlarging your reservoirs? Not at present. I do not think it will be necessary for a short time to come.

328. Are you aware that there has been a suggestion made to enlarge the Lambton Reservoir? I do not recollect its coming under my notice.

329. There has been no requisition made to you? I cannot call it to mind. I do not recollect it.

330. You are not aware that there have been any representations made? No; I am not aware. I do not think that it is immediately necessary; but if the demand increased very much the Board might have to take some steps. For the present, however, they ought to get on very well with the present capacity of the reservoirs.

331. You remember the capacities of the different reservoirs—do you remember the storage capacity of the reservoir at Lambton? I think it is 380,000 gallons.

332. Do you think that that is enough for supplying that populous part for the present? I think it is enough for the present. The whole thing depends on Buttai, for the gravitation main is constantly working, and if Buttai is kept full it is always replenished.

333. Buttai holds 1,000,000 gallons? Yes. And seeing that we have two pumps to keep it going, I think we have sufficient for some time to come.

334. As one of the principal means of conveying that supply to the distributing reservoirs you should have this duplicate pipe service? For pumping. I consider that the main link in the service is to have pumping appliances sufficient to keep Buttai full.

335. You have no provision made for renewals or repairs on the stoppage of the whole works if anything happens to them? We have every provision at present; but circumstances might arise that would make it difficult to effect a repair.

336. If the present main were broken and had to be repaired the whole service would be at a stand still? It would.

337. And it is absolutely necessary that this duplication should take place? In my opinion it is.

C. W. Darley, Esq. 2 Aug., 1892.

338. *Mr. Wall.*] Did I understand you to say that the Hunter River District Water Supply and Sewerage Board would not be able to employ a competent engineer? I did not say so. I said I did not think they could afford to pay a very high salary.
339. Do you know whether they have engaged a secretary? I have not heard—I think the Board made a suggestion.
340. I understood that they had engaged an assistant secretary at £400 a year, and I thought that that was a very good start? The appointment of a secretary and of an engineer is vested by the Act, in the Minister, and so far I have not heard that the Minister has made an appointment. Some members of the Board have spoken to me about it, and seeing that there will not be much work for some time to come, I have said that I think, if the Minister will agree to it, that they may well let their accountant act as secretary for some time to come till the work increases. I think they have appointed an accountant at a salary of £250 a year. I would give him another £50 a year, and let him do the secretarial work for some time to come. For a small Board like that, without much work to do, I think they have already appointed a very large staff.
341. *Mr. Dawson.*] Do you know the name of the accountant? Fry or Try—he was formerly in one of the offices at Newcastle.
342. *Mr. Ewing.*] Has the Board the power of dismissing its own secretary if he is not suitable? I think so.
343. Although it is a Ministerial nomination? The first appointment only rests with the Minister.
344. If you did not like that appointment you could dismiss him? I am under that impression. They would have to show good reason.
345. And you could appoint another yourselves? Yes; I learn from a cutting from a Newcastle paper that Mr. Fry has been appointed accountant, with a salary of £350 a year. I have been told that he is a very good officer.
346. *Mr. Wall.*] Was Mr. Fry until recently, a teacher in one of the public schools? I never saw him. I heard that he was in one of the largest offices in Newcastle.
347. Dalgetty's? Dalgetty's, I was told. If he is a good man, as he is reported to be, I think that he ought to act as secretary and accountant for some time to come.
348. Do you know what his age is? No.
349. *Mr. Ewing.*] You say that although the Minister nominates this person, and virtually gives him the appointment, if he does not suit you, you can get rid of the secretary or of the engineer? I think the Board has that power under the Act.
350. You are not sure? I am not quite sure. It is so under the Sydney Water Supply Act.
351. It would be a remarkable thing to foist a man on to you that you did not want;—it is not likely to be done? I do not think it is likely to be done. If the Board showed they could do without a secretary I do not think it is likely that he would be appointed just yet.
352. *Mr. Davies.*] Can you give the Committee any idea of the absolute annual cost in carrying out the provisions of the Hunter District Water Supply and Sewerage Act, including professional and clerical assistance? To cover the cost up to the present time for caretakers at reservoirs and maintenance men throughout the district, we have had a vote of £4,000 a year. That has just paid for pumping, coals, stores, and maintenance work generally.
353. Under the new Board there will be very much more expense? The maintenance work should not be more expensive; but then there is the Board itself and the staff. That is where the additional cost comes in, and I have put that down at £4,000 a year.
354. So that the annual cost will be about £8,000 a year? That is what I put it down at in my estimate. Looking at the number of appointments, and the salaries, I think it will come to about £4,000 a year for the Board and the executive staff.
355. *Chairman.*] Why was there such a large impounding area secured at Walka, namely 70,000,000 gallons, when it is only about one-third full now. We are told by you that the capacity of the Walka is 70,000,000 gallons? I think it is 70,000,000 gallons.
356. And the Committee, when at Maitland and Newcastle, learnt that the Walka had never been more than about one-third full? I really do not know why it has never been pumped up. It might be wanted in cases of floods, such as we had in 1870, when, during quite four months, the river was too turbid to pump from.
357. We have been told that one of the reasons why it has not been pumped fuller is because they only pumped their spare power into that. Do you not think that in view of possible contingencies, and having such a large reservoir there, it should be filled to a greater extent than it has been? I think that from actual working they have found that sufficient.
358. We were informed that the water is principally pumped direct from the river to your filtering-beds? Yes; except in flood-time, when it goes to the reservoir. The consumption of water has been very little up to the present time—about 11,000,000 gallons a month, I think, and it has not been worth while to add an extra pump.
359. In view of the larger drain on your water service there, do you not think it would be desirable to have a larger quantity of water impounded in that reservoir? They can do it at any time.
360. Will that not mean a greater strain on your pumps than hitherto? No; because there is one pump especially for that, working short hours.
361. The pump that pumps water into that reservoir is the same pump that pumps water into your filtering-bed? Yes.
362. And while it is pumping water into the filtering-bed, it cannot pump water into the reservoir? It takes but a short time. It is a very large pump, in fact. When the time comes a larger pump can be put there.*
363. The pump, drawing water from the river to your filtering-beds, is not working so many hours a day as the pumps operating on the rising-main? There is no necessity. It can do the work in half the time. It is a bigger pump.
364. Where is the necessity, then, for duplicating your suction pipe if your suction engine is so much superior in power to your rising-main engines? In case we want to replenish the reservoir quickly at any time; in fact, the friction is now a little severe in that pipe, and the pipe rather throttles the pump at present.
365. With this new larger suction pipe, you will probably keep your Walka Reservoir much fuller than it is at present? I think it would be advisable to do so.

C. W. Darley, Esq. 2 Aug., 1892.

366. But if after ten years' experience this reservoir has only been one-third full at its best, where is the necessity of having such a large area impounded, and consequently a costly dam? It was anticipated, of course, that the work would be brought into use much more rapidly than it has been. Very few people in the district have been taking the water—only those who like.
367. If your anticipations are fulfilled, and there is a large demand on your water supply, that will either mean working increased hours with the engines attached to the pumps that feed Buttai Reservoir, or duplicating your present pumping power? There is no necessity for that—we could work longer hours—sixteen and even twenty-four hours when the time comes.
368. I suppose, if that plant were put down now, your proposed 20-inch rising-main would be ample without any duplication? It would.
369. It is because the rising-main is only a 15-inch main, and also because it is made of cast-iron, that there is a necessity for this proposed second pipe? It is really on account of the present main being made of cast-iron, and liable to break, that the necessity for this duplicate main arises.
370. We were informed by Mr. Walsh, up there, that your wrought-iron pipes will be three times the length of your cast-iron pipes, and, therefore a number of joints will be done away with? The cast-iron pipes are only 9 feet lengths, and the wrought-iron pipes will be 27 feet or 30 feet lengths.
371. So it comes to this, that owing to the little experience the engineers had ten years ago, as to the nature of wrought-iron pipes, they put down cast-iron pipes, but that if you were putting them down now, you would put down wrought-iron pipes, and would save the necessity of duplication? With my present experience I would lay wrought-iron pipes in all cases for rising-mains.
372. *Mr. Wall.*] Would the duplicate pipe, which you are putting in now, be sufficient in itself in the event of the old pipe giving away? Quite, for a long time to come.
373. Then, as a matter of fact, you might almost dispense with the pipe if you had this duplicate pipe laid? Yes; but, I think, it would be wiser to leave it for what it is worth.
374. If this new pipe will meet the requirements it will not be necessary to replace the old pipe again, if it should wear out? No.
375. This new pipe, of itself, will meet the capacity of the reservoirs, and the requirements of the people, without any duplication of the old pipe, if the old pipe should give way? Quite so.
376. *Chairman.*] Mr. Walsh, your engineer in the north, learnt for the first time the other day, that £15,000 was to be allowed for further reticulation, and he expressed the opinion that inasmuch as the various towns were fairly reticulated, and the Board had a stock of reticulation pipes in hand, some portion of the £15,000 might be used, as Mr. Davies has said, for the purpose of increasing the reservoir capacity, say, at Lambton and Hamilton;—do you think that might be done? The reason I put that amount on the estimate, was that I had applications from Mr. Walsh for more pipes—two or three letters asking for more pipes—and seeing that the matter was coming before the Committee, I thought it better to make one thing of it. There is no necessity, of course, to spend all that money at once—there is no such intention. My object was to let one inquiry cover everything, and to have the money available, so as to get the pipes when they were wanted.
377. In other words, you wished to give the Board a good stock-in-trade to start with? No; the money will be ready for them to spend as required. I do not propose to buy the pipes—it is for them to buy them as they require them.
378. You are not necessarily, I presume, bound down to spend the £15,000 on reticulation; if, after more mature consideration, you think it necessary to devote £5,000 to the purpose of increasing the reservoir capacity, it could be done? With the Minister's permission, I think that could be done, but I have doubts about the necessity for increasing the reservoir capacity.
379. All the subsidiary reservoirs being supplied by gravitation—you do not think there is a necessity for it? Without investigating it, I would not like to say there is a necessity. This is the first I have heard of it. I think that if Buttai Reservoir is kept full, it in its turn will keep all the others full.
380. The weak point in the system, if any, lies between the intake at the Hunter River and Buttai? Yes. If that is kept full, there should be sufficient for all the rest.
381. *Mr. Humphery.*] The new 20-inch main will carry about double the quantity carried by the existing main? Yes, quite double.

[One plan.]

Sydney: Charles Potter, Government Printer.—1892.

PLAN I

Second Pipe Line from Waika to Buttai.

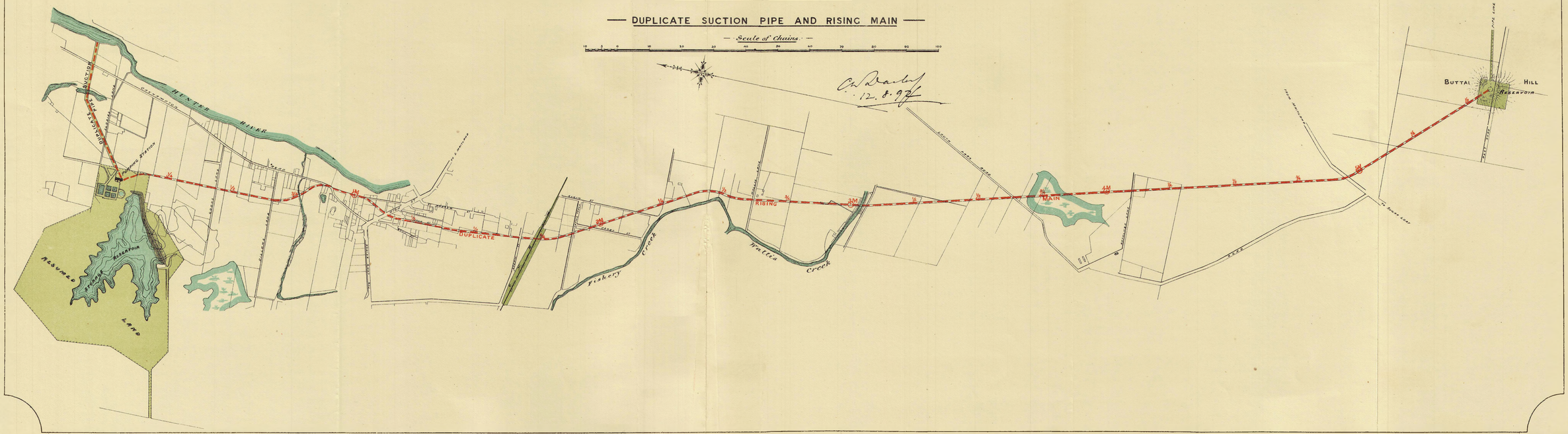
— H R D W S —

— PLAN SHEWING LINES OF PROPOSED —

— DUPLICATE SUCTION PIPE AND RISING MAIN —

— Scale of Chains —

10 5 0 10 20 30 40 50 60 70 80 90 100



C.H. Darley
12.8.97

(Sig 87).

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SYDNEY, NEW SOUTH WALES.

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE BOARD.

(RETURN RESPECTING MEMBERS OF.)

Ordered by the Legislative Assembly to be printed, 13 *December*, 1892.

[*Laid upon the Table of the House in answer to Question No.* 6, *of* 3 *November*, 1892.]

Question.

(6.) MEMBERS OF HUNTER DISTRICT WATER SUPPLY AND SEWERAGE BOARD:—MR. CARRUTHERS ASKED THE SECRETARY FOR PUBLIC WORKS,—

(1.) How many members of the Hunter District Water Supply and Sewerage Board are there; who are they; and what salaries and fees are paid to them?

(2.) How many officials are connected with the Board, and what is the total of the yearly salaries and wages?

(3.) What are the total annual expenses of the Board, including working expenses, interest, and sinking fund?

(4.) What is the estimated yearly revenue of the Board?

(5.) For what period is Mr. A. Brown appointed as President?

Answer.

(1.) Seven in all, *i.e.*, three "official members," and four "municipal members," representing the various municipalities—in terms of subsections I and II of Act 55 Victoria No. 27. The official members are: The Hon. Alexander Brown, M.L.C., President; James S. Rodgers, iron merchant, Newcastle, and Henry Deane Walsh, M.I.C.E., Harbours and Rivers Department, Newcastle. The municipal members are: Alderman John R. Rodgers, Vice-president, Mayor of Newcastle; Alderman Henry Rushton, Mayor of Wallsend; Arthur Coe Lee, architect, West Maitland, and Alderman Archibald Gardiner, mining engineer, Hamilton. The President receives £500 per annum, and the other members of the Board £100 per annum each.

(2.) Forty-four, including clerical and professional staff, engineers, caretakers, turncocks, firemen, and meter reader, &c.

Clerical and Professional Staff.

	Per annum. £		Per annum. £
Secretary and Accountant	350	Cashier	125
Board Engineer	400	Rates Ledger-keeper	125
Chief Clerk	300	Assistant outside Cashier and District Clerk	125
Assessor	250	Assessor's 2nd Assistant	100
Maitland District Inspector	234	Junior Records Clerk	75
Inspector of Plumbing	200	Cashier's Assistant	50
Shorthand, Correspondence, and Records Clerk	175	Caretaker, messenger, and office cleaner	156
Book-keeper and outside Cashier	150	Cadets, 4 at £25 each	100
Assessor's 1st Assistant	150		
District Clerk	150	Amount of yearly salaries ...	£3,371
Maitland Cashier and District Clerk ...	156		

Wages

Wages Staff.

			£	s.	d.	
Engineer-in-charge, Walka	16/- per day	...	249	12	0	per annum.
Second Engineer	11/- „	...	171	12	0	„
Third Engineer and fitter, Walka ...	10/- „	...	156	0	0	„
2 firemen	8/- „	...	249	12	0	„
Oiler and turncock	8/- „	...	124	16	0	„
Cleaner	7/- „	...	109	4	0	„
Fitter man	£10 per month	...	120	0	0	„
1 turncock	9/- per day	...	140	8	0	„
3 turncocks	8/- „	...	374	8	0	„
3 caretakers	£10 per month	...	360	0	0	„
5 „	£9 „	...	540	0	0	„
Meter reader	9/- per day	...	140	8	0	„
Labourer	£9 per month	...	108	0	0	„
Annual amount paid as wages			£2,844	0	0	

(3.) *Estimated annual expenses for* 1893.

Working expenses.

	£	s.	d.
President's salary and Board's fees	1,100	0	0
Salaries of clerical and professional staff, as per answer to question 2 ..	3,371	0	0
Wages of engineers at Walka, and others, as per answer to question 2...	2,844	0	0
Coals	544	0	0
Stores...	200	0	0

Contingencies

Sand for filtering beds, printing, stationery, and office requisites; travelling expenses where no forage is allowed	466	0	0
Rent, Newcastle and Maitland	340	0	0
Forage allowance	200	0	0
Total	£9,165	0	0

The exact figures regarding the Interest and Sinking Fund cannot at present be given, as several matters in connection with the accounts have yet to be adjusted.

(4.) £29,308, made up as follows:—On properties as assessed by the municipalities and not subject to appeal, £20,530; on properties subject to appeal, £4,428; meters and special fees, estimated to return, £4,350.

(5.) The Hon. Alexander Brown, M.L.C., has been appointed for a term of four years, from 1st July, 1892, by His Excellency the Governor, with the advice of the Executive Council, in terms of subsection 1 of clause 5, 55 Victoria No. 27, and section 7 of the aforesaid Act.

Sydney: Charles Potter, Government Printer.—1892.

[3d.]

1892.

NEW SOUTH WALES.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE ACT.

(BY-LAWS.)

Presented to Parliament pursuant to the Hunter District Water Supply and Sewerage Act of 1892.

Department of Public Works,
Sydney, 13th September, 1892.

HUNTER DISTRICT WATER BY-LAWS.

His Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the following By-laws which have been made by the Hunter District Water Supply and Sewerage Board, in accordance with the terms of the "Hunter District Water Supply and Sewerage Act of 1892."

WILLIAM JOHN LYNE.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE BOARD.

WATER BY-LAWS.

WHEREAS by the "Hunter District Water Supply and Sewerage Act, 1892," the Hunter District Water Supply and Sewerage Board is authorised and empowered from time to time to make, alter, and repeal By-laws:

Now the Hunter District Water Supply and Sewerage Board, under and by virtue of the powers contained in the "Hunter District Water Supply and Sewerage Act, 1892," do hereby make the By-laws following, that is to say:

1. The following rates and charges are those which the owners and occupiers of tenements, lands, and premises shall pay in respect of water supplied by the Board, that is to say:—

(For water supplied for domestic purposes otherwise than by measure.)

(I.) Where the premises are of the assessed annual value of ten pounds or under, ten shillings per annum.

(II.) Where the premises are above the assessed annual value of ten pounds, a rate of one shilling for each pound sterling on the amount of the valuation.

Vacant land.

(III.) Vacant lands of the assessed value of £30 and over shall be subject to a rate of fourpence for each pound sterling on the amount of the valuation.

Unfinished houses, &c.

(IV.) The like rates as those above mentioned shall be charged on all lands, tenements, and hereditaments not included in any valuation by any borough or municipal district, and on all lands, tenements, and hereditaments for the time being valued by any such borough or municipal district at a sum less than the true value thereof.

(For water supplied by measure.)

Stand-pipes.

(V.) The charge for water supplied from stand-pipes shall be two shillings per 1,000 gallons.

Supply by measure.

(VI.) The charge for water supplied from the mains by measure shall be two shillings per 1,000 gallons.

(VII.) The charge for water supplied to shipping will be four shillings per 1,000 gallons. Her Majesty's Navy will be supplied free of charge.

(For water for other than domestic purposes otherwise than by measure.)

Water-troughs.

(VIII.) The charge for water-troughs shall be twenty-shillings per annum each.

Gas-engines.

(IX.) The charge for water supplied to gas-engines shall be five shillings per annum for each engine of two-horse power nominal and under, and for every additional horse power nominal beyond two-horse power an additional charge of two shillings and sixpence per annum for each horse power.

Steam boilers.

(X.) The charge for water supplied to steam boilers shall be twenty shillings per annum for each steam boiler up to three-horse power nominal, and for every additional horse power beyond three-horse power an additional charge of five shillings per annum for each horse power.

Organ motors, &c.

(XI.) The charge for water supplied for organ motors and such like mechanism, shall be two pounds per annum for each motor up to one half-horse power, and for every additional one half-horse power beyond one half-horse power an additional charge of twenty shillings per annum for each one half-horse power.

(a) The charge for water supplied for ventilating and refrigerating motors, used for trade purposes, shall be two pounds per annum for each motor, and for private purposes, one pound per annum for each motor.

(b) The charge for water supplied for dentists' lathes motors shall be one pound per annum for each motor. No person shall use water in connection with any motor unless the nozzle supplying such motor has been first approved of by the Board. The waste-pipe from each motor shall be so fixed that the waste water can be measured at any time.

Water for trade purposes, &c.

(XII.) The charge for water supplied for purposes of the undermentioned or other trades shall be at such rates upon such terms and subject to such conditions as may be agreed upon by the Board and the person requiring to be supplied, provided, however, that for any year or part thereof, the minimum charge for water supplied for the undermentioned trades shall be that in each hereunder case set opposite the trade, viz.:—

Photography, and any like process	5s. per annum.
Tripe cleaning	5s per annum.
Tyring purposes	5s. per annum.
Laundries	5s. per annum.
Dyers	10s. per annum.
Condiment making	5s. per annum.
Bottle washing	5s. per annum.
Small goods (sweets)	5s. per annum.
Waterfalls and fountains	5s. per annum.
Shop fronts, by hose	5s. per annum.

Washing vehicles.

(XIII.) The Board may supply water for the washing of vehicles with a hose, without meter, at the rate of 5s. per annum for each vehicle.

NOTE.—In all cases where special fees are charged, the Board reserve to themselves the right of insisting upon a meter being fixed at any time, notwithstanding the fact that the special fee may have been paid. All special fees are in addition to the assessed annual rate of the premises on which such fees are charged, and are payable in advance. All premises on which water is used for other than domestic purposes, and upon which special fees are paid, shall be open for inspection by the Inspectors of the Board at any reasonable hour.

2. Assessed rates shall be paid half-yearly in advance, by equal payments, on the 1st day of January and the 1st day of July in each year, whether a meter is used or not. In the case when a meter is used, the meter account will be rendered only when it is in excess of the assessment. Cheques and post office orders will be received in payment of rates; but if the cheque tendered by any one person as payment for rates due is dishonoured, the Board may cut off his service, and proceed for the recovery of the amount by warrant for distress or otherwise. Cheques and post office orders must be crossed in favour of the Board.

Minimum Charge by Meter or otherwise, the Assessed Rate.

3. The minimum charge for water, whether supplied through meter or otherwise, for domestic purposes and for purposes other than domestic, is the assessed annual rate. If the water is supplied by meter, and the meter account exceeds the assessment (calculated at the rate of two shillings per 1,000 gallons), then such excess shall be charged in addition to the assessment.

One Meter for Several Tenements.

4. One meter may be allowed to supply several tenements, when such tenements are occupied by one person or firm as a place of business or abode, and the meter account will be credited with the assessments of all such tenements. One service only will be allowed under these conditions upon which the meter will be fixed, and all the water for such tenements must pass through such meter. Where peculiar circumstances entail a departure from the above, and two services are absolutely necessary, then there shall be a meter on each service-pipe.

Building charges, &c.

5. The charge for water supplied for building and plastering purposes, for buildings to be used either wholly or partly as dwelling-houses, shall be at the rate of one halfpenny per cubic yard on the cubical contents of each building. The Board will supply water for all other buildings either by meter or at the rate above mentioned per cubic yard on the cubical contents of each building as the Board shall determine: provided that before any water shall be used through meter for building purposes such meter shall be submitted to the Board in each case for examination, and must pass the sensitive test; and the minimum charge in each case for water so supplied through meter shall be twenty shillings.

(1.) The charge for water supplied for plastering rooms only shall be two shillings and sixpence for each room, and for the building of wash-houses, water-closets, coppers and chimneys only two shillings and sixpence each.

(2.) The charge for water supplied for the making and mixing of concrete for foundations of wooden blocks, stone cubes, or other form of permanent roadway or pavement, shall be at the rate of one pound ten shillings per 1,000 square yards, by superficial measurement of road surface; and for all other Concrete, brickwork, or masonry, at the rate of threepence per cubic yard, as measured on the work.

Horses and cows.

6. Any person who maintains horses or cows may be supplied with water, without meter, from the domestic service for the sum of five shillings per annum for each animal, in addition to the assessed annual rate of the premises on which such animal is maintained or supplied with water.

Premises where horses and cows kept liable to extra rate.

7. All lands or premises actually supplied with water by the Board, on which any one or more head of horses or cattle shall be kept or maintained, shall be liable to an extra rate or charge (beyond and in addition to the assessed annual rate of the premises) of five shillings per head for each head of horses or cattle kept or maintained on such lands or premises. And where such lands or premises are not actually supplied with water by the Board they shall be liable to an extra rate or charge (beyond and in addition to the assessed annual rate of the premises) of two shillings and sixpence per head for each head of horses or cattle kept or maintained on such lands or premises.

Gardens.

8. The Board may supply water for gardens (and for such purposes may permit a hose and standpipe to be used) without meter, at a rate of ten shillings per annum for every 750 square feet superficial area, or part thereof, in addition to the assessed annual rate of the premises to which such garden belongs or is attached.

Board may require any premises to take the whole supply of water through meter.

9. If the Board shall in any case be of the opinion that the owner or occupier of any premises is wasting or misusing or otherwise illegally dealing with water, or that the whole supply of water to any premises should for any reason be by meter, they may give to the owner or occupier a notice directing him, within a given time to be therein mentioned, to fix a meter to such premises, and to receive the whole supply of water to such premises through such meter; and after the expiration of such notice, whether a meter has been fixed in accordance therewith or not, the Board may cut off any supply of such premises which is otherwise than by meter.

Before affixing service-pipes, &c., licenses be obtained from Board.

10. Before any person shall affix any service-pipe to any pipe of the Board, or alter, repair, or in any manner interfere with any pipe of the Board, or any service-pipe, cock, or fitting connected with any pipe of the Board, he shall obtain from the Board a license in that behalf to execute any such work; and any unlicensed person affixing, altering, repairing, or in any manner interfering with any such pipe, service-pipe, cock, or fitting as aforesaid, shall be liable to a penalty not exceeding ten pounds.

Licensed plumber.

11. Before any such license shall be granted by the Board, the person applying for the same shall satisfy the Board that he is a competent plumber.

Before pipes can be uncovered two days' notice to Board must be given.

12. Any person, whether licensed as aforesaid or not, who shall offend by opening any ground so as to uncover any pipe or pipes, the property of the Board, or any pipe communicating therewith, without giving two day's notice to the Board of his intention so to do, or who shall in any way tamper, interfere with, or alter any pipe, the property of the Board, or any pipe communicating therewith, without the printed permit of the Board being first obtained, or who shall wilfully or negligently break, injure, or open any lock, cock, valve, pipe, work, or engine, the property of the Board, or whereby the water of the Board may be wasted or misused, shall be liable for each such offence to a penalty not exceeding twenty pounds.

Board or licensed plumber only empowered to tap mains, &c.

13. The Board only, or a plumber duly licensed by the Board, under the superintendence and according to the directions of the officer appointed by the Board for that purpose, is empowered to tap the main in the streets or elsewhere and attach service-pipes thereto, or extend the same generally as the case may be. Any person infringing this clause shall be liable to a penalty not exceeding twenty pounds.

Penalty for communicating with pipes of the Board without notice.

14. Any person, whether licensed as aforesaid or not, who shall lay any pipe so as either directly or indirectly to communicate with the pipe or pipes of the Board without giving two days' notice of the day and hour when such pipe is intended to be made to communicate with the pipe or pipes of the Board, and without having obtained the official printed permit of the Board, or who shall make such communication, except under the superintendence and according to the directions of some officer of the Board, or who shall lay any leaden or other pipe to communicate as aforesaid with a pipe of the Board of a strength and material not sanctioned by the Board, shall be liable for each such offence to a penalty not exceeding five pounds; and, in the event of continuing the offence, to a further penalty of two pounds for each day after the notice of the offence from the Board until proper pipes are laid.

Fee for tapping main.

15. Every application for water must be accompanied by the payment of a fee of three shillings for the tapping of any main, and every application for reconnection with a main, after the water has been cut off for non-payment of rates or other charges, shall be accompanied by the payment of a fee of two shillings and sixpence.

Board may compel owner to connect premises with the water-mains.

16. Every owner or occupier of any house, tenements, or lands, shall, for the purpose of obtaining a supply of water to such house, tenements, or lands (after receiving from the Board the prescribed notice so to do), construct such connections and fittings from and in connection with such house, tenements, or lands to communicate with the water-main of the Board as are prescribed by the By-laws and Regulations of the said Board.

Penalty for using unauthorised fittings.

17. Any person who, being an owner or occupier of lands or premises supplied with water under the said cited Act, for the purpose of taking, in a manner not authorised by such Act or these By-laws, any such water, uses in or places on, or affixes or attaches to, such land or premises, or to any prescribed fitting, or wilfully permits to be used in or placed on, or affixed or attached to, such lands or premises, or to any prescribed fitting, any fitting instrument, or thing, not authorised in that behalf by the Board, or who alters, misuses, injures, or removes any prescribed fitting, except for the purpose of necessary repair, shall, upon conviction thereof, forfeit and pay to the Board a sum not greater than ten pounds, without prejudice to the right of the Board to recover from him damages in respect to any injury by such owner or occupier done, or wilfully permitted to be done, to the Board's property, and without prejudice to the Board's right to recover from him the value of any water wasted, misused, or unduly consumed.

Owner to lay and maintain services.

18. The owner or occupier of any house, tenements, or lands must, at his own expense, lay down and maintain all the pipes and apparatus upon his premises, and upon any street, lane, or land lying between his premises and the Board's mains. All pipes must be of galvanised wrought-iron where possible, and where lead pipes are used they must be of equal thickness throughout, and of at least the respective weights following, viz. :—

Weight of lead pipes.

¾-in.	5 lb.	per yard.
1-in.	6 lb.	,,
1¼-in.	9 lb.	,,
1-in.	12 lb.	,,
1½-in.	16 lb.	,,
1½-in.	20 lb.	,,

Where wrought-iron pipes are used, they must be of the kind known as galvanised wrought-iron lap-welded steam tubes, unless otherwise permitted by the Board.

Defective fittings to be removed.

19. Any consumer's pipe, cock, cistern, or other fitting laid, fixed, or used otherwise than in accordance with these By-laws and with the provisions of the Act, or which shall, in the opinion of the Board, be or become of bad or defective quality, or shall conduce to the waste, misuse, or contamination of the water, shall, upon the Board giving notice in writing, be discontinued and disused; and the Board may require the same to be removed, replaced, or repaired, and may stop the supply of water to the said consumer until such pipe, cock, cistern, or other fitting shall have been removed, replaced, or repaired to the satisfaction of the Board.

Quality of fittings for iron pipes.

20. No person shall use, in connection with the water of the Board, any iron pipe, tee, thimble, bend, reducing coupling, plug, &c., unless it be of the best manufacture, true in section, straight, and of equal thickness, properly and truly cut with Whitworth's standard gas thread, and perfectly sound and new, and free from all defects. Every such tee, bend, tube, &c., shall be capable of withstanding a hydrostatic pressure equal to a column of water 600 feet in height.

Joints.

21. Every person shall make all joints between tees, bends, thimbles, couplings, elbows, and cocks, &c., with white or red lead and flax. All joints on lead pipes, and lead pipes with brass unions, shall be of the kind known as "wiped joints."

Depth of pipe.

22. No person shall lay any service pipe on private property, below the ground surface, at a less depth than 10 inches in situations where it may be liable to injury from foot or other traffic, and in any public place or in any roadway, whether public or private, at a less depth than 18 inches—unless with the special permission of the Board first obtained. In situations where there is no traffic such service pipe may be on the surface.

Pipes through drains to be properly protected.

23. No person shall lay any pipe or other apparatus through any sewer, drain, ashpit, cistern, or manure tank, or through, in, or into any place where, in the event of the pipe becoming unsound, the water of the Board conveyed through such pipe would be liable to be fouled, or to escape without observation—unless such pipe or apparatus be laid to the satisfaction of the Board through an exterior cast-iron pipe or box of sufficient length and strength to afford due protection to the same, and to bring any leakage or waste within easy detection.

Approved fittings.

24. No person shall use any tap, stop-cock, bib-cock, ball-cock valve, closet cistern, service-box, waste-not regulator, bath-tap or valve, or other fitting in connection with a supply of water of the Board which is not of the best quality, and approved by and bearing the stamp of the Board or of the Metropolitan Board of Water Supply and Sewerage.

Cocks.

25. No person shall use any stop or bib-cock which is not loose-valve, screw-down, high-pressure cocks, made of hard brass or gun-metal, and in every respect of best quality and workmanship, and approved by and bearing the stamp of the Board or of the Metropolitan Board of Water Supply and Sewerage.

Cisterns.

26. No person shall use any cistern or tank that is not provided with an equilibrium ball-valve, and the over-flow pipe laid and fixed in a suitable manner, open to inspection, and in a position approved by the Board.

Service not to communicate with rain water receptacles or underground tanks.

27. No person shall fix or use any service-pipe which communicates with any cistern, tank, or vessel intended or used for the reception of rain-water below the surface of the ground, except where a meter is used, and otherwise in accordance with these By-laws.

Water-closets.

28. No person shall construct or use any water-closet fitting not approved by the Board, or supplied from the service pertaining to the tenement unless the same have a proper closet-cistern, or service-box, fitted with approved waste-preventing apparatus. No person shall fix or use any service-pipe which communicates directly or indirectly with the basin or trap, or otherwise than with the cistern of a water-closet.

Meter to be fixed where water supplied without charge, except in cases of public urinals.

29. Every institution or place receiving water without charge shall provide and fix a meter on the service-pipe to indicate the amount of consumption at such institution or place, as a check against waste or undue use, provided that this by-law shall not apply to public urinals, which will receive water without charge, and without meter, provided a cistern with a ball-valve shall be provided to receive the water in the first instance in each case.

Baths.

30. The Board will not supply any water to any bath, the outlet of which is not distinct from and unconnected with the inlet or inlets; and the inlet or inlets shall be placed above the highest water level of the bath. The outlet of such bath shall be provided with a perfectly water-tight plug, valve, or cock. No such bath shall have any overflow waste-pipe that is not laid and fixed in a suitable manner, open to inspection, and in a position approved by the Board. No bath shall exceed in dimensions 6 ft. 6 in. long by 2 ft. 6 in. wide by 2 ft. deep, unless supplied by meter. The Board will not supply water to any bath unless the same shall be so constructed as to prevent a waste of water.

Service connection.

31. Except by the permission of the Board, every tenement shall have an independent service-pipe connected with the water-main, and such service shall be stop-cocked outside of the premises on footpath; and no person shall connect more than one tenement with the main of the Board from one service, except by permission of the Board. Where such permission is given to connect more than one tenement by one service, each such extra service shall have a separate stop-cock on the foot-path or other convenient place outside of the premises, so that every such tenement can be shut off from the main without necessitating the operative shutting off the water entering or trespassing on private land.

Urinals.

32. No person shall fix or have fixed a service-pipe so as to communicate directly with any urinal, and every urinal shall be supplied only through a cistern or service-box, fitted with waste-preventing apparatus approved by the Board.

Water for other than domestic purposes.

33. No person shall use water supplied by the Board for other than domestic purposes, except the supply is by meter, or excepted in the manner hereinbefore provided, under penalty as provided in clause 75 of the Act.

Dial of meters to be capable of registering 1,000,000 gallons.

34. No person, except with special consent of the Board, shall affix a meter, the dial of which is not capable of registering one million (1,000,000) gallons.

Meters registering incorrectly.

35. If any meter shall not directly indicate the water passing through it, the Board may charge for the supply according to the average daily consumption for any month preceding the date upon which such meter shall have been examined and found to be in order; or at the request of the consumer, or by direction of the Board, the said meter shall be tested, and the charge for water supplied regulated accordingly.

Meters not to be interfered with.

36. No person not duly authorised by the Board shall disconnect any meter or other apparatus from the service-pipes, or in any way interfere with the same.

Steam boiler to have self acting valve.

37. If any person shall connect any service-pipe, or branch service-pipe, with any steam boiler for the purpose of feeding or supplying the same with water, without first affixing a self-acting valve for preventing the pressure of the steam reversing or affecting the dial of the meter, he shall be liable to a penalty not exceeding five pounds; and a further penalty of two pounds for each day after notice of the offence from the Board to such offender.

No hose to be attached to any pipe for watering gardens, &c., without meter.

38. Except as hereinbefore provided, no person shall use a hose attached to any tap or pipe (used for the purpose of supplying the water of the Board for domestic purposes to any house or premises) for watering any garden, laying dust, or for any other purpose whatsoever, unless where a water-meter is fixed and the water supplied by measure, or unless the special fee (if any) fixed by the Board has been paid; and any person offending against this by-law shall be liable to a penalty not exceeding five pounds.

No tap to be in garden without meter.

39. Except as hereinbefore provided, no person shall have, maintain, or place any tap in any garden or screwed tap in any yard or to or outside of any dwelling or premises supplied with the water of the Board to which a hose could be attached unless a water-meter is fixed and the water supplied by measure, or unless the special fee (if any) fixed by the Board has been paid; and any person offending against this by-law shall be liable to a penalty not exceeding five pounds.

Large services to terraces and connections.

40. Where owners of terraces require a large service or sub-main to feed more than one tenement, it shall be competent for such owners to lay such large service or sub-main in back lane, but every house service from it shall be ¾-inch, having a ¾-inch stop-cock, so arranged that any one house can be shut off without interfering with the supply to the remaining houses, and the stop-cock must be so placed that the Board's operative can have access to it without entering private land or otherwise becoming a trespasser on private land: Provided that such large service shall be first submitted to the Board for approval, and in order to determine its dimensions.

Pipes, &c., to be kept in proper repair.

41. Any person using water supplied by the Board shall keep all pipes and other appliances in connection with the supply of water to such person in a proper state of repair.

Inspection of work.

42. All work at any time done or to be done on private lands or premises in connection with the water supply, whether such work consist in the laying and fixing of new services, or in the extension or alteration of existing services or fittings, shall be inspected by the proper officer of the Board, and no such work shall be commenced until after the expiration of two days' notice thereof first given to the Board, and the necessary printed permit obtained. In no case shall the water be turned on to any land or premises where any such work shall have been executed until the said work shall have been inspected by the said officer, and certified by him, on the prescribed form. No underground or enclosed work shall on any account be covered up or concealed from view until the same shall have been duly inspected and passed by the inspector; and any person offending against this by-law shall be liable to a penalty not exceeding five pounds.

Supply and use of water open to inspection.

43. The supply and use of water, whether for domestic purposes or under special agreement, shall be open to inspection and admeasurement whenever required; and such information must from time to time be afforded as will be sufficient to enable the Board to obtain a satisfactory account of the quantity of water actually consumed, and of the pipes, taps, cisterns, and other apparatus and conveniences for receiving and delivering such water. Any officer of the Board may at all reasonable times in the day-time enter on the premises of any person using water supplied by the Board for the purpose of inspecting the service-pipes or other appliances on such premises.

Board may repair.

44. If the service-pipes or other appliances of any such person shall on any inspection be found to be out of repair, the Board may forthwith, without notice, repair the same in such manner as may be deemed necessary, and the cost of any such repairs may be recovered by the Board from the owner or occupier of such premises.

Board have control of water supplied to public parks, &c.

45. The water supply to the public parks and gardens shall be by meter, and shall be exclusively under the control and direction of the Board; and any person turning on the water, other than the person or persons duly authorised, or otherwise interfering with such water supply, shall be liable to a penalty not exceeding five pounds.

Notices and applications to be made upon printed forms.

46. All notices and applications required by these By-laws are to be made upon printed forms, to be obtained at the Board's office. Notices sent by post must be prepaid. Any sums paid by the Board on account of notices sent by post and not prepaid will be charged against and recovered from the sender.

Board may discontinue supply.

47. The Board shall be at liberty to discontinue and cut off the supply of water immediately on the discovery of any breach of these By-laws.

Interpretation of terms.

48. In the construction of these By-laws the word "person" shall be deemed to extend to and include a corporation, or any body or number of persons, and the masculine shall include the feminine gender.

Penalties.

49. Any person committing a breach of any By-law to which no specific penalty is attached, or who shall refuse or neglect to obey any injunction in any such By-law, shall, upon conviction, be liable to pay a penalty not exceeding twenty pounds, and, in case of a continuing offence, a further penalty not exceeding five pounds for each day after notice of such offence shall have been given by the Board to such offender.

50. The following is the form of notice to connect the water-mains, prescribed under clause 68, section 1. of the Hunter District Water Supply and Sewerage Act, 1892:—

NOTICE TO CONNECT TO WATERMAINS.

Hunter District Water Supply and Sewerage Board, Newcastle.

To the owner or occupier, 189 .

NOTICE is hereby given that a water-main has been laid in (as the case may be) and is ready to distribute water. The Hunter District Water Supply and Sewerage Board hereby demand and require that the owner or occupier of the houses, tenements, or lands, at or on which this notice is left or exhibited, shall construct such connections or fittings from or in connection with such house, tenements, or lands, to communicate with such main, as are prescribed by the By-laws and Regulations of the said Board.

For the Hunter District Water Supply and Sewerage Board,

ALEXANDER BROWN,
President.

ALFRED E. FRY,
Secretary.

Sydney: Charles Potter, Government Printer.—1892.

[6d.]

1892–3.

NEW SOUTH WALES.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE ACT.

(NEW BY-LAWS, NOS. 31 AND 40, UNDER.)

Presented to Parliament pursuant to the Hunter District Water Supply and Sewerage Act of 1892.

Department of Public Works,
Sydney, 7th June, 1893.

HUNTER DISTRICT WATER BY-LAWS.

His Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of New By-laws Nos. 31 and 40, which have been made by the Hunter District Water Supply and Sewerage Board, in accordance with the terms of the "Hunter District Water Supply and Sewerage Act of 1892."

WILLIAM JOHN LYNE.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE BOARD.

Alteration of By-laws.

WHEREAS by the Act 55 Victoria No. 27, the Hunter District Water Supply and Sewerage Board is authorised and empowered from time to time to make, alter, and repeal By-laws. Now the Board, under and by virtue of the powers contained in the abovementioned Act, hereby alter such By-laws as follows.

By-laws Nos. 31 and 40, published in the Gazette of 14th September, 1892, are hereby cancelled, and the following substituted in lieu thereof :—

New By-law No. 31.

Service connection.

Every house supplied with water by the Board (except in cases of stand-pipes) shall have its own separate service pipe, and such service pipe shall have a path-cock near its point of entrance into the premises : Provided that in the case of a group or block of houses the water rates of which are paid by one owner, the Board may at their option permit one sufficient service pipe for such group or block, but every such service pipe shall have a separate path-cock.

New By-law No. 40.

Large services to terraces and connections.

Where one service pipe is laid from the Board's water-mains to supply a group or block of houses the water rates of which are paid by one owner, with the permission of the Board each tenement may be supplied from a branch off the main service pipe, and each such branch shall not be less than ½ inch in diameter, and have a stop-cock in an approved position so that the water may be shut off any tenement without stopping the supply to the other tenements. The size of the main service pipe to be arranged according to the following scale : Provided that in localities where the pressure of water in the mains is low, the number of houses to be supplied by one service pipe may be reduced by the Board :—

For premises not exceeding four houses, assessed in all at £150 per annum or under, ¾-inch pipe.

For premises not exceeding eight houses, assessed in all at more than £150 and not more than £300 per annum, 1-inch pipe.

ALEXANDER BROWN,
President.

Alfred E. Fry, Secretary.

1892.

NEW SOUTH WALES.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE ACT, 1892.

(PROCLAMATION DEFINING THE BOUNDARIES OF THE WATER DISTRICT OF THE LOWER HUNTER.)

Presented to Parliament, pursuant to Act 55 Vic. No. 27, sec. 36.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

IN pursuance and in exercise of the powers conferred by the "Hunter District Water Supply and Sewerage Act of 1892," I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, do with the advice of the Executive Council, hereby define the boundaries of the Water District of the Lower Hunter to be as follows:—

Commencing on the coast of the South Pacific Ocean, at the north-east corner of portion 1 of 177 acres, parish of Kahibah, county of Northumberland; and bounded thence on the south by the north boundaries of that portion and of portions 2, 3, and 127, to the east boundary of portion 43; thence on the west by part of that boundary of that portion, the east boundaries of portions 42, 41, and 40 and their prolongation north to the south boundary of Joseph Weller's 2,560 acres, portion 9; thence again on the south by that boundary of that portion and its prolongation west to the Sugar Loaf Range; thence on the west and parts of the south and east by that range and the ranges dividing the waters of Cockle Creek and Wollombi Brook from those of the Hunter to the west side of the road from Maitland to Wollombi; thence again on the west by that side of that road to its intersection with the left bank of Black Creek, and by that bank of that creek downwards to its confluence with the Hunter River, and a line north until it strikes a point distant twenty chains in rectangular distance from the left bank of that river; thence on the north by a line (crossing the Paterson and Williams Rivers) and parallel to and distant 20 chains in rectangular distance from that bank of that river, its North Channel, and the shores of Fullerton Cove, to the south boundary of James Smith's 880 acres, parish of Stockton, county of Gloucester; thence on the remainder of the north by that boundary of that land and its prolongation east until it strikes a point east of and distant 2 miles from the west coast of the South Pacific Ocean aforesaid; thence on the remainder of the east by a line parallel to and distant 2 miles in rectangular distance from that coast southerly until it strikes a point due east of the point of commencement; and thence on the remainder of the south by a line west, to the point of commencement.

The land comprised within above boundaries, being situate in the parishes of Kahibah, Teralba, Mulbring, Cessnock, Pokolbin, Allandale, Branxton, Gosforth, Heddon, Stanford, Maitland, Stockrington, Alnwick, Hexham, and Newcastle, county of Northumberland; parishes of Marwood, Stanhope, Wolfingham, Middlehope, and Seaham, county of Durham; parishes of Eldon, Stockton, and Stowell, county of Gloucester. Area, about 488 square miles.

Given under my Hand and Seal, at Government House, Sydney, this twelfth day of November, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892-3.

NEW SOUTH WALES.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE ACT.

(PROCLAMATION DEFINING THE BOUNDARIES OF THE WATER DISTRICT OF THE LOWER HUNTER.)

Presented to Parliament, pursuant to Act 55 Vic. No. 27, sec. 36.

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(L.S.)

JERSEY, *Governor.*

IN pursuance and in exercise of the powers conferred by the "Hunter District Water Supply and Sewerage Act of 1892," I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, do, with the advice of the Executive Council, hereby define the boundaries of the Water District of the Lower Hunter to be as follows:—

Commencing on the coast of the South Pacific Ocean, at the north-east corner of portion 1 of 177 acres, parish of Kahibah, county of Northumberland; and bounded thence on the south by the north boundaries of that portion and of portions 2, 3, and 127 to the east boundary of portion 43; thence on the west by part of that boundary north to the north-east corner of that portion; thence again on the south by the north boundary of that portion and its prolongation west crossing Lake Macquarie to its western shore; thence by the shores of that lake southerly and north-westerly to the left bank of L. T. Creek; thence on the south-west by that bank of that creek upwards to its intersection with the southern boundary of Bloomfield and Marks' 429 acres 2 roods (exclusive of roads and tracks), portion 44, parish of Awaba, county of Northumberland; thence again on the south by that boundary of that portion and its prolongation west to the range partly forming the boundary between the parishes of Awaba and Teralba, county of Northumberland; thence by that range westerly until it meets Sugar Loaf Range; thence on the west and parts of the south and east by that range and the ranges dividing the waters of Cockle Creek and Wollombi Brook from those of the Hunter to the west side of the road from Maitland to Wollombi; thence again on the west by that side of that road to its intersection with the left bank of Black Creek, and by that bank of that creek downwards to its confluence with the Hunter River, and a line north until it strikes a point distant 20 chains in rectangular distance from the left bank of that river; thence on the north by a line (crossing the Paterson and Williams Rivers) and parallel to and distant 20 chains in rectangular distance from that bank of that river, its North Channel and the shores of Fullerton Cove, to the south boundary of James Smith's 880 acres, parish of Stockton, county of Gloucester; thence on the remainder of the north by that boundary of that land and its prolongation east until it strikes a point east of and distant 2 miles from the west coast of the South Pacific Ocean aforesaid; thence on the remainder of the east by a line parallel to and distant 2 miles in rectangular distance from that coast southerly until it strikes a point due east of the point of commencement; and thence on the remainder of the south by a line west, to the point of commencement.

The land comprised within above boundaries, being situate in the parishes of Kahibah, Teralba, Awaba, Mulbring, Cessnock, Pokolbin, Allandale, Branxton, Gosforth, Heddon, Stanford, Maitland, Stockrington, Alnwick, Hexham, and Newcastle, county of Northumberland; parishes of Marwood, Stanhope, Wolfingham, Middlehope, and Seaham, county of Durham; parishes of Eldon, Stockton, and Stowell, county of Gloucester. Area about 528 square miles.

Given under my Hand and Seal, at Government House, Sydney, this twenty-second day of December, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892–3.

NEW SOUTH WALES.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE ACT.

(PLUMBERS' REGULATIONS UNDER.)

Presented to Parliament pursuant to the Hunter District Water Supply and Sewerage Act of 1892.

Department of Public Works,
Sydney, 22nd August, 1892.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE BOARD.

It is hereby notified that His Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the following Plumbers' Regulations in connection with the Hunter District Water Supply and Sewerage Board.

WILLIAM JOHN LYNE.

Plumbers' Regulations.

Permit to be obtained on printed form.

1. Persons requiring to use the water of the Board for building purposes, house supply, garden, stock, or other uses, will be granted a permit so to do on making application at the office of the Board on payment of all rates accrued and to accrue up to the end of the half-year then current, which permit must be exhibited to any officer of the Board on demand. Such permit may be issued to the proprietor, tenant, or other person interested in the premises; but it is not to be inferred therefrom that the work can be executed by the recipient, unless he be a licensed plumber; and any licensed plumber performing any such work without obtaining a permit will render his license liable to be cancelled, without prejudice to any other action the Board might think fit to take.

Application for connections to be lodged two days.

2. Applications for permission to lay on water to any premises from the Board's mains, or from any service-pipe, must be lodged at the Board's office at least two days before the work is required to be done, such notice to be on printed forms, which are supplied on application, and for the correctness of the information written thereon the plumber will be held strictly responsible.

Drilling fees.

3. The drilling fee must, in all cases, accompany the amount for building purposes, house supply, gardens, &c. (except in cases of extension from existing services), and no drilling or connecting permit will be issued unless all fees and rates then due are paid.

Permission to connect to adjoining premises to be obtained from owner.

4. In all cases where it is intended to connect a service-pipe to the service-pipe of any other premises, a written permission to connect must be obtained from the owner of such premises, and must accompany the application before authority to connect will be granted.

Permission to test new service-pipes.

5. When, during the erection of a new building, the service-pipes for domestic or other use are being laid throughout, and where it is desired to apply a test to the domestic service to ascertain whether it is watertight or not, the plumber shall make an application on the printed forms to that effect, giving at least two days' notice, and shall lodge the same at the Board's office, stating the day and hour when such test is to be applied. A printed permit will then be issued to the applicant, which will entitle him to attach a temporary connection from the building service to the domestic service for test purposes only, and when such test (which must be made under the supervision of an officer of the Board) is satisfactorily made, the connection must be detached, and the end of the T piece or pipe shall then be plugged or capped, and such plug or capping shall be sealed by the Board's officer to prevent tampering with the connection.

Conversion of building service to domestic, &c.

6. When, on the completion of the building, it is proposed to extend a service-pipe originally laid for building purposes, and to use the same for domestic, garden, stock, and other purposes, two days' notice must be given on the proper form, and lodged at the Board's office to enable the property to be assessed, and all rates and charges must be paid to the end of the then current half-year. When these regulations shall have been conformed with, then permission to extend will be granted on a printed permit, and for the removal of the seals by the Board's officials only; in any case where such seals have been broken by other than an officer of the Board the assessment will be charged from the date of application for testing.

Building service not to be used for domestic.

It is therefore to be expressly understood that the service-pipe laid for building purposes is not to be used or extended to furnish water for domestic or any other purposes than that for which permission has been granted unless a printed permit has been issued for that purpose. Any infringement of this regulation will bring the plumber under the penalties of Regulation No. 1.

Application to transfer, alter, or repair.

7. Application for permission to transfer, alter, repair, or extend servicepipes, must be made to the Board on the ordinary application form at least twenty-four hours before

commencing the work, and a printed permit obtained in accordance with Regulation No. 1, except in cases of great waste of water, or where damage to premises, &c., may be taking place, when immediate steps must be taken to stop the leak, and notice must be given at the Board's Office, of the same immediately thereafter.

Application for water by Meter.

8. All applications for the use of water by meter must be lodged at the Board's office at least two days before the connection is required, to enable an officer of the Board to visit the premises and select the best position for the meter and box. When this application has been lodged the meter must then be taken to the Board's office to determine its correctness. The days for receiving and delivering meters shall be Tuesdays and Thursdays. The certificate of the correctness of meters which may register correctly at the time of testing, but are otherwise in a defective state, will not be issued until the repairs are effected.

Instruction to fix Meter.

9. When the meter is fixed it shall be enclosed in a strong box of wood or iron, placed above ground in a position approved by an officer of the Board, and having a proper padlock and key. The lock and key to be of a pattern supplied by the Board, and the owner of such meter may supply himself with a duplicate key for his own satisfaction, but he is required to keep the meter-box safely locked. On no account are plumbers or others to take off, alter, or otherwise interfere with meters or pipes connecting the same unless a printed permit has been granted for that purpose. Where a meter has been used for building or other purposes, and it is desired that the meter be taken off, a notice to that effect must be given at the Board's office at least six days before the date of contemplated removal. The meter will then be read by the proper officer of the Board, and, on payment of the amount due for water used and all rates and fees, and other conditions having been complied with, permission to disconnect will be granted on a printed permit. Where a notice has been served to disconnect a meter for cleaning, repairing, or testing its rate, the application to disconnect, accompanied with the notice which has been served, must be lodged at the Board's office; permission to disconnect will then be granted on a printed permit, which permit must be produced when the meter is taken to the Board's office. Meters disconnected for the above purpose of cleaning, &c, must be replaced within six days of the date of disconnection, unless a satisfactory reason be assigned for the delay. Plumbers disconnecting meters without first obtaining the necessary permit will bring themselves under the penalties of Regulation No. 1.

Plumbers may post application.

10. Plumbers will find their work greatly facilitated by posting all applications for connections, extensions, transfers, alterations, repairs, to test pipes or disconnect meters to the Board a few days before it is contemplated commencing the work. Applications not containing the fullest information as to house, number (if any), occupier and owner's name, or in the case of meters, the meter No., &c., or in the case of new buildings, the builder's name, will not be entertained until such is supplied.

Application for fire service.

11. A deposit of a sum of money shall be made in all cases where special fire services are desired in any building and where a direct connection is required, that is the main to be cut and branch and stop valve to be fixed or inserted. The amount of such deposit will be fixed by the Board, and on completion of work the balance of deposit, if any, to be returned, or a further sum charged if due. Plumbers to take all risk and responsibility of opening the ground or any other surface formation during the fixing of the above service.

Sealing fire services.

12. Special fire service stand-pipes, whether in or outside buildings, are to be protected with a wooden or iron case, and where the supply is not through meter they must be sealed with the Board's seal by an officer of the Board, and in every case where such seal is broken, whether by Fire Brigade or anyone else, for testing or other purpose, notice to that effect must be given at the Board's office not later than twenty-four hours afterwards to enable the same to be re-sealed. The omission of such notice will render it necessary for the Board to insist on a meter being used for such fire service or to refuse a fire service to the premises. Fire services must not be used for any other purpose whatever, lest when a fire occurs the service may be found out of repair or otherwise unserviceable.

Days set apart for connections.

13. Service connections from the Board's mains will be allowed on certain days, set apart and appointed for each district respectively, when an officer of the Board will be present to shut off the water, to direct the operations of the plumber, and to turn on the water again when the work of connection is completed.

Directions as to tapping.

14. The main shall be tapped on the top where practicable for a ¾-inch brass stop-cock (unless special written permission be obtained to insert larger); the stop-cock shall be known as high pressure, loose spindle top valve having a square or curved barrel lining and brass barrel union attached by a wiped joint to a piece of three-quarter-inch lead pipe (weighing 9 lb. to the yard) 2 feet long, the other extremity to be similarly attached to another brass barrell union, suitably tapped, to screw on to a ¾ galvanised iron service-pipe, or where so required an enlarging union must be provided, suited for screwing on to a 1¼ galvanised iron pipe. The iron pipes are to be screwed together with white or red lead paint, so as to be thoroughly watertight as far as a point 9 inches from the building line where a path-cock is to be inserted of a kind to be seen at the Board's office, and enclosed in an iron box, thence the service-pipe is to be ¾ in internal diameter. All changes of direction shall be made by curved elbows all carefully screwed on with paint as hereinbefore directed, ¾-inch heavy lead, where approved by the Board, weighing 9 lb. to the lineal yard, can be used, if desired, instead of the 1¼ inch galvanised iron.

Path-cocks and boxes.

15. Path-cocks and boxes must be fixed at a distance not more than 9 inches from building line. The iron boxes to be properly built up on bricks or with earthenware, or iron pipe as risers, all boxes to be of uniform size and marked with the letter W on lid, and to be flush with the pavement.

Size of service.

16. Where main is laid on footway the service shall be ¾-inch pipe, or inch if required may be permitted by the Board if found necessary. In cases of repairs or alteration to that part of a service between the main and the building line, and where no path-cock or box is fixed, such repairs or alterations shall only be permitted on condition that a path-cock and box shall be also fixed at the same operation.

Larger service may be given if necessary.

17. If specially applied for the Board may grant an inch or larger service, but the water must pass through a meter, or it must be shown that such pipe is necessary.

Each house to be separately stop-cocked.

18. When special permission is given to supply more than one dwelling from one connection from the main, every branch shall be separately stop-cocked on footpath as if each were singly connected from main, and shall not in this manner supply more than three houses by a ¾-inch service. This will only refer to new houses; but where premises are already erected, and to obviate raising the floors in every house, the connection from the main may be taken through one house, or down any right-of-way, and shall then be branched from such right-of-way, into each yard, and every branch shall be independently stop cocked on such right-of-way and fitted with iron boxes properly fixed to each service. The service in such case must be of a special size, to be determined by the Board. With the exception of those houses, where it has not been possible to connect direct through the want of a main in that street, and special permission has been granted to lay a service common to several houses as above described or to connect to an existing service-pipe, every detatched house or tenement must have an independent and separate service.

Materials to be approved of by Board.

19. All service-pipes, stop-cocks, ball-cocks, valves, and other fittings shall be equal in quality to samples kept in the Board's office to the design shown by a printed sheet of fittings or shall be approved of by the Board, and must bear the stamp of the Board, or that of the Metropolitan Board of Water Supply; and plumbers inserting fittings of a quality not so approved or stamped will be called upon to show cause why their licenses shall not be suspended or cancelled. If any defect be found in a licensed plumber's work, within twelve months of its completion, and the Board's officers certify that the defect is due to bad workmanship the said plumber shall remedy such defect free of cost, under a penalty of cancellation of license.

High-pressure cocks only to be used.

20. All cocks, whether within or without the premises, shall be of the kind known as high-pressure loose spindle valve, and not larger than ¾-inch at the outlets, except the supply be through a meter, or attached to a special fire service stand-pipe, or by permission of the Board.

Restoration of surfaces disturbed by plumbers.

21. Plumbers, when opening the ground in or across the streets or footpaths, must perform the work in a neat and careful manner, so as to interrupt the public traffic as little as possible; road-metal, ballast, curbing, guttering, flagging, or any form of pavement, must be carefully taken up and laid on one side; and when the excavation is completed, and the pipes, &c., laid, the trench filled and thoroughly rammed to the satisfaction of the superintending officer, the road metal, ballast, flagging, tar-paving, curbing, and guttering, &c., are to be carefully relaid in such a manner as to be equal in condition to its state before operations commenced, and to the satisfaction of the Board's officer.

Giving notice to Municipal authorities.

22. All plumbers opening up ground in the street or footpaths for the purpose of effecting repairs or fixing new services shall be subject to the same necessity of giving notice to the Municipal Council where such property is situated, and shall be subject to the same restrictions in and during the time of breaking up such street or pathways, or for any delay arising therefrom, as the Board is subject to.

Water not to be turned on until work inspected.

23. All work at any time done or to be done on private lands or premises in connection with the water supply, whether such work consist in the laying or fixing of new services, or in the extension or alteration of existing services or fittings, shall be inspected by the proper officer of the Board, and in no case shall the water be turned on to any lands or premises where such work has been executed until a printed permit has been obtained in accordance with Regulation No. 1, and the said work shall have been inspected and certified on a proper printed form; neither shall any underground work be covered up until passed by the proper officer or inspector.

Path-cock to be affixed wherever any alteration is being effected.

24. If in course of effecting repairs or alterations to existing connections it be found on any service that there is no path-cock, the plumber employed on the work is required to inform the owner or occupier of such premises that such path-cock is an indispensable accessory of the service, and that such path-cock must be fixed and enclosed in an iron box, otherwise such alterations cannot be sanctioned.

Urinals to be fed from cisterns, and to work only when in use.

25. All urinals shall be fed from cisterns, and shall not discharge more than two gallons at each flushing, and shall, with the exception of public urinals, be so constructed to work only when used or set to flush periodically. No urinal or water-closet shall under any circumstances be directly connected to pipes leading from the water mains.

Infringement of Act and Regulation.

26. Licensed plumbers will be held strictly responsible to the Board for any damage arising from the infringement or neglect of these Regulations or of the Act, 55° Vic. No. 27, or of the Board's By-laws.

Plumbers' licenses.

27. The Board will grant licenses to competent plumbers, enabling them to undertake the connection of premises with the Board's water mains. The applicants for such license must undergo such examination as the Board may from time to time deem necessary in all branches of the plumber's trade bearing upon the work in question, and in their knowledge of the sanitary work as applied to buildings, water-closets, and connections, and in the proper disposal of systems of pipes and other fittings for hot water supply. Plumbers proposing to undergo examination for such license must give notice of their intention so to do fourteen clear days before the end of each calendar month.

License fee.

28. The annual license fee is twenty shillings, and no rebate will be allowed for any part of the year that may have elapsed prior to the application for the license.

Currency of license.

29. Licenses issued by the Board under the By-laws and Regulations are only current from the 1st January to the 31st December of the year of issue, and plumbers desirous of remaining on the roll for the ensuing year must apply for a renewal of their license and pay the necessary fee before such license can be renewed. Plumbers performing any work for which the above license is required without in the first place securing such license will be liable to a fine not exceeding ten pounds.

Change of address of plumbers.

30. Plumbers having changed their addresses (which will more particularly apply to their business premises) must give notice of the same at the Board's office not later than forty-eight hours after such change.

Office hours of Inspector of Plumbing.

31. The office will be open for the transaction of business for licensed plumbers, and an officer will be in attendance on every working day from 9 a.m. to 1 p.m., and Saturdays from 9 a.m. to 11 a.m.

For the Hunter District Water Supply and Sewerage Board,

ALEXANDER BROWN,
President.

Sydney: Charles Potter, Government Printer.—1893.

[3d.]

1892-3.

NEW SOUTH WALES.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE ACT.

(NEW PLUMBERS' REGULATION No. 18, UNDER.)

Presented to Parliament pursuant to the Hunter District Water Supply and Sewerage Act of 1892.

Department of Public Works,
Sydney, 7th June, 1893.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE BOARD.

His Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the following New Regulation No. 18 of the Plumbers' Regulations in connection with the Hunter District Water Supply and Sewerage Board.

WILLIAM JOHN LYNE.

HUNTER DISTRICT WATER SUPPLY AND SEWERAGE BOARD.

ALTERATION OF PLUMBERS' REGULATION.

WHEREAS by the Act 55 Victoria No. 27, the Hunter District Water Supply and Sewerage Board is authorised and empowered from time to time to make, alter, and repeal By-laws. Now the Board, under and by virtue of the powers contained in the abovementioned Act, hereby notify that Plumbers' Regulation No. 18, published in the Gazette of 22nd August, 1892, is hereby cancelled, and the following Regulation is substituted in lieu thereof:—

NEW PLUMBERS' REGULATION No. 18.

Arrangement of Service Pipes to supply one or more houses.

Every house supplied with water by the Board (except in the cases of stand-pipes) shall have its own separate service pipe, and such service pipe shall have a path-cock near its point of entrance into the premises: Provided that in the case of a group or block of houses the water rates of which are paid by one owner, the Board may at their option permit one sufficient service pipe for such group or block, but every such service pipe shall have a path-cock. Where service pipes are thus laid to supply a group or block of houses, each tenement shall have an independent branch pipe from the main service pipe, and each such branch pipe shall not be less than ½ inch diameter, and have a stop-cock in an approved accessible position near the main service pipe. Stop-cocks placed underground must be surmounted with a proper iron surface box. The size of the main service pipe to be arranged according to the following scale, except in localities where the pressure of water is low; in these cases the number of houses to be supplied by one service may be reduced by the Board:—

For premises not exceeding four houses, assessed in all at £150 per annum and under, ¾-inch pipe.

For premises not exceeding eight houses, assessed in all at more than £150 and not more than £300 per annum, 1-inch pipe.

ALEXANDER BROWN,
President.

ALFRED E. FRY, Secretary.

1892.

LEGISLATIVE ASSEMBLY.
NEW SOUTH WALES.

HUNTER DISTRICT WATER-WORKS.

(RETURN RESPECTING COST OF.)

Ordered by the Legislative Assembly to be printed, 4 October, 1892.

[*Laid upon the Table of the House in answer to Question No. 5, of 7 September, 1892.*]

Question.

(5.) COST OF HUNTER DISTRICT WATER-WORKS:—MR. EDDEN *asked* THE SECRETARY FOR PUBLIC WORKS,—

(1.) What was the original cost of the Hunter District Water-works?
(2.) The original cost of permanent renewable works?
(3.) The date of all payments in connection with all permanent and renewable works?
(4.) The amount of revenue received by the Government since the first supply of water to 30th June, 1892, and all and any other revenue derived therefrom to 30th June, 1892?
(5.) The amount of capital standing in the books, charged against the Hunter District Water Supply?
(6.) What are the special amounts charged annually for interest, and have those amounts been computed and capitalised and added to the cost of works up to 30th June, 1892?

Answer.

(1 and 2.) Original cost of Hunter District Water-works, viz.:—

Permanent works		£187,666	6 3
Renewable works		202,968	2 1
Total original cost		£390,634	8 4

(3.) Amounts expended annually on water-works:—

For 13 months ended 31 Dec., 1880		£ 3,006	13 11
12 „ 31 „ 1881		16,141	2 11
12 „ 31 „ 1882		23,638	13 7
12 „ 31 „ 1883		41,979	5 1
12 „ 31 „ 1884		78,797	1 4
12 „ 31 „ 1885		72,676	9 4
12 „ 31 „ 1886		50,094	6 6
12 „ 31 „ 1887		29,074	13 4
12 „ 31 „ 1888		29,788	5 5
12 „ 31 „ 1889		27,623	18 0
12 „ 31 „ 1890		7,525	0 10
12 „ 31 „ 1891		7,746	15 5
6 „ 30 June, 1892		2,542	2 8
Total expended on works		£390,634	8 4

(4.) Revenue to 30 June, 1892, for water supplied:—

Cash received		£27,549	8 6
Interest allowed thereon at 3½ per cent. per annum ...		2,750	9 5
Accounts owing at 30 June, by—			
Railway Department £1,662 2 6			
Newcastle Borough Council 6,659 12 2			
Wickham Municipal Council 233 14 7			
Carrington „ 219 16 2			
Waratah „ 151 18 5			
Sundry persons 140 7 6			
	9,067	14	10
Total revenue	£39,367	12	9

(5.) Capital indebtedness :—

Account, permanent works	£187,666	6	3
,, renewable works	202,968	2	1
,, net interest, as per Item No. 6	63,459	2	8
Total capital indebtedness	£454,093	11	0

(6.) Amounts charged annually for interest, computed at 3½ per cent., and capitalised and added to cost of works, up to 30 June, 1892 :—

For	12	months ended	31	Dec.,	1880	£ 67	3	3
	12	,,	31	,,	1881	323	8	10
	12	,,	31	,,	1882	931	17	6
	12	,,	31	,,	1883	1,970	9	2
	12	,,	31	,,	1884	4,096	3	3
	12	,,	31	,,	1885	7,260	14	7
	12	,,	31	,,	1886	9,878	11	11
	12	,,	31	,,	1887	11,298	10	10
	12	,,	31	,,	1888	12,811	7	5
	12	,,	31	,,	1889	14,281	7	3
	12	,,	31	,,	1890	15,329	14	4
	12	,,	31	,,	1891	16,156	3	8
	6	,,	30	June,	1892	8,421	3	5
					Total interest	£102,826	15	5
Deduct revenue to 30 June, 1892, as per Item No. 4 ...	39,367	12	9
Net interest, capitalised and added to cost of works ...	£63,459	2	8

Sydney : Charles Potter, Government Printer.—1892.

[3d.]

1892.

NEW SOUTH WALES.

COUNTRY TOWNS WATER AND SEWERAGE ACT, 1880.

(BY-LAWS—GOULBURN WATER SUPPLY.)

Presented to Parliament, pursuant to Act 44 Vic. No. 14.

Department of Public Works,
Sydney, 22nd April, 1892.

It is hereby notified that His Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the following By-laws in connection with the Water Supply of the Borough of Goulburn, which have been prepared in accordance with the provisions of the Country Towns Water and Sewerage Act of 1880, 44 Vic. No. 14.

WILLIAM JOHN LYNE.

WHEREAS by the Country Towns Water and Sewerage Act, 44 Victoria No. 14, the Council of the Borough of Goulburn is authorised and empowered to make and alter and repeal By-laws; they do hereby repeal all existing Water Supply By-laws and make the following By-laws for raising revenue and for regulating and maintaining the Water Supply of the Borough of Goulburn, to take effect from 1st January, 1892, until repealed:—

1. The following shall be the Rates and Charges for water, which shall be paid by and recoverable from the owner of the lands or premises, or the occupier or person requiring, receiving, or using the supply of water; and all such Rates and Charges may be enforced and recovered in respect of any lands or premises situate within one hundred and fifty feet of any street or public highway along which a main water-pipe belonging to the Council is laid, although such lands or premises are not actually supplied with water from such main (vide Clause 60 of the Act 44 Victoria No. 14), and in respect to lands or premises situate beyond the said one hundred and fifty feet from the main which are supplied with water (vide Sec. 4 of Clause 13):—

BY RATE OF THE ANNUAL VALUE AS ASSESSED FOR GENERAL RATES.

2. On every house, tenement, or land of £10 assessed value and under, 10s. per annum.

3. On all lands and tenements (other than unimproved vacant land) above £10, at 1s. per £ per annum.

4. On all unimproved vacant land of an assessed annual value exceeding £10, the rate in addition to the rate chargeable under clause 2 shall be 6d. per £ per annum for each £ of the assessed value exceeding £10.

BY MEASURE.

The following charges to be in addition to the charge by any of the above rates (vide Clause 24 of Act 44 Vic. No. 14):—

5. Manufactories, boilers, motive power, public baths, street troughs, 1s. 6d. per 1,000 gallons.

6. Irrigation, 1s. 6d. per 1,000 gallons.

7. For water supplied to lands and tenements which, under section 163 of the Municipalities Act of 1867, are exempted from general rates—

(a) The property of Her Majesty, or in the occupation of the Imperial Government or the Government of New South Wales, or occupied as school subject to the provisions of the Public Schools Act of 1866, 1s. 6d. per 1,000 gallons, minimum quantity 30,000 gallons.

(b) Hospitals, benevolent institutions, and buildings used exclusively for public charitable purposes, churches, chapels, and buildings used exclusively for public worship, 1s. per 1,000 gallons, minimum quantity 30,000 gallons.

8. The minimum charge for water, whether supplied through meter or otherwise, for domestic purposes, or for other than domestic, is the assessed annual rate: Provided that, if the water is supplied by meter, the meter account shall be charged at the rate of 2s. per 1,000 gallons until the rate chargeable under the annual assessment is reached; after which any excess shall be charged at the rate of 1s. 6d. per 1,000 gallons.

GENERAL PROVISIONS.

9. The Council may enter into an agreement to supply water for any purpose other than the above, or upon premises not otherwise liable for water rates, at a rate not less than 1s. 6d. per 1,000 gallons, and for a not less quantity than 1,000 gallons.

10. All lands or tenements becoming liable by the extension of a main, or other cause, to be charged for water during the currency of a year, or to have its previous charge increased, shall immediately pay the proportionate amount of charge or increase to 31st December of the current year.

11. All new buildings shall be assessed from the time that notice of intention to build is lodged as if they were then erected; and the proportionate amount of charge or increase to 31st December of the current year, or to the subsequent 30th June, if the period would have been less than six months; and all arrears due upon the land shall be paid before permission to connect with the main can be issued.

12. All rates and charges shall be payable half-yearly in advance, whether a meter is used or not. In cases where a meter is used, the meter account will be rendered only when it is in excess of the assessment.

13. Any person who maintains horses may, with the consent of the Council, be supplied with water without meter from the domestic service for the sum of 5s. per annum for each horse, in addition to the assessed annual rate of the premises in which such horse is maintained or supplied with water.

14. The Council may supply water for gardens (and for such purpose may permit a hose and stand-pipe to be used) without meter at the rate of 10s. per annum for every 750 square feet superficial area, or part thereof, of such garden, in addition to the assessed annual rate of the premises to which such garden belongs or is attached, except in respect of the premises mentioned in sub-section *a* of clause 7 of these By-laws.

15. No person shall use water supplied by the Council for other than domestic purposes, unless the supply is by meter or except in the manner herein provided.

Regulations for the Guidance of Persons Licensed to lay on Water, Users of Water, and others.

Licensed persons only to fix service-pipe, &c.

16. Before any person shall affix any service-pipe to any pipe of the said Council, or alter, repair, or in any manner interfere with any pipe of the said Council, or any service-pipe, cock, or fitting connected with the pipes of the said Council, he shall obtain from the Council a license in that behalf to execute such works; and any unlicensed person affixing, altering, repairing, or in any manner interfering with such pipe, service-pipe, cock, or fitting as aforesaid shall be liable to a penalty not exceeding ten pounds.

License.

17. Before any such license shall be granted by the said Council, the person applying for the same shall satisfy the said Council that he is competent. Every such license shall terminate with the 31st December of each year and shall be subject to an annual fee of twenty shillings. All applications for renewals must be lodged with the Town Clerk, on or before the 10th January in each year.

Before pipes can be uncovered, two days' notice to Council must be given.

18. Any person, whether licensed as aforesaid or not, who shall offend by opening any ground so as to uncover any pipe or pipes, the property of the Council, without giving two days' notice to the Council of his intention so to do, or who shall in any way tamper, interfere with, or alter any pipe, the property of the Council, without the permission in writing of the Council being first obtained, or who shall wilfully or negligently break, injure, or open any lock, cock, valve, pipe, work, or engine, the property of the Council, shall be liable for each such offence to a penalty not exceeding twenty pounds.

Penalty for communicating with pipes of the Council without notice.

19. Any person, whether licensed as aforesaid or not, who shall lay any pipe to communicate with the pipes of the Council without giving two days' notice of the day and hour when such pipe is intended to be made to communicate with the pipes of the Council and obtaining permission, or who shall make such communication, except under the superintendence and according to the directions of some officer of the Council, or who shall lay any leaden or other pipe to communicate with a pipe of the Council of a strength and material not sanctioned by the Council, shall be liable for each such offence to a penalty not exceeding five pounds; and in the event of continuing the offence, to a further penalty of two pounds for each day after the notice of the offence from the Council.

Council or officers only empowered to tap mains, &c.

20. The Council and its officers only are empowered to tap the main in the streets or elsewhere and attach service-pipes thereto, or extend the same generally, as the case may be. Any person infringing this clause shall be liable to a penalty not exceeding twenty pounds.

Payments with application.

21. Every application for water must be accompanied by the payment of a fee of 4s. for each tapping of a main and the amount of rates and charges for water supply which may be demanded under these By-laws.

Notice of alteration and repairs.

22. In every case of repairs to service-pipe, or where it may be wished to transfer service-pipes from one main to another, or where any change or alteration to them may be required in any way, notice of such repair or alteration, &c., must be given in writing to the Town Clerk at least twenty-four hours before any such work shall be commenced, except in cases of great waste of water, when immediate steps must be taken to stop the leak, and notice given to the Town Clerk of the same forthwith.

Service-pipes.

23. All service-pipes must be laid 18 inches below the surface of roadway and gutters, and meters, where required, fixed in accordance with the direction of the Town Clerk or other authorised officer of the Council; and on each service-pipe connected with the mains must be fixed two stop-cocks—one at the junction of the main and the other on the footpath, 1 foot 6 inches from the building lines, enclosed in an iron box with proper lid; and no person shall lay any service-pipe on private property at a less depth than 10 inches below the ground surface. All service-pipes, taps, stop-cocks, valve, &c., shall be equal in quality to samples kept in the Town Clerk's office or be approved of by the Town Clerk or other authorised officer of the Council. The Council's workmen are to open the trench, bore the mains, and insert the stop-cock, the stop-cock being of the kind a sample of which is on view at the Town Clerk's office, the same being left at the Town Clerk's office along with the notice to connect. By the time these operations are completed, the plumber who has been employed to lay on the service must have taken all his measurements, prepared all the pipes to the exact length complete, with the lead connections of approved length and weight per yard, properly jointed to cap linings, barrel union, &c., ready for attachment to the stop-cock, so as to avert any delay in the re-filling of the trench. In the event of the articles above named not being ready for fixing at the period named, the trench may be filled in again by the Council's workmen, and the re-opening and filling of the same shall be paid for by the plumber, in addition to whatever other payments which may accrue under these By-laws and Regulations. All expenses of labour in drilling, inserting stop-cock, opening and filling trenches, and charges for all cocks, materials, &c., shall be borne by the plumber, the account for the same to be delivered without delay and paid by him to the Town Clerk immediately on receipt of the account. Failing due attention to the latter directions, the Council may cancel the license of the said plumber.

Service connections.

24. Except by the permission of the Council, every tenement shall have an independent service-pipe connected with the water main; and no person shall connect more than one tenement with the water main from one service except by permission of the Council.

Approved fittings.

25. All service-pipes connected with the water mains shall have a length of at least two feet of ¾-inch lead pipe weighing nine pounds per lineal yard between the stop-cock in the main and the service-pipes, and such service-pipes shall be 1¼-inch galvanised wrought iron pipe to within 1 foot 6 inches of the building lines. All joints with lead pipes shall be of a kind known as "wiped" joints. The lead pipe above referred to shall be joined to the stop-cock at the main and to the galvanised iron service-pipe by means of a barrel union similar to that on view in the Town Clerk's office, or other approved fittings. All wrought iron pipes used in connection with the supply of water shall be of a kind known as galvanised wrought iron lap welded steam tubes. No person shall use any water meter, tap, stop-cock, bib-cock, ball-cock, valve, cistern, service-box, waste-not regulator, bath tap or valve or other fittings in connection with supply of water of the Council which is not of the best quality and approved by the Council.

Defective fittings to be removed.

26. Any consumer's pipe, cock, cistern, or other fitting laid, fixed, or used otherwise than in accordance with these Regulations and with the provisions of the Act, or which shall, in the opinion of the Council, be or become of bad or defective quality, or shall conduce to the waste, misuse, or contamination of the water, shall, upon the Council giving notice in writing, be discontinued and disused; and the Council may require the same to be removed, replaced, or repaired, and may stop the supply of water to the said consumer until such pipe, cock, cistern, or other fitting shall have been removed, replaced, or repaired to the satisfaction of the Council.

Pipes through drains to be properly protected.

27. No person shall lay any pipe or other apparatus through any sewer, drain, ash-pit, cistern, or manure-tank, or through, in, or into any place where, in the event of the pipe becoming unsound, the water of the Council conveyed through such pipe would be liable to be fouled, or to escape without observation, unless such pipe or apparatus be laid through an exterior cast-iron pipe or box of sufficient length and strength to afford due protection to the same and to bring any leakage or waste within easy detection.

Cisterns.

28. No person shall use any cistern or tank connected with any service pipe or pipes of the Council that is not provided with an equilibrium ball-valve, and the overflow-pipe laid and fixed in a suitable manner, open to inspection, and in a position approved by the Council.

Service not to communicate with rain water receptacles or underground tanks.

29. No person shall fix or use any service-pipe which communicates with any cistern, tank, or vessel intended or used for the reception of rain water, or made or used below the surface of the ground, except with the express permission of the Council.

Water-closets.

30. No person shall, without the consent in writing of the Council first obtained, construct or use any water-closet fitting not supplied from the service pertaining to the tenement through a proper closet-cistern or service-box, fitted with approved waste-preventing apparatus. No person shall without such consent as aforesaid fix or use any service-pipe which communicates directly or indirectly with the basin or trap or otherwise than with the cistern of a water-closet.

Urinals.

31. No person shall fix a service-pipe so as to communicate directly with any urinal; and every urinal shall be supplied only through a cistern or service-box fitted with waste-preventing apparatus approved by the Council.

Baths.

32. The Council will not supply any water to any bath the outlet of which is not distinct from and unconnected with the inlet or inlets; and the inlet or inlets shall be placed above the highest water-level of the bath. The outlet of such bath shall be provided with a perfectly water-tight plug, valve, or cock. No such bath shall have any overflow waste-pipe that is not laid and fixed in a suitable manner, open to inspection, and in a position approved by the Council. No such bath shall exceed in dimensions 6 feet 6 inches long by 2 feet 6 inches wide by 2 feet deep unless supplied by meter. The Council will not supply water to any bath unless the same shall be so constructed as to prevent a waste of water.

Water for other than domestic purposes.

33. No person shall use water supplied by the Council for other than domestic purposes, except the supply is by meter, or excepted in the manner hereinbefore provided. No person shall sell or give any water for use off the premises he occupies.

Meters.

34. No person shall affix a meter until it shall have been tested and approved by the Council or its duly appointed officers, and, except with special consent of the Council, the dial of every such meter must be capable of registering not less than (1,000,000) one million gallons. All water-meters to be enclosed in a strong wooden box; all keys of both meters and boxes to be lodged at the Town Clerk's Office immediately after the meters are fixed. The Council reserves the right of affixing their own locks to the meters and boxes; twenty-four hours' notice to be given of the day on which it is intended to connect meters, in order that the proper officer may attend and see them fixed correctly. On no account are plumbers or other persons to take off, alter, or otherwise interfere with meters or pipes connecting the same, unless by permission of the Town Clerk, and in the presence of an authorised officer of the Council.

Meters registering incorrectly.

35. If any meter shall not correctly indicate the water passing through it, the Council may charge for the supply according to the average daily consumption for any month preceding the date upon which such meter shall have been examined and found to be in order; or at the request of the consumer, or by direction of the Council, the said meter shall be tested and the charge for water supplied regulated accordingly.

Steam boilers to have self-acting valve.

36. If any person shall connect any service-pipe or branch service-pipe with any steam boiler for the purpose of feeding or supplying the same with water, without first affixing a self-acting valve for preventing the pressure of the steam reversing or affecting the dial of the meter, he shall be liable to a penalty not exceeding five pounds, and a further penalty of two pounds for each day after notice of the offence from the Council to each offender.

Hose-taps and hoses.

37. No person shall, without the consent in writing of the Council, place any tap in any garden, or screw-tap in any yard, or to or outside of any dwelling or premises supplied with water of the Council to which a hose could be attached, and no person shall use a hose attached to any tap or pipe for watering any garden, laying dust, or for any other purpose whatsoever, unless a meter is fixed or he obtain permission from the Council and pay the charges which may be demanded under these By-laws; and any person offending against this By-law shall be liable for each offence to a penalty not exceeding five pounds.

Pipes to be kept in repair.

38. The owner of the premises, or the person using water supplied by the Council, shall keep all pipes and other appliances in connection with the supply of water to such person in a proper state of repair.

Inspection of work.

39. All work at any time done or to be done on private lands or premises in connection with the water supply, whether such work consist in the laying and fixing of new services or in the extension or alteration of existing services and fittings, shall be inspected by the proper officer of the Council, and no such work shall be commenced until after the expiration of two days' notice thereof first given to the Council. In no case shall the water be turned on to any lands or premises where any such work shall have been executed until the said work shall have been inspected by the said officer, and certified by him on the prescribed form hereinafter mentioned. No underground or enclosed work shall on any account be covered up or concealed from view until the same shall have been duly inspected and passed by the inspector; and any person offending against this By-law shall be liable to a penalty not exceeding five pounds.

Supply and use of water open to inspection.

40. The supply and use of water, whether for domestic purposes or under special agreement, shall be open to inspection and admeasurement whenever required; and such information must from time to time be afforded as will be sufficient to enable the Council to obtain a satisfactory account of the quantity of water actually consumed, and of the pipes, taps, cisterns, and other apparatus and conveniences for receiving and delivering such water. Any officer of the Council may at all reasonable times in the daytime enter on the premises of any person using water supplied by the Council for the purpose of inspecting the service-pipes or other appliances of such person.

Council may repair.

41. If the service-pipes or other appliances of any such person shall on any inspection be found to be out of repair, the Council may forthwith, without notice, repair the same in such manner as may be deemed necessary; and the cost of any such repairs may be recovered by the Council from the owner or occupier of such premises.

Council may discontinue supply.

42. The Council shall be at liberty to discontinue the supply of water immediately on the discovery of any breach of these By-laws and Regulations.

Notices and applications to be made on printed forms.

43. All notices, applications, and certificates required by these By-laws are to be made upon printed forms to be obtained at the Town Clerk's office.

Interpretation of terms.

44 In the construction of these By-laws the word "person" shall be deemed to extend to and include a corporation or any body or number of persons, and the masculine shall include the feminine gender.

Penalty for using unauthorised fittings.

45. Any person who, being an owner or occupier of lands or premises supplied with water under this Act, for the purpose of taking, in a manner not authorised by this Act, any such water, uses in, or places on, or affixes or attaches to, such land or premises or to any prescribed fitting, or wilfully permits to be used in, or placed on, or affixed or attached to, such lands or premises or to any prescribed fitting, any fitting, instrument, or thing not authorised in that behalf by the Council, or who alters, misuses, injures, or removes any prescribed fitting, except for the purpose of necessary repair, shall upon conviction thereof forfeit and pay to the Council a sum not greater than ten pounds, without prejudice to the right of the Council to recover from him damages in respect to any injury by such owner or occupier done, or wilfully permitted to be done, to the Council's property, and without prejudice to the Council's right to recover from him the value of any water wasted, misused, or unduly consumed.

Sample fittings.

46. A set of standard fittings, such as are at present approved is exhibited in the Town Clerk's office; but the Council will give due consideration to the claims of any other fitting which may be presented for approval, and if considered satisfactory, the same will be purchased and placed among and become one of the standard approved fittings.

Reward for information as to fittings.

47. The Council will pay a reward of not less than ten shillings to any persons who shall give such information as shall lead to the conviction of any person or persons who shall wrongfully attach (temporarily or otherwise) any pipe to any of the mains or services of the Council, or to any pipe, cistern, or apparatus connected therewith, or to or into which the water of the Council shall flow, or who shall wrongfully draw off,

use, or take the water of the Council, or who shall knowingly permit the said water to be wrongfully drawn off, used, or taken.

Reward for information as to waste.

48. The Council shall also adequately reward any person (not being the person in fault) who shall communicate timely information to the Council of any leakages or waste of water, whether the same be negligently or wilfully occasioned or suffered, and who shall give such information as shall lead to the conviction of any person or persons who shall have negligently or wilfully occasioned or suffered such leakage or waste, or to the conviction of such person or persons who shall have stolen or caused to be stolen, or improperly appropriated, the water of the Council.

General penalties.

49. Any person committing a breach of any By-law to which no specific penalty is attached, or who shall refuse or neglect to obey any injunction or direction in any such By-law, shall upon conviction be liable to pay a penalty not exceeding twenty pounds, and in case of a continuing offence, a further penalty not exceeding five pounds for each day after notice of such offence shall have been given by the Council to such offender.

By order,

E. FORSYTH,

Town Clerk.

Town Hall, Goulburn,
22nd December, 1891.

Sydney: Charles Potter, Government Printer.—1892

[3d.]

1892.

NEW SOUTH WALES.

WATERWORKS FOR THE BOROUGH OF COOTAMUNDRA,

(NOTIFICATION OF COMPLETION OF.)

Presented to Parliament, pursuant to Act 44 Vic. No. 14.

COOTAMUNDRA WATER-WORKS.

In accordance with the provisions of the Country Towns and Sewerage Act, 44 Vic. No. 14, section 125, I, William John Lyne, the Minister for Public Works of the Colony of New South Wales, have the honor to report, for the information of His Excellency the Governor and Executive Council, that the works for the Supply of Water for the Borough of Cootamundra, in the said Colony, which, under the provisions of the before-recited Act, and at the request of the Council thereof, have been constructed under the direction of the Minister for Public Works of the said Colony, have been completed.

Given under my hand, this twenty-first day of November, 1892.

WILLIAM JOHN LYNE.

Copy of a Resolution submitted to and passed by the Council of the Borough of Cootamundra, at a meeting of the Council thereof held on the 8th day of August, 1890:—

Present: His Worship the Mayor, Alderman Matthews (in the Chair), and Aldermen M'Beath, Pinkstone, Southee, Miller, Scanlon, and Dickson.

Moved by Alderman M'Beath, seconded by Alderman Pinkstone, and carried,—

"That the Council of the Borough of Cootamundra, having taken into consideration the question of Water Supply for the town of Cootamundra, do hereby request His Excellency the Governor, with the advice of the Executive Council, to take all such steps, and cause such works to be executed, as may be necessary to provide a water supply for the town of Cootamundra; and the said Council, on behalf of the Borough of Cootamundra, hereby agree to do and undertake all the liabilities and obligations mentioned in section 125 of the Act 44 Vic. No. 14; and it is hereby expressly agreed that such liability is accepted for the total amount to be expended on such works, whatever such amount may be."

(L.S.) W. H. MATTHEWS,
Mayor.

8th August, 1890.

NOTIFICATION OF COMPLETION OF WATER-WORKS FOR THE BOROUGH OF COOTAMUNDRA, UNDER 44 VICTORIA No. 14.

Whereas I, the Governor aforesaid, with the advice of the Executive Council of the said Colony, having duly sanctioned the carrying out of certain works for and in connection with the Supply of Water to the Borough of Cootamundra, in the said Colony, for and towards the completion of which said works public funds were provided by Parliament; and whereas the said works have been reported to me as complete by the Minister for Works, in accordance with the provisions of the 125th section of the before-recited Act: Now I, the Governor, aforesaid, with the advice of the Executive Council, hereby declare by this notification that such works are complete, to the intent that the Council of the said Borough of Cootamundra, within and for the purposes of which the said works have been constructed, shall take over the same, and the administration and management thereof, upon the terms and conditions prescribed by the before-recited Act.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this nineteenth day of November, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892-3.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND FOR AND IN CONNECTION WITH WATER SUPPLY TO THE TOWN OF DUBBO.)

Presented to Parliament pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1888," 51 VICTORIA No. 37.

NEW SOUTH WALES, to wit. (L.S.) JERSEY, *Governor.* — Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

WHEREAS I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, with the advice of the Executive Council, have directed that a certain public work, that is to say, the Erection of a Pumping Station in connection with the Supply of Water to the Town of Dubbo, in the said Colony, for which public funds are lawfully available, the estimated cost of which does not exceed twenty thousand pounds, shall be carried out under the provisions of the "Public Works Act of 1888," as an authorised work by the Minister for Public Works as Constructing Authority, and that the land described in the Schedule hereto, which is in my opinion required for carrying out the said work, shall be acquired by taking the same under the "Lands for Public Purposes Acquisition Act," as adopted by the "Public Works Act of 1888": Now, therefore, I, the said Governor, with the advice aforesaid, in pursuance of the "Public Works Act of 1888," do declare by this notification, to be published in the Government Gazette, and in one or more newspapers published or circulated in the Police District wherein the said land is situated, that the Crown Land comprised within the description set forth in the Schedule hereto has been appropriated, and the private property within such description has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette, the said land described in the said Schedule hereto shall forthwith be vested in the said Constructing Authority as a corporation sole on behalf of Her Majesty, for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the further intent that the legal estate therein, together with all powers incident thereto or conferred by the said last-mentioned Act, shall be vested in such Constructing Authority as a Trustee; and I declare that the following is the Schedule of the land hereinbefore referred to:—

SCHEDULE.

All that piece or parcel of land situated in the parish of Dubbo, county of Lincoln, and Colony of New South Wales, being reserve No. 1,177, within the Dubbo Population Boundary as notified in Government Gazette of 21st February, 1881: Commencing on the west side of Brisbane-street where it intersects a road 1 chain wide, being a point 1 chain 50 links west of the north-west corner of portion No. 78, Gerald Springs, 18 acres and 31 perches; bounded thence on the east by the west side of Brisbane-street to its intersection with the north-east side of Macquarie-street; thence on the south-west by part of the north-east side of that street bearing north-westerly to the south side of the road 1 chain wide mentioned, being a point east of the north-east corner of portion No. 71, John C. Pyries' 23 acres 2 roods; and thence on the north by part of that road bearing east, to the point of commencement,—containing 1 acre 3 roods 36 perches.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this nineteenth day of December, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,
WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892–3.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND FOR AND IN CONNECTION WITH THE SUPPLY OF WATER TO THE TOWN OF DUBBO.)

Presented to Parliament pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1882," 51 VICTORIA No. 37.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

WHEREAS I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, with the advice of the Executive Council, have directed that a certain public work, that is to say, the Supply of Water to the Town of Dubbo, in the said Colony, for which public funds are lawfully available, the estimated cost of which does not exceed twenty thousand pounds, shall be carried out, under the provisions of the "Public Works Act of 1888," as an authorised work by the Minister for Public Works as Constructing Authority, and that the land described in the Schedule hereto, which is in my opinion required for carrying out the said work, shall be acquired by taken the same under the "Lands for Public Purposes Acquisition Act," as adopted by the "Public Works Act of 1888": Now, therefore, I, the said Governor, with the advice aforesaid, in pursuance of the "Public Works Act of 1888," do declare by this notification, to be published in the Government Gazette, and in one or more newspapers published or circulated in the Police District wherein the said land is situated, that the Crown Land comprised within the description set forth in the Schedule hereto has been appropriated, and the private property within such description has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette, the said land described in the said Schedule hereto shall forthwith be vested in the said Constructing Authority as a corporation sole on behalf of Her Majesty, for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the further intent that the legal estate therein, together with all powers incident thereto or conferred by the said last-mentioned Act, shall be vested in such Constructing Authority as a Trustee: And I declare that the following is the Schedule of the land hereinbefore referred to:—

SCHEDULE.

All that piece or parcel of land situated in the parish of Dubbo, county of Lincoln, and Colony of New South Wales, being part of a grant of 80 acres to Jonah Goode, and also allotments Nos. 3, 4 and 5 of the first subdivision of that grant, and contained in certificate of title registered volume 148, folio 165: Commencing on the east side of Fitzroy-street, at a point bearing south and distant 2 chains from its intersection with the south side of Fitzgerald-street, being also the south-west corner of J. Machattie's allotment No. 6; and bounded thence on the north by the south boundary of that allotment bearing east 5 chains to the west side of Jubilee-street; thence on the east by part of that side of that street bearing south 3 chains to the north-east corner of H. Wheeler's allotment No. 2; thence on the south by the north boundary of that allotment bearing west 5 chains to the east side of Fitzroy-street aforesaid; and thence on the west by part of that side of that street bearing north 3 chains to the point of commencement,—containing 1 acre 2 roods and said to be in the possession and occupation of James Holmes.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this twelfth day of December, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1893.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(NOTIFICATION OF RESUMPTION OF LAND, FOR AND IN CONNECTION WITH THE WATER SUPPLY TO THE TOWN OF PARKES.)

Presented to Parliament, pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1888," 51 VICTORIA No. 37.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

WHEREAS I, VICTOR ALBERT GEORGE, EARL OF JERSEY the Governor aforesaid, with the advice of the Executive Council, have directed that a certain public work, that is to say, the Construction of a Service Reservoir in connection with the Supply of Water to the Town of Parkes, in the said Colony, for which public funds are lawfully available, the estimated cost of which does not exceed twenty thousand pounds, shall be carried out under the provisions of the "Public Works Act of 1888," as an authorised work by the Minister for Public Works as Constructing Authority, and that the land described in the Schedule hereto, which is in my opinion required for carrying out the said work, shall be acquired by taking the same under the "Lands for Public Purposes Acquisition Act," as adopted by the "Public Works Act of 1888": Now, therefore, I, the said Governor, with the advice aforesaid, in pursuance of the "Public Works Act of 1888," do declare by this notification, to be published in the Government Gazette and in one or more newspapers published or circulated in the Police District wherein the said land is situated, that the Crown Land comprised within the description set forth in the Schedule hereto has been appropriated, and the private property within such description has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette, the said land described in the said Schedule hereto shall forthwith be vested in the said Constructing Authority as a corporation sole on behalf of Her Majesty for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the further intent that the legal estate therein, together with all powers incident thereto or conferred by the said last-mentioned Act, shall be vested in such Constructing Authority as a Trustee; and I declare that the following is the Schedule of the land hereinbefore referred to:—

SCHEDULE.

All that piece or parcel of land situated in the parish of Currajong, county of Ashburnham, and Colony of New South Wales, being part of reserve No. 1,949, in the town of Parkes, as notified in the Government Gazette of the 10th December, 1883: Commencing on the north-eastern side of High-street, at its intersection with the north-western side of Church-street; and bounded thence on the south-west by the said High-street bearing north-westerly 5 chains; thence on the north-west by a line at right angles to the last-described line bearing north-easterly 2 chains 50 links; thence by a line at right angles to the last-described line bearing south-easterly 5 chains to the north-western side of Church-street aforesaid; and thence by that side of that street bearing south-westerly 2 chains 50 links, to the point of commencement,—containing 1 acre 1 rood.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this nineteenth day of December, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN

1892–3.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND FOR AND IN CONNECTION WITH WATER SUPPLY TO THE TOWN OF MOSS VALE.)

Presented to Parliament, pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1888," 51 VICTORIA No. 37.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

WHEREAS I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, with the advice of the Executive Council, have directed that a certain public work, that is to say, the Supply of Water to the Town of Moss Vale, in the said Colony, for which public funds are lawfully available, the estimated cost of which does not exceed twenty thousand pounds, shall be carried out under the provisions of the "Public Works Act of 1888," as an authorised work by the Minister for Public Works as Constructing Authority; and that the lands described in the Schedule hereto, which are in my opinion required for carrying out the said work, shall be acquired by taking the same under the "Lands for Public Purposes Acquisition Act," as adopted by the "Public Works Act of 1888": Now, therefore, I, the said Governor, with the advice aforesaid, in pursuance of the "Public Works Act of 1888," do declare by this notification, to be published in the Government Gazette and in one or more newspapers published or circulated in the Police District wherein the said lands are situated, that the Crown Land comprised within the descriptions set forth in the Schedule hereto has been appropriated, and the private property within such descriptions has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette, the said lands described in the said Schedule hereto shall forthwith be vested in the said Constructing Authority as a corporation sole on behalf of Her Majesty, for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the further intent that the legal estate therein, together with all powers incident thereto or conferred by the said last-mentioned Act, shall be vested in such Constructing Authority as a Trustee; and I declare that the following is the Schedule of the lands hereinbefore referred to:—

SCHEDULE.

1st. All that piece or parcel of land situate in the parish of Bong Bong, county of Camden, and Colony of New South Wales, being part of a grant of 1,000 acres to Charles Throsby, being also lot 14 of section 3 of a subdivision of that gran known as Throsby Park Estate: Commencing on the north eastern side of Valetta Road at a point bearing north 51 degrees 38 minutes west, and distant 2 chains 23 links from its intersection with the northern side of Woodville Road; and bounded thence on the north-west by part of the south-eastern boundary of lot No. 11 of the said section No. 3 bearing north 38 degrees 22 minutes east 10 chains 45 links; thence on the east by the western boundary of lot 15 of the aforesaid section No. 3 bearing south 3 minutes east 9 chains 56½ links to the northern side of Woodville Road; thence on the south by part of that side of that road bearing south 89 degrees 57 minutes west 4 chains 74 links to its intersection with the north-eastern side of Valetta Road aforesaid; and thence on the south-west by part of that side of that road bearing north 51 degrees 38 minutes west 2 chains 23 links, to the point of commencement,—containing 3 acres 1 rood 29 perches, and said to be in the possession and occupation of P. H. Throsby.

2nd. All that piece or parcel of land situate in the parish of Mittagong, county of Camden, and Colony of New South Wales, being part of a grant of 30 acres to Charles Throsby: Commencing at a point on the north-east boundary of said grant bearing south 25 degrees 32 minutes east 2 chains 50 links from its north-east corner; thence by lines bearing south 37 degrees 56 minutes west 8 chains 61 $\frac{5}{10}$ links and south 37 degrees 19 minutes east 3 chains 66 $\frac{5}{10}$ links to the right bank of the Wingecarribee River; thence by that river bearing generally north-easterly to the north-east boundary of the said grant of 30 acres to Charles Throsby; thence by that boundary, to the point of commencement,—be the said dimensions a little more or less, containing 3 acres 1 rood 17 $\frac{5}{10}$ perches, said to be in the possession and occupation of P. H. Throsby.

3rd. All that piece or parcel of land situate in the parish of Mittagong, county of Camden, and Colony of New South Wales, being part of a grant of 640 acres to William Bowman: Commencing at a point on the north-east boundary of a grant of 30 acres to Charles Throsby bearing south 25 degrees 32 minutes east and distant 2 chains 50 links from the north-east corner of that grant; and bounded thence by lines bearing north 37 degrees 56 minutes east 8 chains 9 $\frac{5}{10}$ links, north 7 degrees 42 minutes east 10 chains 63 $\frac{5}{10}$ links, north 32 degrees 2 minutes east 9 chains 9 links, north 65 degrees 47 minutes east 13 chains 78 $\frac{5}{10}$ links, and south 24 degrees 13 minutes east 5 chains to the right bank of the Wingecaribee River; thence by that river bearing generally southerly to the north-east boundary of the aforesaid grant of 30 acres to Charles Throsby; thence by the north-east boundary of that grant, to the point of commencement,—be the said dimensions a little more or less, containing 13 acres 3 roods 4 $\frac{1}{10}$ perches, said to be in the possession and occupation of P. H. Throsby.

4th. All that piece or parcel of land situate in the parish of Bong Bong, county of Camden, and Colony of New South Wales, being part of a grant of 700 acres to Charles Throsby: Commencing at a point on the left bank of the Wingecaribee River bearing south 8 degrees 42 minutes 30 seconds west 11 chains $77\frac{0}{10}$ links from the north-eastern corner of a grant of 30 acres to Charles Throsby, in the parish of Mittagong; and bounded thence by lines bearing south 37 degrees 19 minutes east 2 chains $24\frac{5}{10}$ links, south 65 degrees 40 minutes west 3 chains $75\frac{5}{10}$ links, and south 87 degrees 1 minute west 18 chains $82\frac{4}{10}$ links to the western side of Argyle Road; thence by that road bearing south 9 degrees 48 minutes east $50\frac{3}{10}$ links; thence by lines bearing north 87 degrees 1 minute east 18 chains $85\frac{5}{10}$ links, north 65 degrees 40 minutes east 3 chains $96\frac{3}{10}$ links, south 37 degrees 19 minutes east 2 chains $39\frac{4}{10}$ links, north 52 degrees 41 minutes east 3 chains $63\frac{5}{10}$ links, north 38 degrees 5 minutes east 15 chains $19\frac{5}{10}$ links, north 7 degrees 42 minutes east 19 chains $72\frac{5}{10}$ links, north 65 degrees 47 minutes east 12 chains 12 links, and north 24 degrees 13 minutes west 1 chain 6 links to the left bank of the Wingecaribee River; thence on all other sides by that river, to the point of commencement,—be the said dimensions a little more or less, containing 19 acres 3 roods $21\frac{0}{10}$ perches, said to be in the possession and occupation of P. H. Throsby.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this twelfth day of December, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE

GOD SAVE THE QUEEN!

Sydney: Charles Potter, Government Printer.—1893.

[3*d*.]

1892-3.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND FOR AND IN CONNECTION WITH THE SUPPLY OF WATER TO THE TOWN OF COBAR.)

Presented to Parliament, pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1888," 51 VICTORIA No. 37.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

WHEREAS I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, with the advice of the Executive Council, have directed that a certain public work, that is to say, the Supply of Water to the Town of Cobar, in the said Colony, for which public funds are lawfully available, the estimated cost of which does not exceed twenty thousand pounds, shall be carried out under the provisions of the "Public Works Act of 1888," as an authorised work by the Minister for Public Works as Constructing Authority; and that the lands described in the Schedule hereto, which are in my opinion required for carrying out the said work, shall be acquired by taking the same under the "Lands for Public Purposes Acquisition Act," as adopted by the "Public Works Act of 1888": Now, therefore, I, the said Governor, with the advice aforesaid, in pursuance of the "Public Works Act of 1888," do declare by this notification, to be published in the Government Gazette and in one or more newspapers published or circulated in the Police District wherein the said lands are situated, that the Crown Land comprised within the descriptions set forth in the Schedule hereto has been appropriated, and the private property within such descriptions has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette the said lands described in the said Schedule hereto shall forthwith be vested in the said Constructing Authority as a corporation sole on behalf of Her Majesty for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the further intent that the legal estate therein, together with all powers incident thereto, or conferred by the said last-mentioned Act, shall be vested in such Constructing Authority as a Trustee; and I declare that the following is the Schedule of the land hereinbefore referred to:—

SCHEDULE.

1st. All that piece or parcel of land situate in the parish of Cobar, county of Robinson, and Colony of New South Wales, being part of portion 96: Commencing at a point bearing east, and distant 8 chains 57½ links from the north-west corner of that portion; and bounded thence by lines bearing south 20 degrees 24 minutes east 4 chains 18$\frac{9}{10}$ links, south 31 degrees 49 minutes east 2 chains 36$\frac{8}{10}$ links, south 66 degrees 15 minutes east 1 chain 99½ links, north 78 degrees 24 minutes east 4 chains 17$\frac{3}{10}$ links, south 66 degrees 55 minutes east 1 chain 33$\frac{3}{10}$ links, south 32 degrees 19 minutes east 9 chains 61$\frac{1}{10}$ links, south 41 degrees 51 minutes east 5 chains 59$\frac{7}{10}$ links, south 49 degrees 6 minutes east 4 chains 8$\frac{8}{10}$ links, south 83 degrees 34 minutes east 1 chain 7$\frac{8}{10}$ links, north 71 degrees 43 minutes east 4 chains 70$\frac{7}{10}$ links, south 79 degrees 5 minutes east 2 chains 43$\frac{3}{10}$ links, south 33 degrees 29 minutes east 2 chains 11 links, south 5 degrees 46 minutes east 3 chains 92$\frac{8}{10}$ links, south 44 degrees 56 minutes east 2 chains 8$\frac{8}{10}$ links, south 79 degrees 13 minutes east 1 chain 91$\frac{3}{10}$ links, north 67 degrees 21 minutes east 3 chains 87$\frac{1}{10}$ links, north 51 degrees 49 minutes east 2 chains 3$\frac{4}{10}$ links, and north 67 degrees 5 minutes east 3 chains 18 links, to the east boundary of the aforesaid portion; thence by that boundary bearing north 32$\frac{8}{10}$ links; thence by lines bearing south 67 degrees 5 minutes west 3 chains 34$\frac{1}{10}$ links, south 51 degrees 49 minutes west 2 chains 3 links, south 67 degrees 21 minutes west 3 chains 74 links, north 79 degrees 13 minutes west 1 chain 73 links, north 44 degrees 56 minutes west 1 chain 89 links, north 5 degrees 46 minutes west 3 chains 89 links, north 33 degrees 29 minutes west 2 chains 31 links, north 79 degrees 5 minutes west 2 chains 63$\frac{7}{10}$ links, south 71 degrees 43 minutes west 4 chains 72 links, north 83 degrees 34 minutes west 1 chain 54½ links, north 49 degrees 6 minutes west 3 chains 97$\frac{3}{10}$ links, north 41 degrees 51 minutes west 5 chains 55$\frac{3}{10}$ links, north 32 degrees 19 minutes west 9 chains 73 links, north 66 degrees 55 minutes west 1 chain 52 links, south 78 degrees 24 minutes west 4 chains 17 links, north 66 degrees 15 minutes west 1 chain 80$\frac{6}{10}$ links, north 31 degrees 49 minutes west 2 chains 24½ links, and north 20 degrees 24 minutes west 4 chains 5$\frac{8}{10}$ links, to the aforesaid north boundary of portion 96; thence by that boundary bearing west 32 links, to the point of commencement,—be the said several dimensions all a little more or less, containing 1 acre 3 roods and 13$\frac{7}{10}$ perches or thereabouts, and said to be in the possession and occupation of T. Morrissey.

2nd. All that piece or parcel of land situate in the parish of Cobar, county of Robinson, and Colony of New South Wales, being part of portion 96: Commencing at a point bearing west, and distant 5 chains 16½ links from the south-east corner of that portion; and bounded thence by lines bearing north 34 degrees 6 minutes west 2 chains 57$\frac{7}{10}$ links, north 48 degrees 39 minutes west 2 chains 37½ links, north 85 degrees 34 minutes west 3 chains 20½ links, north 45 degrees 2 minutes west 1 chain 75½ links, north 3 degrees 25 minutes west 2 chains 22½ links, north 80 degrees 38 minutes east 1 chain 19$\frac{4}{10}$ links, south 70 degrees 23 minutes east 2 chains 62 links, north 79 degrees 47 minutes east 1 chain 65$\frac{4}{10}$ links, north 45 degrees 13 minutes east 3 chains 26 links, north 89 degrees 41 minutes east 1 chain 82 links, south 55 degrees east 4 chains 33 links;

thence by the east boundary of the aforesaid portion bearin north 36 links; thence by lines bearing north 55 degrees west 4 chains 21½ links, south 59 degrees 41 minutes west 2 chains 3 links, south 45 degrees 13 minutes west 3 chains 29 links, south 79 degrees 47 minutes west 1 chain 48 links, north 70 degrees 23 minutes west 2 chains 61 links, south 80 degrees 38 minutes west 2 chains 14 links, south 3 degrees 25 minutes east 2 chains 60 links, south 45 degrees 2 minutes east 1 chain 98 links, south 85 degrees 34 minutes east 3 chains 21 links, south 48 degrees 39 minutes east 2 chains 23 links, and south 34 degrees 6 minutes east 2 chains 33 links; thence by the south boundary of the aforesaid portion bearing east 36 links, to the point of commencement,—be the said several dimensions all a little more or less, containing 3 roods 12 perches or thereabouts, and said to be in the possession and occupation of T. Morrissey.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this twelfth day of December, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

Sydney: Charles Potter, Government Printer.—1893.

[3*d*.]

1892–3.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND FOR AND IN CONNECTION WITH THE SUPPLY OF WATER TO THE TOWN OF NOWRA.)

Presented to Parliament, pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1888," 51 VICTORIA No. 37.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

WHEREAS I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, with the advice of the Executive Council, have directed that a certain public work, that is to say, Supply of Water to the Town of Nowra, in the said Colony, for which public funds are lawfully available, the estimated cost of which does not exceed twenty thousand pounds, shall be carried out under the provisions of "The Public Works Act of 1888," as an authorised work by the Minister for Public Works as Constructing Authority; and that the lands described in the Schedule hereto, which are in my opinion required for carrying out the said work, shall be acquired by taking the same under "The Lands for Public Purposes Acquisition Act," as adopted by "The Public Works Act of 1888": Now, therefore, I, the said Governor, with the advice aforesaid, in pursuance of "The Public Works Act of 1888," do declare by this notification, to be published in the Government Gazette, and in one or more newspapers published or circulated in the Police District wherein the said lands are situated, that the Crown Land comprised within the description set forth in the Schedule hereto has been appropriated, and the private property within such descriptions has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette, the said lands described in the said Schedule hereto shall forthwith be vested in the said Constructing Authority as a corporation sole on behalf of Her Majesty for the purposes of "The Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the further intent that the legal estate therein, together with all powers incident thereto, or conferred by the said last-mentioned Act, shall be vested in such Constructing Authority as a Trustee: And I declare that the following is the Schedule of the lands hereinbefore referred to:—

SCHEDULE.

1st. All that piece or parcel of land situated in the parish of of Illaroo, county of Camden, and Colony of New South Wales, being part of a grant of 40 acres to R. Hnampto: Commencing at the north-east corner of the said grant of 40 acres to R. Hampton; and bounded thence on the east by part of a grant of 98 acres 2 roods to John Gibson bearing southerly 19 chains 93·2 links to the north side of the Brown Mountain Road 1 chain wide; thence on the south by that side of that road bearing westerly 25 links; thence on the west by other part of the aforesaid grant of 40 acres to R. Hampton, bearing northerly 19 chains 93·2 links to the southern boundary of a grant of 640 acres to A. Berry; thence on the north by part of the southern boundary of that grant bearing easterly 25 links, to the point of commencement,—containing 1 rood 39·7 perches and said to be in the possession and occupation of R. Hampton.

2nd. All that piece or parcel of land situated in the parish of Illaroo, county of Camden, and Colony of New South Wales, being part of a grant of 640 acres to A. Berry: Commencing at the north-west corner of the said grant of 640 acres to A. Berry; and bounded thence on the north by the southern side of a road 66 feet wide bearing easterly 28·08; thence on the east by other part of said grant bearing south-easterly 89 chains 34$\frac{1}{10}$ links to the north-east corner of a grant of 40 acres to R. Hampton; thence on the south by part of the northern boundary of that grant bearing westerly 28 08 links; thence on the west by other part of the said grant of 640 acres to A. Berry bearing north-westerly 89 chains 34$\frac{1}{10}$ links, to the point of commencement,—containing 2 acres 37$\frac{1}{4}$ perches, and said to be in the possession of the trustees of the late A. Berry and occupied by W. A. Noakes, J. Evison, James Neain, and John Disson.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this seventh day of February, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892–3.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND IN CONNECTION WITH THE NOWRA WATER SUPPLY.)

Presented to Parliament pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1888," 51 VICTORIA No. 37.

NEW SOUTH WALES, to wit. (L.S.) FREDK. M. DARLEY, *Lieutenant-Governor, Administering the Government.*

Proclamation by His Excellency The Honorable Sir FREDERICK MATTHEW DARLEY, Knight, Lieutenant-Governor of the Colony of New South Wales and its Dependencies.

WHEREAS I, Sir FREDERICK MATTHEW DARLEY, the Lieutenant-Governor aforesaid, with the advice of the Executive Council, have directed that a certain public work, that is to say, Supply of Water to the Town of Nowra, in the said Colony, for which public funds are lawfully available, the estimated cost of which does not exceed twenty thousand pounds, shall be carried out under the provisions of the "Public Works Act of 1888," as an authorised work by the Minister for Public Works as Constructing Authority, and that the land described in the Schedule hereto, which is in my opinion required for carrying out the said work, shall be acquired by taking the same under the "Lands for Public Purposes Acquisition Act," as adopted by the "Public Works Act of 1888": Now, therefore, I, the said Lieutenant-Governor, with the advice aforesaid, in pursuance of the "Public Works Act of 1888," do declare by this notification, to be published in the Government Gazette, and in one or more newspapers published or circulated in the Police District wherein the said land is situated, that the Crown Land comprised within the description set forth in the Schedule hereto has been appropriated, and the private property within such description has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette, the said land described in the said Schedule hereto shall forthwith be vested in the said Constructing Authority as a corporation sole on behalf of Her Majesty, for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the further intent that the legal estate therein, together with all powers incident thereto or conferred by the said last-mentioned Act, shall be vested in such Constructing Authority as a Trustee; and I declare that the following is the Schedule of the land hereinbefore referred to:—

SCHEDULE.

All that piece or parcel of land situated in the parish of Illaroo, county of Camden, and Colony of New South Wales, being part of a grant of 44 acres to John Adams: Commencing at the north-west corner of the said grant of 44 acres to John Adams; and bounded thence on the north by a grant of 80 acres to John Boyd, and by part of the southern boundary of a grant of 51 acres 3 roods to John Camp, bearing easterly 11 chains 38 links; thence on the east and south by other part of the said grant to John Adams bearing respectively southerly 8 chains 78·73 links and westerly 11 chains 38 links to the eastern boundary of the aforesaid grant of 80 acres to John Boyd; thence by part of that boundary of that grant bearing northerly 8 chains 78·73 links, to the point of commencement,—containing 10 acres, and said to be in the possession and occupation of Charles Camp.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this second day of May, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892–3.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

PUBLIC WATERING-PLACES.

(RETURN RESPECTING)

Ordered by the Legislative Assembly to be printed, 27 *April*, 1893.

[*Laid upon the Table of the House in answer to Question No.* 2, *of* 8 *March*, 1893.]

Question.

2. PUBLIC WATERING-PLACES:—MR. WADDELL *asked* THE SECRETARY FOR MINES AND AGRICULTURE,—
(1.) What is the total sum expended on public watering-places to date?
(2.) What is the annual cost of keeping such works in repair?

Answer.

(1.) Previously to March, 1889, these works were constructed by the Department of Public Works. Expenditure by Public Works Department upon public watering-places, appliances, fencing, &c., £287,340 15s. 7d.; expenditure by Mines Department upon public watering-places. appliances, fencing, cottages, rabbit-proof netting, renewals, surveys, artesian bores, and experimental cultivation, £127,231 15s. 9d.; total, £414,572 11s. 4d.

(2.) Annual cost for repairs:—1889, £744 16s. 8d.; 1890, £1,027 12s. 4d.; 1891, £402 7s. 5d.; 1892, £661 18s. 3d. Annual average cost, £709 3s. 8d.

881—

[3d.]

1892.

NEW SOUTH WALES.

PUBLIC WATERING PLACES ACT OF 1884.

(AMENDED REGULATIONS UNDER THE.)

Presented to Parliament, pursuant to Act 48 Vic. No. 16.

Department of Mines,
Water Conservation,
Sydney, 29th March, 1892.

PUBLIC WATERING PLACES ACT OF 1884.

AMENDED REGULATIONS.

THE following Regulations made by His Excellency the Governor, with the advice of the Executive Council, for the purpose of carrying out the above-named Act, and of regulating the Management, Maintenance, and Control of Watering-places, are hereby published for general information, in lieu of those published on the 1st December, 1885, which are hereby cancelled from 1st May, 1892.

T. M. SLATTERY.

General.

1. All water whether conserved or natural within the area of any Public Watering-place, except that lying within the limits of any Public Road, shall be held to belong to such Public Watering-place; and any person using such water shall pay on demand to the tenant or caretaker of such Public Watering-place the authorised charges.

2. Inspectors and Overseers of Public Watering-places and other persons appointed under the above-named Act, or any person acting under the authority of the Minister for Mines and Agriculture, shall have free ingress and egress to and from any Public Watering-place, and access to any appliance or appurtenance thereon, and to the books and papers relating thereto, and may also when necessary examine and test the machinery and appliances at such Public Watering-places; and with that view the tenant or caretaker in charge thereof shall, when called upon, supply, as the case may be, the necessary steam, horse, or manual power, and provide such tools and implements as may be required to make such test or examination.

Rules of Watering.

3. All travelling stock in charge of a person supplied with a travelling statement or permit as required under the Diseases in Sheep Act, 41 Victoria, No. 19, all teams used by carriers and all stock used by travellers, upon prepayment of the watering charges prescribed by these Regulations, may be supplied with water by the tenant, caretaker, or person in charge of a Public Watering-place except when such Public Watering-place is notified as closed to the public; but no other stock shall be supplied with water without the sanction of the Minister.

4. Owners of stock residing within a radius of 5 miles of a Public Watering-place, may with the sanction of the Minister, obtain water for their stock or for domestic use, for such periods and at such rates as he may permit, not exceeding those prescribed by these Regulations.

5. Tenants may water and depasture within their Tenant's Lease area forty head of large stock or 200 sheep, where both sheep and large stock are kept, five head of the former shall be reckoned as the equivalent of one head of the latter. Any breach of this Regulation will be dealt with under Clause 13, of the Public Watering-places Act, and will render the lease liable to forfeiture.

6. Drovers wishing to ensure prompt supply must give the tenant or caretaker six hours' notice of their intention to water at a Public Watering-place. The person desiring a supply of water may, at the request of the tenant or caretaker, render such assistance as may be necessary, but shall not without the sanction of the tenant or caretaker interfere with the works appliances or water.

7. In order that the water be kept free from pollution no stock shall be allowed to camp in such a position that their droppings will be carried into the water, and carcasses of all stock dying within 1 mile of a Public Watering-place shall be removed or burnt by the owner or drover of such stock. (41 Vic., No. 19.)

8. Tenants and caretakers shall make all arrangements necessary to ensure as far as possible the safety and convenience of stock watering, and will allow only a reasonable number of stock to come to the troughs at one time; and will, except when otherwise directed keep the supply tank always full.

9. All travelling stock will be supplied with water in order of their arrival at a Public Watering-place, except when such is notified as closed to the public, upon pre-payment of the authorised charges. Working horses and working cattle shall be served before travelling stock.

10. All persons in the Public Service, including the Police, shall be allowed water and agistment for their horses free upon the tenant or caretaker being satisfied of the position or occupation of such persons.

Watering Charges.

11. The charges for water which a tenant or caretaker shall collect are as follows:—

	s.	d.
Horses, per head	0	1
Cattle, per head	0	1
Sheep, per hundred or portion of hundred	1	0
Camels	0	4
Goats and pigs, per head	0	0¼

When water is required for domestic purposes or in bulk, the same shall be supplied at the rate of 6d. per 100 gallons, or at any lower rate that the Minister may in any special case approve.

Any other animals according to agreement between tenant or caretaker and the drover or owner.

Water will be supplied at any time during daylight.

Agistment.

12. Caretakers may run two horses; and upon application two cows and fifteen ration sheep at the Public Watering-place.

13. Horses may be taken in for agistment and water at 1s. (one shilling) per head per night, or 2s. 6d. (two shillings and sixpence) per head by the week.

14. When feed is plentiful, small lots of quiet cattle may, by instructions of the District Inspector, be agisted and watered for one night at 4d. per head.

15. Sheep are not to be taken in for agistment.

16. The caretaker will collect all sums for agistment and water before admitting to paddock.

17. When grass begins to fail, the caretaker must notify owners to withdraw their stock at a week's notice, and it will be his duty to report if this is not promptly done.

18. The caretaker will enter amount of fees and number of stock agisted in his returns.

19. All drovers or owners in charge of travelling stock, shall pay the watering rates according to the numbers stated in their travelling statement or permit, irrespective of any losses unless they shall produce a declaration made before a Magistrate, setting forth the number of stock lost since the issue of the statement or permit.

20. Horses belonging to mail contractors or any coach proprietors running over the road near which a Public Watering-place is situated and actually working, shall be charged one half the rates for watering and agistment.

21. No drover shall be permitted to loiter or camp upon the Public Watering-place longer than twenty-four hours, unless compelled by stress of weather.

And no person other than the families of caretakers, tenants, or their agents shall be permitted to camp or remain upon a Public Watering-place longer than twenty-four hours without the consent of the Minister or unless compelled by stress of weather.

Careless use of Fire.

22. At each Public Watering-place a notice shall be posted in a conspicuous position containing in legible characters a copy of the scale of charges, and a notice that any complaints should at once be addressed to the Officer in charge of Water Conservation, Department of Mines, Sydney, a caution against damage to a Public Watering-place, and a caution against the careless use of fire.

Tenders for Public Watering-places.

23. A separate tender shall be made for the lease of each Public Watering-place, and shall be sealed and endorsed "Tender for Public Watering-place," and addressed to the Tender Board, Department of Mines, Sydney.

24. Every such tender shall be placed by the tenderer or his agent in a box kept for that purpose at the Department of Mines, and any tender transmitted by post shall be forthwith placed in such box unopened.

25. Every tender shall be accompanied under the same envelope by a Bank Draft or Post Office Order for £5, or by a receipt showing that that sum has been deposited with the Colonial Treasurer; and, in the event of the ultimate acceptance of the tender, the tenderer shall receive credit for the amount of such deposit as rent; and, in the event of the tender being rejected, the amount shall be returned to the tenderer; and, in the event of the successful tenderer failing to execute the necessary bond and lease within the prescribed time, he shall forfeit his deposit.

26. The Tender Board shall open the tender box on the first Tuesday after the date fixed for tenders to be sent in, and all tenders found in the box shall be recorded by the Board.

27. Neither the highest or any tender shall necessarily be accepted, and fresh tenders may be called for, as the Minister shall direct.

28. The lease of a Public Watering-place will be issued to the tenant, subject to such conditions as are prescribed in the Act or these Regulations, or as the Governor, with the advice of the Executive Council, may deem necessary.

29. No lease of a Public Watering-place shall confer any right to purchase in virtue of improvements or otherwise any land comprised within the area demised. Any improvements made by the tenant, the estimate and plans of which have previously received the sanction of the Minister, may be paid for on expiration of the term of the lease at the price agreed upon less 5 per cent. per annum for depreciation.

30. The tenant and two sureties resident in the Colony, approved by the Minister, shall, when called upon, execute a lease and enter into a bond, in a sum equal to two years' rent of such Public Watering place, to secure the payment of the rent, and the fulfilment by the tenant of the covenant's conditions and provisions of the lease and observance of the provisions of the above-named Act and the Regulations.

31. The lease of a Public Watering-place shall confer upon the tenant the right to collect and retain for his own use the charges authorised at such Public Watering-place, and the right of agistment and cultivation within the leased area with the rights and limitations set out in these Regulations.

32. The lease shall be liable to forfeiture upon the breach or failure of any provisions of the Act or Regulations, the fact of such breach or failure shall be determined by the Minister.

33. The rent of such Public Watering-place shall be paid to the Colonial Treasurer at Sydney in equal quarterly instalments in advance on or before the 31st March, 30th June, 30th September, and 31st December, and if not paid within the current quarter fourteen days after the date the payment as aforesaid is due, a fine of 5 per cent. on the quarter's rent shall be levied. If the rent be not paid upon the expiration of the quarter for which it is due, the sureties may be called upon to pay the amount within fourteen days, and upon the expiration of that period proceedings may be taken for the recovery of the rent due and the fine, and the Minister may direct an Officer to take possession of such Public Watering-place, and collect the charges payable thereat, without prejudice to any right to cancel the lease or to enforce any claim against the tenant or his sureties.

34. The tenant, on payment of the first quarter's rent, in advance, and upon the gazettal of the lease, will receive notice of the acceptance of his tender, and of the date upon which he will be put in possession; and if, after receiving such notice, he fail to attend on the date named and take delivery, a caretaker shall be engaged at such Watering-place at his risk and expense, and his payments forfeited.

35. If the tenant of a Public Watering-place fail for more than thirty days after the date of the notice of the acceptance of his tender, and of the notice of the date upon which he is required to attend and take possession, the Minister may cancel the lease, and cause the same to be put up for lease by auction, or let by tender or otherwise, and the tenant and his sureties shall be liable for all loss or damage which may be incurred, and all costs, charges, and expenses entailed thereby; and the amount of such loss, damages, costs, charges and expenses may be recovered from the tenant and his sureties, as provided by the Act or the Regulations thereunder.

36. When the tenant is put in possession according to notice, a schedule of the works, appliances, and appurtenances at the Public Watering-place, and a statement of the condition and state thereof at the time they are handed over to him, shall be prepared in duplicate, and shall be signed by the tenant and the officer delivering the works to him, which shall be an acknowledgment of the condition and state thereof, and one copy of such statement shall be retained by the tenant and the other by the Officer in charge of Water Conservation.

37. At the termination of the lease the tenant shall surrender to such person as the Minister shall authorise, the works, appliances, and appurtenances leased to him, in the same good order and condition, reasonable wear and tear excepted, in which they were received by such tenant; and if the works, appliances, or appurtenances so surrendered then require repairs, the tenant shall pay to the Colonial Treasurer the cost of such repairs.

38. A lease of a Public Watering-place shall be liable to forfeiture if (*a*) the tenant or his sureties fail to pay the rent when due; (*b*) the tenant become insolvent or shall assign his estate for the benefit of his creditors, or upon his conviction of illicit traffic in liquor, or keeping a disorderly house, or of harbouring improper characters, or other offences against the Vagrant Act, or upon conviction for any criminal offence or the admission of stock to the main or conserving tank, and for watering more of his own stock or other than is provided for by Regulations; and the tenant or his sureties shall be liable for all expenses or losses incurred by the Crown by reason of the forfeiture of such lease and the reletting of the Public Watering-place.

39. No subletting nor transfer of the lease of a Public Watering-place shall be permitted without the sanction of the Minister.

40. Should the tenant desire to renew his lease, he must give the Minister three (3) months' notice of such desire.

41. The tenant of a Public Watering-place shall, during his lease, keep the works, buildings fences, gates, gauges, drains, inlets, valves, pipes, embankments, approaches, and all machinery, appliances, and appurtenances thereto belonging (whether the same be within or out side of the boundaries of the Leasehold and Public Watering-place) in good order, repair, and condition. Tenant to keep down all Bathurst burr and prickly-pear upon Public Watering-place.

42. Upon receipt of a notice from the Officer in charge, Chief Inspector, Inspector, or Overseer requiring the tenant to make certain repairs, he shall forthwith make such repairs or cause such repairs to be made, and if he fail to commence the work within fourteen days and complete the same within a reasonable time after the receipt of such notice, such repairs may be made by the Officer in charge or Officer authorised at the tenants expense, and the cost of such repairs may be recovered from the tenant or his sureties in the nearest Court of Petty Sessions.

43. Every precaution shall be taken by the tenant during floods or in the case of fire, to prevent injury or damage to the Public Watering-place, its appliances, or appurtenances under lease to him, and he shall be liable for all loss and injury sustained by reason of his negligence in any such case.

44. The tenant shall by himself or his agent or servant, be at all times in attendance at the Public Watering-place and shall be accountable for the proper conduct and shall be responsible for the acts of his agent or employees. In all cases when a tenant employs a caretaker, he shall notify the same to the Officer in charge, and the name of the person so employed.

45. The Officer in charge or other Officer authorised, may, subject to the approval of the Minister, require the tenant to dismiss any caretaker or agent whom he considers unfit for the charge of the works, and may place a caretaker in charge pending the employment by the lessee of a suitable caretaker.

46. A book, which will be supplied by the Department for the purpose, shall be kept by the tenant, containing an exact statement of all stock watered; and such book shall be open at all times for the inspection of the Inspectors of Public Watering-places or any other Officer authorised by the Minister. In the event of any tenant furnishing incorrect or misleading returns of the numbers of stock watered or agisted or making incorrect or misleading entries in the book provided, shall be liable to a penalty not exceeding £10 for each offence.

47. The tenant must forward by post prepaid to the Officer in charge of Water Conservation at the end of each week, a statement of the depth of water, as shown by the gauge in a tank or dam, or by sounding in a well, and such other particulars as may be required upon forms supplied by the Department.

48. The tenants of Public Watering-places must keep copies of the Watering-places Act and the Regulations issued thereunder, and plan showing the area set apart as a Public Watering-place, which they shall produce when required by any person desiring water.

49. Should the Minister decide to repair or alter any tank, dam, or well, or any appliance or appurtenance thereof, the tenant shall without delay or hindrance, permit such repairs or alterations to be carried out.

50. The tenant or his agent shall reside upon or in the immediate neighbourhood of the Public Watering-place, and shall during the hours of daylight be accessible to persons requiring water.

51. If the Minister considers such a course necessary he may, on giving the tenant three months' notice, cancel any lease granted hereunder, and the tenant shall have no claim for compensation on account of such cancellation.

Water Trusts.

52. Any Public Watering-place may be placed under Trustees, or vested in a Municipal or Borough Council, or in any other body or corporation, subject to these Regulations and the following conditions:—

(1.) The number of Trustees may be such as the Minister shall decide.

(2.) The Trustees shall see that the works, appliances, and appurtenances are kept in a thoroughly efficient state.

(3.) The Trustees shall, within two months of the notification of their appointment in the *Gazette*, frame such regulations for the proper administration of the Trust as they may deem necessary, and a scale of charges for the sale of water for domestic use, or for stock belonging to residents within the limits of the municipality, or within a radius of 4 miles of the Watering-place, when not within a municipality. Such regulations and charges, upon approval by the Minister, and notification in the *Gazette*, and upon being laid upon the Table of the House, shall have the full force of law, and such charges shall be collected by the Trustees, or the person appointed by them for such purpose.. Upon the failure of the Trustees to submit such regulations and scale of charges within two months, the Minister may frame such regulations as he may deem necessary, and may regulate the charges to be made, and after notification in the *Gazette*, and upon their being laid upon the table of the House, the Trustees shall be required to collect them.

(4.) All travellers, teamsters, and drovers entitled to obtain water at other Public Watering-places shall, on prepayment of the charges prescribed, be entitled at Public Watering-places under Trustees.

(5.) All Watering-places under Trustees will be open to inspection by the Officers appointed by the Minister for that purpose; and all repairs or alterations needed for maintenance of the Watering-place in an efficient condition shall be effected by the Trustees. If the Trustees fail the Minister or the Officer appointed for that purpose may cause such repairs or alterations to be made.

(6.) The Trustees must employ a caretaker, and see that he resides upon or in the immediate vicinity of the Watering-place.

(7.) The Trustees must forward to the Officer in charge of Water Conservation, at the end of each week, complete returns upon the forms which will be supplied to them, and containing such particulars as may from time to time be required.

(8.) The Trustees are not empowered to let the area marked T.L. of the Public Watering-place without the consent of the Minister being specially obtained.

(9.) If any Trustees fail to perform the duties imposed upon them in virtue of the trust, or fail to observe the provisions of the Act and these Regulations thereunder, the Minister may remove such Trustees, and appoint other Trustees in their stead, or may dissolve the trust, and place a caretaker in charge of the Public Watering-place, or may otherwise dispose of it.

(10.) The moneys collected by the Trustees shall be applied by the Trustees.

(1.) To the payment of a caretaker's wages.

(2.) To the maintenance, repair, and improvements of the works.

(3.) The balance or surplus shall be paid to the Colonial Treasurer.

Forfeitures and Penalties.

53. No person shall, except at the request of the tenant, caretaker, or proper officer, interfere with the machinery or appliances of a Public Watering-place, and no person shall allow his stock to water except where directed by the tenant or caretaker.

54. The tenant shall not, under pain or forfeiture of his lease, or the caretaker under the penalty of dismissal, allow stock to be admitted to the main or conserving tank without the direct sanction of the Minister.

55. All persons are prohibited taking water from a Public Watering-place without prepayment of the charges, or without the consent of the caretaker, tenant, or the person for the time being in charge; and all persons so doing are liable to prosecution for the recovery of the authorised charges, and for all penalties incurred for breach of the Regulations, under Clause 16 of the Act.

56. If any person other than a tenant, caretaker, or trustee, shall violate, neglect or refuse to comply with any of the foregoing Regulations for the breach of which a penalty is not provided, such person shall, on conviction for every such offence, be liable to a penalty not exceeding £2.

Miscellaneous.

57. Caretaker shall mean any person in charge of a Public Watering-place, whether employed by the Department, tenant, or Trustees.

58. Trustees shall be equally bound by these Regulations as a tenant or caretaker.

59. The tenant or caretaker of a well shall withdraw the bucket after baling, and shall suspend them above water level.

Sydney: Charles Potter, Government Printer.—1892.

[3*d*.]

1892–3.

NEW SOUTH WALES.

PUBLIC WATERING PLACES.

(REGULATIONS IN CONNECTION WITH THE ADMINISTRATION OF THE SUNNY CORNER WATER SUPPLY TRUST.)

Presented to Parliament, pursuant to Act 48 Vic. No. 16, sec. 14.

Department of Mines and Agriculture,
Public Watering Places,
Sydney, 14th March, 1893.

His Excellency the Governor, with the advice of the Executive Council, has approved of the following Regulations in connection with the administration of the SunnyCorner Water Supply Trust.

T. M. SLATTERY.

REGULATIONS FOR THE ADMINISTRATION OF THE SUNNY CORNER WATER SUPPLY.

1. Scale of charges:—

Public offices and institutions connected with the mains, £3 3s. per annum.
Hotels connected with the mains, £4 4s. per annum.
Business places, other than hotels, £2 10s. per annum.
Private houses where water is used for domestic purposes only, £1 10s. per annum.
If unconnected with the supply half the above rates only will be charged.
Payment shall be made quarterly and in advance to the Treasurer of the Trust.
Domestic purposes shall include all the purposes to which water is ordinarily applied in a dwelling-house or the premises attached thereto.
Any person who regularly maintains horses, cows, goats, or pigs upon his premises may be supplied with water by measurement for their use at an annual charge of 10s. for each horse or cow, and two shillings and six pence (2s. 6d.) per head for each goat or pig so kept and watered.

2. The Trustees may enter into agreements with consumers for the sale and supply of water through meters, and such agreements shall definitely set forth the purposes for which such water may be supplied and the rates to be charged, and shall further limit the liability of the Trustees in the event of the failure of the supply from whatsoever cause.

3. The Trustees may, as occasion arises, limit the supply to be delivered to each household or person for domestic purposes and for the use of stock.

4. The Trustees may, upon the payment of a fee of £1 10s. (one pound ten shillings) per annum by the applicant, issue quarterly licenses, not transferable, to cart water, which shall only be supplied from the stand pipes, and may limit the price at which water shall be delivered.

5. Before any person shall affix any service-pipe to the main or any pipe therefrom, or alter, repair, or in any manner interfere with the main, or any service-pipe, cock, or fitting connected therewith, he shall obtain from the Trustees a license in that behalf to execute such works, and any unlicensed person affixing, altering, repairing, or in any manner interfering with such pipe, service-pipe, cock, or fitting, as aforesaid shall be liable to a penalty not exceeding £2 (two pounds).

6. The consumer must, at his own expense, lay from and maintain the pipes and apparatus from the main, and upon his premises, together with water; all pipes must be galvanised wrought iron where possible, and where lead pipes are used they must be of equal thickness throughout and of at least the respective weights following, viz.:—

⅜-inch	5 lb.	per yard
½-inch	6 lb.	do
¾-inch	9 lb.	do
1-inch	12lb.	do
1¼-inch	16lb.	do
1½-inch	20lb.	do

Where wrought-iron pipes are used they must be of the kind known as galvanised wrought-iron lap-welded steam tubes.

7. Any consumer's pipe, cock, cistern, or other fitting laid, fixed, or used otherwise than in accordance with these Regulations, or which shall, in the opinion of the Trustees, be or become of bad or defective quality, or shall conduce to the waste, misuse, or contamination of water, shall, upon the Trustees giving notice in writing, be discontinued and disused; and the Trustees may require the same to be removed, replaced, or repaired, and may stop the supply of water to such consumer until such pipe, cock, cistern, or other fitting shall have been removed, replaced, or repaired to the satisfaction of the Trustees.

8. No person shall lay any service-pipe below the ground surface at a less depth than 24 inches.

9. No person shall lay any pipe or other apparatus through any sewer, ash-pit, cistern, or manure tank, or through, in, or into any place where, in the event of the pipe becoming unsound, the water conveyed through such pipe should be liable to be fouled or to escape without observation, unless such pipe or apparatus be laid through an exterior cast-iron pipe or box of sufficient length and strength to afford due protection to the same, and to bring any leakage or waste within easy detection.

10. No person shall use any cistern or tank that is not provided with an equilibrium ball-valve, and the overflow pipe laid and fixed in a suitable manner, open to inspection, and in a position approved by the Trustees.

11. No person shall fix or use any service-pipe which communicates with any cistern, tank, or vessel intended or used for the reception of rain-water, or made or used below the surface of the ground, except with the express permission of the Trustees.

12. No person not duly authorised by the Trustees shall connect or disconnect any meter or other apparatus from the service-pipes, or in any way interfere with the same.

13. Any person using water supplied by the Trustees shall keep all pipes and other appliances in connection with the supply of water in a proper state of repair.

14. All work at any time done or to be done on private lands or premises in connection with the water supply, whether such works consist in the laying and fixing of new services and fittings, shall be inspected by the Trustees or their officers; and no such work shall be commenced until after the expiration of two days notice thereof first given to the Trustees. In no case shall the water be turned on to any lands or premises where any such work shall have been executed until the said work shall have been inspected and approved by the Trustees or their officers. No underground or enclosed works shall on any account to be covered up or concealed from view until the same shall have been duly inspected.

15. If the service-pipes or other appliances of any such person shall on any inspection be found to be out of repair, the Trustees may forthwith, without notice, repair the same in such manner as may be deemed necessary, and the cost of any such repairs may be recovered by the Trustees from the owner or occupier.

16. The supply and use of water, whether for domestic purposes or under special agreement, shall be open to inspection and admeasurement whenever required, and such information must from time to time be afforded as will be sufficient to enable the Trustees to obtain a satisfactory account of the quantity of water actually consumed, and of the pipes, taps, cisterns, and other apparatus and conveniences for receiving and delivering such waters. Any officer of the Trustees may, at all reasonable times in the day time, enter on the premises of any person using water supplied by the Trustees, for the purpose of inspecting the service-pipes or other appliances on such premises.

19. The Trustees shall furnish to the Department the prescribed returns under the Public Watering Places Act, and shall furnish a duly audited balance sheet every six months showing all receipts and expenditure.

20. The Trustees shall receive the whole of the revenue to be derived from the Sunny Corner Water Supply, and shall apply it:—

1. To the payment of salaries of such officers as they may consider necessary to employ.

2. To the payment of any expenses in connection with maintenance and repairs of the work.

3. Any balance available after such payment shall be paid into the Consolidated Revenue.

[3d.]

Sydney: Charles Potter, Government Printer.—1893.

1892.

NEW SOUTH WALES.

PUBLIC WATERING-PLACES ACT OF 1884.

(RATES LEVIED BY THE TRUSTEES OF THE EMMAVILLE TANK, UNDER THE.)

Presented to Parliament, pursuant to Act 48 Vic. No. 16.

Department of Mines and Agriculture,
Water Conservation, Sydney, 17 June, 1892.

His Excellency the Governor, with the advice of the Executive Council, has approved that the following rates be levied by the Trustees of the Emmaville Tank, from the 30th April, 1892:—

	s.	d.
Horses of residents within 4 miles of the Tank, at per head	0	1
Cattle of residents within 4 miles of the Tank, at per head	0	0½
Sheep, per 100 or portion of 100	1	0
Goats, at per head	0	0¼
Any other animal, according to agreement with Trustees.		
Water in bulk, per 100 gallons	0	6
All water for mining or other purposes, not for domestic use, per 100 gallons...	1	0

The charges for travelling stock to be as set forth in the Amended Regulations under the Public Watering-places Act of 1884.

T. M. SLATTERY.

1892-3.

NEW SOUTH WALES.

TIBOOBURRA WELL.

(RATES LEVIED AT.)

Presented to Parliament, pursuant to Act 48 Vic. No. 16, sec. 14.

Department of Mines and Agriculture,
Public Watering Places,
Sydney, 20 March, 1893.

His Excellency the Governor, with the advice of the Executive Council, has approved that the following rates be levied at Tibooburra Well, Tibooburra, from the 1st April, 1893 :—

	s.	d.
Horses of residents within 5 miles of the well, at per head	0	0½
Cattle of residents within 5 miles of the well, at per head	0	0½

For all other stock the rates to be as set forth in the Amended Regulations under the Public Watering Places Act of 1884.

T. M. SLATTERY.

[3d. 817—

1892-3.

NEW SOUTH WALES.

MILPARINKA WELL.

(RATES RELATING TO.)

Presented to Parliament, pursuant to Act 48 Vic. No. 16, sec. 14.

Department of Mines and Agriculture,
Public Watering Places,
Sydney, 21 February, 1893.

His Excellency the Governor, with the advice of the Executive Council, has approved that the following rates be levied at Milparinka Well, Milparinka, from the 7th February, 1893:—

	s.	d.
Horses of residents within 5 miles of the tank, at per head	0	0½
Cattle of residents within 5 miles of the tank, at per head	0	0½
Sheep, per 100, or portion of 100	1	0
Goats and pigs, at per head...	0	0¼
Camels, per head	0	4

The charges for travelling stock to be as set forth in the Amended Regulations under the Public Watering Places Act of 1884.

T. M. SLATTERY.

[3d.] 723—

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

TENDERS FOR ARTESIAN TUBING.

(CORRESPONDENCE RESPECTING.)

Ordered by the Legislative Assembly to be printed, 30 November, 1892.

RETURN to an *Order* made by the Honorable the Legislative Assembly of New South Wales, dated 1st November, 1892, That there be laid upon the Table of this House a Return showing,—

"(1.) The names of the persons from whom tenders were received "(directly or through agents) by the Water Conservation Branch of the "Mines Department for artesian tubing on 22nd June, 1891.
"(2.) Copies of all correspondence concerning the above tenders between "the firms or agents concerned and the Department.
"(3.) The name of the successful tenderer, with particulars as to prices "and conditions agreed upon, and the quantities and deliveries arranged "for."

(Mr. Cullen.)

(1.)

Tenders for Artesian Tubing.

Name	Collar-joint			Swelled-joint.			Flush-joint			Place of delivery.	Time.
	10-inch.	8-inch.	6-inch.	10-inch.	8-inch.	6-inch.	10-inch.	8-inch.	6-inch.		
	per foot.			per foot.			per foot.				
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.		
Messrs. A. and J. Stewart and Clydesdale.	10 0	6 6	4 2	9 6	6 3	3 10	9 0	5 10	3 6	Sydney or Adelaide.	According to quantity: in four or three months.
Messrs. Lloyd and Lloyd.	9 9	7 3	5 0	11 6	7 0	3 10	9 9	7 3	5 0	Sydney or Adelaide.	In four and a half to six months
J. Menzies & Co.	7 7½	5 4½	3 3	10 0	5 0	3 4½	8 3	6 0	3 6	Sydney or Adelaide.	In ten to fourteen weeks.
G. Kaufmann & Co. .. .	11 7	8 6½	5 11	11 7½	7 2⅝	4 3½	11 7½	8 6½	5 2¾	Sydney or Adelaide.	No time specified.
Wm. Fleming	9 6	7 0	4 3								
Harrold Bros.				Job lot.							
	3,800 feet			Flush-joint			6¾ inch.. ..... 5 4				
	2,250 ,, ...			Collar ,, ...			8 ,, ... 5 7				
	1,600 ,, ...			,, ,, ...			10 ,, ... 6 9				

(2.)

Messrs. G. Kaufmann & Co. to The Minister for Mines.

Dear Sir, 30, Pitt-street, Sydney, 8 May, 1891.

Hearing that it is the intention of your Government to import a large quantity of artesian well casing, I should like to call your attention to the enclosed circulars as to the quality of the casing imported by this firm.

We have large stock, all sizes, on hand at present, so that we are able to provide a string at a moment's notice.

Should you decide upon purchasing, I shall be happy to quote you.

Yours, &c.,
GEO. KAUFMANN & CO.
(E. H. CATTERALL, Manager).

[*Enclosures.*]

484—
[870 copies—Approximate Cost of Printing (labour and material), £7 19s. 0d.]

[*Enclosures.*]

Artesian Well-boring Tubes—Dusseldorf *v.* Stewart's.

30, Pitt-street, Sydney, 31 October, 1889.

We have pleasure in drawing attention to the annexed details of the test of artesian well-boring tubes, made this day at the Melbourne University.

From the accompanying copy of certificate from Professor Kernot, it will be seen that the Dusseldorf tubes are superior in every respect to the Glasgow tubes.

The test pieces were both taken from our ordinary stock of tubes.

GEO. KAUFMANN & CO.,
Sole agents for Dusseldorf Rohren and Eisen Walzwerke, Dusseldorf, manufacturers of artesian well-boring tubes, &c.

Engineering Laboratory, University of Melbourne, 31 October, 1889.

Tension Test Number.	Description.	Stress in Pounds.		Stress in Tons.	Contraction of area per cent.	Elongation per cent.	Remarks.
		Total.	Per sq. in.	Per sq. in.			
58	From tube by Stewart, Glasgow	31,600	50,560	22·5	25	17	Fracture all fibrous.
59	Do	31,150	49,000	21·9	24	17	Do
60	From tube by Dusseldorf Rohren & Eisen Walzwerke	34,100	52,786	23·6	30	19	Do
61	Do	35,400	55,312	24·7	27	19	Do

It will be seen from the above experiment that the Rohren and Eisen Walzwerke, Dusseldorf, is the better material in every respect; the tenacity being higher, and the ductility (as evidenced by the contraction and elongation) greater.

W. C. KERNOT,
Professor of Engineering.

Mr. T. J. MacWilliam to The Minister for Mines.

Artesian Well Tubing.

Sir, 297, George-street, Sydney, 22 June, 1891.

In connection with my tender herewith, I have the honor to submit a few extracts from letters received *re* Stewart's "Russian" brand. The originals may be seen at my office:—

January 12th.—From Duncan Sinclair, who is drilling four wells on Dunumbral Station, says:—"That in Europe and Canada I have, within a period of thirty years, used tubing made by every known maker, but, without exception, I find Stewart's 'Russian' brand to be the best I ever used. I also find it to be cheaper, by 50 per cent., to me, as a contractor, than any other maker's."

March 20th.—Mr. A. J. Simmons, who is engaged drilling a number of wells in Queensland for Sir Samuel Wilson, writes:—"The cheap rubbish of 6-inch casing my principals, Fisken, Valentine, & Co., sent me, at the time when you had none in stock, lost me a well, and the company £1,500. At no money would I make a contract unless supplied with Stewart's 'Russian' brand casing."

April 5th.—R. E. Fair, now putting down wells in Queensland, writes:—"After using German, American, and English tubing, I find Stewart's the best and most reliable tube of any in the market, and would use and recommend no other."

May 1st, 1891.—Mr. D. C. Carmichael says, who is drilling on Wanaaring Station for Messrs. Hebden Bros.:—"I have found the tubing most satisfactory in every way, and would not use any other than Stewart's 'Russian' brand."

May 10th.—Captain J. D. Arnold, who is putting down a number of bores for Reid and Shaw of Yancannia Station, writes:—"I have used all known makers' tubes in Russia, Austria, Roumania, and Canada, but commend me to Stewart's 'Russian' as the best tubing ever made. It may be used over and over again, and my experience has been with other makers that it is a very difficult task to put them down, let alone drawing them. We shall be requiring a further quantity shortly. I may say that I fear no ground with this splendid 'Russian' tube."

May 21st, 1891.—Mr. M. Porter, now drilling on Lissington Station, Bourke, writes:—"It was threatened to supply me with another maker's tubes, and immediately gave notice that I would cancel the contract unless supplied with Stewart's 'Russian.' My reputation being at stake by using inferior tubing, having used several other makers', I have found them all worthless compared with Stewart's 'Russian' brand.

May 30th, 1891.—Mr. D. Cameron writes:—"The 10-inch tubing purchased from another maker arrived after some delay, and after trying to use them, I am seriously thinking of throwing up the contract, or discharge my men, and wait here myself until a supply of your 'Russian' tubing comes to hand. The rubbish I am using will not bear its own weight."

N.B.—I could supply 100 others equally satisfactory, &c.

T. J. MacWILLIAM.

[*Enclosures.*]

Australian Mortgage, Land, and Finance Company (Limited),
2, Spring-street, Sydney, 28 August, 1891.

Dear Sir,

I enclose extract from Mr. Duncan Sinclair's letter of 22nd August relating to the withdrawal of Stewart casing (Russian brand) from Dunumbral Bore, which may be of service to you. It is needless for us to say how pleased we are with the brand.

Yours, &c.,
W. F. ALLWORTH,
Secretary.

T. J. MacWilliam, Esq.

Sydney, 5 June, 1891.

Dear Sir,

With reference to your inquiries regarding the durability and suitableness of Stewart's "Russian brand" casing for well-boring purposes, I have much pleasure in stating through a varied experience with Stewart's and other brands, I have found Stewart's "Russian brand" the only casing that gives general satisfaction. I may add that I had a pressure of

of 140 tons on a string of 530 feet of 5 inches by five-sixteenths of an inch thick at the Bourke bore, and could not part it. The reason this casing was so tight in the ground was a very strong magnet causing the casing to become thoroughly magnetised, and hence held fast in the bore.

Yours, &c.,
GRAINGER BARTON.

T. J. MacWilliam, Esq.

Department of Mines—Water Conservation—Tender for Artesian Tubes.

To the Hon. the Minister for Mines and Agriculture, Phillip-street, Sydney, N.S.W.,—

We, the undersigned, do hereby tender and offer to supply the whole of the artesian tubing that may be required for the next ensuing twelve months by the Water Conservation Branch to be delivered in the quantities and sizes specified in *Gazette* notice of 12th June, 1891, for or at the rates entered in the accompanying schedule of prices, and enclose herewith a for the sum of £ as required by the conditions of contract, and agree to forfeit the same in the event of failing to provide the required security and sign the contract within twenty days from the date of notification of acceptance of tender by the Minister.

T. J. MacWILLIAM,
297, George-street
(By power of attorney, for Andrew and James Stewart and Clydesdale, Glasgow).

22nd June, 1891.

Full guarantee will be given by Manager, Union Bank, Sydney.

Take Notice—Intending Sureties.

Notice is hereby given that the full penalties will be enforced in case of default.

Notice to Tenderers.

When two or more persons send in a joint tender, the name of each must be set forth therein, the word company must not be used, and all names must be written in full.

No tender in any way informal will be taken into consideration.

Every tender to be carefully and legibly filled up in accordance with schedule, and addressed as follows:—

"Tender for the supply of artesian tubes, Water Conservation.—The Under Secretary for Mines, Sydney."

Water Conservation.—Contract for Artesian Tubes.

Schedule of quantities and prices for the supply and delivery of artesian tubing, as specified.

Description.		Rate per foot, delivered Adelaide.	Rate per foot, delivered Sydney.
Collar-joint—			
Diameter,	Thickness.	s. d.	s. d.
10-in.	$\frac{5}{16}$-in.	10 0	10 0
8-in.	$\frac{5}{16}$-in.	6 6	6 6
6-in.	$\frac{5}{32}$-in.	4 2	4 2
Swelled-joint—			
Diameter.	Thickness.		
10-in.	$\frac{11}{32}$-in.	9 6	9 6
8-in.	$\frac{9}{32}$-in.	6 3	6 3
6-in.	$\frac{5}{32}$-in.	3 10	3 10
Butt and butt-joint—			
Diameter.	Thickness.		
10-in.	$\frac{5}{16}$-in.	9 0	9 0
8-in.	$\frac{5}{16}$-in.	5 10	5 10
6-in.	$\frac{5}{32}$-in.	3 6	3 6

Messrs. G. Kaufmann & Co. to The Officer-in-Charge for Water Conservation.

Dear Sir,

30, Pitt-street, Sydney, 20 June, 1891.

With reference to tender for artesian tubes, your type-written copy of form of tender only reached this office at noon to-day, and as the terms of same will necessitate reference to our head office in Melbourne, I have therefore by this same post communicated with the Honorable the Minister for Mines, requesting him to delay the opening of tenders until next Thursday, so that we, as from Victoria, may be placed on an equitable basis with other tenderers.

Immediately upon receipt of your tender form, the writer called upon you, but you had left for the day.

Yours, &c.,
GEO. KAUFMANN & CO.
(*Per* E. H. Catterall, Manager).

Messrs. G. Kaufmann & Co. to The Minister for Mines.

Sir,

30, Pitt-street, Sydney, 22 June, 1891.

We have the honor to submit to you our prices for the supply of tubing required for artesian bores, as follows:—

Collar-joint, 10-in. × $\frac{5}{16}$-in., at 11s. 7d. per foot.
" 8-in. × $\frac{5}{16}$-in, at 8s. 6½d. per foot.
" 6-in. × $\frac{5}{32}$-in., at 5s. 11d. per foot.
Swelled-joint, 10-in. × $\frac{11}{32}$-in., at 11s. 7½d. per foot.
" 8-in. × $\frac{9}{32}$-in., at 7s. 2¾d. per foot.
" 6-in. × $\frac{5}{32}$-in., at 4s. 8¼d. per foot.
Butt and butt-joint, 10-in. × $\frac{5}{16}$-in., at 11s. 7½d. per foot.
" 8-in. × $\frac{5}{16}$-in., at 8s. 6½d. per foot.
" 6-in. × $\frac{5}{32}$-in., at 5s. 2¾d. per foot.

ex ship Sydney or Adelaide.

Our head office being in Melbourne, we have had to forward tender form to them, and will in due course submit this tender in proper form, under usual conditions and terms.

Yours, &c.,
GEO. KAUFMANN & CO.
(E. H. Catterall, Manager).

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Messrs. Lloyd and Lloyd to The Minister for Mines and Agriculture.

Re tender for artesian tubing.

Collar-joint. Swelled-joint. Butt or flush joint.



Sir, 121, Bathurst-street, Sydney, New South Wales, 22 June, 1891.

I enclose tender for artesian tubing priced, against the three classes of joints specified, also cheque for the requisite deposit, £56 10s.

For delivery { 2,000 feet, 10 in. / 6,000 ,, 8 ,, / 10,000 ,, 6 ,, } The same could be in port Sydney or Adelaide, in from four and a half to six months from date of order. Of course a delivery of each quantity would be in port sooner.

All the sizes tendered for are inside diameter.

In the event of this tender being accepted, I will deposit the security, £300, in cash, with you, as specified on index form.

JAMES BROWN,
Australian representative for Lloyd and Lloyd.

[*Enclosures.*]

Department of Mines—Water Conservation.

Tender for Artesian Tubes.

To the Hon. the Minister for Mines and Agriculture, Phillip-street, Sydney.

I, THE undersigned, do hereby tender and offer to supply the whole of the artesian tubing that may be required for the next ensuing twelve months by the Water Conservation Branch to be delivered in the quantities and sizes specified in *Gazette* notice of 12th June, 1891, for, or at the rates entered in the accompanying schedule of prices, and enclose herewith a cheque in favour of Minister for the sum of £56 10s., as required by the conditions of contract, and agree to forfeit the same in the event of failing to provide the required security, and sign the contract within twenty days from the date of notification of acceptance of tender by the Minister.

I will deposit cash, £300 (see my letter accompanying).

JAMES BROWN,
121, Bathurst-street.

22nd June, 1891.

Take notice—Intending sureties.

NOTICE is hereby given that the full penalties will be enforced in case of default.

Notice to Tenderers.

WHEN two or more persons send in a joint tender. The name of each must be set forth therein; the word company must not be used, and all names must be written in full.

No tender in any way informal will be taken into consideration.

Every tender to be carefully and legibly filled up in accordance with Schedule, and addressed as follows:—

"Tender for the supply of Artesian Tubes, Water Conservation. The Under Secretary for Mines, Sydney."

Water Conservation—Contract for Artesian Tubes.

SCHEDULE of quantities and prices for the supply and delivery of artesian tubing as specified.

Description.		Rate per foot, delivered Adelaide.	Rate per foot, delivered Sydney.
Collar-joint:—			
Diameter.	Thickness.	s. d.	s. d.
10-in.	$\frac{5}{16}$-in.	9 9	9 9
8-in.	$\frac{5}{16}$-in.	7 3	7 3
6-in.	$\frac{5}{32}$-in.	5 0	5 0
Swelled-joint:—			
Diameter.	Thickness.		
10-in.	$\frac{1}{2}$-in.	11 6	11 6
8-in.	$\frac{5}{16}$-in.	7 0	7 0
6-in.	$\frac{5}{32}$-in.	3 10	3 10
Butt and butt-joint:—			
Diameter.	Thickness.		
10-in.	$\frac{5}{16}$-in.	9 9	9 9
8-in.	$\frac{5}{16}$-in.	7 3	7 3
6-in.	$\frac{5}{32}$-in.	5 0	5 0

Messrs. Harrold Bros. to The Minister for Mines and Agriculture.

Sir, Sydney, 22 June, 1891.

Referring to the enclosed tender for supply of artesian well casing, we beg to point out that the time allowed for tendering was not sufficient to permit of obtaining quotations from manufacturers. Our past experience teaches us that it is not practicable to cable sufficiently fully to make tendering upon such quotations safe, and our practice has been to send full specifications by mail and get prompt cable quotations in reply. We would respectfully suggest that the time for such important tenders as the present to be lodged should be at least six weeks after complete specifications are obtainable.

Should the casing now submitted by us be approved, we can obtain cable quotations without delay for the supply of any further quantity exactly similar that may be required.

We may mention that the sizes and specification now offered are those which experience has shown to be suitable for South Australian purposes, and therefore we confidently recommend them to your Department.

HARROLD BROS.
(*Per* M. D. WILLIAMS.)

[*Enclosure.*]

[*Enclosure.*]

Sir, Sydney, 22 June, 1891.

We notice by *Government Gazette*, that tenders are invited for a quantity of tube well casing. The time allowed for tendering is not sufficient to enable us to submit offers of casing agreeing exactly with the advertised specifications, but we have the following lap welded, wrought iron in stock :—3,800 feet flush-joint 6½-inch external diameter, by $\frac{5}{16}$ inch ; 2,250 feet collar-joint 8-inch external diameter by ¼ inch ; 1,600 feet collar-joint 10-inch external diameter by ¼ inch ; lengths 16 feet to 18 feet, and assorted short lengths. Makers, E. Lewis and Son, Wolverhampton, brand "Trident."

This we beg to offer you at the following prices, viz. :—6½-inch flush-joint at 5s. 4d., net cash ; 8-inch collar-joint at 5s. 7d., net cash ; 10-inch collar-joint at 6s. 9d., net cash, free on railway trucks at Port Adelaide (in bond).

Having our own steamer trading between Adelaide and Sydney, we will deliver any portion that may be required at Sydney free alongside wharf in Sydney, without extra charge.

Immediate delivery can be given at Adelaide, the whole being in store.

We have sample lengths of each size at our Bridge-street offices, and will be pleased to send them for inspection wherever required.

We have supplied about 50,000 feet of this casing for use in South Australia, where it has been highly approved, and we can confidently refer you to Mr. Jones, the Conservator of Water in that colony, as to its quality and value.

As boring is about to commence on the Bellana Pastoral Company's property, and we are asked to quote prices for use there, the present offer is made subject to to your acceptance within fourteen days from date.

Yours, &c.,
HARROLD BROS.
(*Per* M. D. Williams).

The Hon. the Minister for Mines and Agriculture.

Messrs. J. Menzies & Co. to The Minister for Mines and Agriculture.

Dear Sir, 313, George-street, Sydney, 20 June, 1892.

We beg herewith to enclose formal tender for the supply of artesian well tubes for the ensuing twelve months, and trust you will find same in order.

We take this opportunity of bringing before you the fact that we are one of the largest tube manufacturing firms at home, and make wrought-iron tubes and fittings from one-eighth of an inch to 15 inches in diameter for all purposes—gas, water, steam, hydraulic, oil line pipe, well-boring, &c., black galvanized, and coated with solution.

We have just opened offices and large stores in this Colony at the above addresses where an extensive stock of all classes of our manufacture, including boring tubes, are always on hand.

We may say that it is our intention to keep the largest and best assorted stock in Australia of all kinds of tubes and connections.

We have had the pleasure of supplying the Victorian Government with boring tubes for some time, and have a further order from that Department in hands at the moment.

We guarantee first-class quality in all cases, and shall be pleased to submit our manufactures to test at any time.

Delivery of the whole 18,000 feet specified could be made at ports named in fourteen weeks from receipt of order, or half the quantity in ten weeks.

Trusting you may be able to favour us with the contract, which shall have best attention.

We are, &c.,
JAMES MENZIES & CO.
(*Per* W. Maxwell, their Attorney).

P.S.—We send the only sample we have here which, although neither the size nor thickness required by you, will show the quality of our manufacture.—J.M. & Co.

[*Enclosures.*]

Department of Mines—Water Conservation—Tender for artesian tubes.

To the Hon. the Minister for Mines and Agriculture, Phillip-street, Sydney,—

20 June, 1891.

We, the undersigned, do hereby tender and offer to supply the whole of the artesian tubing that may be required for the next ensuing twelve months by the Water Conservation Branch, to be delivered in the quantities and sizes specified in *Gazette* notice of 12th June, 1891, for or at the rates entered in the accompanying schedule of prices, and enclose herewith a Bank of Australasia cheque for the sum of £45, as required by the conditions of contract, and agree to forfeit the same, in the event of failing to provide the required security and sign the contract within twenty days from the date of notification of acceptance of tender by the Minister.

WALTER MENZIES,
Rutherglen, Glasgow.
JAMES MENZIES,
Rutherglen, Glasgow.
WILLIAM MENZIES,
Rutherglen, Glasgow.

By their Attorney,—
W. Maxwell,
313, George-street, Sydney.

Should the foregoing tender be accepted, we, the undersigned, do hereby agree to be responsible for the due performance of the contract ; and we hereby undertake, within fourteen days from the date of the notification of the acceptance of the said tender, jointly and severally, to execute and deliver a bond to Her Majesty, in the penal sum of £300 sterling, for securing such performance.

JAS. R. PHILP,
52, Dowling-street, Sydney.
WM. S. MAXWELL,
Stanley-street, Camperdown, Sydney.

Take notice—Intending sureties.

Notice is hereby given that the full penalties will be enforced in case of default.

Notice to tenderers.

When two or more persons send in a joint tender, the name of each must be set forth therein, the word company must not be used, and all names must be written in full.

No tender in any way informal will be taken into consideration.

Every tender to be carefully and legibly filled up in accordance with Schedule, and addressed as follows :—

"Tender for the supply of Artesian Tubes, Water Conservation.—The Under Secretary for Mines, Sydney."

Water Conservation—Contract for Artesian Tubes.

SCHEDULE of quantities and prices for the supply and delivery of Artesian Tubing, as specified.

Description.		Rate per foot, delivered Adelaide.	Rate per foot, delivered Sydney.
Collar-joint :—			
Diameter.	Thickness.	s. d.	s. d.
10-in.	$\frac{5}{16}$-in.	7 7½	7 7½
8-in.	$\frac{5}{16}$-in.	5 4½	5 4½
6-in.	$\frac{9}{32}$-in.	3 3	3 3
Swelled-joint :—			
Diameter.	Thickness.		
10-in.	$\frac{11}{32}$-in.	10 0	10 0
8-in.	$\frac{9}{32}$-in.	5 0	5 0
6-in.	$\frac{8}{32}$-in.	3 4½	3 4½
Butt and butt-joint :—			
Diameter.	Thickness.		
10-in.	$\frac{5}{16}$-in.	8 3	8 3
8-in.	$\frac{7}{16}$-in.	6 0	6 0
6-in.	$\frac{7}{32}$-in.	3 6	3 6

Delivery of the whole 18,000 feet specified could be made at ports named in fourteen weeks from receipt of order, or half the quantity in ten weeks.

W. Fleming, Esq., to The Minister for Mines and Agriculture.

Sir, 22 and 24, Clarence-street, Sydney, 22 June, 1891.

Herewith I beg to hand you my tender for the supply of artesian well tubing, as called for in advertisement in *Government Gazette*.

The tubing I will supply is best American drive pipe, specially made for the purpose, of very tough, close-grained iron, capable of standing a great deal of punishment in the shape of being driven into the ground. Great care is used in cutting the screw threads, to make them uniform, and have solid metal threads, so as to make a strong joint with the collar. The ends of the pipe meet together in the middle of the collars, and being turned true in the lathe, make a perfect joint.

The inside edge of all pipes are trimmed off, so that they present a perfectly smooth surface inside.

Strict attention to these details is absolutely necessary to make A1 drive pipe, as the pipe must go together straight and true, without undue force being requiredin screwing together in order to prevent any deflection in long strings, such as may be required in deep borings.

My tender is only for collar joint pipe. In America the flush joint pipe is seldom used, except for diamond drill purposes, while the swell joint pipe has fallen altogether into disuse, owing to its liability to telescope, and to the obstruction in the inside of the pipe at the junctions, caused by the one pipe screwing into the other.

Tender for the supply of best American well collar-joint drive pipe, in quantities and of the dimensions following, delivered f.o.b., Darling Harbour, Sydney, or Port Adelaide, South Australia, viz :—

2,000 feet of 10-inch (internal diameter) collar-joint drive, $\frac{5}{16}$-inch thick, at 9s. 6d. per foot	£950 0 0
6,000 feet of 8-inch (internal diameter) collar-joint drive pipe, $\frac{5}{16}$-inch thick, at 7s. per foot	2,100 0 0
10,000 feet of 6-inch (internal diameter) collar-joint drive pipe, $\frac{9}{32}$-inch thick, at 4s. 3d. per foot	2,125 0 0
	£5,175 0 0

Prices of drive-pipe heads and shoes, as follows :—Head for 10-inch pipe, £5 each ; shoe for 10-inch pipe, £5 each ; head for 8-inch pipe, £3 15s. each ; shoe for 8-inch pipe, £3 15s. each ; head for 6-inch pipe, £2 10s. each ; shoe for 6-inch pipe, £2 10s. each.

To be delivered, the first quantity within four months of date of order, and subsequent supplies as may be required.

I enclose my cheque for the sum of £51 15s., as a guarantee of good faith.

I have, &c.,
WILLIAM FLEMING.

Messrs. J. Menzies & Co. to The Officer-in-Charge of Water Conservation.

Dear Sir, 313, George-street, Sydney, 9 July, 1891.

Referring to the writer's conversation with you on Tuesday last, regarding contract for artesian well tubes. As, through some rumour, there seems to be some doubt about the quality of our manufactures, we beg respectfully to draw your attention to the fact that when making quotation, we at same time gave a written guarantee to supply first-class quality, and this guarantee we beg hereby to confirm.

In making our offer we quoted a specially low price in order to introduce our make, which we are determined to do, as can be seen from the fact, that an extensive branch business has just been opened here, and we are perfectly aware that even in our own interest, it is essential to supply an article at least equal to that already supplied to this market, and this we are in a position to undertake to do.

We may say our firm is of best financial and business standing, and if our prices are right we cannot see justice in condemning our manufactures before you have tried them.

We expect the reports against our make are nothing more than hearsay, and we cannot see that they should be considered in the face of the fact that your Department will have both written guarantee and cash deposit to secure the quality.

Trusting to have a favourable reply at your convenience.

We are, &c.,
JAMES MENZIES & CO.
(*Per* W. MAXWELL, their Attorney).

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T. J. MacWilliam, Esq., to The Officer-in-Charge of Water Conservation.

Sir, 297, George-street, Sydney, 20 July, 1891.

Re enclosed letter from my people.—I have the honor to hand you this letter received Saturday last, which shows you how the "iron market" is going at home.

In this connection, I hope the matter of the tubes for which I tendered will soon be settled one way or other.

I may say that I am cabling home, to know if my offer to you still holds good; if so, for how much longer.

I based my figures on a much lower price than the 60s. per ton for the raw material; indeed I guessed the price at 43s. to 45s., and I shall do my best that my tender be not disturbed, and regret now that I did not limit the time in which the offer will remain open.

My opinion is, that from the reading of home papers that the "iron market" is going to be very much firmer.

I am, &c.,
T. J. MacWILLIAM.

[*Enclosure.*]

A. and J. Stewart and Clydesdale (Limited),
41, Oswald-street, Glasgow, 6 June, 1891.

My Dear Sir,

Having a few spare minutes I employ them by sending you these few lines, and hope same will find you well and prospering. To begin with the never-failing theme, the weather, it is as bad as it can be. We are now fairly into June, and I don't believe anyone is clad differently from what they were in January. We have had steady east winds now for three months. The only mild weather we have had this year was in February. I wish we could import a little of your heat. I would willingly export a few tubes gratis in return.

Trade here is in a very uncertain and peculiar state. Speculation is playing the "dickens" with everything. The latest move has been a corner in pig iron warrants. The price of Scotch has been put up from 42s. to over 60s., and the gamble still goes on, to the detriment of people like ourselves and legitimate trade. Speculation and commodities should be put down. Wait till I get into Parliament. I suppose you will have heard that I am now running in double harness, and became a father not long ago.

Have you tried to do anything in plates? Who does the trade? We have just finished a splendid gas-furnace at the British works, and we are to start her next week on 12-inch diameter. We can now practically make any size you want, and any quantity. I see you are going to have a general election in New South Wales. I suppose that won't do any harm?

Do you ever see young Danks? If so, kindly remember me to him. Where do his tube orders go now?

I don't despair of a visit to Australia, but hard to say when that will take place. Let me have a few lines from you, and with kind regards.

I am, &c.,
T. C. STEWART.

Mr. T. J. MacWilliam, Sydney.

Messrs. J. Menzies & Co. to The Minister for Mines and Agriculture.

Sir, 313, George-street, Sydney, 1 August, 1892.

We beg most respectfully to confirm our interview with you yesterday, regarding tenders sent in over a month ago for your year's supplies of artesian well boring tubes.

There seems to be some uncertainty about the quality of our manufactures on account of some report, the accuracy of which we do not admit. We can get no indication from your Department of the nature of the grounds (if any) for the rumour, so that we might have a chance to investigate the matter, and we are inclined to think that there is capital being made of this hearsay, which is seriously affecting us, and favouring other tenderers.

We are aware that our offer is extremely low, the prices being made so as to entitle us to the contract for the present year, and we have decided that, should our tender be accepted, the quality of the goods to be supplied will give every satisfaction, and ensure future orders being placed with us.

We beg to point out that there is no risk whatever in changing to our make, as, in accordance with your specified conditions, we give a guarantee, and cash deposit to secure quality, and we hereby further guarantee to supply quality equal to any make, including that in use by you at present.

If our prices are right (and we guess they must be), we trust you will see your way to place the contract with us at this time, and not support a monopoly.

We are not aware of any method whereby we could prove to you that our manufactures are equal to any unless you try them, and we sincerely hope that you will not condemn our make before you have tried it.

As already stated, the Victorian Government have used our tubes, and a further shipment is at present on the way out.

We may say that our firm is of long business standing, and is financially and otherwise in a position to carry out the contract to your satisfaction.

An extensive branch business has just been started in this Colony at the foregoing addresses, where we carry the largest stock of all kinds of tubes and connections to be found in Australia.

We are, &c.,
JAMES MENZIES & CO.
(*Per* W. MAXWELL, their Attorney).

I have already asked for a full report; please expedite.—S. SMITH, 5/8/91.

No decision can be arrived at until replies have been received from the other colonies with respect to the inquiries made as to the different makes of casing. The writer may be so informed, and that the matter will receive the full consideration that its importance to the Department demands.—J.W.B., 4/8/91. The Under Secretary.

Submitted.—H.W., 4/8/91. Approved.—S. SMITH, 5/8/91. Inform, 5/8/91. Informed,—T.H.S., 6/8/91.

The

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The Officer-in-Charge of Water Conservation to Messrs. J. Menzies & Co.

Sirs, Water Conservation, Department of Mines, Sydney, 6 August, 1891.

In reply to your communication of the 1st instant, addressed to the Hon. the Minister for Mines and Agriculture, with reference to your tender for supplying this Department with artesian well boring tubes; I am directed to inform you that no decision can be arrived at in this matter until replies have been received from the other colonies with respect to the inquiries made as to the different makes of casing; and further, that the matter will receive the full consideration that its importance to the Department demands.

I have, &c.,
JAMES W. BOULTBEE,
Officer-in-Charge.

Messrs. J. Menzies & Co. to The Minister for Mines and Agriculture.

Sir, 313, George-street, Sydney, 8 September, 1891.

We understand you are about to consider tenders sent in for your supply of tubes for artesian well boring, and we beg respectfully to remind you of our letter dated 1st August last, and further to formally confirm verbal offer given your Department to consider any proposal you may think necessary to ensure quality or to supply a sample lot, the year's contract to depend upon result of trial shipment.

We may say great extensions and improvements have been made in our works and machinery during the past few years. Five months ago we started a large furnace with improved appliances for making tubes up to 15 inches in diameter, and our quality can only be fairly judged by our manufactures of the present day, and not by our make of a number of years ago.

If our prices are lowest we trust you will not pass us at this time, as it is competition that brings quality to perfection, and makes prices what they ought to be.

We have every confidence that our present make has only to be tested in order to be approved of.

We are, &c.,
JAMES MENZIES & CO.,
(*Per* W. Maxwell, their Attorney).

Messrs. J. Menzies & Co. to The Minister for Mines and Agriculture.

Sir, 313, George-street, Sydney, 22 September, 1891.

We called upon the Officer-in-Charge at the Water Conservation Branch, in the hope of getting to know the reason for our tender for artesian boring tubes being declined, but were informed that without your authority such information could not be given.

If you will be good enough to let us have this information, and a note of the other offers, which we expected would be publicly intimated as in other departments, you will confer a favour.

JAMES MENZIES & CO.
(*Per* W. Maxwell, their Attorney).

Submitted,—I do not see that we are called upon to assign a reason for declining to accept this firm's tender. Although it is not the custom to make public the rates of tenders in this Department, there are perhaps no reasons why the rates should not be communicated.—J.W.B., 24/9/91. The Under Secretary.

Submitted.—H.W., 24/9/91. The Minister directed this to stand over.—J.W.B.

(3.)

Messrs. A. and J. Stewart and Clydesdale.

Collar-joint per foot:—10-inch, 10s.; 8-inch, 6s. 6d.; 6-inch, 4s. 2d. Swelled-joint per foot:—10-inch, 9s. 6d.; 8-inch, 6s. 3d.; 6-inch, 3s. 10d. Flush-joint per foot:—10-inch, 9s.; 8-inch, 5s. 10d.; 6-inch, 3s. 6d.

Delivered free on wharf, Sydney, or Adelaide, within three or four months from receipt of order, according to quantity.

The following quantities of casing for the respective boring contracts have been obtained:—

Contract No. 2, Belalie bore, 1,500 feet of 5-inch s.-j. casing.

Contract No. 3, Nyngan bore, 300 feet of 10-inch c.-j. casing; 1,200 feet of 8-inch c.-j. casing.

Contract 4, Moongulla bore, 4,097 ft. 4¼ in. of 5-inch s.-j. casing.

Contract No. 6, Ivanhoe to Menindie, 910 ft. 6 in. of 10-inch c.-j. casing; 992 ft. 9 in. of 8-inch c.-j. casing; 1,984 feet of 6-inch c.-j. casing.

Contract No. 9, Box Creek to Arumpo and Euston to Pooncarrie, 1,913 ft. 8 in. of 10-inch c.-j. casing; 4,517 ft. 5 in. of 8-inch c.-j. casing; 7,017 ft. 11 in. of 6-inch c.-j. casing.

Contract No. 10, Milparinka to Wanaaring, 1,150 feet of 10-inch s.-j. casing; 2,500 feet of 8-inch s.-j. casing; 7,000 feet of 6-inch s.-j. casing.

Contract No. 11, Silverton to Lake Cobham, 1,000 feet of 10-inch s.-j. casing; 3,000 feet of 8-inch s.-j. casing; 5,000 feet of 6-inch s.-j. casing; 2,000 feet of 5-inch s.-j. casing.

Contract No. 12, Hay bores, 1,000 feet of 10-inch s.-j. casing; 2,000 feet of 8-inch s.-j. casing; 5,000 feet of 6-inch s.-j. casing.

Contract No. 13, Louth to Wanaaring, 400 feet of 10-inch s.-j. casing; 1,000 feet of 8-inch s.-j. casing; 2,000 feet of 6-inch s.-j. casing.

Contract 14, Wanaaring to Milparinka, 1,000 feet of 5-inch s.-j. casing.

Sydney: Charles Potter, Government Printer.—1892.

[6d.]

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

WATER CONSERVATION AND UTILIZATION BILL.

(MESSAGE No. 7.)

Ordered by the Legislative Assembly to be printed, 11 *October*, 1892.

JERSEY, *Message No. 7.*

Governor.

In accordance with the provisions contained in the 54th section of the Constitution Act, the Governor recommends for the consideration of the Legislative Assembly the expediency of making provision to meet the requisite expenses in connection with a Bill to define the rights of the Crown and private persons to water; to establish a Board for the conservation and utilization of water, and to define the constitution and powers of such Board; to also establish Water Trusts, and to define the constitution and powers thereof; to make provision for the drainage of land, and to confer certain powers on the Board and Trusts with regard to navigable waters; to empower such Board and Trusts to raise money on loans upon certain conditions, to make and levy certain rates and charges, and to provide for the establishment of a sinking fund for the liquidation of such loans; to provide for the payment of compensation for lands taken and damage done under the provisions of the Bill; to repeal certain enactments; and for other purposes in furtherance of, or consequent on, the aforesaid objects.

Government House,

Sydney, 11*th October*, 1892.

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE AND PLANS,

RELATING TO THE

PROPOSED STORM-WATER SEWERS

DISCHARGING INTO

JOHNSTONE'S BAY.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

1892.

[2s. 6d.] 40—a

MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable William Henry Suttor, Vice-Chairman.
The Honorable James Hoskins.
The Honorable Frederick Thomas Humphery.
The Honorable Andrew Garran, LL.D.
The Honorable John Davies, C.M.G.

LEGISLATIVE ASSEMBLY.

Jacob Garrard, Esquire, Chairman.
Thomas Thomson Ewing Esquire.
William Chandos Wall, Esquire.
William McCourt, Esquire.
John Cash Neild, Esquire.
Edward William O'Sullivan, Esquire.
Charles Collins, Esquire.
Henry Dawson, Esquire.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

STORM-WATER SEWERS DISCHARGING INTO JOHNSTONE'S BAY.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing certain storm-water sewers discharging into Johnstone's Bay, Port Jackson," have, after due inquiry, resolved that it is expedient the proposed sewers should be constructed; and, in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

General statement.

1. The proposed storm-water sewers are a work which forms part of the general scheme for the drainage of the Western Suburbs. Storm-water, as the Committee pointed out in their report upon the Drainage Works for the Western Suburbs (27th August, 1889), may cause considerable difficulty in any system of sewerage, and for the draining of some portions of those suburbs special works have to be carried out. One of these special works is that which is the subject of this Report. The construction of these sewers remained in abeyance after the Committee's report upon the general scheme until September, 1890, when the Minister for Works, in a Minute upon the question of storm-water drainage, urged upon the Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers the importance of constructing the storm-water sewers as quickly as possible. This Minute was considered by the Commissioner and Engineer-in-Chief, and he suggested the construction of a number of these sewers, including those discharging into Johnstone's Bay, pointing out, at the same time, that if these suggested works were carried out the "sanitary arrangements of the districts in which they would be built would, beyond question, be considerably improved." To these suggestions the Cabinet assented, subject to the necessary provision being made by Parliament, and subsequently Parliament voted for these sewers £278,401 in two sums—£201,531 in the Estimates for 1891, and £76,870 in those of 1892. Of the total amount £208,283 was for works forming part of the Western Suburbs scheme, and most of the money on those works, as on the others included in the votes mentioned, will be expended without any previous reference to this Committtee, for the reason that, in all instances but two, the estimated cost of the sewers is under £20,000. The two cases in which the estimated cost is such as, according to the Public Works Act, makes it necessary that the works should be referred to the Committee are the sewers discharging into Johnstone's Bay, and a sewer from Munni-street, Newtown, through Macdonaldtown to Shea's Creek. The latter, it was at first thought by the authorities of the Department of Public Works, would not cost £20,000, and under that impression the

the work was commenced and is now being carried on. It was not therefore referred to the Committee. The sewers discharging into Johnstone's Bay are consequently the only work under the votes so far passed by Parliament for the construction of storm-water sewers respecting which the Committee will make inquiry.

Description of the Johnstone's Bay sewers.

2. The Johnstone's Bay sewers are intended to provide storm-water drainage for an area of 1,110 acres within the municipalities of Newtown, Camperdown, Petersham, Glebe, and Leichhardt, much of it thickly populated, and at the rate of forty-three persons per acre—the rate fixed in the sewerage scheme for the district—capable of carrying a population of 47,730 persons. The sewers are designed in four sections. The first, called the Stanmore branch, commences at Bruce-street, and passes down by the Stanmore Railway Station, along Gordon Crescent, across Douglas-street and Percival Road, and then by way of a proposed street parallel with the West Kingston sub-main, past Bridge-street to Johnstone's Creek, the course of which it follows as far as the Parramatta Road. The second section, a length of 28 chains, starting from the Parramatta Road, continues to follow the course of the creek, and terminates at Booth-street. From this point the third section proceeds, deviating from the creek, which at this part of its course will be filled in, and terminates at Roselle Bay. The fourth section is a branch for the drainage of a portion of Newtown. It commences at Liberty-street, Newtown, where it connects with a channel already constructed by the Sewerage Department, and extending for a length of 23½ chains joins the main sewer at a point about 21 chains south of the Parramatta Road. The sewers will be constructed of concrete and will be dish-shaped, the sides raking in a little. From their commencement at Bruce-street to Booth-street their width will increase from an 18-inch pipe drain to an open channel of 20 feet 6 inches, and from Booth-street this channel will widen to the outfall, where the width will be 54 feet 8 inches. The grade of the work shows very little fall, and a width of sewer which in ordinary cases would be very excessive is in this instance necessary. From the 18-inch pipe the depth of the sewers will range from 2 feet 4 inches to 6 feet 7 inches at the outfall. A portion of the sewer from the western end of the Stanmore section down to where it joins the Newtown section will be covered, the expense of this covering (£2,000) to be borne by the trustees of the Johnstone Estate; the other portions will be open. For some distance from the outlet the sewer will be subject to the rise and fall of the tide. At no time, therefore, will it be free from a certain quantity of water; but this, it is considered, will not be objectionable either in regard to causing a nuisance, or in effectually disposing of the drainage from the watershed of the sewer. Roselle Bay, into which the sewers will discharge, is to be reclaimed. Its foreshores are now a public nuisance, but in conjunction with this proposed work a retaining-wall is to be erected around the bay, and the space within the wall and the mainland filled in. Probably a portion of the reclaimed land will be dedicated as a public park, and the frontage to the bay resumed for wharfage. The principal of these storm-water sewers, when constructed, it is represented, will remove nuisances which have been complained of from time to time by the municipalities and residents interested, and it will also be of great value in the construction of the Camperdown branch and eastern branch of the Western Suburbs Sewerage Scheme, as it will enable provision to be made for overflow in these sewers.

Estimated cost.

3. The estimated total cost of the work is £51,352, but £2,000 of this amount will be contributed by the trustees of the Johnstone Estate, leaving the net cost as £49,352. This amount comprises £11,052 for the Stanmore branch, £7,200 for the second section, £28,500 for the third, and £2,600 for the Newtown branch.

The Committee's method of inquiry.

4. The Committee examined the departmental officers concerned in the proposed work, and made a personal examination of the localities through which the sewers will pass, and then, calling together the mayors of the municipalities interested in the work, examined them in the presence of the departmental officers. In this manner they obtained a clear and comprehensive insight into every important feature of the proposal.

The evidence.

5. Though the number of witnesses examined was small, the evidence obtained is complete in all matters which in the inquiry it is essential the Committee should know. As indicated in a previous part of this Report, it is almost in the nature of an accident that the proposed work has been referred to the Committee.

The

The work forms part of a general scheme already approved and being carried out, and it is only because its cost is estimated to exceed £20,000 that it has been the subject of this inquiry. It is pointed out by the Under Secretary for Public Works, in a minute forming part of his evidence, that it is quite possible the cost of these sewers will be covered by the money voted by Parliament for the main portion of the Western Suburbs Scheme, if there be added to it the 10 per cent. excess which the Public Works Act allows the Constructing Authority in the carrying out of the works. This is further testimony in favour of the proposed sewers, and the evidence generally indicates that they are necessary and should be constructed. They appear to have been well designed, and the municipal representatives examined before the Committee agree generally as to the advisableness of carrying them out. The Mayor of Newtown expressed some doubt as to whether the Newtown branch sewer will be effectual in draining that borough, but the departmental officers are confident it will. There is also a feeling on the part of the municipal representatives, as shown in their evidence, not favourable to the proposal to leave the sewer unprotected by a fence or railing. The officers of the Sewerage Department do not consider such a protection necessary, and point out that it would be expensive; but, at the same time, they admit that, by leaving the sewer unprotected, accidents by persons falling into the sewer are possible, and for the consequence of such accidents the Metropolitan Board of Water Supply and Sewerage will be liable. One other point of interest calling for mention is that the cost of the proposed work will not entail upon the ratepayers any marked increase in their rates. As the sewers form part of the general scheme for the drainage of the Western Suburbs, the cost of their construction will be included in the total expenditure for that purpose, and will fall upon the whole of the population of those suburbs proportionately. Mr. R. R. P. Hickson, who is at the head of the Sewerage Department and a member of the Metropolitan Board of Water Supply and Sewerage, questions very much whether an increased rate will be required.

5. The Committee arrived at a decision with reference to the proposed work on the 22nd ultimo by passing, on the motion of Mr. Humphery, seconded by Mr. Neild, the following resolution:— Resolution of the Committee.

> "That, in the opinion of the Committee, it is expedient the proposed storm-water sewers discharging into Johnstone's Bay, as referred to the Committee by the Legislative Assembly, be carried out."

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 12 July, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

STORM-WATER SEWERS DISCHARGING INTO JOHNSTONE'S BAY.

TUESDAY, 7 JUNE, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. JAMES HOSKINS.	JOHN CASH NEILD, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.

The Committee proceeded to consider the proposed Storm-water Sewers discharging into Johnstone's Bay.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. June, 1892.

1. *Chairman.*] Can you give the Committee a statement as to the necessity for this work? I have not very much to say about this particular matter, except that it forms part of a general scheme of storm-water channels in connection with the sewerage system of the western suburbs. I might be allowed to refer to the Report of this Committee upon the Western Suburbs Sewerage Scheme. At page 30 of the Appendix it will be found that Mr. Stayton says:—

A sewerage scheme alone will certainly not meet the whole of the sanitary requirements of the western suburbs. The frequent floods at Marrickville Valley, and the removal of storm-waters generally, is a question which must necessarily be dealt with; and although no sum is included in the foregoing estimate for sewers and other works, the following remarks will show that the subject has received careful investigation, that it has been fully considered, and that the execution of certain works is absolutely necessary.

Then at page 10 of the Committee's Report, paragraph 13, it is stated:—

Storm-water may cause considerable difficulty in any system of sewerage, and the subject has not been overlooked in the present proposals. Overflow weirs will carry off any excess of storm-water, or, if necessary, at some future time relief sewers can be provided, and the small quantity of sewage contained in storm-water so discharged into natural watercourses would be so greatly diluted, it is considered, as to render it perfectly unobjectionable. These provisions for storm-water would not be sufficient to prevent flooding in a portion of the Marrickville Valley, and for the effectual draining of that locality from any excess of storm-water, certain special works would have to be carried out. The same thing would probably be necessary in some other localities.

I may mention that a sum of £20,000 was voted by Parliament, in a lump sum, for a storm-water channel for the Marrickville Valley. That was the only vote taken at first for that purpose, but the subject came up for a definite decision in September, 1890. At that time Mr. Bruce Smith was Secretary for Public Works, and on the 17th September, 1890, he wrote the following minute:—

Minute Paper—Storm-water Drainage.

Department of Public Works, Sydney, 17 September, 1890.

As the Commissioner for Roads is aware, I have been considering the question of hastening on the sewerage works of the city and suburbs, the subject being one of the gravest concern as so largely affecting the health of the citizens. After going fully into the matter, I am satisfied that Mr. Hickson is doing his utmost to press on with the work, but I cannot disguise from myself the serious consequences following the delay which must necessarily take place before these works are completed; and I have therefore been carefully considering whether something cannot be done quickly to (in a measure) mitigate the evils which are constantly resulting from the want of a proper sewerage system, more especially as regards the western suburbs. These districts are growing with great rapidity, and the evils I have referred to are becoming intensified in a corresponding degree, but the scheme now being undertaken cannot, I regret, reach them for some years to come. It has, however, occurred to me that some measure of relief might be obtained by carrying out quickly what will eventually form the "storm-water" portion of the general scheme. At present the watercourses which serve to carry off storm-waters are almost entirely in their natural state, and are the receptacles of the sewerage of the large populations which have settled in these suburbs, becoming in consequence a series of fœtid pools which menace the health of the whole population. If these storm-water sewers can be at once constructed they can be utilised for a time for the more rapid and satisfactory discharge of the sewage matter, which must of necessity, under present circumstances, find its way into them, and thus, I feel sure, be the means of preventing a large amount of sickness.

We have now an abundant water supply, the capacity of the Nepean scheme being something like 50,000,000 gallons per diem. The normal consumption is about 10,000,000 gallons per diem, and the present pipe-line will deliver about 18,000,000 gallons per diem, which will be nearly doubled when the second pipe-line, about to be put down, is completed. Taking into account this large reserve of water, there can be no difficulty, I imagine, in utilising it in flushing down these proposed storm-water sewers; and, indeed, it cannot, I think, be put to a more profitable use. Of course, as soon as the sewerage system proper is complete, these drains will revert to their intended use, *e.g.*, channels for the conveyance of storm-waters only. One thing which must, however, be carefully avoided is, that under the term of storm-water sewers we are not led into carrying out what is practically municipal work, and not coming under the designation of storm-water sewers proper. It will, I apprehend, be easy for the municipalities to make temporary connections with the storm-water drains, and so render them effective for the purpose I have suggested.

J Barling, Esq.

7 June, 1892.

I therefore wish Mr. Hickson to at once take this matter into his most serious consideration. The surveys necessary for the work I have already authorised to be carried out. What I desire him to do is to push on with these, and give an estimate of the cost: I will then do my utmost to obtain the necessary funds, so that tenders can be invited. Every possible endeavour should be made to carry these instructions into effect, delay, as I have already pointed out, meaning the sacrifice of health and life. I can see clearly that the municipalities in these matters are almost powerless: it is only the central authority which can effectually deal with them. The cost will, of course, form a part of the sewerage debt, and I feel convinced that both my colleagues and Parliament will bear me out in every effort I may make to ameliorate the serious condition of affairs which now exists in our midst for the want of a proper system of sewerage. I rely upon Mr. Hickson to give energetic effect to these instructions so far as it lays within the scope of his branch; and I hope by next summer, at all events, a large portion of this system of storm-water drainage may be in operation.

Before concluding, I would desire to draw attention to some passages from the speeches of Drs. Maclaurin and Ashburton Thompson, in regard to the sewerage of these districts, which were made at a meeting of the representatives of the various municipalities held at this office on the 6th December, 1888, and which speak very eloquently for themselves :—

Dr. Maclaurin said :— * * * "It was impossible to go on as we are doing at present, as the population was increasing so rapidly that the present state of matters could not continue without causing great inconvenience. It was scarcely necessary to bring forward any arguments in this connection from a sanitary point of view, as it was well known what injury would arise from an accumulation of foul waters in many ways, and particularly by contaminating the water supply. The evil results of the accumulation of fœcal matters show themselves in two ways—first, by the existence of typhoid fever, and secondly, by the high rate of mortality of young children under 5 years of age. With respect to both of these matters, it is very clear that the health of the suburbs is not what it might naturally be expected to be." * *

Dr. Ashburton Thompson said :— * * * "You know how prevalent typhoid has been for many years; but you may not, perhaps, have sufficiently observed that the importance of this disease is not to be measured by number of deaths alone, but also by the number of non-fatal attacks of sickness, and best of all by the ages of the persons seized with it. I can tell you that here this prevalent and fatal disease attacks by preference, roughly speaking, persons between the ages of 15 and 35—persons, that is to say, at ages when their usefulness is highest, their ordinary liability to death lowest, and when their sickness causes the greatest pecuniary loss to the community. But this is not the only disease of this kind from which we suffer very heavy losses—diphtheria, diarrhœa, cholera, and dysentery are others of the same kind, and all of them are preventable diseases which, under the most favourable conditions, might almost be abolished. Now you are asked to join in spending money; and many things in the world have to be brought to the test of the pocket. Even in matters of life and death we have to consider profit and loss, ways and means. I am afraid I cannot show that the money you are now asked to spend on behalf of your individual municipalities will clearly return a profit to your individual coffers; but I think you must be ready to admit that a life saved is, in reality, money saved, and above that, that a diminution in the average annual number of days of sickness (such as sewerage will undoubtedly result in) is a real and great pecuniary saving. You see a saving of seven days sickness per annum per head upon 52,000 males, means, in fact, a saving to the community in one year of all the profit and advantage derivable from 1,030 years of toil for every single year that that reduction is effected in that population. Now, the prosperity of nations is correlative with the prosperity of its parts—say of its municipalities. I do not wish to push this argument too far, but if you spend money in reducing sickness—and you will spend it to that end if you spend it on sewers—I think you will, on reflection, see that this expenditure—this bread cast upon the waters—will at last be returned to you."

BRUCE SMITH.

Mr. Hickson.—J.B., 17/9/90.

In reply to that minute, Mr. Hickson wrote as follows :—

Minute Paper—Stormwater Drainage.

Department of Public Works, Roads and Bridges Branch, Sydney, 23 September, 1890.

THERE is a very large question involved in the Minister's minute of 17/9/90, and one which requires most careful consideration before the Department is committed to an expenditure (which must necessarily be heavy) on storm-water channels.

The line of demarcation between a storm-water channel, as taken in connection with a sewerage scheme, and one which is wholly or partly chargeable to a municipality, is, in some cases, so fine that it requires very careful discrimination before deciding to which class these channels belong.

On the other hand, there are some cases in which there can be no reasonable doubt as to the necessity for storm-water channels, pure and simple, as an adjunct to a sewerage scheme, and a fair and reasonable charge thereto.

Looking at the matter therefore, in this light, and fully agreeing with the Minister's views as to the desirability of at once carrying out as much of the storm-water channel system as will form part of the permanent works, and at the same time give some relief to those parts of the city and suburbs which cannot possibly be sewered for some years, I have carefully considered the matter from the following standpoints :—First, as to what storm-water channels must be made in connection with the sewerage scheme, and secondly, how many of these it would be desirable to build at once, to be used as temporary sewers till the sewers proper were completed.

I have before me at present, a list of some sixteen storm-water channels which may eventually have to be made; of these, the following may fairly be taken as coming under the designation of storm-water channels required as relief channels to the sewers it is proposed to erect, and, therefore, a fair charge against the sewerage account.

On the northern watershed, Iron Cove Creek channel cost about £18,500; this will drain a large area lying between Burwood and Ashfield.

Three storm-water channels will have to be built draining into Long Cove Creek; one on main arm, draining parts of Petersham, and costing about £16,500; one branching east towards Leichhardt, at a cost of about £4,000; and the other one branching west towards Ashfield, at a cost of £4,000.

Johnstone's Creek cost about £8,500, draining portions of Leichhardt and the Glebe.

On the southern watershed a channel will have to be made from Munni-street, Newtown, through Macdonaldtown to Shea's Creek, at a cost of £15,500.

Another channel in Macdonaldtown, at a cost of about £8,500, will be necessary. Two or three other smaller ones, at an aggregate cost of about £6,000, will also be required. If these works were carried out, the sanitary arrangements of the districts in which they would be built, would, beyond question, be considerably improved.

To carry these works out, in order to have them ready for the summer after next, it will be necessary to put on at once about four additional surveyors and three or four technical draftsmen.

There will not be much difficulty in getting the surveyors, but I have no idea where to put my hands on suitable draftsmen: I am securing every available one that presents himself, putting him on on trial for a few weeks at a nominal salary, to be recommended for an appointment if found suitable. I thought this a better arrangement than making the recommendation in the first instance without a trial.

If the Minister decides to have these channels put in hand at once, he may rest assured that every effort will be made to have them finished before the summer after next.

ROBT. HICKSON.

These documents were submitted to the Cabinet on the 30th September, and minuted as follows :—"Assented to by Cabinet, subject to provision being made. Plans may be prepared and tenders invited, but not accepted till funds provided."

2. Is that the whole scheme submitted to the Cabinet? Yes. The funds required were subsequently voted. In 1891 £201,531 were voted, and in 1892 £76,870, making a total of £278,401, of which £208,283 belonged to the Western Suburbs Scheme. The question of the particular sewer now before the Committee came before the present Government in January last, when I submitted the following minute to the Minister :—

Minute Paper—Storm-water Drains, Western Suburbs.

Department of Public Works, Sydney, 28 January, 1892.

MR. HICKSON has frequently brought under attention the necessity for coming to a determination with regard to the question of the storm-water sewers, which may be looked upon as accessories and subsidiary to the main sewerage scheme for the western suburbs already approved by the Public Works Committee. In 1891 the amounts shown on the attached list

list were voted for the purpose of carrying out storm-water sewers in the several localities named, but it appears that in two instances the cost will exceed the sum of £20,000, viz., the Munni-street sewer by £6,000, and Johnston's Creek by £18,200. These are the only cases which can be ascertained at present where the £20,000 limit will be exceeded. J. Barling, Esq. 7 June, 1892.

The question, therefore, arises as to whether, under the terms of the Act authorising the construction of the main Western Suburbs Sewerage Works, we can include these particular sewers, viz., the Munni-street sewer and the Johnstone's Creek channel. Mr. Hickson points out that the storm-water sewers are an essential to, and really form part of, the main sewerage scheme.

The sum of £1,143,592* has been voted for those portions of the works to be constructed by the Department, and by the 16th section of the Public Works Act the constructing authority is authorised to carry out the works, provided they shall not exceed in the aggregate more than 10 per cent. of the estimate submitted. Ten per cent. of the amount voted for works to be carried out by the Department will amount to £114,359, and, judging from the cost of the works already executed and in course of execution, Mr. Hickson thinks that this sum will be ample to cover not only any extras on the contracts, but the cost of these storm-water sewers also.

I have, therefore, to submit to the Minister the question whether we are not justified in at once proceeding with these works, and to point out that the Public Works Committee, in their report upon the whole subject, make the following remarks (page 10, paragraph 13) :—

"Storm-water may cause considerable difficulty in any system of sewerage, and the subject has not been overlooked in the present proposals. Overflow weirs will carry off any excess of storm-water, or, if necessary, at some future time, relief sewers can be provided, and the small quantity of sewage contained in storm-water so discharged into natural water-courses would be so greatly diluted, it is considered, as to render it perfectly unobjectionable. The provisions for storm-water would not be sufficient to prevent flooding in a portion of the Marrickville Valley, and for the effectual draining of that locality from any excess of storm-water certain special works would have to be carried out. The same thing would probably be necessary in some other localities."

It is clear, therefore, that the Committee contemplated the carrying out of such works.

In conclusion, I would point out that the work is of such extreme urgency that it hardly admits of a day's delay, and, further, that in the event of Mr. Hickson's calculations proving incorrect as to the cost of the works, there will be ample opportunity of bringing the whole subject before the Public Works Committee before we have actually exceeded the amount authorised, as the works will occupy many years in completing, probably ten at least.

J. BARLING.

Mr. Hickson wrote on that minute that he fully concurred with it. This was brought by Mr. Secretary Lyne before the Cabinet, and the following minute was recorded :—

"The Cabinet considers, after explanation by the Minister, that works of this character, costing over "£20,000, should be submitted to the Works Committee."

As a result of that decision, the present proposal is laid before the Committee. I now wish to give the official description of this particular work :—

Johnstone's Creek Storm-water Channel.

JOHNSTONE'S CREEK discharges into Roselle Bay, between the Glebe and Annandale. It drains an area of 1,110 acres, lying in the municipalities of Newtown, Camperdown, Petersham, the Glebe, and Leichhardt. With the exception of Johnstone's Estate and Briggs' Estate, which have been subdivided but not sold, and the reserve of Roselle Bay, the area is thickly populated. At the rate of forty-three persons per acre, as fixed in sewerage scheme for the district, the area is capable of carrying a population of 47,730 persons.

The channel commences at the outer end of the proposed reclamation at Roselle Bay. For about seventy chains, the cost of which will be £28,500, it will be subject to tidal influence, and from thence to Parramatta Road a good gradient can be obtained. This length is about 28 chains, and the estimated cost £7,200. At about 21 chains above Parramatta Road the creek divides into two branches, the one running south-west being called the Stanmore branch, and the other, running south, the Newtown branch. The Stanmore branch, together with a portion of the main creek channel south of the Parramatta Road, a length of 74 chains, is estimated to cost £11,052, and will terminate at Bruce-street, Petersham. The Newtown branch extends from the main channel to the suburban railway near Liberty-street, Newtown, where it connects with a channel already constructed by the Department. The length of this branch is 23½ chains, and the estimated cost £2,600. The Stanmore branch has, by arrangement with the property owners, been designed as a covered channel, the cost of which covering (£2,000) will be borne by the owners. All the other portions are open.

Johnstone's Creek channel will, when constructed, remove nuisances which have been complained of from time to time by the municipalities and residents interested. It will also be of great value in the construction of the Camperdown branch and eastern branch of the western suburbs sewerage, as it will enable provision to be made for overflow in those sewers.

The total length of this channel is 195 chains, and the cost £49,352.

With regard to Roselle Bay, I may point out that a retaining wall is being constructed, in the position shown on the plan, across that bay for the purpose of reclaiming it. The matter is now being dealt with, but is not finally completed. When the work is carried out, it is anticipated there will be a reclaimed area, including roads, of 54 acres. I cannot, however, give details of this at the present moment, as the survey is only now being made. I mentioned just now that there was a total sum of £208,283 voted for storm-water sewers. The sewers finished have cost £16,165. Those in course of construction will cost £65,366. The sewers not constructed will cost £126,752.

3. Of that total amount this particular work only will come before the Committee, because the cost exceeds £20,000? No; that would scarcely be strictly correct. The Munni-street sewer will cost over £20,000.

4. Will the Munni-street sewer have to be submitted to the Committee? No. We had undertaken that work on the supposition that it would cost under £20,000. It was then supposed that we should continue the Shea's Creek Canal so as to make it a canal proper, and if that had been done, the sewer would have emptied into it at the upper part of the canal. However, the canal has not been carried out, and we are compelled to find an outlet for that sewer.

5. Then this is the only work which will be presented to the Committee? Yes.

6. Have the various municipalities been consulted with reference to this particular work? I do not know whether they have been specifically consulted, but they have urged us to carry on the work.

7. When Dr. Ashburton Thomson made the speech quoted in the Minister's minute, was this extra expense involved in the construction of storm-water sewers put before the municipal representatives? No.

8. Do you think it might alter their views as to the desirability of the scheme if they knew that £200,000 was to be added to the cost? I do not think it is possible for them to have altered their determination. It was thought quite unnecessary to call them together again.

9. Will not £200,000 be a serious addition to the cost of the sewerage scheme? I do not think so. If you look to the evidence which was submitted to the Committee when the sewerage scheme was under consideration, you will see it was explained that this work would be a necessity. As far as Mr. Hickson and

* Amounts voted :—

Loan Act, 1889—Western Suburbs—Main scheme	£830,000
Loan Act, 1891—Completion of Western Suburbs Sewerage Scheme (Schedule B of Act 54 Vic. No. 17)	313,592
Total	£1,143,592

J. Barling, Esq. 7 June, 1892.

and myself worked out this matter, this extra expenditure will add something less than one penny in the pound to the rates.

10. What municipalities will be within this drainage area? Newtown, Camperdown, Petersham, the Glebe, and Leichhardt.

11. *Mr. O'Sullivan.*] Will this work be constructed under the same conditions as the Western Suburbs Sewerage Scheme? Yes; it forms a necessary portion of it. It was an addition to it, and this was thoroughly understood by the Public Works Committee when they dealt with the main scheme.

12. Will the principle be adopted of making the money advanced repayable in sixty years? It is the intention to introduce an Act by which the money will be repaid in sixty years; but there may be a little misunderstanding on that point. This storm-water scheme, as well as the whole sewerage scheme, will be managed by the Water and Sewerage Board, and the rates will be paid into the Treasury, as at the present time. In the last report of the Board, it will be seen that the water and sewerage of Sydney and suburbs have paid a revenue on the money expended of 5·61 per cent., or 3·86 per cent. on the capital, after paying expenses. The intention of the Bill which you refer to is that a sinking fund shall be provided, by means of which the debt will be paid off in a period not exceeding 100 years. The Executive will have the power of fixing a period not exceeding 100 years.

13. In the course of time it will be a remunerative work? No doubt.

14. What is the intention of the Department with regard to the reclamation area at Roselle Bay? It is not finally settled; but in all probability a portion will be dedicated as a park, and the frontage to the bay, I daresay, will be reserved for wharfage. Surveys are now being made, and no doubt in a short time the necessary land will be resumed or appropriated, I use the word appropriated advisedly, because it is a question whether some of it is not Government land.

15. Is the chief argument of the Department in favour of the work that it is required for sanitary purposes? Undoubtedly.

16. *Mr. Humphery.*] Do I understand that it is in contemplation to spend £208,000, or more, in carrying out the whole scheme? Yes.

17. The only reason why this work was referred to the Committee is that its cost will exceed £20,000? Yes.

18. *Mr. Davies.*] Is it contemplated, as a temporary matter, to connect the existing drains with this storm-water sewer? Yes.

19. Is it intended subsequently to make connections with the ordinary sewers when they are completed, and then close up the connection with this storm-water channel? The storm-water channel will simply be used for storm-water, and not for any polluted water. It will not, of course, be used for any fœcal matter.

20. But will not a large quantity of such matter find its way into the sewer? I do not think so.

21. Is it not a fact that a large number of drains flow into this creek already, and that fœcal matter finds its way into the creek now? I do not think so; and if it were known, it would be very soon stopped.

22. Is it not a fact that many drains connect with this creek which have been laid for fifteen years, and which convey such matters I refer to into the water-course? That is not the intention in constructing this work.

23. Is it not proposed to continue that drainage in the meantime? It is proposed to convey the slop-water which flows down the gutters at present.

24. *Mr. Neild.*] Would not the construction of this sewer necessarily disclose the existence of such pipes as Mr. Davies has referred to, so that they could be stopped? Undoubtedly. If we found that the sewer was used for such purposes as Mr. Davies has referred to, we would soon stop the practice.

25. Is it only intended that the channel shall convey away such sewage matter as already finds its way into the water-tables of the streets? Yes.

26. Pending the construction of the regular sewers will the existing closet arrangements, which I suppose are cesspits or earth-closets, be continued in the district? Undoubtedly so.

27. So that no fœcal matter will find its way into the channels? Certainly not.

28. Can the outfall of this sewer be used for barge purposes? I do not think it is intended for that purpose at all.

Robert R. P. Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and examined:—

R. R. P. Hickson, Esq. 7 June, 1892.

29. *Chairman.*] You are Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers? Yes.

30. You are also a Government representative on the Water and Sewerage Board? Yes.

31. What material do you use in the construction of this work? Concrete.

32. We are told that the sewer at the outfall will be subject to tidal influence;—would the sewer be perfectly dry at low water if no water came down from the drainage area? Not quite. It discharges about 1 foot below low water mark.

33. Have you not already constructed a sewer down the channel of that creek from the Parramatta Road? A small portion was done some years ago, before I took charge of the Department, between Booth and and Piper Streets. It is only the ordinary surface, lined with concrete. That will have to be destroyed. It is too small an area, and it would not be on a proper level for the other portion of this work.

34. Will there be any nuisance caused by such a large sewer being open to the atmosphere? There will be much less nuisance than at present, because offensive matter which comes down now very often gets into little ponds and pools at the sides, and the smell all the way down is most offensive.

35. What is the shape of the proposed sewer? It is a dish-shaped sewer. The sides rake in a little. When there is only a small flow it will get down to the centre of the sewer. It is to be made of concrete right through.

36. At the outfall, will the width be 54 feet? Yes.

37. Would such a width be necessary for the quantity of storm-water? Yes; that is the necessary width calculated for the water-shed. The grade is very bad. When we get above Booth-street there is a much smaller channel. Above Booth-street it will average about 15 feet.

38. What is the depth of the sewer in the wide part? Six feet 6 inches. At the top it is only 3 feet 6 inches, and the width 5 feet.

R. R. P. Hickson, Esq. 7 June, 1892.

39. Do you intend to cover in the channel from the western end of the Stanmore section down to where it joins the Newtown section? It is intended to cover a portion of that section.
40. Will it not be difficult to keep the covered-in portion clean? No; it is a good sized sewer, 6 feet wide and 3 feet 6 inches deep.
41. Will £2,000 be sufficient to cover the extra cost of that part of the channel? Yes; that is our estimate of the cost.
42. Have you consulted any of the municipal authorities with regard to this sewer? Not directly; but they have come to me on the subject, and they are anxious to have the work carried out.
43. Are there existing sewers branching into the existing channel? There are only junctions at the different creeks which we propose to tap, with the exception of our long one near the Lillie Bridge Ground.
44. Has there been much concrete work constructed by the Department in the city? All our sewers are made with concrete bottoms and brick arches.
45. How long have they been in use? Those built by the Department have been in use about eight years.
46. Do they show any signs of deterioration in the bottom? No.
47. What is the rate at present imposed for sewerage? Seven-pence.
48. Will this increase, the expenditure of £200,000 for the Western Suburbs Sewerage Scheme, necessitate the raising of the rates? I cannot say. It will bring in a very much larger area, and, consequently, a much larger revenue, so that I question very much whether an increased rate will be required.
49. I suppose the people in this particular drainage area will not be saddled with a special rate for this work, but it will be spread over the whole of the western suburbs? Over the whole of the works under the authority of the Board.
50. Are the sewerage accounts and the water accounts kept separate? Yes.
51. When you speak of the cost being spread over all the works of the Board, you mean the whole of the sewerage works? Yes.
52. *Mr. Humphery.*] How much money have you spent already on storm-water sewers? Over £16,000 on sewers which have been finished.
53. What is the estimated cost for works in progress? About £150,000.
54. Are you able to say whether the amount now available for expenditure will be sufficient to cover the cost of the contemplated storm-water system? Yes; as far as I see at present I do not think it will be necessary to make any more storm-water channels.
55. It will not be necessary to make more than you can construct with the money available? Yes.
56. Is the proposal now before the Committee part of the storm-water system which is to be covered by this vote of £278,000? Yes, this is a part of it.
57. Therefore, if this Committee were not to recommend the carrying out of the work, the storm-water system, as contemplated when Parliament was asked for the money, would be incomplete? Yes.
58. *Mr. Davies*] Can you tell the Committee the capital value of the property which will be taxed under this proposal? No.
59. Can you tell the number of dwelling-houses which will be served by the storm-water channel? No.
60. Will not every house within a certain radius from the sewer be liable to be rated under the Act? Every house within the district will be liable. This is not a sewer with which the houses will connect. It is a storm-water sewer, and the cost will be spread over the whole city and suburbs.
61. Will you get any revenue from it? Not until we complete the main sewers now in course of construction.
62. Have you any idea of the income derivable from the locality? No.
63. Have you stated that it is your opinion that the income will be sufficient to justify the expenditure, owing to the larger amount of property which will be rated? Yes.
64. Do you propose to connect these storm-water sewers with the gully-shafts? We propose to connect all the surface drainage.
65. Do you propose to make provision for the drainage of water from houses, other than the water from the streets? We propose to make provision for all the water that our sewers will not take. We do not propose in our sewers to take the whole of the sewage and the whole of the water. We take the sewage and the water that falls from the roofs and yards, and everything outside of that is supposed to go down the storm-water channels; but a great deal more water can get into our sewers than they can actually carry. We make the storm-water channel for two reasons: First, to improve the sanitary condition of the valleys through which they run; and secondly, to carry off the surplus water from the sewers. There will be a connection made between the sewers and the storm-water channels, so that the storm-water only can be carried away by the storm-water channels.
66. What would be the cost of covering the whole of the storm-water channel? I cannot say now.
67. Would it not be an improvement to cover the whole of it? It would be unnecessary.
68. What protection do you afford to the people on each side of it? If the reclaimed area is made into a park it will be railed off.
69. What protection will the people have who live in the neighbourhood of the channel? Only their back yards.
70. Will not the channel be much deeper than it is at present? Yes.
71. If a man or child falls into the open channel would he not be injured very much? No doubt that would be the case, but the drains made by the Councils were left unprotected.
72. Would the Water and Sewerage Board be liable in case of an accident in this channel? I suppose it would be.
73. *Mr. Neild.*] How is it proposed to provide for sewage matter on the lower levels, which I suppose it would be impossible to connect with the Bondi sewer? We propose to divide the lower levels into zones, and to pump up the sewage into the sewers which are close to them. In the general scheme there are twelve or fourteen pumping-stations provided.
74. In the estimate of the cost of this work, is there any provision for fencing in the channel? No.
75. Will not the portion of the channel which will be covered in be an absolute sewer? Yes.
76. Will there be any provision made to prevent children or adults being swept into that sewer? We do not propose to do so. I do not know that it is necessary.
77. Have any lives been lost in connection with the water-channels of the city or suburbs? Not within my knowledge.

R. R. P. Hickson, Esq. 7 June, 1892.

78. Seeing that so much stress is laid in the documents placed before the Committee upon the protection of life, do you not think that in a large scheme of this kind provision should be made against the probability of the loss of life? We have not done so in any other storm-water channels, and the occasion has not arisen. The Councils have not made any such provision, and I hardly feel that the Government should be put to the expense of covering in the storm-water sewers. We do so when the sewers run through a park, and if the land at the lower end of this sewer is converted into a park we will fence in the channel, because there are always children and grown-up people walking about. At present I think there are fences along this creek for most of the distance.

79. Are you disposed to rely upon the boundary-fences of the properties abutting on the channel? I think so.

80. Has the legal aspect of the question been considered by your Department, or the Water and Sewerage Board? No, but I presume there is no doubt that the Department will be responsible.

81. Do you not think that if the Department is liable it should protect itself against such a risk? The risk is very small, and the cost of preventing it would be very great.

82. Do you use the same proportion of cement and sand, or stone, as is used in connection with the supply of water to the city? I do not know the proportion used in connection with the water supply, but in connection with sewage from 1 to 6, and from 1 to 9, according to the nature of the work.

83. Have you carried out extensive concrete work at Double Bay, Rose Bay, and at the Bondi flats? Yes.

84. Has there been any deterioration in connection with those sewers? No; on the contrary, all our sewers, after they have been in use, get a coating of greasy slime over them, and that seems to protect them.

85. Has the concrete work there been in use sufficiently long to prove its efficacy? Yes, and also in other places.

86. *Mr. O'Sullivan.*] Will this storm-water sewer be similar to the Rushcutter's Bay sewer, except that the latter is covered in? It will be similar to that sewer, because a portion of the Rushcutter's Bay sewer is not covered in. That sewer is open from the road downwards.

87. That sewer is not anything like 54 feet wide? No; but there is not such a large drainage area. In this channel a width of 54 feet is necessary at the lower end, but at Booth-street it is about 26 feet wide.

88. There is not much population on Johnstone's Estate, through which this sewer passes? There is not much.

89. Is there much necessity for constructing a sewer there? Yes, because there is a large population further up, from which the drainage comes down into the creek. It is very foul there.

90. How is it that the portion of this creek which was concreted some years ago is now useless? I presume it was quite sufficient for the purpose at the time; but it is useless now as part of the present scheme.

91. You say that the sewerage rate is 7d., the water rate is the same, and will not that be pretty stiff upon property-owners when the municipal and lighting rates are added? Yes, but this work is an absolute necessity.

92. Has there been any protest against this additional expenditure? No; all the municipal people affected by the scheme have urged that the work should be carried out.

93. It may be regarded as absolutely essential for sanitary purposes, and the people are quite willing, as far as you know, to undertake the extra liability? Yes, as far as I know.

C. H. Ohlfsen-Bagge, Esq., Principal Assistant Engineer, Sewerage Branch, Department of Roads and Bridges, sworn, and examined:—

C. H. Ohlfsen-Bagge, Esq. 7 June, 1892.

94. *Chairman.*] Are you responsible for the details of this scheme? Yes.

95. Have you inspected the locality? Yes.

96. Do you know if Mr. Stayton had this area under his consideration? Yes; I think they were all under consideration.

97. Have you been in consultation with Mr. Stayton, since he left the Department, with reference to these works? No.

98. With reference to the outlet of this sewer, we are told that it is 54 feet wide and 6 feet deep—is that based on calculations as to the rainfall of the area? It is calculated on 2 inches of rainfall in an hour, and 1 inch flowing off at once.

99. Is that the usual formula adopted? Yes, for gently-sloping ground.

100. Is not the slope of the upper portion very rapid? No.

101. What is the fall? At the Newtown branch we start with a gradient of 1 in 65, then there is a gradient of 1 in 129; that goes up to the junction of the Stanmore Creek. There we have a gradient of 1 in 12, then 1 in 63, 1 in 51, 1 in 73, and 1 in 115. From the junction of the two creeks we run to the Parramatta Road with a gradient of 1 in 77·5. From there we run down with a gradient of 1 in 41 for about 20 chains, then we come to a gradient of 1 in 632. That is passing Chester and Booth Streets. At Booth-street the gradient changes to 1 in 1,697.

102. How do you propose to deal with the outlet at the reclaimed area in order to prevent dead animals and other things from floating up? We will have to wait until it is filled in at the outlet, because if we did the work now we should have to pile and sheet-pile the whole outlet end of the channel.

103. Will your work go to the present head of the bay? Yes; up to the present stone dyke. When the outer portion is filled in we shall construct the outlet end of the channel.

104. Do you anticipate that there will be any nuisance arising from the very flat portion? If the bottom of the bay at the outlet end of the channel is properly dredged below the level of our channel it will keep itself clean. There is from 3 to 4 feet between high and low water-marks, and if dredging takes place for 5 to 10 feet the channel will keep clean.

105. It will necessitate continual dredging by the Government? Yes, from time to time.

106. What time do you anticipate will elapse before the sewers proper will be ready to take away the ordinary house slops? The Prince Alfred Hospital extension sewer is already finished. We have a storm-water overflow there.

107. I understand the greater portion of this area is not now tapped by existing sewers? No; but it will be shortly.

107½. When will this area be connected with the sewers proper? It depends upon the means available.

C. H. Ohlfsen-Bagge, Esq. 7 June, 1892.

108. Supposing there is no block in the way of funds, how long will it take from the Departmental point of view? A couple of years.
109. Have you consulted any of the local authorities with reference to this storm-water channel? Yes; the local authorities generally apply for these channels, then we have to send round our surveyors with an agreement for all the owners to give consent, and we ask all the municipalities to assist us, so that they all know.
110. Have you taken that course in this case? Yes.
111. Have all the persons through whose property the sewer runs given their consent? A small portion of them have not given their consent, but I do not think there will be any difficulty.
112. In obtaining that consent, do you come into contact with all the municipalities? Yes; and with every house-owner
113. Have you heard any objection on the part of the municipal authorities as to this sewer? No.
114. If any objections were raised would you be likely to hear of them? In the case of the Stanmore branch there were objections by the holders of Johnstone's Estate. We proposed to build an open sewer through their property, but they objected. They said that if we would build a covered channel through their property they would contribute £2,000 towards it, and we accepted the offer.
115. Will that sum cover the whole of the extra expense? Yes; but I do not know that it will cost exactly that amount.
116. What is the length of the covered portion? About 50 chains.
117. What is the size of the part which is covered in? 4 feet 9 inches in diameter at the lower end, and at the other end 18 inches. The drainage area increases as it goes down.
118. Do you think that this work will be constructed at the cost which is put down for it? Yes; I have gone carefully into the figures.
119. Will all this work be done by contract? Yes; we do nothing except by contract.
120. Do you base the cost upon information gained in letting other similar contracts? Yes.
121. Do you have clerks of works upon these jobs? The first officer is the Superintending Engineer, Mr. Davis; then he has got his resident engineers on the various works, and then there are inspectors.
122. How long has Mr. Davis been associated with you? I started about eleven years ago, and Mr. Davis must have come two or three years afterwards.
123. *Mr. Davies.*] How do you propose to cover the channel at Johnstone's Estate? It will be a concrete arch. The bottom is set square, with a circular top. It is 4 feet 9 inches in diameter.
124. What is the space between the top of the crown and the bottom of the sewer? At the head it is 18 inches high; then the sewer gradually increases to 4 feet 9 inches.
125. You propose to leave the balance of the sewer open? Yes.
126. Without any side protection? We consider that the side protection should be done by the municipalities. In some cases, where the ground is open, we have been obliged to put up fences. We have had to protect the channel against cattle. In most instances these sewers run between private properties which are already fenced in.
127. Are you of opinion that where there is vacant property it should be fenced off? Yes.
128. Would it not be a better job if the whole sewer were covered? It would then cost about £75,000. At the lower end of the sewer the work would be very heavy indeed, as we would have to construct there an arch 54 feet.
129. There would not be any great necessity for covering the outlet, but I refer to the other part? In some instances it would be very difficult to cover it up, because the ground would not permit of it. If we covered it up we should have to make the channel deeper. At present the water flows naturally into the water-course, and it should be the same with regard to a storm-water channel.
130. Do you take the creek as the basis of the work all through? Yes; and if we covered it up we should get into trouble in various ways. We should have to construct extensive inlets for water, and the whole work would be a sewer and not a storm-water channel.
131. *Mr. Neild.*] How many chains in length do you propose to cover on the Johnstone Estate? About 50 chains.
132. That will be at the rate of about £40 per chain? Yes.
133. Do you not think it would be worth while incurring so small an expense as £40 a chain in order to cover in the Newtown branch, for instance? There is a greater drainage area on the Newtown branch. It commences with a width of 5 feet and a depth of 3 feet 6 inches, and it ends with a width of 6 feet 10 inches and a depth of 4 feet 11 inches. The expense of covering the Newtown branch would, therefore, be much larger.
134. Do you propose to protect the upper end of the covered-in portion with gratings, to prevent children from being washed in? Iron gratings are put up at all the inlets.

THURSDAY, 9 *JUNE*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. James Hoskins.	John Cash Neild, Esq.
The Hon. Frederick Thomas Humphery.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.

The Committee further considered the proposed Storm-water Sewers discharging into Johnstone's Bay.

Robert R. P. Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and further examined:—

R. R. P. Hickson, Esq. 9 June, 1892.

135. *Chairman.*] Do you desire to put in a plan showing the sections of the various portions of this storm-water channel? Yes.
136. Will you explain to the Committee the different sections? Starting from Newtown, there is a grade of 1 in 65, and the cross section is 5 feet by 4 feet. Then as far as the junction with the Stanmore branch the grade is 1 in 129, with a cross-section of 6 feet 10 inches by 4 feet 11 inches. Down to Parramatta Road we have a grade of 1 in 77·5, with a cross-section of 7 feet 9 inches by 5 feet 6 inches. To a point halfway between Parramatta Road and Chester-street we have a very steep grade of 1 in 41, with a cross-section of 7 feet 9 inches by 5 feet 8 inches.

137.

R. R. P. Hickson, Esq. 9 June, 1892.

137. Does that include the greater portion of the concrete channel? Yes. From the last point mentioned down to Booth-street we have a grade of 1 in 631·91, with a cross-section of 19 feet 8 inches by 6 feet 7 inches. From Booth-street to the outlet the grade is 1 in 1,697, with various cross-sections, as follows:—32 feet 6 inches by 6 feet 7 inches, 48 feet 10 inches by 6 feet 7 inches, and 54 feet 8 inches by 6 feet 7 inches. On the Stanmore branch we start with a grade of 1 in 42. In that length we have a cross-section of 18 inches, which consists of an earthenware pipe about half the distance. Then we come to the concrete sewer, 2 feet 4 inches in diameter, covered in as far as Percival-street. Then there is a grade of 1 in 63, with a concrete sewer 2 feet 6 inches in diameter. From there to about half-way to the junction there is a grade of 1 in 51·147, with a cross-section of 3 feet 2 inches. From there practically down to the junction we have a grade of 1 in 73·292, with a cross-section of 3 feet 9 inches. At the junction we get 4 feet 9 inches in diameter. When we get into the main line the cross-section is 6 feet 10 inches by 4 feet 11 inches.

138. Have calculations been carefully made as to the quantity of water which will come down? The data is the same as is taken for the whole sewerage for the city. I am considering the question of putting in flood-gates on the lower level, with a view of confining at high-water a certain quantity of water which will discharge at low-water, and keep the sewer flushed out.

139. Have you not a large amount of water available in the water-mains without using salt water? It is to save the fresh water. The salt water will cost us nothing.

140. *Mr. O'Sullivan.*] Why has a deviation been made in the old bed of the creek? It has been done for two reasons: First of all, it is a shorter route, and it costs less. Secondly, it is easier to construct in this way, because it allows the old channel to be utilised to carry off the water while we are carrying on our operations.

141. Will the old bed of the creek be filled in when the new channel is made? Yes.

142. *Mr. Neild.*] Will the depth of the channel in the level portion of the work be sufficiently great to prevent the adjacent land from being flooded? We keep the sides of the sewer sufficiently high to prevent that.

143. What is the height above high-water mark? At the outer end it will probably be 2 feet 3 inches, but further up it will be about 2 feet.

144. Do you think that 2 feet will be sufficient to carry off the water when a large body is coming down? Yes; because there is such a good get-away. Being so close to the bay it gets away very rapidly.

William Rigg, Esq., Mayor of Newtown, sworn, and examined:—

W. Rigg, Esq. 9 June, 1892.

145. *Chairman.*] Are you Mayor of Newtown? Yes.

146. Has your Council had under consideration the construction of this proposed storm-water channel? Not in an official way.

147. Having had this scheme explained to you, do you think it will be a benefit to the borough of which you are Mayor? Yes, if you give us access to it.

148. Will you explain what you mean by that? The storm-water sewer starts with an opening of 5 feet by 4 feet. I consider that is sufficient for all purposes; but our access to that is only by means of a pipe about 3 feet by 3 feet—that is, the culvert under the railway line. All the storm-water from the area from Missenden Road down to the station by a subway, and down by Judge Foster's property, finds its way to this particular culvert under the railway line, and that is the principal cause of all our trouble with storm-water at Newtown.

149. Do you think there should be a larger culvert there? Yes; we want to get access to the storm-water channel.

150. Under whose jurisdiction is that culvert? I take it that it is under the jurisdiction of the Railway Commissioners.

151. As far as the scheme itself is concerned, do you think it is sufficient and desirable? Yes. I should like to see the sewer covered.

152. On behalf of your Council, can you give your assent to it? Yes.

153. The cost is estimated at £49,352, which will be in addition to the estimated cost of the Western Suburbs Sewerage Scheme. It may, or may not, cause an increase in the sewerage rate. Do you think that your Council, or the people in your district, would be prepared to face a possible increase? Yes; if they give us the full use of it. At present we will not have proper access to it.

154. *Mr. Humphery.*] What length of drain do you think will be necessary in order to give you proper access to this proposed channel? About 130 yards.

155. *Mr. O'Sullivan.*] With regard to a probable increase in the sewerage rate, have you taken the opinion of the people on the matter? I have consulted with one or two in connection with the Council, but no public meetings have been held on the subject, and to my knowledge no public meetings were held in connection with the general sewerage scheme.

156. As far as you know, you cannot say that the people will approve of the probability of having to pay an extra rate? There is nothing to prevent them objecting to it, and I have not heard of any objections.

157. It is not likely that the persons who will benefit by the storm-water channel will object? I do not think there is the slightest fear of Newtown objecting, provided they are given the full benefit of the scheme.

158. Do you think that the other people in the municipality will object? No.

159. Do you think they will be willing to pay an extra rate, even though they get no direct benefit from the work? I cannot pledge myself to that; but in my opinion they will not. The whole cost of this work to Newtown will be trifling, and it is of such importance that, personally, I cannot see where any objection can come in.

Llewellyn Charles Russell Jones, Esq., Mayor of Petersham, sworn, and examined:—

L. C. R. Jones, Esq. 9 June, 1892.

160. *Chairman.*] Are you Mayor of Petersham? Yes.

161. Has your Council had this scheme under consideration? We have held several meetings about the drainage during the last two years or more.

162. Do you think that this proposal will be of benefit to your borough? It will be a very great benefit indeed.

163. Has there been an intolerable nuisance at Stanmore owing to the stagnant sewerage water? Yes; it has been very bad for a long time.

164.

L. C. R. Jones, Esq. 9 June, 1892.

164. Will this proposal do away with that nuisance? Yes. It will make Stanmore pure at last.
165. On behalf of your Council, you can say that they look upon this as a necessary work which should be undertaken immediately? Yes.
166. Supposing it is necessary to increase the sewerage rate for this and similar works, do you think the people of your borough would be prepared to face the burden? I think the people ought to be prepared; but my experience of the ratepayers generally is that they do not like to pay any extra rates.
167. But, speaking as a representative man, you think they should pay up cheerfully, if necessary? Yes.
168. *Mr. O'Sullivan.*] Have you heard any dissatisfaction expressed with reference to this proposal? No; the public generally have been agitating on the subject. We have been corresponding with the Government for years past, and held several meetings on the subject.
169. *Mr. Davies.*] Was it through the action of your Council that it was decided to cover a portion of the sewer? I suppose it was through our Council, because we have been in correspondence with the Johnstones for a long time. It did not matter to us whether it was open or not, but the Johnstones proposed that it should be covered. We were going to spend a few thousands on this sewer ourselves.
170. Were there representations made through your Council? Yes.

Seaforth J. Procter, Esq., Mayor of Camperdown, made an affirmation, and was examined:—

S. J. Procter, Esq. 9 June, 1892.

171. *Chairman.*] Are you Mayor of Camperdown? Yes.
172. What are the boundaries between your borough and the adjacent ones? The boundary between Camperdown and the Glebe is the Orphan School Creek. The boundary between Camperdown and Newtown is a line drawn from Bligh-street southwards to the corner of Kingston Road.
173. Will your borough have a larger drainage area into this sewer than any of the others? Yes.
174. Do you think that this scheme will meet your requirements? Yes; but we would certainly have preferred it to have been covered in.
175. Is the larger portion of your borough already connected with the sewerage system proper? Yes.
176. So that the drainage from your municipality will be storm-water only? Yes; Camperdown has already spent something like £5,000 upon sewers leading into Johnstone's Creek.
177. Did not the Government also assist you in that? Yes. Some few years ago we contributed £100 towards concreting a portion of the channel at Johnstone's Creek, between Booth-street and Camperdown.
178. Has this scheme been before your Council at all? The present proposal has not, but the question has been before the Council several times, and we have sent several deputations to the Government on the subject.
179. Supposing it is found necessary in future to increase the sewerage rate in order to provide for the cost of these storm-water sewers, do you think the people of your locality will be inclined to object? I think they would be perfectly willing to pay the increased cost, though they do not like to pay increased rates.
180. What is your reason for wishing to have this sewer covered in? We think it ought to be covered as far as the Parramatta Road. It would be an advantage to the borough, and it would be kept cleaner.
181. Is it not sometimes easier to keep open sewers clean? That is a matter of opinion. I should think that a lot of extraneous matter would fall into an open sewer.
182. Would not a covered-in sewer add considerably to the cost? I do not think that question has been considered by my Council. I do not think the ratepayers would be willing to pay the cost of covering in the very wide part of this sewer.
183. May we take it that, on the whole, the borough of Camperdown approves of this work, and would urge it forward? Yes; except the portion of Johnstone's Creek which has been concreted by the borough of Leichhardt, by our borough, and by the Government; it is a seedplot of disease. The boroughs of Leichhardt and Camperdown keep the concreted portion clean.
184. Did that work do away with a very great nuisance? Yes; but the nuisance has only been transferred lower down, and to some extent higher up.
185. *Mr. Davies.*] Is there an arrangement by which the borough of Leichhardt and your borough keep the existing drain clean? Yes. We do it every alternate year. We include it in the scavengers' contract.
186. Was there a large amount of sickness, and fever, and death, before this concrete drain was put in? It was very bad.
187. Has that concrete drain been a great boon to all the municipalities there? I should think so. I know that it has improved the health-rate of our borough.
188. The present proposal is that a similar drain, only on a larger scale, should be made? Yes.
189. What is the length of the concrete drain already laid down? I do not know; but it would not exceed a quarter of a mile.
190. Do you think that this proposed sewer will be dangerous unless it is covered in? I think it will be. If it is left open it certainly will be very dangerous. It seems to me that it will be an unfinished work if it is left unfenced and open.
191. Will it jeopardise the lives of the people in those municipalities if the sewer is not fenced in? I certainly think it will be a source of danger if it is not fenced in where it crosses streets.

Robert R. P. Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and further examined:—

R. R. P. Hickson, Esq. 9 June, 1892.

192. *Chairman.*] Where the channel will cross streets, do you recognise that there is a responsibility on your part to afford protection? Yes; we cannot get through a street without making proper provision for getting across it.
193. *Mr. Neild.*] Is it covered in, and the sides of the covering protected? I am speaking generally of storm-water channels. There is only one case where we have had actually to erect a bridge; that was at Parramatta. In the present case there is a bridge at the Parramatta Road, and we do not cross another street until we reach Booth-street. There is a bridge there. We provide for a crossing at another street, and that is all that is necessary.

William Bullock Wragge, Esq., Mayor of Leichhardt, sworn, and examined:—

W. B. Wragge, Esq. 9 June, 1892.

194. *Chairman.*] Are you Mayor of Leichhardt? Yes.
195. Have you been a member of the Municipal Council for some years? For four years, and this is my first year as Mayor.
196. Do you think that this storm-water channel is a necessary work? Yes.
197. Does your borough largely contribute to the storm-water and sewage which runs down the present channel? Yes.
198. Are you connected with the sewerage system proper? Not yet.
199. Will you be embraced within that scheme? Within some portion of it.
200. Do all your household slops at present run down to the gutters? Yes.
201. Is the night-soil dealt with otherwise? Yes; it is taken away in punts.
202. Is your Council at the cost of cleaning out the present sewer at Johnstone's Creek, from Parramatta Road down to Booth-street? Yes; there is an arrangement between our borough and Camperdown.
203. Does the cost amount to very much? No; it only involves a scavenger going down the sewer occasionally.
204. Has this project been before your Council? Only in a casual way.
205. Do you think that your opinion on the subject is shared by the aldermen, that it is desirable to go on with this scheme? I think that the scheme will meet with the general approval of our Council.
206. Even if it is necessary to pay an increased sewerage rate? The Council would have no objection, but I think there would be an objection on the part of the ratepayers.
207. *Mr. Davies.*] Was there a large amount of work done four or five years ago in your district by the unemployed? Yes.
208. Where does Helsarmel Creek empty itself? Into Long Cove Bay.
209. Is that a concrete drain, such as is now proposed? Yes; on a much smaller scale.
210. Has that been of service to your municipality? It has been of very great service. This proposed Johnstone's Creek channel will benefit the eastern part of the municipality, and there will be a catchment area of about 200 acres which will be benefited.
211. In view of the advantage which will be gained, do you anticipate that there will be any objection to an increased sewerage rate? Personally I have no objection, but I do not know what the ratepayers might say.
212. *Mr. Humphery.*] Have you any doubt as to the proposed work being absolutely necessary? I think it is very necessary, but I think it should be protected by a fence or by some other means. It will be very dangerous to leave an open culvert.

William George Yeates, Esq., Mayor of Glebe, sworn, and examined:—

W. G. Yeates, Esq. 9 June, 1892.

213. *Chairman.*] Are you Mayor of the Glebe? Yes.
214. Have you been connected with that borough for many years? For about nine years. This is my first year as Mayor.
215. Has your Council repeatedly had under its notice the desirability of dealing with the sewage and storm-water which runs into Roselle Bay? It has not come before our Council as a matter of business; but it has been talked over many a time. The particular complaint is with regard to the low-lying land.
216. Has there been an improvement of late years by reclaiming a portion of Roselle Bay? Yes; but the nuisance is still very great.
217. Do you think that it is desirable that the scheme now before the Committee should be carried out? Yes. It is very desirable for the health of the inhabitants of all the municipalities in the neighbourhood.
218. Do you think that your Council will agree with your views? To a certain extent. They would agree to my views as to the sewer being constructed and carried out; but I do not think they would agree to any extra taxation. The Borough of the Glebe has been at very great expense in constructing the Orphan School Creek drain. The Borough of Camperdown, which ought to have borne a part of the cost, never had any money, or they were not willing to part. That work cost us something like £2,000. From about 50 yards to the south of Pyrmont Bridge Road we have built a concrete drain down to Johnstone's Creek. We have also been at great expense in constructing other drains leading to that drain. That is the reason why the ratepayers would object to incurring any more expense. Only a very small portion of our borough would drain into this proposed channel.
219. If this storm-water channel is not constructed, will not all your drains and gutters create a greater nuisance than ever at your back-door? No; because we shall be able to connect very shortly with the sewers.
220. Are you not aware that the storm-water channels are really a part of the sewerage scheme, and that you could not have that scheme without storm-water channels? I am aware of that. We have never received any great benefit from Johnstone's Creek, inasmuch as there is only a dyke dug through the low-lying marshy land. There is not a proper sewer constructed, such as the one from Parramatta Road downwards.
221. At low water, even in cool weather, is not the smell very offensive on the flat ground, and very detrimental to health? Yes; more particularly as the sewage lodges in the lower part. Where the concrete drain is made, all the sewage glides down rapidly; but then it lodges in the low-lying ground.
222. That is all the more reason why a smooth concrete channel should be carried down to this bay? Yes.
223. It is proposed to erect a sea-wall at the outlet at a cost of £35,000, and to fill up the space inside with silt. To what purpose do you think that land should be devoted? I think it should be made a park.
224. Do you think the Government should sell it, so as to ease the burden on the ratepayers so far as the sewerage rate is concerned? A portion of it might be sold.
225. Is it your opinion that land which has been reclaimed with silt, and sometimes with household garbage, should not be built upon? Yes. I think it would be much better for the health of the inhabitants if such reclaimed land were turned into a park.
226. Does your Council consider that this work should be carried out as soon as possible in the interests of health? Yes.
227. *Mr. O'Sullivan.*] During the time you have been in the Council has it come to your knowledge that there has been an epidemic of disease owing to the fœtid water in Johnstone's Creek? No.

W. G. Yeates, Esq. 9 June, 1892.

228. Do you know that the ratepayers of the Glebe would be inclined to pay an extra rate on account of this work? I do not think they would be inclined to do so, because we have already incurred so much expense. We have borrowed and spent over £40,000, principally in constructing drains and sewers.
229. Have you heard any dissatisfaction expressed at this work? No; I am only expressing my own belief.
230. *Mr. Humphery.*] What is the income of your borough? £10,500 from all sources.
231. The interest on the proposed expenditure would be about £1,700 a year. That would be spread over several municipalities, so that there would be only £200 or £300 a year for your borough. Do you think they would be prepared to bear that burden to get rid of the existing nuisance? I do not think so.
232. Would not your borough be benefited by the creation of a park on this reclaimed land? Certainly. The ratepayers' health would be benefited by it.
233. Would it not be worth while to pay a trifle in order to obtain a valuable recreation ground? Personally, I think it would be.
234. Supposing this sewer had been made, would you not have had to construct the Orphan School Creek works all the same? We should have had to spend a part of it, but in this case we had to spend the whole of it. I think the Camperdown Borough should have paid some of the money which we had to pay.
235. Is there any doubt that the ratepayers of your borough would benefit considerably by this work? I have no doubt that it will be a very great benefit, and it is very much needed.
236. *Mr. Davies.*] Are you aware that the rates which would be imposed for sewerage works will be imposed by the Water and Sewerage Board? Yes.
237. Are you aware that the rate will not affect your actual income in any way? It will not affect our income, but it is unjust that we should have to pay so much more than other boroughs, which will receive more benefit from the work.
238. Are you not aware that the rates are imposed uniformly on all boroughs in the city and suburbs on the assessed value of the property? Yes.
239. That being the case, will not the City of Sydney have to bear its proportion of the cost just as well as your borough? I was not aware of that.
240. Are you not aware that, by the extension of a general system of sewerage, a larger income will be obtained? Each borough will be benefited by the general system.
241. Have you not urged that the great objection to this work is that you will have to pay more than other boroughs? I do not object. I have simply stated that it is my opinion that the borough of the Glebe would not like to have to pay any more expense. Personally, I am satisfied that the work is necessary, and that it ought to be carried out. I think that the Council on the whole, and the ratepayers of the Glebe, will object to the additional expense.
242. Has not the Glebe Council constructed an open drain along the Orphan School Creek, which empties itself into Johnstone's Creek, so that at present the filth and sewage from the Glebe goes into the Municipalities of Camperdown and Leichhardt? Yes; the creek divides the three municipalities.
243. Then, why should you object to the expenditure which will be incurred for taking away the sewage from your own and other municipalities? I do not object. I am only expressing my opinion that the people of the Glebe will be dissatisfied if extra taxed.*

Joseph Davis, Esq., M. Inst. C.E., Assistant Engineer, Sewerage Branch, Department of Roads and Bridges, sworn, and examined:—

J. Davis, Esq. 9 June, 1892.

244. *Chairman.*] Are you Assistant Engineer, Sewerage Branch, Department of Roads and Bridges? Yes.
245. Are you in charge of the actual construction of the various works? Yes.
246. Have you had under your jurisdiction the whole of the out-door works connected with the sewerage system? Yes.
247. Are the surveys more particularly done under your immediate jurisdiction? Not the surveys. I have to do with the estimates chiefly, and to assist generally in designing the work.
248. Are you familiar with the whole area affected by this scheme? Yes, and with the estimate of cost.
249. Do you think the estimates are likely to be exceeded? No; I think they are fair, unless prices go up.
250. Have you had large experience in connection with similar works? Yes.
251. In the light of your experience you do not think the estimate for this work will be exceeded? No.
252. Have you visited this district frequently in summer and winter? Yes.
253. Is it one of the worst spots about Sydney? Yes. It is so bad that last summer the Minister for Works directed that £150 should be spent in cleaning out the creek. I cleaned it out, and improved it below Booth-street.
254. It is very flat there? Yes.
255. Will you not be faced with the same difficulty when this sewer is constructed, as the grade is the same? No, I do not think so, because there will not be so much friction. Instead of loose stones and earth there will be smooth concrete sides and floor.
256. In computing the section of this drain have you made liberal allowance for abnormal rainfall? Yes.
257. You have heard the evidence given by the Mayor of Newtown with regard to the difficulty there will be in taking advantage of this sewer? Eight years ago I made a survey of the creek discharging into the culvert of which the Mayor spoke. I did not do anything beyond that; but I know, as a matter of fact, that the Department contributed the cost of the pipes, and the Newtown Council laid them. Those are the pipes above the culvert which the Mayor of Newtown referred to. I am under the impression that the pipes were 24 inches in diameter. The Mayor of Newtown has stated that the culvert is about 30 inches in diameter. It is only fair to assume that if a 24-inch pipe was large enough above the culvert, then the culvert itself is large enough.
258. You then arrived at the conclusion that a 24-inch pipe was necessary? It is 21 inches or 24 inches.
259. And the Borough Council accepted those pipes and placed them in the ground, thereby confirming your estimate of the quantity of water flowing over a given area? Exactly.
260. Have you observed, since that culvert was put in, whether it is sufficient or insufficient? I have not.

261.

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* NOTE (*on revision*):—At the time I gave my evidence I believed that a special rate was to be made on the municipalities interested in the storm-water sewer, in addition to the usual sewerage rate charged. I regret that I made the mistake.—W. G. YEATES.

J. Davis, Esq. 9 June, 1892.

261. If it is sufficient for the purpose, where is the necessity for making your drain twice as large? A very large quantity of water comes under the railway bridge. The stream coming through the culvert is supplemented by three other streams, one from Liberty-street, and two others from the streets east and west of Liberty-street, on the northern side of the railway.
262. So far as the work under our consideration is concerned, do you think that ample provision is made for all the water that can possibly come down? Yes.
263. Do you think that any little block between that and the higher land can be dealt with by the municipal authorities, or the Railway people? I should imagine so.
264. Did you compute the cost of the covered-in portion of the channel running through Johnstone's Estate? It was done in conjunction with me. I supplied the prices.
265. Do you think that £2,000 will cover the extra cost? Yes, fully.
266. Has anything been allowed for supervision? The actual work will not amount to £2,000, so that there is ample allowance for office expenses. We allow 10 per cent. for contingencies, which includes office expenses.
267. Do you think there will be any serious nuisance arising from the level portion running over the present bay? I do not anticipate any.
268. Do you agree with Mr. Hickson's idea of erecting flood-gates? I do not think flood-gates will be necessary. However, they would be a safeguard. We have had experience at Rushcutter's Bay. There is a tidal channel there, and we have found that if the outlet to the channel is kept clean the flood-waters carry away any silt.
269. In view of the sewers proper being erected, it is only a matter of time when all offensive matter will go into those sewers? Yes.
270. It will be necessary to dredge in front of the retaining-wall? Yes. I think that is the case wherever a sewer or channel discharges into the harbour.
271. There must be at least 18 inches or 2 feet of water below the bottom of the outlet? Yes.
272. Will that have to be dredged periodically? Yes. We find that a few days' work once in twelve months at Rushcutter's Bay keeps the whole thing right.
273. Are the plans and everything ready for calling for tenders? For the upper portion only.
274. How long do you think it will take to complete the work? Supposing we get instructions to commence at once, we may get it completed in twelve months.
275. Where existing drains run into the creek, will you make a connection? Yes; we always do that in the case of storm-water sewers.
276. Will private individuals, who now drain slops or storm-water into Johnstone's Creek, be afforded an opportunity of doing so when you make this work? We will leave pipes for them to make a connection. We shall give the same facilities as exist at present, without any cost to private individuals.
277. Has the fencing of the sewer been considered? No.
278. Not even where it crosses streets? Of course, that is always done.
279. Is the span of the tramway bridge sufficient for your sewer? Yes; the bridge was specially designed to suit this channel. The Railway Department were communicated with at the time.
280. Is it absolutely necessary that the channel should be so wide as 51 feet at the lower part? Yes, considering that it is a tidal channel.
281. *Mr. O'Sullivan.*] Did you design this scheme? It was designed in conjunction with me. Mr. Bagge and myself confer on such matters.
282. From a professional point of view, is it imperatively necessary that the channel should be of these dimensions? Yes. I could not recommend anything smaller.
283. *Mr. Humphery.*] The Mayor of Newtown considers that the sewer should be extended 150 yards, so as to take the storm-water from the southern side of the railway. What will be the cost of that extension? I do not suppose it would cost more than £500, but it would be especially costly, on account of passing under the railway embankment, and I judge that the Railway Commissioners will be the proper authorities to do such work. If they have not provided a sufficient waterway they should do so.
284. You have heard the evidence of Mr. Rigg, and have examined the locality? Yes; that was eight years ago.
285. You heard him say that the existing culvert is 3 feet, while you make provision for a channel 5 feet by 4 feet. Do you not think that it would be necessary, in order to have an efficient system of storm sewage for that portion of Newtown, that Mr. Rigg's views should be carried out, and that the sewer you propose should be extended? I think that if there is a 3-foot culvert, and the water can get into that, it should be sufficient. The water will come into our sewer at the upper end from the railway bridge, and east and west on the north side of the railway, in addition to that coming through the culvert in question. There are four directions from which the water will come into this sewer, so that the water which comes through the culvert is supplemented by those three other streams.
286. Do you make provision not only for the waters which come through this 3-foot pipe, but also for the water from three other directions, and is that the reason why your sewer is so much larger than the railway culvert? Yes. If that culvert is 3 feet, I should imagine that it should be large enough, and I should be rather disposed to think that the water cannot get into it.
287. Will you explain? The water has to pass through gullies from the street surface into the sewer, and if there are not sufficient openings into the sewer the water cannot get into it.
288. Is that work which should devolve upon the municipality? Yes.
289. *Mr. Davies.*] In the existing storm-water drain from Parramatta Road down to the bay, are there a number of pipe-connections? Yes.
290. Do you know the exact number? No.
291. What do you propose to do with those pipes? To connect them with the channel as we construct it.
292. Will you leave the municipalities to make the connection on the other side of the junction? Our practice has been to put in a junction and leave the municipalities to construct the gully. We consider that is part of street and road work.
293. Would it be possible to construct gully-shafts on the sides of the proposed open sewer? I am referring to where it crosses the streets.
294. What will be done in the case where pipe-drains come down from properties abutting on the side of the channel? We will insert a pipe in the concrete, and in that way leave an opening in the side of the channel.

295.

J. Davis, Esq. 9 June, 1892.

295. Where will the connection be made with gully-shafts? There are no gully-shafts, except where we cross the streets. At Parramatta Road there will be a necessity for gully-shafts at either side of the channel.
296. *Chairman.*] Are you aware that, in addition to the 2-foot pipe which you place near the railway-station at Newtown, there is also a 21-inch pipe? No.

William Rigg, Esq., Mayor of Newtown, sworn, and further examined:—

W. Rigg, Esq. 9 June, 1892.

297. *Chairman.*] The Committee desire some further explanation as to the quantity of water coming from the Newtown side of the railway to the south, and the facilities given for conveying that water? There is a 24-inch pipe and also a 21-inch pipe.
298. What are the boundaries on the north side of the district which is drained to the south, and through the pipes you have referred to? There is an area of about 40 acres. The boundaries of the district are as follow:—From the Missenden Road along the Newtown Road proper to the existing Newtown station. It lies on the western side of the road; it goes from the railway bridge, along the railway line to 100 yards on this side of the old station, where it passes under the culvert to the south side of the line. The culvert there is a large one, and is quite sufficient. From there it winds at the back of the old station, through Judge Foster's property, into Gladstone-street. That is where the 24-inch pipe starts. The 21-inch pipe starts a little further down. I think there is access to both of them from this particular gully-shaft.
299. So that the 24-inch pipe and the 21-inch pipe lead into the railway culvert of 3 feet? Towards it, but not directly into it. They lead to Trafalgar-street, in front of the railway culvert; but at Gladstone-street the trouble commences. That is where the two pipes are flooded by the storm-water, and these are not sufficient to carry the storm-water.
300. Then it comes to this, that the block is at the 24 and 21-inch pipes, and not at the 3-foot railway pipe? After these pipes are blocked, the water takes possession of the street, and finds its way down an open passage of 4 feet, which carries a tremendous body of water, and it blocks the culvert. It is the discharge from the two pipes, and the surface water above, which blocks this particular culvert. The expression of opinion which has been given, that some of the water would go under the bridge, is not in accordance with my observation—I never saw it go round the bridge. I wish to bring this matter under the notice of the Committee before I assent to the proposal on behalf of Newtown.
301. Could you not divert some of the water under the railway bridge, and also provide drainage in the next street? There is not sufficient fall. We also get a great deal of surface-water from Petersham.
302. Is it not possible to intercept the water from Petersham and send it into this proposed storm-water channel? We have done all we could in that respect. We have only recently put in cube crossings to carry out that object. Notwithstanding that, I have seen the culvert under the railway blocked.

Joseph Davis, Esq., M. Inst. C.E., Assistant Engineer, Sewerage Board, Department of Roads and Bridges, sworn, and further examined:—

J. Davis, Esq. 9 June, 1892.

303. *Chairman.*] You have heard the explanation given by Mr. Rigg with reference to the flooding of properties, owing to the insufficient get-away on the southern side of the railway. Do you consider that provision to meet that difficulty should be made by the council interested, or do you think it is part of the work which should fall upon your Department? Assuming that there is a 24-inch pipe and a 21-inch pipe discharging into a 3-foot culvert, the 3-foot culvert would have about the same capacity as the two pipes together.
304. But if the 24-inch pipe and the 21-inch pipe were not sufficient, and the neighbouring property is flooded, whose duty is it to deal with the matter—your Department or the Municipal Council of Newtown? The Municipal Council, of course
305. At all events, your storm-water channel from where you start is quite sufficient to take all the water that will come into it? Exactly.
306. The Municipal Council can provide as they like for their wants when you have carried out your work? We have provided for 112 acres at the head of our sewer, and that is sufficient.

[Two plans.]

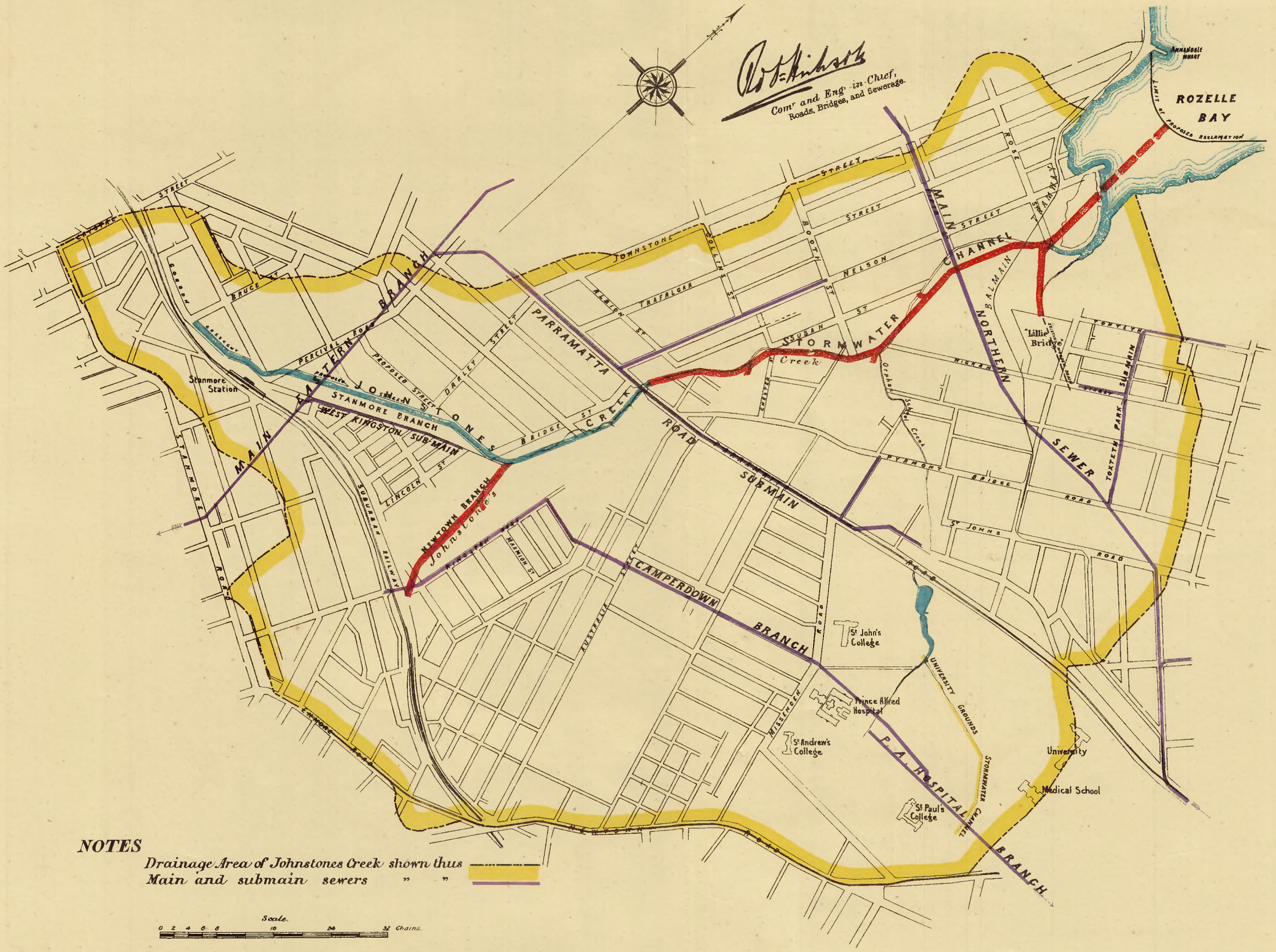
Sydney: Charles Potter, Government Printer.—1892.

40—C

PLAN I.

SYDNEY & SUBURBS STORMWATER DRAINAGE

JOHNSTONES CREEK STORMWATER CHANNEL



NOTES

Drainage Area of Johnstones Creek shown thus ——

Main and submain sewers " "

Scale.
0 2 4 6 8 16 24 32 Chains.

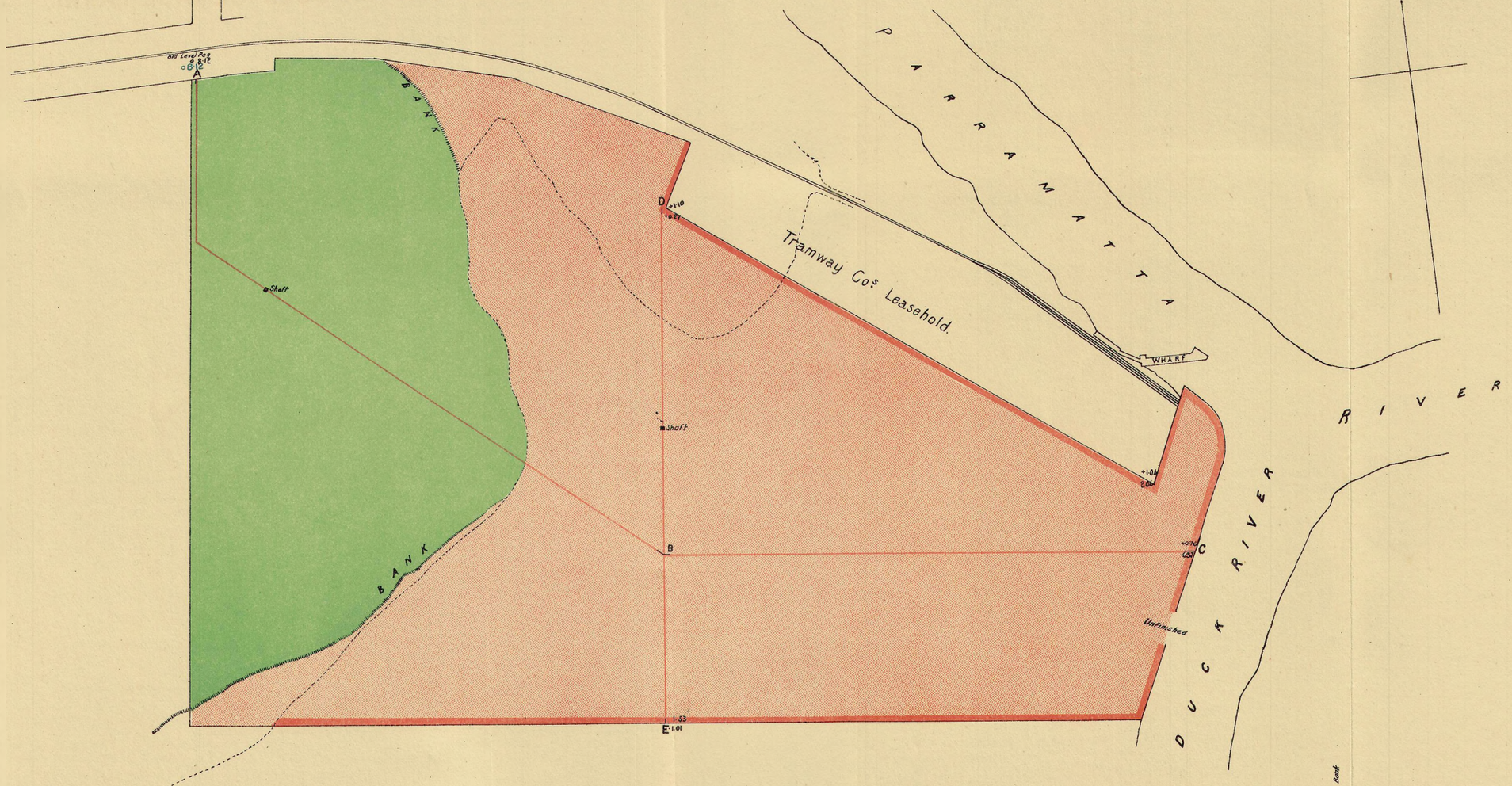
(Sig 40).

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

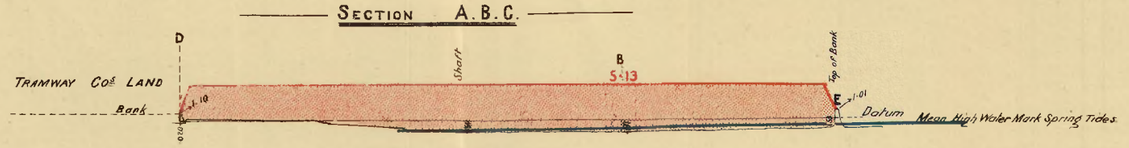
PLAN II.

PARRAMATTA SEWERAGE.

Mr C.H. STAYTON'S PLAN AND SECTIONS OF PROPOSED SEWAGE FARM.



SECTION A.B.C.



SECTION D.E.

Scale

2 1 0 2 4 6 8 10 Chs.

Scale

10 5 0 10 20 30 40 50 Ft.

Geo. H. Stayton.
Mr. Inst. C.E.
August 9th 1892.

(Sig 49)

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE, APPENDICES, AND PLANS,

RELATING TO THE

PROPOSED SEWERAGE WORKS

FOR

PARRAMATTA.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER

1892.

MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable William Henry Sutton, Vice-Chairman.
The Honorable James Hoskins.
The Honorable Frederick Thomas Humphery.
The Honorable Andrew Garran, LL.D.
The Honorable John Davies, C.M.G.

LEGISLATIVE ASSEMBLY.

Jacob Garrard, Esquire, Chairman.
Thomas Thomson Ewing, Esquire.
William Chandos Wall, Esquire.
William McCourt, Esquire.
John Cash Neild, Esquire.
Edward William O'Sullivan, Esquire
Charles Collins, Esquire.
Henry Dawson, Esquire.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SEWERAGE WORKS FOR PARRAMATTA.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of constructing sewerage works for the town of Parramatta," have, after due inquiry, resolved that it is not expedient the proposed sewerage works should be constructed, for the reason that in the opinion of the Committee the sewage farm included in the proposed works is too small for the purpose, and the sewage should be dealt with at the proposed pumping station at Clay Cliff Creek, by a system of precipitation and filtration or other effective modern process; and in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—

1. The proposed works are designed to drain an area of 1,383 acres, $803\frac{1}{2}$ of which are on the north side and $579\frac{1}{2}$ on the south side of the Parramatta River, but for the present it is intended to provide for the sewerage of only 929 acres, 421 on the north side and 508 on the south side of the river. The works consist of main, storm-water, and subsidiary sewers, a pumping station, and a sewage farm. From a main outfall sewer, calculated to discharge the sewage of the prospective population of Parramatta upon the area of 1,383 acres, there extend four branch sewers—south-eastern and south-western, north-eastern and north-western. The south-eastern, 60 chains long, and designed to drain 285·59 acres, leaves the main sewer at Harris-street, and extends generally in a south-westerly direction along Harris-street, Hassall-street, Wigram-street, Kendall-street, Station-street, and Junction-street to Sydney Road. The south-western branch, 51·15 chains in length, and intended to drain 164 acres, extends from the main sewer at the intersection of Smith-street with Phillip-street, along Phillip-street and Marsden-street to Aird-street. The north-eastern leaves the main sewer at the same point as the north-western branch, and runs easterly along Pennant-street to Elizabeth-street, a distance of 12 chains; thence along Brickfield-street, a continuation of Elizabeth-street, to Albert-street, a further distance of 28 chains, the area drained being 221 acres. The north-western branch, leaving the main sewer at its northern end, runs westerly along Pennant-street to O'Connell-street, and thence generally northerly along O'Connell-street, Grose-street, Fleet-street, and New-street to its termination at Dunlop-street. The length of this branch is 78·1 chains, and the area drained is 200 acres. In addition to the north-eastern branch sewer proposed in the scheme as it is before the Committee, it is intended to provide a junction in the main channel at Harris-street for a future branch which will cross the river at Harris-street. Official description of the proposed works.

street bridge, and drain an area of 382½ acres on the north-eastern portion of the town. The main outfall sewer commences at Pennant-street on the north side of the Parramatta River, and passing along Sorrell-street, crosses the river into Smith-street, by way of which street it proceeds to Phillip-street, and then along Phillip-street to Charles-street, down Charles-street to George-street, and thence along George-street to a point at Clay Cliff Creek, near the tramway, where a pumping station is to be erected. This outfall sewer will at the pumping station end be oval in shape, 4 ft. x 2 ft. 8 in. in size, internally, and built of brick and concrete. From Harris-street to Smith-street the size of the sewer will be reduced to 3 ft. 3 in. x 2 ft. 2 in. From Phillip-street it will consist of 24-in. diameter iron pipes. The gradient is from 1 in 500 to 1 in 750. The pumping station will be fitted with machinery sufficient to deal with the sewage from the present population, and will pump the sewage into a delivery main through which it will flow to an overground receiving tank, constructed of iron or concrete, upon the north-west part of the sewage farm. From the tank the sewage will be discharged into pipes laid along the lines of roads and provided with valves from which the various filter-beds can be flooded as required. The area of the sewage farm is at present 40 acres, but by reclamation an additional 22 acres will be obtained, making a total of 62 acres. The situation of the farm is at the point of junction of the Parramatta and Duck Rivers, one and a half to two miles distant from the thickly populated parts of Parramatta, three-quarters of a mile from the nearest habitation in the municipality of Granville, and about a mile and a half from the centre of population in Granville. The 40 acres which have been resumed consist of clay and sand, with a large proportion of the former. The additional 22 acres will be formed of river sand and silt, dredged from the Parramatta River or from Long Cove, and distributed by sand-pumps over this area for reclamation purposes. The western portion of the total area is above spring-tide level; the eastern portion, comprising about one-third of the whole, is below mean high-water level, but enclosed with fascine embankments it will be filled in above highest spring-tide, after which it will be divided by raised roads running north and south and east and west. Owing to a large proportion of the soil of the farm being denser than is desirable, it may in time, it is stated, become necessary to lay 4-in. diameter agricultural drain-pipes at a suitable depth below the ground, underneath and along the centre lines of the embankments, dipping towards the lines of roads along which they would discharge the effluent into glazed stoneware pipes laid below the roads with such gradients as may be determined for the purpose of discharging the effluent into the Duck River. Cereals and other crops would be grown upon the farm, and practically it would be dealt with as is done at Webb's Grant, Botany, in connection with the drainage of the western suburbs of Sydney.

Estimated cost.

2. The estimated total cost of the proposed works is £75,926, of which amount £16,000 has already been spent or arranged for. This £16,000 represents among other things the cost of the land resumed for the sewage farm, the fascine embankments for enclosing the portion of the farm now subject to the overflow of the tide, the construction of what is described as the Clay Cliff Creek storm-water sewer, and the estimated cost of the Brickfield Creek storm-water sewer, for which tenders have been invited. The total cost is divided over the several works in the official description of the scheme as follows: Main sewers, £42,926; storm-water sewers now under construction and cost of sewage farm, £13,000; subsidiary sewers, £20,000. The annual cost of the works is estimated at £4,268, which is made up as follows: Interest and payment of principle in sixty years at 4 per cent. on £76,000, £3,040; coal and stores for the engine-house, £162; wages and expense of working the sewage farm, £860; repairs to engines calculated at 5 per cent. on the total cost, £206.

The Committee's inquiry.

3. The Committee have examined a number of witnesses with reference to the proposed works, so that full information respecting the scheme should be before them; they visited Parramatta to acquaint themselves by personal inspection with the details of the scheme, and, accompanied by the Mayors of Parramatta and Granville, also Webb's Grant, Botany, the sewage farm connected with the Western Suburbs Drainage System; and they have had a report upon the proposed works prepared by an acknowledged authority upon methods for the disposal of sewage.

Position of Parramatta with regard to the proposed works.

4. There is no question of the necessity for the carrying out of an effectual system for dealing with the sewage of Parramatta. As will be seen from the evidence of the Under Secretary for Public Works, the unsatisfactory sanitary condition of the town has been the source of much trouble both to the Municipal authorities and the Government, and the President of the Board of Health and Government Medical Adviser states it is absolutely necessary that something should be done as the present practice of disposing of the sewage of the town is offensive and dangerous to health. The population of Parramatta is estimated at about 12,000, and the whole of the drainage, including that from the Government institutions in the town, is discharged into the river which, at times, becomes in consequence very foul and a serious nuisance. The Mayor of Parramatta describes the nuisance as intolerable, and undoubtedly it must be very bad. The proposed works are approved of by the Parramatta Municipal Council. They had not been considered by the Council collectively before they were under inquiry by the Committee, but, at the request of the Committee, the scheme was put by the Mayor before the Council, and a resolution approving of it was passed. The Council approves also, apparently, of the sewerage rate which, it will be necessary to impose for the purpose of ensuring the requisite repayments on the total expenditure upon the works. There is, however, some doubt as to whether the ratepayers will be able to bear this sewerage rate in addition to the taxation necessary to meet the existing indebtedness of the municipality. By fixing the time for the repayment of the cost of the works at sixty years, and taking the rate of interest upon the money at 3½ per cent.,* it is calculated that an annual rate of about 4 per cent. or £3,040 will be required, and adding to this the working expenses, £1,228, the total sum wanted per year is £4,268. The ratable value of property in the borough, including the Government institutions, is estimated at £93,244, and on this sum a rate of 10·97d., or practically, 11d. in the £ will be necessary to produce the required annual revenue. At present the residents of the borough pay for the pan system a charge which produces an income, as stated by the Mayor, of £1,531 per annum, out of which the Council makes a small profit. Taking the net cost of the pan system at £1,330, as it will be found explained in the evidence of the Under Secretary for Public Works, the additional sum required to be provided annually by the residents, in order to meet the total annual cost of the proposed new scheme, would be £2,938, or a rate additional to what is now paid of 7·5d. in the £. When the population of the municipality shall have so increased that the total drainage area of 1,383 acres shall be occupied to the probable limit, which would be equal to a total population of 48,400, it is estimated that the sewerage rate required would be 6d. in the £. This estimate is made on a calculated total expenditure of £111,321 upon the works proposed in the present scheme, and the extensions required for the larger population, and an estimated assessment value of £314,640, which together show an annual cost of £7,918.

Mode of administering the works when constructed.

5. Parramatta is the second municipality in the Colony for which a separate sewerage system has been proposed, and this circumstance has something to do with the question of payment of the amount necessary to provide for the interest and sinking fund in relation to the expenditure upon the works. The Metropolitan Water Supply and Sewerage Act controls all sewerage works within the County of Cumberland, and as Parramatta is within that county the proposed works will be administered under that Act. The policy favoured by the present Minister for Works, the Committee are informed, is that municipalities should manage their own affairs. The Parramatta Council desires that the works should be handed over to it. The Granville Borough Council considers that, if the scheme in any way concerns the population of Granville, that municipality should, in regard to the works, be placed on an equal footing with Parramatta.

Objections to the scheme.

6. Some objections to the scheme as put before the Committee have been made in relation to the sewage farm. The area to be used for the farm is within the municipality of Granville. The proximity of the farm to population is considered by the people of Granville, as stated to the Committee by the Mayor, to be very objectionable, and it is thought a site much further from any centre of population is desirable. At the same time a better site has not been proposed. It is merely suggested

* This calculation is put before the Committee by the Under Secretary for Public Works. The present borrowing rate exceeds 4 per cent.

suggested that from the large area of land in and around Granville, Parramatta, and other adjoining municipalities, some site could be obtained where the sewage of all these boroughs might be disposed of without becoming a nuisance to anybody. The Mayor of Ermington and Rydalmere also objects to the sewage farm, and is of opinion that, carried out as proposed, it would be a nuisance not only to his borough but also to the surrounding districts.

Special report on the scheme.

7. With a view to having before them, respecting the proposed works, the opinions of a competent and recognised authority on sewerage engineering, outside the service of the Government, the Committee engaged Mr. George Henry Stayton, M. Inst. C.E., to make an examination of the scheme, and to report upon it. A report upon "Sewage Purification," written by Mr. Stayton upon evidence obtained by him under instructions from the Minister for Works during a visit to England in 1891, and printed on the order of the Legislative Assembly, was before the Committee for their information. Mr. Stayton was first called as a witness in the inquiry, and his evidence, based upon the information then before him, indicated that in his opinion the scheme in some respects was crude and costly, and not likely to prove as efficient as it ought to be. These objectionable features related chiefly to the proposed sewage farm. The absence of details with regard to the levels of the out-fall works and the locality surrounding them prevented him from making definite statements respecting the sewage farm, but speaking generally, from the evidence given in the inquiry, it appeared to him that the area to be used for the purposes of the farm was of such a nature that it would probably become surcharged or water-logged with the sewage, and, under varying atmospheric pressures, would throw off offensive gases which would make the farm a nuisance. Mr. Stayton also expressed doubt as to whether the number of persons per acre, the sewage from which it was intended to dispose of upon the farm, was not very excessive. "Where broad irrigation, as it is called," he said, "is most successfully practised in England, it is, as a rule, on a very large scale, and not more sewage than that from 100 to 200 persons per acre is dealt with in that manner. Now, both at Parramatta and Webb's Grant, as far as I can see, the rate will be something like 800 persons per acre under the prospective population. While 800 persons to one acre may do very well at Webb's Grant, I question whether it would do at Parramatta—whether it would not be a failure." One of the most successful of modern systems of sewage purification, he pointed out, is precipitation combined with filtration or irrigation, and precipitation can be and is carried on within a very short distance of populated districts, without the slightest smell or annoyance, the effluent discharged being quite inodorous. He was requested to visit Parramatta and report upon the scheme to the Committee, and his report, with an accompanying plan, will be found published with the proceedings in the inquiry as an appendix. It represents that "no levels had been taken or sections prepared of the intended sewage farm," and that "the plan of the proposed farm did not show the entire extent of land intended to be included within the fascine banks." He had the necessary levels taken, and also ascertained that the total area of the farm would be about sixty-four acres. Having sunk trial shafts he found that the existing land on the proposed farm consists largely of clay, and "is certainly not fitted to effectively purify the crude sewage of the existing population, without expensive preparation and drainage in the first instance;" and, with regard to the swampy portion to be filled in, that before it "can be used with safety as a sewage filter it should be raised with suitable material to the level shown upon the sections." Mr. Stayton says also in his report, that "under all the circumstances, but more particularly in the absence of levels and sections, I fail to see how the estimated cost of the outfall and farm works can have been properly determined." Summarised, his conclusions as stated in his report are :—

(1) "That the proposed system of sewage disposal is crude and incomplete, and, if carried out, would prove objectionable, and cause serious nuisance.

(2) That the site of the intended irrigation or filtration area cannot be rendered thoroughly effective, without largely increasing the proposed outlay.

(3) That the purification of the sewage could be more efficiently ensured by adopting the International process of precipitation and filtration.

(4) That the establishment of such purification works within the municipal boundary at the intended pumping-station, or alongside the river immediately below the gas-works, would be practicable and more economical.

(5) That, if by reason of the land having already been resumed for the proposed farm at Duck River, it is considered necessary to adhere to the original proposal, I am strongly of opinion that such scheme should not be permitted unless the method of treatment is supplemented by the beforementioned process of precipitation and filtration (ferozone precipitation and polarite filtration), nor unless a satisfactory assurance be obtained that the reclaimed area will be filled in with suitable material to a height of at least 5 feet above mean high-water mark spring tides, as shown upon the accompanying sections."

The polarite filters, he explains, would not necessarily always be in use. "Irrigation from the tanks can be conducted in two ways: The supernatant water may be drawn off direct from the large tanks after precipitation, or the effluent may be used after passage through the filters. During the growing season, when rye-grass will greedily devour nearly any quantity of sewage, the water may be taken direct from the precipitation tanks; but when the land and crops have but little purifying power the filtering tanks would be constantly employed, the effluent being afterwards run over the surface of the land for aeration." The suitableness and proper design of the main and branch sewers in the scheme he does not question, "as they have doubtless," he says, "been designed upon the recognised principles of sanitary engineering." The cost of the scheme as estimated by the Department of Public Works for the present and prospective works will, in his opinion, have to be largely exceeded if the works of reclamation and drainage, and the precipitation and filtration tanks and appliances are carried out, the additional works at or below the pumping-station probably increasing the total outlay up to that point of the scheme by £60,000, whereas by dealing with the sewage at the site of the pumping-station by the International system of precipitation and filtration the additional cost might be kept down to £40,000. The Departmental estimate of the cost of pumping the sewage and then treating it on the sewage farm is £12,375. To make this part of the scheme effective, Mr. Stayton considers the expenditure must be increased by £18,000 or £20,000 to provide for precipitation and filtration. This would make the total cost of the works, from the pumping station to the farm, £62,375. On the other hand he explains that by dealing with the sewage at the site of the pumping station according to the International system the expense at and from that point might be kept down to £40,000. Examined on his report, Mr. Stayton said that not only had the scheme as suggested by him the advantage in capital outlay but the annual cost in connection with it would be less, as less pumping power would be required. He had based his estimates on what had been done with similar works in England, and he was convinced that the works could be carried out here for the cost stated without difficulty and without being a nuisance to anyone.

Reply to the Special Report.

8. In reply to Mr. Stayton, a report was laid before the Committee by Mr. R. R. P. Hickson, Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers. This document deals at considerable length both with the report written by Mr. Stayton and the evidence given by him. It represents that many of his statements are based on incorrect assumptions, that the International process of dealing with the sewage at Parramatta is quite unnecessary, that the Departmental estimate of cost is more favourable than his, and that the sewage farm will prove thoroughly satisfactory. The proposed farm is the important feature of the scheme, as it is this means of disposing of the sewage to which exception has been taken. Mr. Hickson says the advantages of the farm are:—

"(1st) Distance from populated area; (2nd) the utilization of sludge without cartage, in growing crops, and consequent revenue from the products thereof as a set off against expenses; (3rd) that if the Clay Cliff Creek site was adopted, probably no market for the poudrette produced at the precipitating works could be obtained; and (4th) the sewage farm is situated in a suitable position for receiving the drainage of Granville and other adjacent Municipalities, and is adjoined by low-lying ground, which, although useless for residential purposes, could be made available by reclamation for an extension of the farm."

A perusal of the evidence given before the Committee, Mr. Hickson points out, shows the intentions of the Department to be:—

"(1st) That the farm is to be worked by the same process for the purification of the sewage as that at Botany, which has been endorsed by Mr. Stayton; (2nd) that it is intended to fill up the low-lying portion of the farm to a depth of from 4 feet to 6 feet above high spring tide-level with sand, and not with river mud and silt, as stated by him; (3rd) that subsoil drainage has been anticipated; (4th) that as population increases, putting a greater tax upon the land, the Department anticipated the necessity for the treatment of the crude sewage by precipitation combined with downward filtration and irrigation; (5th) that the expense of filling, preparing, and draining the farm is included in the estimates, and that the

the cost will therefore not have to be added, as represented by Mr. Stayton; and (6th) that, judging from experience gained on the Botany farm and elsewhere, downward filtration and irrigation will meet all requirements at Parramatta, and that the additional expense proposed by Mr. Stayton of precipitating-tanks and polarite filter-beds is quite unnecessary."

Professional evidence for and against the scheme.

9. Mr. Hickson, in evidence, repeated the statements in his report, and Mr. J. M. Smail, Engineer for Sewerage, Metropolitan Board of Water Supply and Sewerage, who, at Mr. Hickson's request, was examined after visiting Parramatta, supported the Commissioner's contention that the scheme as put before the Committee was satisfactory, and would prove successful. Mr. Smail produced two bottles of effluent, the result of a test made of the filtering powers of the soil on a portion of the proposed sewage farm, and the sand on the sewage farm at Webb's Grant, Botany, and did not doubt that the sewage could be efficiently filtered on the farm at Parramatta. On the question as to the possible effects from the sewage farm upon the public health the Departmental scheme received the support of Dr. Manning, Medical Adviser to the Government, who said that from his experience of sewage farms, including that at Botany, he had no doubt there would be no danger to the public health if the sewage were treated in the way proposed. The manager of the sewage farm at Webb's Grant, who made the experiment which produced the two bottles of effluent, did not, he informed the Committee, consider the farm at Botany a nuisance to anybody, though the present system of treating the sewage there was not perfect. The test of the filtering powers of the two soils he had made by using two inverted bottles filled three parts full of soil—in one instance soil from Webb's Grant, in the other soil from Parramatta—and pouring into each of the bottles a gallon of the ordinary metropolitan sewage. This quantity of sewage passed through the Webb's Grant soil in one hour, and through the Parramatta soil in six hours. Mr. Stayton, under examination, after having read Mr. Hickson's report and heard his evidence relating to it, emphatically stated that his views as put before the Committee had not in the smallest degree been shaken, and that if anything he was stronger in his assertion that the scheme was not by any means perfect, and if carried out, as proposed, would certainly create a nuisance and a trouble. From the experiments made as to the filtering power of the soil on the proposed sewage farm, he drew the conclusion that instead of the area being sufficient to deal with sewage at the rate of 800 persons per acre, the land was capable of dealing efficiently with the sewage of only 133 persons per acre. Irrigation farms are provided for, as a rule, he repeated, at the rate of from 100 to 200 persons per acre. When land is not so valuable, he explained, the system followed is, in the majority of instances, precipitation, filtration, and irrigation. Most of the work which has been and is now being carried out in England is that involving precipitation and irrigation. In no instance, he informed the Committee, is there, to his knowledge, broad irrigation being carried out, and if it is it would only be at the rate of about 100 persons per acre. As to the question of expense, he still held to the statement that with the additional machinery required for the precipitation process as recommended by him, the cost of the scheme necessary for the present and for the prospective population of Parramatta would be less than the estimates of the Department of Public Works as put before the Committee.

Municipal indebtedness.

10. At the instance of the Committee the Under-Secretary prepared a return of the indebtedness of the various municipalities in the Colony to the Government for sewerage works and water-works, and, as will be seen from the information supplied, the state of affairs in connection with this matter is very significant. Excluding what has been done for Sydney, the Western Suburbs of Sydney, and North Shore, very little has been spent by the Government upon sewerage works for municipalities, but a very considerable sum has been expended upon water-works, and up to the present there is no certainty of any of the money or the interest upon it being repaid. Investigations for sewerage works for a number of country towns have been made, and the question arises whether, if these works be carried out at the expense of the Government, there will be any better prospect of the expenditure upon them being repaid than there is of the repayment of the expenditure upon water supply. The matter is receiving the attention of the Government. It has been under consideration since January, 1888, but no special notice of it appears to have been taken since March, 1890. It is thought that if the period during which the indebtedness shall be repaid be extended, it will be quite within the power of the municipalities to make

make the necessary provision. Under the Country Towns Water Supply and Sewerage Act the period is twenty-eight years. It was seen when the works were completed that it was not possible in twenty-eight years for the municipalities to meet their obligations, and it became a subject for consideration whether, under section 125 of the Act, it would be well to reduce the amounts by making certain remissions, or have an Act passed to provide for easier repayments. It was decided to adopt a sixty-years system, with power to extend the period in some cases to one hundred years, and pending the passing of the necessary Act it is proposed that in the case of each municipality now indebted, the interest due to February, 1892, shall be added to the capital expenditure, and the repayments under the new system be made from that date. Parramatta is not indebted to the Government for water supply works, but the Borough Council has raised loans to the extent of £56,000.

Conclusion arrived at by the Committee.

11. The Committee have carefully considered the evidence before them, and have arrived at the conclusion that it is not expedient that the proposed works should be carried out. They are of opinion, from the evidence adduced, that the proposed sewage farm, owing to its situation and the nature of the soil, is too small for the purpose intended, and that the sewage should be dealt with by precipitation and filtration or some other effective modern process. The extent to which many of the municipalities of the Colony are indebted to the Government, and their failure to make the necessary repayments, are matters of grave importance in the consideration of any proposed further expenditure in this direction; but in coming to a conclusion in regard to the proposed sewerage works the Committee are more directly influenced by the evidence respecting the inadequacy of the proposed sewage farm, and by the value of a system by which the sewage shall be precipitated and then filtered, so that the solids may be easily and without nuisance removed and the effluent pass unobjectionably over an irrigation area or into the river. It is clear to the Committee, from the evidence, that the sewage farm as proposed is not large enough for the purpose of dealing with the sewage that would be discharged over it. Looking at the nature of the soil and the situation of the land it is doubtful whether it is at all suitable for a sewage farm. A sewage farm suitable in regard to the nature of its soil and properly conducted is not objectionable, but small in area, or consisting of soil too dense or too largely charged with moisture to act as a proper filter, it is likely to prove not only inadequate but a serious public nuisance. Following the general practice in relation to sewage farms on the broad irrigation principle in England of establishing them on the basis of from 100 to 200 persons per acre, the farm as proposed is barely large enough for the existing population of Parramatta, yet it is expected to prove sufficient for the population when it shall have increased to four times its present number, and possibly for the population of some of the municipalities adjoining Parramatta. The evidence of the professional witnesses in the inquiry is to some extent conflicting, while the report from the Commissioner, and his later examination, indicate that the Department had at that time a much fuller conception of the portion of the scheme relating to the sewage farm than appeared when the proposed works were first put before the Committee. With the addition of a system of precipitation and filtration the scheme can be carried out satisfactorily in regard to both dealing with the sewage effectively and preventing any nuisance to residents of Parramatta or of any municipality adjoining that borough. The Commissioner states that it was from the first intended to provide for precipitation when it should become necessary. The Committee are of opinion that it would be wise to make precipitation or other effective modern process a part of the scheme that may be adopted. It can be added to the scheme now to the extent required for the present population, and it can be enlarged as required. The conclusion arrived at by the Committee is shown in the following extract from their Minutes of Proceedings of 14 September last:—

> Mr. Suttor moved,—"That this Committee is of opinion that it is not expedient to carry out the proposed Sewerage Works for Parramatta as referred to the Committee by the Legislative Assembly."
>
> The motion was seconded by Mr. Wall.
>
> Mr. Garrard moved,—"That the motion be amended by the addition of the following words: 'for the reason that, in the opinion of the Committee, the sewage farm is too small for the purpose, and that the sewage should be dealt with at the pumping station at Clay Cliff Creek by a system of precipitation and filtration or other effective modern process.'"

The

The amendment was seconded by Mr. Davies, and passed on the following division upon the question, "That the words proposed to be added be so added":—

Ayes, 6.	Noes, 5.
Mr. Garrard,	Mr. Suttor,
Mr. Hoskins,	Mr. Ewing,
Mr. Davies,	Mr. Wall,
Mr. Neild,	Mr. McCourt.
Mr. O'Sullivan,	Mr. Dawson.
Mr. Collins.	

The motion, as amended, was passed on the following division:—

Ayes, 6.	Noes, 5.
Mr. Garrard,	Mr. Suttor,
Mr. Hoskins,	Mr. Ewing,
Mr. Davies,	Mr. Wall,
Mr. Neild,	Mr. McCourt.
Mr. O'Sullivan,	Mr. Dawson.
Mr. Collins.	

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 4 October, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

SEWERAGE WORKS FOR PARRAMATTA.

WEDNESDAY, 22 *JUNE*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee proceeded to consider the proposed Sewerage Works for Parramatta.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 22 June, 1892.

1. *Chairman.*] Will you make a statement to the Committee in regard to the Parramatta Sewerage proposal? I do not think I need go into the details of the early history of the movement which led to the adoption of the proposal now before the Committee. For many years past the unsatisfactory sanitary condition of Parramatta has been the source of much trouble, both to the Municipal authorities and the Government, which owns a large amount of property in the Borough, in connection with the various public institutions located there. At present the whole of the sewage empties itself into the river, which, at times, gets into a very foul state, and becomes a serious nuisance. The population of the town is estimated at the present time at about 12,000. In 1871 it was slightly over 6,000, so that in twenty years the population has practically doubled, and I think it will be admitted that I am safe in saying that this rate of increase will probably be continued. The estimated cost of the proposed work is £75,726, or say £76,000, of which £16,000 has already been spent or arranged for. This includes the cost of land which has been resumed for the sewage farm; the cost of fascine dykes for enclosing the portion of the farm overflowed by the tide; the construction of the Clay Cliff Creek storm-water sewer; the estimated cost of the Brickfield Creek storm-water sewer, for which tenders have been invited, and other minor matters which I need not particularise. The total extent of the borough is 1,800 acres; the area provided for by the scheme is 929 acres, leaving for future connection 454 acres, making together 1,383 acres. The balance of 417 acres is made up as follows:—Parks, reserves, and cemetery, 281 acres; waste land, 136 acres; total, 417 acres. The proposed drainage area is divided as follows:—On the north side of the river, 421 acres; on the south side of the river, 508 acres; total, 929. The area left for future connection is divided as under:—On the north side of the river, 382 acres; on the south side of the river, 71·58 acres; total 453·58 acres. I now come to the important feature of the additional burden which this scheme will impose upon the ratepayers of the borough. As I have before pointed out, the estimated cost of the scheme, roughly speaking, is £76,000. Under the amending Bill, which the Minister proposes to introduce next Session, the time for the repayment of moneys advanced for such purposes as this will be extended to sixty years, and the rate of interest fixed at 3½ per cent. It has been computed that the payment of a rate of 4·0088 per cent. per annum will be sufficient to provide for this interest and a sinking fund to pay off the capital sum in the proposed extended period, viz., sixty years. For all practical purposes this annual rate may be taken as 4 per cent.; and, calculated on this basis, a sum of £3,040 will be required annually for interest and sinking fund on the cost of this scheme. The working expenses are put down at £1,228, making the total annual sum required £4,268. I find that the pan system at present in use produces an income of £1,644 odd per annum, which sum leaves a credit to the Council, after paying expenses, of something like £315. Taking the net cost, then, of the pan system to the ratepayers at £1,330 per annum, it leaves an additional sum of £2,938 per annum to be provided to pay for the new scheme. Under the Metropolitan Water and Sewerage Act the Government institutions will be liable to rates, but it is very difficult to arrive at an accurate estimate of what their ratable value would be, but it may be approximately put down at £16,866. The ratable property in the borough amounts to £76,378, giving a total of (say) £93,244. On this sum a rate of 10·97d. in the £ will be required to produce the necessary annual revenue, viz., £4,268. Taking into account, however, the net cost of the present system, viz., £1,330 per annum, this reduces the actual additional burden to 7·5d. in the £ per annum. As the population increases, the future extension will have to be gradually carried out, and

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when it has reached the probable limit of thirty-five persons per acre over the whole area of 1,383 acres, equal to a total population of 48,400, it is estimated that the extensions will have cost as follows:—Extensions, &c., of main sewers, £25,128: subsidiary sewers, £30,000; total cost of extensions, £55,128. This gives a grand total for all works of £111,321, which, with an assessment value estimated at £314,640, and an annual cost of £7,918, would require a rate of 6d. in the pound. The official description of the scheme, as given under the signature of Mr Hickson, is as follows:—

THE area proposed to be drained by this scheme is 1,383 acres, 803½ acres of which are situated on the north side and 579½ acres on the south side of the Parramatta River. Although the main outfall sewer has been designed long enough to carry the drainage from this area, it is at present contemplated to provide for the sewerage of only 929 acres, 421 acres of which are on the north side and 508 acres on the south side of the river.

The pumping-station is to be erected at Clay Cliff Creek, near the tramway line; and from thence to the sewerage farm at the junction of Duck Creek and the Parramatta River, the sewage will be carried by a delivery main laid along the Tramway Avenue.

From the pumping-station the main sewer runs along George-street, Charles-street, Phillip-street, Smith-street, and Sorrell-street to Pennant-street, a distance of 95·78 chains.

The south-eastern branch sewer leaves the main sewer at Harris-street, and thence runs generally in a south-westerly direction along Harris-street, Hassall-street, Wigram-street, Kendall-street, Station-street, and Junction-street to Sydney Road.

The length of this branch is about 60 chains, and it drains 285·69 acres.

The south-western branch leaves the main sewer at the intersection of Smith-street with Phillip-street; it then runs along Phillip-street and Marsden-street, terminating at Aird-street. Its length is 51·15 chains, and it drains 164 acres.

The north-western branch leaves the main sewer at its northern end, and thence runs westerly along Pennant-street to O'Connell-street; thence generally northerly along O'Connell-street, Grose-street, Fleet-street, and New-street to its termination at Dunlop-street. The length of this branch is 78·1 chains, and the area drained is 200 acres.

The north-eastern branch leaves the main sewer at the same point as the north-western branch, and runs easterly along Pennant-street to Elizabeth-street, a distance of 12 chains; thence along Brickfield-street, a continuation of Elizabeth-street, to Albert-street, a further distance of 28 chains, the area drained being 221 acres.

Future extensions.—In addition to the extension, just referred to, of the north-eastern branch, a junction will be provided in the main channel at Harris-street for a future branch, which will cross the river at the Harris-street bridge, and drain an area of 382½ acres on north-eastern portion of the town.

The cost of the works proposed to be carried out at present is estimated as follows:—

	£	s.	d.
Main sewers	42,926	0	0
Storm-water sewers now under construction—cost of sewage farm	13,000	0	0
Subsidiary sewers	20,000	0	0
Total cost	£75,926	0	0

I may explain that the sewage farm has an original area of 40 acres, but by reclamation an additional area of 22 acres will be obtained, giving a total of 62 acres. The whole of this has been protected by fascine banks, and the filling in will be undertaken as soon as we have a sand pump dredge available. Roughly speaking, this farm is distant 96 chains from the pumping-station, or (say) 1½ to 2 miles from the thickly populated parts of the town. On the Granville side the nearest habitation is something like three-quarters of a mile away; the centre of population being about double that distance. Some amount of opposition was expressed by the Granville people to this sewage farm when it was first proposed, on the ground that it might possibly become a nuisance; but I think the matter was so fully gone into then that any further opposition will not be very serious: and in order to reassure persons on that point I might read two or three extracts which were quoted by Mr. M'Mordie, then of the Sewerage Branch, in his report on that particular part of the question:—

IN the first report of the Rivers Pollution Commissioners in England, they say, "We do not recommend irrigation for the abatement of the town sewage nuisance without having made ample inquiry into any risk to health which may be incurred by the establishment of sewage meadows in the neighbourhood of towns. Such inquiries have been made at Edinburgh, Croydon, Norwood, and Barking, where irrigation has been carried on long enough, and, near Edinburgh, at least, in a sufficiently careless manner to have certainly developed whatever elements of mischief may be inherent in the practice. Nowhere have we found instances of ill-health that are properly attributable to malaria or other causes due to irrigation."

As regards Norwood, Dr. Alfred Cresswell wrote nearly twenty years ago, "My investigations and independent observations during the last three years have made me an advocate for this method of utilising sewage matter. As an instance of how perfectly the watery portion is purified, I can state that the water flowing over these fields and thence conducted to a neighbouring brook is frequently drunk by persons who are ignorant of its source. It is clear, pellucid, and tasteless. I repeat, therefore, that, after watching the working of these fields, my opinion is that when this system of sewage irrigation is well managed the health of the inhabitants in the immediate vicinity is in no way influenced by it. I may mention that ours is a deep clay soil, and that I have no experience of light or sandy soils."

Dr. Alfred Carpenter, in a paper read before the Social Science meeting at Bristol, in October, 1869, says: "At Norwood, moreover, a public footpath passes through the fields which are frequented by hundreds of persons for recreation and amusement, especially on a Sunday. The persons so using the footpath have been frequently surprised when they have been told that their walks for pleasure have been taken through the sewage farm of the Croydon Local Board of Health."

As showing the necessity for something being done at Parramatta, I had hoped to be able to submit a letter from the Government Statistician, but he was out of town yesterday. I have no doubt I shall be able to put in a letter from him afterwards. The Government Architect, Mr. Vernon, writing to me under date of the 20th instant, says:—

THE following is a list of the Government institutions that I understand will be affected by the new scheme of drainage now before the Public Works Committee for its consideration, viz.—

Lunatic Asylum.
Benevolent Asylum, Macquarie-street.
Benevolent Asylum, George-street.
Gaol.
Industrial School.

I have the honor to express the opinion that the whole of these institutions at the present moment lack proper discharge for their sewage, and that there is a great and increasing necessity that this should be provided.

So far as the institutions themselves are concerned, with the exception of the two Benevolent Asylums, the system of drainage is in good and substantial order, and on fairly modern principles.

That of the two asylums is as good, perhaps, as can be expected in such old and dilapidated premises.

All these institutions at present are drained into the Parramatta River, and although considerable expense is now being incurred to relieve to some extent this defective system, still nothing but the contemplated general scheme for the whole district can ever effectually do away with what must otherwise always be a nuisance.

I have also received a letter from Dr. Manning, the President of the Board of Health. After excusing himself, on account of the heavy work which he has to do in connection with the small-pox outbreak, for not going into the question thoroughly, he concludes his letter with these words, which, I think, will answer all the

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the purpose I have in view:—"It is absolutely necessary that something should be done at Parramatta, and the public institutions and the town are one in regard to this matter. The river below the dam receives the drainage of the town, including the public institutions, and is at all times, especially in summer, offensive and dangerous to health."

2. Is this sewerage system, when it is completed, to be passed over to the Municipal Council or to the Metropolitan Water and Sewerage Board? It will, no doubt, be passed over to the Parramatta Council under the sixty years' system.

3. This is the first town outside the metropolis for which it is proposed to construct a sewerage system? Yes, if you exclude North Sydney, for which a separate sewerage system is being constructed.

4. Is it out of the jurisdiction of the Metropolitan Sewerage Board? That will have to be determined by legislation. The Country Towns Water Supply and Sewerage Act applies to all cases outside the county of Cumberland, whilst the Metropolitan Water Supply and Sewerage Act deals with that county, and Parramatta will come under that Act; but it has yet to be determined whether it will be administered by the Board or the Council. There are provisions for both cases, and I think I am right in saying that it is the policy of the Minister that municipalities should manage their own affairs.

5. This work could be carried out under the Country Towns Water Supply and Sewerage Act? No; only under the Metropolitan Act.

6. Though you have brought into existence a Board to control all water supply and sewerage works in the county of Cumberland, you are cutting a piece out of their domain? If you look at the Act you will see that it is contemplated that separate systems should be handed over to the local authorities.

7. Is it not a fact that all the country between what is now the metropolitan area and Parramatta is taken up in local governing areas? Yes, practically.

8. And if you carry out sewerage schemes for the other portions, will you place them under the various municipalities rather than under the Sewerage Board? No; I think this is a different case. The Western Suburbs Sewerage Scheme will take in all the suburbs up to Strathfield, being one connected system, whereas the Parramatta system will be an unconnected one, and therefore can be dealt with by the Parramatta people themselves.

9. Nothing has been done, then, to provide a sewerage scheme for the country lying between Homebush and Parramatta? I think I am correct in saying that nothing has been done, with the exception, perhaps, of the storm-water sewer for the Rookwood Cemetery.

10. In all probability, owing to this scheme being isolated from the metropolitan area, it will be passed over to the local council? Yes.

11. Has there been any proposition to connect the rising town of Granville with this sewage farm? There has been such a proposition, but I do not know that it has ever been definitely brought forward. The sewage farm is capable of being utilised for the drainage of Granville. If the Granville system should be connected with the sewage farm it will tend to lighten the burden on both municipalities.

12. How far is the Granville Railway Station from the sewage farm? I think it is about a mile and three-quarters.

13. There has been a continual agitation for something to be done with the sewerage at Parramatta? Continually, for ten years at least.

14. The Government admit that this nuisance is very largely created by the Government dependents? I should not like to say that. I know that the Parramatta people contend that it is so.

15. But if there is a very large population in the Government institutions, those institutions must of necessity contribute to the nuisance? I believe I am correct in saying that there are very large areas of ground in which they utilise their night-soil. I know the Parramatta people complain that the water which is used to wash the pans goes into the river and creates a nuisance.

16. The slops from the Government institutions do not drain into the river? I am not quite sure.

17. The sewerage rate for Parramatta, then, would be less than the rate which is charged by the Metropolitan Board? I think not.

18. And the reason for the difference is, that this scheme is very much cheaper than the other? I should not like to give a decided opinion on that point. It is 7½d., if we deduct the cost of the present pan system.

19. Have the Parramatta Council passed any resolution affirming the desirability of carrying out the scheme? I do not know that the Department has received any resolution exactly bearing on that point. They have approached the Government again and again, but I am not certain that they have actually seen the plans of this amended scheme, although, of course, they know generally what it is.

20. As far as you know, the local authorities are in thorough accord with this scheme, or at all events, raised no objection to it? I do not think there has been any definite resolution arrived at.

21. *Mr. O'Sullivan.*] Do I understand that you give as a reason why Parramatta should be specially favoured with a sewerage scheme the existence of the Government institutions? No; I think the Government would be prepared to carry out a sewerage scheme elsewhere if the funds were provided by Parliament, and it were shown that it would pay, but Parramatta has pressed the case very much. As it is a town of large population, it is evidently worth taking up, especially as the whole cost will be repaid.

22. I presume that if other centres of population make the same claim the Government will have to respond? I should think so, provided Parliament has voted the necessary funds. Of course, if there was a small population scattered over a large area it could not bear the cost.

23. *Mr. Hoskins.*] Did you not say that the rate of interest would be 3½ per cent.? Yes.

24. And did you also say that they would be charged 4 per cent., which would include one-half per cent. in order to provide a sinking fund? Yes; to pay off the debt in sixty years.

25. You do not anticipate that debentures bearing 3½ per cent. interest will be floated at par? The Government have determined that that is what they would charge. It may be that we shall get money by-and-bye at less than 3½ per cent. I think that Canada gets its money at less than 3½ per cent.

26. If 3½ per cent. debentures cannot be sold at par, and you propose to charge 4 per cent. in order to provide for a sinking fund, must you not raise a larger sum than the nominal estimated cost of this work, and, therefore, would you not require to pay a higher rate of interest? Undoubtedly. Any difference between 3½ per cent. and what it actually costs, of course, the whole country would bear.

27. Not the Municipality of Parramatta? No; the whole country, I imagine. I do not see any other way out of it; but this is a question involving one of policy on which I am not instructed.

28. *Mr. Davies.*] Has any portion of the Rosehill race-course been resumed for the purpose of this scheme? I think not.

29.

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29. Would not a sewerage rate of 11d. in the £ be very much in excess of anything paid in the city or suburban municipalities? People in areas with a comparatively small population must expect to pay higher rates.
30. Is it contemplated that the Government institutions should be assessed? Undoubtedly. I had a conference with the solicitor to the Board yesterday, and he gave me a statement as regards the various assessments, which I will hand in.
31. The population of 12,000 which you gave includes the inmates of the Government institutions? Yes.
32. The Borough of Parramatta is not likely to extend very much? There is such a lot of unoccupied land that I should think there is plenty of room for extension within its own boundaries. I should think that it is not at all unreasonable to suppose that in twenty years it will have double its present population. This scheme is capable of serving thirty-five persons to the acre. That is a population of 48,000 persons. When the population reaches that point the rate will be reduced to something like 6d. in the £.
33. *Dr. Garran.*] Are the Government establishments rated for any purpose at all? I am informed that they pay water rates.
34. Can you state the proportion paid by the Government establishments and the proportion paid by all the rest? I am not able to give the information at present.
35. *Mr. Wall.*] You referred to 136 acres of waste Crown land;—is that land reclaimable, or not? I cannot answer that question.
36. Can you state the total rates which are levied on the owners of property at Parramatta? No.
37. I want to know the interest on the money, and the amount of the rates they pay? I will obtain the information.
38. I want to ascertain whether they have exceeded the limit of their borrowing power? This would be a special case, and the Government would find the money.
39. *Mr. Collins.*] Supposing the Parramatta Council refuse to take over this work, can they be compelled? I think they can be compelled.
40. On what basis was money lent to the different Councils in the country districts to provide water supplies? It was lent under the terms of the Country Towns Water and Sewerage Act, to be paid off in twenty-eight years.
41. Have they paid any money? There have been one or two cases where it has been done. Deniliquin paid the first year. Hay is ready to pay now. In the case of Goulburn, Wagga Wagga, and Albury, the rates were collected, I think, in the first year on an understanding with the Council, and paid into the Treasury, but immediately we handed over the works the payments ceased. I do not think the Councils are so much to blame for that state of things as is alleged, because it has been understood for some years past that the Government intended to adopt a sixty years' basis for the repayment of the money, and we are just making a calculation on that basis, capitalising the interest which has accrued from the time when those Councils took over the works.
42. And you will compel them to pay? Yes. If they do not pay there is a power in the Act under which the Supreme Court can be appealed to and receivers appointed.
43. *Mr. Ewing.*] Has the Parramatta Council demanded the construction of this work? They have again and again represented the necessity for its being done.
44. Through Mr. Taylor? Yes, and also through the Council.
45. It virtually means an advance of £76,000 to the Municipal Council? Yes.
46. Before you make an advance of that kind surely you will have some undertaking with the municipality that they will accept the responsibility? It would be provided for by Act of Parliament.
47. Would it not be just as well to have a definite agreement? In nearly every case we have done that, especially with regard to waterworks.
48. And that will be done? I do not think there is any necessity in this case.
49. Who owns the sewerage farm at present? The Government.
50. I suppose the area of 40 or 60 acres will be handed over as an asset to the Borough Council? Yes.
51. Will there be any charge for that? It will be part of the debt.
52. The value of the land is included in the sum of £76,000? Yes.
53. And they will have to pay interest on the value of the land? Yes.
54. *Mr. Wall.*] In connection with water and sewerage works for country towns, have any representations been made to the Government as to the inability of the country towns to pay the money, and is it in consideration of those representations that the money has never been demanded of them? Again and again the municipalities have pointed out that they cannot pay under the twenty-eight years' system, but I think they are all perfectly well able to pay under the sixty years' system. I do not think it is fair to assume that the municipalities wish to repudiate their liabilities to the Government.
55. *Mr. Neild.*] Last Session, I think, a special Act was passed for the Hunter River district, which extended the term from sixty years to 100 years? Not exactly, a limit was made of 100 years. The Executive have been given a maximum limit of 100 years for these repayments, but sixty years is generally the period which it is supposed they will take.
56. Why should sixty years apply to one case and 100 years to another case? Take, for instance, the Sydney waterworks. As the tunnels and the dam will last, in all probability for all time, it is safe to give a currency of 100 years, but as regards the pipes, which will be worn out in a certain number of years, it would be unsafe to give so long a period. Parliament has determined that the period should vary according to the durability of the works.
57. Can you state the amount at which the land for the sewerage farm is to be valued? At its cost to us.
58. Has it been resumed? Yes, the Government offer has been accepted, but I forget the exact amount. The interest will have to be added.

Robert R. P. Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and examined:—

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59. *Chairman.*] You desire to make an engineering statement in regard to this proposal? Before I read my statement, I desire to explain that the boundary of the Municipality of Parramatta is shown on the large plan by a stroke and two dots; that the area tinted yellow is that which we propose to sewer; that the red lines show the main sewers and branch main sewers from the pumping-station; that the darker red lines

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lines show the iron main from the pumping-station to the sewage farm, and that the portion coloured green is the area we have resumed for the sewage farm. The sewage farm is situated at the junction of the Parramatta River and Duck River. It contains 61 acres 1 rood 3½ perches.

60. I understood that 49 acres were resumed, and that the other is to be made up with silt? Forty acres have been resumed, and 22 acres 1 rood 2½ perches have been included in the fascine bank which is put in. It did not require to be resumed because it is Government property. The whole area contains 62 acres 1 rood 31½ perches, the western portion of which is above spring-tide level, while the eastern portion is below mean high-water level.

61. About how much? About a third. The latter has been already enclosed with fascine embankments, and is to be filled in with sand pumps from the river above highest spring tide, after which it will be divided by raised roads running north and south, and east and west.

62. Are you going to put in clean sand or silt? Ordinary river sand.

63. Would not that be sufficiently charged with sewage matter? A great deal will depend on the material which the Department of Harbours and Rivers will bring. They will bring, no doubt, a great deal of sand and a great deal of silt. Of course, the sand will be better. The areas between the roads are to be levelled and divided by dwarf embankments into filter-beds, about 2 chains in width. The 21-inch diameter outfall main will discharge the sewage into a receiving tank, to be constructed above ground, of either iron or concrete, situated upon the north-west part of the farm. From this tank the sewage will be discharged into pipes laid along the lines of roads, and provided with effet valves from which the various filter-beds can be flooded one after another, as may be required. Cereals may then be grown upon the raised portions of the beds. On account of the less porous nature of the soil of this sewage farm, it may in time become necessary to lay 4-in. diameter agricultural drain-pipes, at a suitable depth below the ground, underneath and along the centre lines of the dwarf embankments, dipping towards the lines of roads along which they would discharge the effluent into glazed stone-ware pipes, laid below the roads with such gradients as may be determined at the time, for the purpose of discharging the said effluent into the Duck River. Delivery main.—The cast-iron delivery main, of 21-in. diameter, proposed to be laid to suit present requirements for a population of 12,000 (allowing for 25 gallons of sewage per head per day, and 1 inch of rainfall per day upon 200 square feet of roofing and yard surface for each person) can discharge 1,284 gallons per minute, or more if required, with increased steam pressure. It commences at the receiving tank, on the western boundary line of the sewage farm, and extends for a length of 96 chains along Tramway Avenue, on the south side of the Parramatta River, crossing over Clay Cliff Creek, to the pumping-station on the west side of the said creek, at the junction of Tramway Avenue and Arthur-street. Pumping-station.—The pumping-station comprises (for the present requirements of a population of 12,000) two pumping-engines, each capable of raising 650 gallons 35 feet high per minute, with boilers, engine-house, chimney, straining-chamber, &c. Any material which may be retained by the strainer will be conveyed by tram to the sewage farm to be used there in the formation of dwarf embankments. Main Outfall Sewer.—The main outfall sewer is calculated to discharge the sewage of the whole prospective population over the whole area of 1,383 acres, together with the allowance of rainfall already stated, the combined flow being calculated at 0·92 cubic feet per minute per acre, equal to 1,272·36 cubic feet, or 7,952·25 gallons per minute. During storm floods 1,762 gallons per minute of this quantity can escape over storm-water overflow-weirs into storm-water channels, which are being constructed in conjunction with this scheme. The blue lines on the plan show the storm-water sewers which have been constructed. One is on the north, and the other on the south side of the river. The oval outfall sewer of 4 ft. x 2 ft. 8 in. internal dimensions, to be built of brick and concrete, commences at the pumping-station and extends, with a gradient of 1 in 750, for a length of 36·88 chains along George-street to its junction with Harris-street, where the south-eastern branch sewer, draining an area of 285·59 acres, joins the main sewer, and where also a junction is provided for a prospective northern branch sewer, which will drain an area of 382·42 acres. From Harris-street the main outfall sewer is reduced to an oval shape of 3 ft. 3 in. x 2 ft. 2 in. internal dimensions, and will be constructed of brick and cement, at a gradient of 1 in 600. It extends for a length of 14 chains along George-street to Charles-street; thence north along Charles-street for 7 chains to Phillip-street; thence west along Phillip-street for a length of 13·90 chains to Smith-street, where the south-western branch sewer, draining an area of about 164 acres, joins the main sewer. From Phillip-street the main sewer is reduced to one of 24 in. internal diameter, and extends, with a gradient of 1 in 500, along Smith-street, across Parramatta River, and along Sorrell-street to its junction with Pennant-street, a length of about 24 chains, where the main sewer ends, and is joined by the north-eastern branch, which will drain an area of about 221 acres, and by the north-western branch sewer, which drains an area of about 200 acres. That portion of the main sewer which crosses the Parramatta River is to be constructed of iron pipes, 24 in. diameter laid above highest flood-level. South-eastern Branch Sewer.—The south-eastern branch sewer of 21-in. diameter, draining an area of 285·59 acres, which joins the main sewer at junction of George and Harris Streets, extends south, with a gradient of 1 in 600, along Harris-street to Hassall-street; thence along Hassall-street to Wigram-street, and along Wigram-street to Kendall-street, a length of about 27 chains; thence of 16-in. diameter, at a gradient of 1 in 300 along Kendall-street to Station-street, and along Station-street to the railway bridge over Clay Cliff Creek, and under said bridge along Parkes-street to Wentworth-street, a total length of about 23·70 chains; thence of 12-in. diameter, at a gradient of 1 in 100, along Wentworth-street to Junction-street, and along Junction-street to the Sydney Road, a total length of about 9·80 chains. South-western Branch.—The south-western branch sewer of 18-in. diameter, draining an area of about 164 acres, joins the main sewer at the junction of Smith and Phillip Streets, and extends from this point west, with a gradient of 1 in 400 along Phillip-street for a length of 6·20 chains; thence of 15-in. diameter at a gradient of 1 in 300 along Phillip-street to Marsden-street, thence south along Marsden-street to George-street for a length of 21·40 chains; thence again south along Marsden-street for a length of 8·45 chains, of 12-in. diameter, at a gradient of 1 in 300, to Macquarie-street; thence again south along Marsden-street, of 9-in. diameter, at a gradient of 1 in 100, for a length of 15·10 chains, under the Great Western Railway to Aird-street. North-western Branch Sewer.—The north-western branch sewer, draining an area of about 200 acres, joins the main sewer at the junction of Sorrell and Pennant Streets, extends from this point west along Pennant-street, of 18-in. diameter, at a gradient of 1 in 120, for a length of 7·30 chains, to Church-street; thence again along Pennant-street, of 16-in. diameter, at a gradient of 1 in 350, for a length of 7·40 chains

to

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to Villiers-street; thence again along Pennant-street of 16 in. diameter, at a gradient of 1 in 450, for a length of 9·80 chains to O'Connell-street; thence of 16 in. diameter, at a gradient of 1 in 450, north along O'Connell-street to Grose-street of 16-in. diameter, at a gradient of 1 in 450 for a length of 11·25 chains; thence along Grose-street to Fleet-street of 15 in. diameter, at a gradient of 1 in 400, for a length of 7 chains; thence north, along Fleet-street to Fennell-street of 15 in. diameter, at a gradient of 1 in 400, for a length of 6 chains; thence north, of 15 in. diameter, at a gradient of 1 in 250, along Fleet-street, past Harold and Albert Streets to Factory-street, a length of 20·85 chains; thence north, of 12 in. diameter, at a gradient of 1 in 250, along New-street to Dunlop-street, a length of 8·50 chains. North-Eastern Branch Sewer—The north-eastern branch sewer, draining an area of about 221 acres, joining the main sewer at the junction of Sorrell and Pennant streets, extends from this point east along Pennant-street of 18 in. diameter, at a gradient of 1 in 500 to Brickfield-street, a length of 12 chains. The extension of the north-eastern branch sewer from this point will be continued north along Brickfield-street of 15 in. diameter, at a gradient of 1 in 248·15; past Ross-street and Grose-street to Fennel-street, a length of 16·65 chains; and thence again north along Brickfield-street, of 12 in. diameter, at a gradient of 1 in 100; past Harold-street to Albert-street, a length of about 11·40 chains.

64. These dimensions of the various branches seem to strike a layman's mind as being very small for the area to be drained. Are the dimensions of the pipes and drains not merely for the houses now on the area, but its full occupation by human beings? Its full occupation by human beings.

65. Only a very small portion of the rainfall will come down these pipes? Two hundred superficial feet for each inhabitant.

66. That is less than you have going out through the Bondi sewer? Yes, we want as little water as possible.

67. That is the reason why you are not allowing so much rainfall to go into the sewer? We have reduced the amount of rainfall as much as we possibly could because every extra gallon means additional cost in pumping.

68. Will you give us some information now with regard to the estimated cost of the work? The whole of the works herein described, exclusive of the future extensions, are estimated to cost £75,926. That sum includes £20,000 for reticulating sewers which are not shown on the plan, and £16,000 already spent on sewage farm and storm-water channel.

69. The sum of £16,000 has been spent on the construction of storm-water sewers and the resumption of land—can you state the actual cost of the storm-water sewers? Between £6,000 and £7,000.

70. Under whose instructions have they been carried out? I am carrying them out.

71. Are they planned to work in with this particular scheme? Yes.

72. Can you give the cost of the works above the pumping-station separately from the cost of the works to the east of the pumping-station? The cost of the works above the pumping-station is £53,416, made up as follows:—Main sewers, £26,416, reticulation, £20,000, storm-water sewers, £7,000. The annual cost of the proposed works I estimate at £4,268, which is made up as follows:—Interest and payment in 60 years at 4 per cent. on £76,000, £3,040; coal, and stores for the engine-house, £162; wages and expense of working the farm, £860; repairs to engines calculated at 5 per cent. on the total cost, £206. The annual rate required to be paid for these works I estimate as follows:—The present population on the area of 929 acres, the portion tinted yellow, is 12,000 souls, and the annual assessment of this area with buildings, excluding the Government institutions, amounts to £76,377. This information has been given by the Town Clerk of Parramatta. To that amount we have to add the value of the Government institutions, which it has been rather difficult to ascertain, and which I have got at in this way. As £76,377 is to the 12,000 souls on the 929 acres, so would the number of people in these asylums and gaols be to the sum at which we should assess the Government institutions. Working it out in that way, I make the annual assessment on which the rate would be collected from the Government institutions come to £16,866, so that £93,244 is the total annual assessment on which the rate will be collected. The rate to cover this annual cost of £4,268 on £93,244 would be 10·97d., or practically 11d. in the £. Taking credit for what the Council pay now for their pan system, viz., £1,330 a year—it reduces the working expenses to £2,938, and reduces the rate to 7½d. in the £.

73. *Mr. Davies.*] Is that not the rate for emptying the pans not at per head but at per dwelling-house,? No; the actual cost to the Council is £1,330 a year.

74. It is not calculated on the basis of population, but on the basis of so much for each dwelling or pan? I do not know how it is calculated. The Council Clerk supplied me with the figures.

75. *Chairman.*] Do the Government institutions bury the whole of the night-soil on their grounds? I think they do. The population located on the 929 acres to be operated upon for the present will, of course, increase gradually, and as the population increases the remaining 454 acres (outside the present 929 acres), will be gradually built upon, and as these buildings accumulate sufficiently to pay for being connected with the sewerage system they will, no doubt, be connected. The north-eastern branch, from the junction of Pennant and Elizabeth Streets, will be gradually extended along Brickfield-street to Albert-street, and perhaps further. The northern branch, from the junction of Harris and George Streets, will in like manner be extended gradually northwards, across the Parramatta River, along Macarthur-street, as the now vacant area of 382 acres is being built upon. As these gradual extensions take place, the main and outfall sewers, not being capable of expansion when additional supply of sewage discharges into same, due provision has been made in the discharging capacities of these sewers to receive and conduct the sewage that will be added from the said extensions as they take place. With regard to the pumping-station and rising main, we have not made that provision, because the pumping-station can be easily duplicated—it is easy to lay a second iron pipe along Tramway Avenue. The cost of these sewer extensions, together with the cost of additional pumping engines, a second delivery main, &c., would be as follows:—

	£	s.	d.
Second 21-in. cast-iron delivery main, 96 chains long	7,805	0	0
One mile 372 yards extensions of main and branch sewers	4,853	0	0
Completion of pumping station	7,920	0	0
Land, and preparing 40 acres on sewage farm	4,550	0	0
Second portion of subsidiary or reticulating sewers, which will be constructed by the Metropolitan Water and Sewerage Board, estimated to cost approximately	30,000	0	0
Approximate total for future completion	55,128	0	0

76.

76. You spoke of increasing the sewage farm;—does that mean the resumption of more land? I think not; it means increasing the area under cultivation. If we get a good light sandy soil, it will take an immense quantity of sewage, but if we get a heavy loamy soil, it will not take so much. R. R. P. Hickson, Esq. 22 June, 1892.
77. Is your sewage farm to be of the same character as that at Webb's Grant, or that which you propose to construct at North Shore? We do not propose to deal with the sewage by chemical means; but practically in the same way as it is dealt with at Webb's Grant.
78. Have not complaints been made that the sewage farm at Webb's Grant is a common nuisance? I have never heard of any complaints.
79. Has the Liernur method been discarded by you altogether in dealing with the sewage of isolated towns? No; it, in common with all known systems of dealing with sewage, has been considered in connection with this scheme.
80. You are aware that a former Committee expressed an opinion that while that method might be adopted for small isolated areas, it was not suitable for such a large area as the western suburbs? Yes.
81. This being a small and isolated area, did you view the question in that light? We have gone into the question very carefully, and considered two or three different systems of raising sewage.
82. And you came to the conclusion that this is the best and cheapest method? Undoubtedly.
83. *Mr. Ewing.*] Is it absolutely necessary to have that sharp turn at the corner of Kendall-street? Yes; unless you go through private property.
84. Might it not be better to get underneath? No; unless you lose your connections with the houses. There is no great objection to the curve.
85. Why have all these different grades? To suit the surface of the ground, so as to get as nearly as possible an equal surface under the ground.
86. *Mr. O'Sullivan.*] Are the floods which occasionally occur in the Parramatta River likely to injure your sewage farm? No; the fascine bank is above the flood level.
87. That area is liable to be flooded? It is all encased now.

WEDNESDAY, 29 JUNE, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM MCCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee further considered the proposed Sewerage Works for Parramatta.

Robert R. P. Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and further examined:—

88. *Chairman.*] Have you any further statement to made in reference to this proposal? I explained all that I thought was necessary. R. R. P. Hickson, Esq. 29 June, 1892.
89. You expressed some doubt as to whether the sewage farm would deal effectually with the same quantity of sewage matter as a body of pure sand, such as you have at Webb's Grant;—do you know of a farm that is composed of somewhat similar soil? The Adelaide farm is of a much stronger, less absorbent nature. There is no sand there at all. It is all heavy soil.
90. Has it become charged very quickly with matter, making it unfit for use? No; it is working very satisfactorily, and is very close to the city.
91. Although you intend to reclaim a lot of land it will not be used for a considerable time? No.
92. Do we understand that the area of 62 acres will be sufficient to drain the increased area of Parramatta as well as Granville? It will be quite sufficient for the increased area of Parramatta. It depends greatly, I may say entirely, on the nature of the material we get for filling in, as to whether it will be capable of carrying the Granville sewage also. If it is pure sand, which I have every reason to think we shall get from the Harbours and Rivers Department, it will; but if it is largely charged with silt it is more than probable we shall have to increase the area of the farm.
93. That would not be very difficult, as there is a lot of waste land adjoining? I question very much whether we should have to resume any, because a great portion of this property on the south is already Government property.
94. That is subject to tidal influence? Yes.
95. Which you are now reclaiming by fascine banks along that creek? Yes.
96. When did you begin to build these storm-water sewers at Parramatta? About nine months ago.
97. Was the sewerage scheme fully developed at that time? Not fully developed.
98. The mature development of this scheme will not lead to any alteration in these sewers? No.
99. Has Parramatta been exceptionally dealt with in the matter of storm-water sewers as compared with other places in the metropolitan area? No.
100. Do the slops from the houses on the area immediately drained by the storm-water sewers now go into them? Not yet, as they are not completed.
101. I mean the ordinary house slops, not the solid sewage? They will go into the storm-water channels in a very few days.
102. And by and by, if this scheme is carried out, that sewage will be diverted into the sewers proper? Yes.
103. Are the channels designed for the purpose of carrying the storm waters only? Yes.
104. Have you considered whether this municipality can bear an increased rate of 7d. in the pound? No.
105. Have the municipal authorities of Parramatta been consulted;—have they seen the plans or made any suggestions? No.
106. You were Engineer-in-Chief for Harbours and Rivers for some time? I was acting for a time.

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107. Has there been any shirking of their responsibilities on the part of any municipal bodies who have had the benefit of a water supply extended to them? I am not prepared to give a definite answer.
108. Your tenure of office was so short that you did not go into the question? Exactly.
109. You have not the slightest doubt that your estimates of the probable cost of this work will not be increased to any serious extent? I am quite satisfied that they will not. Our estimates are full.
110. Having had a considerable experience of similar works in the metropolitan area, you are able to judge as to the cost? Yes.
111. If the area on the north side opposite your farm were to become thickly populated, it would be possible to drain that area into your farm by carrying pipes either across or under the river? We could hardly carry pipes across the river, as it is navigable at that point, but it could be syphoned under the river.
112. I suppose it is more desirable to concentrate this sewage matter in one large farm than to have four or five farms within a small radius? I think it is more advisable.
113. And if Rydalmere were to become thickly populated you would probably recommend that its sewage matter be taken to this sewage farm? I should not like to say that, I think there are places on the other side of the river further down that would come in for sewage farms. It is a very costly thing to take sewage either over or under a river. It could be done if necessary.
114. *Mr. Humphery.*] Have you devised any scheme for utilising to the greatest advantage the sewage farm after the reclamation works have been completed? It would be utilised in the same way as it is treated at the Botany Sewage Farm.
115. Will that be retained by the Government and worked under their management? I cannot say how it will be managed.
116. Do you not think a better return could be obtained from the Webb's Grant farm and this farm if the land were let instead of being worked by the Government? I think it might give a better return.
117. Have you given the matter any consideration? Yes; it is under the consideration of the Water and Sewerage Board now. I think it is more than likely, when we get the Botany Sewage Farm in working order, we shall lease it.
118. What is the area of Webb's Grant? Six hundred and twenty acres.
119. How much of that area is under irrigation? Forty-three acres are at present under cultivation and available for irrigation.
120. What return do you get from the 43 acres? It was a little over £300 last year, and the expenditure was about £720.
121. So that the management of the farm alone entailed a loss of £400? I do not know exactly that that is a fair way of putting it. We have improved the land very considerably. We have a valuable asset. Of course, the improvement of the farm is due entirely to the deposit of the sewage matter; but a great deal of the expenditure was used in improving the land. I think the value of the land should go as an asset. Besides that we have crops unsold, and some cattle and pigs, which if sold would more than pay the expenditure which we incurred last year.
122. Instead of employing labour to cultivate the sewage farm at Parramatta and obtain produce, would you recommend that the Water and Sewerage Board should lease the land to tenants? Not for the first year or so. I think we should have to start the farm and show what can be done before we can get anyone to take it up.
123. You would improve the land before you leased it? Yes.
124. *Mr. Hoskins.*] Will you not have some difficulty in getting rid of the water off the farm after you have utilised the sewage. It seems such a small fall to the river—lower, I think, than the river? It is lower now, but it will be raised considerably above the level of the river. There will be no difficulty, as it will all percolate through the sand.
125. Will there be a sufficient fall to get it into the river? Yes.
126. Does the sum of £700 include not only the cost of preparing the land for cultivation, but also the cost of bringing new land into cultivation? Yes.
127. *Mr. Davies.*] What treatment does the sewage undergo after it reaches the pipe service? It is pumped into a distributing tank at the north-west corner of the farm; from that tank it gravitates down to the various paddocks.
128. What is the size of the tank? The designs are not out yet.
129. What will it be constructed of? I can hardly say. It may be concrete or it may be iron.
130. Has the cost of the tank been considered? Yes.
131. The character of the soil on this farm is very different from the character of the soil at Webb's Grant or Shea's Creek? Yes; as it stands now.
132. But how do you propose to cure that? All the low portion will be filled up with sand from the dredges, and nearly the whole of the area that will be brought under cultivation will be of the same nature as the land at Webb's Grant.
133. You are aware that on Webb's Grant you can go 50 or 70 feet through sand? Yes.
134. You have no misgivings as to the practical results of the farm if you get the necessary sand? No.
135. Have you considered that the vapour which will be drawn from this great bed of fœcal matter in the middle of summer would be a great nuisance to the people on the other side of the river as well as to the people of Granville? That nuisance has not been found to arise at any farm that I am aware of. It certainly has not arisen at Botany, and I know from my own experience that it is not present at Adelaide. All the reports in connection with sewage farms go to show that it is not a nuisance.
136. You do not think that, in the summer season, the people of Granville will get anything but a savoury breeze from this sewage farm? I have been all over the Botany and Adelaide farms both in winter and summer. Of course, when you get on to the farm there is a little smell, but it is lost in a very short distance.
137. Are those farms as close to the centre of population as this farm will be? At Adelaide the farm is a great deal closer, it is just outside the city.
138. This farm will be about 1½ mile from Granville Railway Station, and less than that to the other side of the river? Yes; but the population is very sparse on the other side.
139. What sort of filters will you have? We have no filters.
140. No charcoal filters? No.

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141. You simply pass the sewage in its crude state right on to the farm? Yes.
142. Do you mean to tell the Committee that no smell will arise from that farm in the summer time? We are doing the same thing at Botany.
143. Are you aware whether the surrounding municipalities, especially Granville, know that you intend to cast on this farm all the fœcal matter of Parramatta? I believe both Councils are acquainted with our intentions.
144. Have you received any protest against this scheme? Granville has protested.
145. Do you not think they will have good grounds for protesting? I do not think so.
146. On clayey soil with no possibility of absorbing the fœcal matter? No; the soil will not be of a clayey nature, but of a sandy nature, and will absorb the matter.
147. For the portion of Parramatta which is not provided for in this scheme, but which you may subsequently have to provide for, will this pipe service be sufficient? It will be sufficient up to the pumping-station, but we shall require an extra pump and another main. The estimated cost of that work is £55,000.
148. If it will cost £75,926 to drain the whole of the settled portion of this borough, including all the necessary pipes and sewers, how do you make out that an additional expenditure of £55,000 will be required to drain the small portion that will remain unsewered? It is made up as follows:—

	£	s.	d.
Second 21-in. cast-iron delivery main, 96 chains long	7,805	0	0
One mile 372 yards extensions of main and branch sewers	4,853	0	0
Completion of pumping-station	7,920	0	0
Land, and preparing 40 acres on sewage farm	4,550	3	0
Second portion of subsidary or reticulating sewers, which will be constructed by the Metropolitan Water and Sewerage Board, estimated to cost approximately	30,000	0	0

149. Practically, you have to duplicate the size of the farm, and the pipe service? Not the pipe service, but the rising main. We shall not touch the concrete sewers, as they are of full capacity to take the whole of the drainage.
150. The iron delivery pipes would have to be duplicated, the engine power increased, and more land brought under cultivation? Yes.
151. How many more acres? We would have to treat 40 additional acres. It is very difficult to know how much we shall require until we know the exact nature of the material with which we are going to fill in the farm.
152. What is the population of the area which is drained by Webb's Grant of 620 acres? At present it drains a population of about 35,000 persons. We have only 43 acres under cultivation.
153. You have not got the same quality of material to drain into at Parramatta? In one case we have to drain for a population of 12,000 persons, and in another case we have to drain for the whole of the city and suburbs. Webb's Grant of 620 acres, and of which only 43 acres have been brought under cultivation, is to drain the whole of the western suburbs down to Strathfield.
154. And those 43 acres receive the drainage of 35,000 persons? Yes.
155. *Dr. Garran.*] Have you investigated the drainage of the present Government establishments at Parramatta? No.
156. *Mr. Neild.*] Do you regard sand as an absorbent? Yes, it absorbs sewage.
157. Are not the particles of which sand is constituted hard? Yes.
158. And capable of absorbing anything? Yes, the particles themselves are.
159. When you refer to sand as absorbing sewage you mean filtering, and the sewage matter going into the lower levels? Yes.
160. If you put enough sewage matter into the sand, and it cannot get away, would it not have a tendency to raise the sand, or would the weight of the sand be sufficient to keep it together? I suppose if the sand were encased, so that no drainage could take place, the bulk must of necessity increase.
161. The Adelaide farm is a clayey loam soil? Yes.
162. Have you studied the chemical action of soils upon sewage? No.
163. You admit, of course, that sand can have no possible action on sewage? No.
164. No more effect on sewage, chemically, than so much broken glass? If there is a good deal of salt in it it might have.
165. The Botany sand has a great deal of salt in it? Yes.
166. Your impression is that the saline particles among sand have a useful effect? I think so.
167. What is the height above water-mark of that portion of Webb's Grant which you have under cultivation? I should say from 4 to 6 feet.
168. Assuming that sand does not actually absorb, but acts as a filter for sewage, the opportunities for getting rid of sewage matter would be very much greater at Webb's Grant than on the proposed farm at Parramatta, the height of which is so much lower? It will practically be the same when it is finished.
169. To what extent do you propose to fill in to cover the portion which is now above high water-mark? The fascine bank we have made around the farm is of the same height above high water-mark as the fascine bank in Cook's River, so that the finished level of the farm at Parramatta will be within a foot or so of the same level as the farm at Webb's Grant.
170. Is not the farm at Webb's Grant further removed from tidal influence than this farm will be? Yes.
171. And, therefore, at Webb's Grant there would be better opportunities for drainage? Slightly. The effluent water which we get in the centre of our farm at Botany is perfectly clear and harmless.
172. A considerable portion of the proposed farm is already more or less under water? Yes, the middle portion.
173. What will become of the water when it is filled up? It will go into the river.
174. Will the soil below the present water-level become dryer by the filling up, or will you only have for the purposes of your farm the depth of soil or sand that you put in? Practically, the depth of sand we put in.
175. Then, underlying that depth, you will still have a body of sandy matter surcharged with water as at present? Yes.

R. R. P. Hickson, Esq. 29 June, 1892.

176. Is the soil or sand at Webb's farm at a similar depth from the surface surcharged with water in like manner? Yes.
177. How far have you to sink to reach natural water? It is standing at about 2 ft. 6 in. below the surface.
178. You have only a depth of 2 ft. 6 in. to work on? Practically; if you dig a hole in any sand-bed, you will get water after going down a foot or so, according to the nature of the bed.
179. That will be a low-lying sand-bed? Both of these are low-lying sand-beds.
180. Do you know the process in vogue at North Sydney for dealing with local sewage? There is none, except the pan system, that I know of. We propose to establish a farm there; but it is not in operation yet.
181. Is not the system known as the International system in vogue there? I do not know.
182. You do not know whether the liquid portion of the sewage is rendered so pure as to be allowed to run into the harbour by the Government authorities? I do not know; very likely it is the same as at Webb's Grant, where the water is very pure and allowed to flow into Cook's River.
183. Do you know of sewage farms anywhere else situated in sandy flats closely adjoining tidal waters? I could not say from memory that any sewage farms are exactly similarly circumstanced to these farms; but by referring to books in my possession I can get the information.
184. Of course, you will admit that the Webb's Grant farm has not been in use long enough to give any authoritative evidence of its eventual success? No.
185. And the large area of vacant ground surrounding the portions which you have put under sewage irrigation would also tend to relieve the irrigated portions of surplus liquid? To a very slight extent, because they are all higher than the paddocks we have now.
186. Did not the Committee see, yesterday, a considerable area of uncultivated land flooded with surface water? That is comprised in the area of 43 acres to which I have referred as being under cultivation and available for irrigation.
187. Is not the sewage at Adelaide deodorised as well as filtered? I think not; I do not know what they are doing now.
188. You were in Adelaide in 1887? Yes; they were not deodorising their sewage then, because I spent a whole day on their farm, and witnessed the operations.
189. Did you ever hear of visitors to the farm being so taken with the pellucid aspect of the sewage matter as to have sufficient temerity to taste it? No.
190. If newspaper reports to that effect were produced, I suppose you would accept them as fairly accurate? Yes.
191. I suppose you depend very largely on your crops for the absorption of the sewage? Yes; a good deal.
192. If you had no crops, if it were merely a sandy waste, it would become very soon charged, and the growth of vegetation is an essential part of a sewage farm? Yes.
193. Therefore, whether a profit is realised or a loss is sustained is a matter of comparative indifference? Yes.
194. It is an essential without which you cannot do? Yes; unless you discharge it into the sea at once.
195. Have you read any accounts, of not exactly sewage farms, but plantations in England where willows are almost entirely used, affording a means of getting rid of enormous quantities of liquid? I do not remember any case where willows have been exclusively used to form a sewage farm. I have no doubt the books I refer to would give the information.
196. At Webb's Grant you use a variety of vegetation? Yes.
197. Are you doing that to ascertain what it is best to grow, or are you growing a variety with the view of making some return? It is to realise some return. We get experience every day as to what is the best crop to grow.
198. The clayey soil in the upper portions of the sewage farm is not a hard retentive clay, is it? I think it is.
199. Does it not contain a good deal of sandy grit? Some of it does, but I think the upper part does not.
200. Have you made any borings to ascertain the lower strata of the farm? No.
201. For all you know, this clay may be merely a crust overlying sandy deposits? It may be.
202. *Mr. Wall.*] Before adopting this system for disposing of the sewage of the city and Parramatta, the Water and Sewerage Board thoroughly investigated the subject, and adopted what it considered the best system? The Water and Sewerage Board have had nothing to say to this scheme.
203. Some person in authority has had information as to the best mode for disposing of the sewage of Sydney and Parramatta? Yes; the officers of our own Department.
204. And you have adopted this system as being the most satisfactory method? Yes.
205. Does the estimate of cost include the filling in of the farm? Yes; the total cost.
206. Have you any idea as to what you will be able to let the farm for? No; we do not take that matter into account, because there will be no return for the first two or three years.
207. *Chairman.*] You state that this estimate covers the cost of the sewage farm, that means the fascine dykes which you have already erected round the outer boundary? Yes.
208. You do not estimate that the filling up will cost anything, because the work will be done by the Harbours and Rivers Department? Yes; it will be done with material which would otherwise be sent to sea.
209. There is no doubt that at the end of two years you will be able to get a reasonable return? Yes; I think so.

C. H. Ohlfsen-Bagge, Esq., Principal Assistant Engineer, Sewerage Branch, Department of Roads and Bridges, sworn, and examined:—

C. H. Ohlfsen-Bagge, Esq. 29 June, 1892.

210. *Chairman.*] I suppose the details of this scheme have been worked out in your office? Yes.
211. Have you visited the locality yourself, or are you dependent on the field officers for your information? I have inspected the place myself.
212. And after mature consideration, you think this is the best, if not the only way, to deal with the sewage of Parramatta? Yes.
213. Has it had very careful and long consideration at the hands of the Department? Yes.
214. Whom have you consulted in connection with this scheme? We only consulted amongst ourselves, that is, among the principal officers of the Department.

C. H. Ohlfsen-Bagge, Esq. 29 June, 1892.

215. Do you think your estimate of the cost is likely to be exceeded? It is very hard to say. I think it is a very fair estimate.
216. You have had a large experience of similar works in and about Sydney? Yes.
217. Your estimates are based on your knowledge of the cost of those works? Exactly.
218. I suppose that the pumping of the sewage matter is not looked on with very great favour by sewerage engineers, if they can get it by gravitation to the depôt? If we can get it by gravitation we prefer it; in this instance we cannot.
219. The fall to the pumping-station is quite little enough? Yes; sufficient to do it.
220. There is not fall enough to do without a pumping-station? No.
221. As your sewage depôt is some distance from the town, you must of necessity pump the sewage up into the main for delivery? Yes.
222. Is it a fact that the proposed sewers are large enough to serve an increased area in the future? The outfall sewer is large enough to serve the whole future population.
223. But if there is a large increase in the sewage matter, you will have to duplicate the delivery main? Yes.
224. Have you had any large experience of sewage farms in other countries? I have studied the question from books. I was never on sewage farms in any other country.
225. Do you think that the sewage farm at Webb's Grant has come up to the expectations of those who originated the idea? Well, it ought. There could not be a better place for a sewage farm. It is a pure sand filter. If they do not clog the filter it will last for hundreds of years.
226. The means to prevent clogging is, I suppose, to cultivate the land? Ploughing it up, and removing the actual manure matter by growing cereals.
227. Supposing no vegetation were grown, it would soon become clogged, and create a nuisance? No; the sewage matter does not go into the sand at all, but remains on the top.
228. The sand merely acts as a drainer for the effluent water? Yes.
229. If not attended to by the growth of crops, it would be merely a deposit of matter on the surface? Yes.
230. And which might become a nuisance, but the growth of vegetation absorbs that matter? The growth absorbs the matter, and ploughing keeps the ground open.
231. When the Western Suburbs Sewerage Scheme was investigated by a previous Committee the Liernur system of dealing with sewage received some attention? Yes.
232. It was stated by some witnesses, that whilst that method might do for isolated and comparatively small populations, it would not suit a large area such as the western suburbs? Exactly.
233. This being an isolated area, do you think it could be economically adopted here? Not at all. It would cost double the money. You would have to introduce the Liernur system and the gravitation system at the same time. The Liernur system does not take away your sewage, but only the fœcal matter.
234. You had in your mind, when you decided on this scheme, the principles which govern the Liernur system? Yes.
235. And it is after giving all due weight to those principles that you concluded that this scheme is preferable to any other? It is the cheapest and best.
236. You do not admit so much water into your storm-water sewers in this case as you do in the case of the Western Suburbs Scheme? No; we considered each town on its own merits, and we reduced the water supply. Parramatta could not produce more than 40 gallons per head per day for many years to come.
237. But if you had sufficient gravitation to take your sewage right on to the farm without the intervention of a pump, would you allow more storm-water to go into the channels than you propose to do, or is it because you have to deal with every gallon of sewage by pumping that you restrict the inflow of storm-waters? I honestly believe that we have made a fair allowance. If you allow more storm-water to go in you must increase the whole cost of the scheme.
238. Was not one of your reasons for allowing the storm-water to go into the Western Suburbs Scheme to give an increased velocity to the sewage matter going down your sewers to Webb's Grant or Bondi? That was one reason. The western gradients are very flat.
239. Several storm-water sewers have already been constructed in connection with this scheme? One, a short piece at Clay Cliff Creek.
240. Was that design got out and approved before you decided on this scheme of sewerage for Parramatta? Yes.
241. Have you worked this piece into your storm-water sewers, or *vice versa*? The storm-water sewer was bound to work into this scheme. We had the scheme before us in a rough way prior to that storm-water being approved. We knew that these creeks were forced to come in as adjuncts to any future sewerage scheme.
242. Do you know what area of the Granville municipality can be drained into the sewage farm? I believe the whole municipality.
243. Hardly along the bank of the Duck River? Not exactly down below; but the ground on both sides is higher, and we could get over the river.
244. You think you will have sufficient area at the farm to deal with the sewage of Granville as well as that of the area left out of Parramatta? I think so, for many years to come.
245. Under whose inspection was the storm-water sewer at Parramatta carried out? Under the inspection of Mr. Davis.
246. Was it let by tender? Yes.
247. *Mr. O'Sullivan.*] The system you propose is what is called the mixed system? It is a gravitation scheme.
248. Pretty well the same scheme that you proposed for the western suburbs? Not exactly the same.
249. It is nearly four years since you adopted that system? Yes.
250. Has there been any improvement made in sewerage works in that time? I do not think so.
251. Your Department is well posted in all improvements which have been made? Yes; we have members of the engineering institutions of several of the leading European States in our Department.
252. You consider that in the case of Parramatta you have adopted the best system suitable to its requirements and its surroundings? I think so.
253. *Mr. Davies.*] You have had no practical experience in the treatment of sewage matter? I am not a sewage farmer, but a civil engineer.

C. H. Ohlfsen-Bagge, Esq. 29 June, 1892.

254. You do not know much about the treatment of sewage matter? Not practically as a sewage farmer.
255. But you know how to construct sewerage works? Yes.
256. Some localities are better suited for the purpose of filtration? Yes.
257. Do you think any nuisance will arise from this farm being covered with fæcal matter? That is impossible, because, according to this tracing, the pipe service will enter at the junction of Tramway Avenue and Thackeray-street. It will then pass down for a distance of 8 chains to a small tank, 5 feet in diameter, raised above the ground. From this standpipe the main sewer distributing pipes will run along raised roads east and west, and south and north. Between those roads we have small fields, varying from 2 chains to 8 chains in width, which are divided again by dwarf embankments. The ground between each field will be flooded as the sewage comes on, and after it is flooded it will be ploughed up. If simple ploughing will not do it we will have to revert to the ridge and furrow system.
258. So that only a portion of the farm will be covered with sewage matter at any one time? Yes; we will take one field after another.
259. *Chairman.*] Some attention was given, a year or two back, to the purification of sewage by electrólysis;—has there been any development of that system in a way to cheapen the process? No; the developments point out that, so far, it is quite impracticable.
260. While theoretically correct, it is too expensive to be brought into actual practice? Yes.

Joseph Davis, Esq., M.I.C.E., Assistant Engineer, Sewerage Branch, Department of Roads and Bridges, sworn, and examined:—

J. Davis, Esq., M.I.C.E. 29 June, 1892.

261. *Chairman.*] You have supervised the field-work in connection with the proposed scheme? Yes; as far as it has gone.
262. You are also in charge of the storm-water sewer over Clay Cliff Creek? Yes.
263. Was that storm-water sewer started before this scheme was decided upon? The surveys were being made at the same time as the contract was being prepared for the storm-water sewer.
264. I suppose the construction of that sewer was brought about by the usual local agitation for the expenditure of public money? I believe it was through Mr. Taylor, if I remember rightly.
265. It was recognised that if Parramatta was to have a sewerage system it would require storm-water channels as well? Yes.
266. And the sum of £16,000 which has been expended on that scheme included the cost of making the sewer, resuming the land at the sewage farm, and constructing the fascine banks? Yes.
267. Does it include anything else? Nothing else, except the cost of the surveys.
268. Each particular work is charged with the cost of the surveys? Exactly.
269. Were you consulted, after you furnished this data to the office, as to the scheme itself? Yes; I assisted Mr. Bagge, and with him went over the lines of the proposed sewers.
270. And you think it is the best possible scheme to drain Parramatta? I think it is the cheapest and best way of dealing with the sewage of Parramatta.
271. You are acquainted, if not from observation, from reading, with the Liernur system? Yes, from reading; and I prepared a statement this morning, thinking that possibly I might be asked some questions on the subject.
272. We shall be glad if you will read your paper? The Liernur system removes excreta, and does not deal with the drainage of kitchen slops, bath water, or general house drainage, so that any city or town adopting it would have to provide a separate system of drainage to do this work. Dr. R. Blasius, of Brunswick, in 1885, stated, on the authority of the City Engineer of Amsterdam, that the cost of the Liernur system in the city was 4s. 10d. per head of the population, and that only 385 gallons of semi-liquid sewage per head per annum were treated. Professor Tidy, F.R.S., estimates that the annual quantity of fæces and urine amounts to over 300 gallons per head, and it is, therefore, obvious that very little except fæces and urine finds its way into the Liernur system at Amsterdam. In the case of Parramatta, as there are practically no sewers, even if the Liernur system were adopted, a system of sewers in addition, such as is now proposed, would have to be constructed to carry away the liquid sewage. The pan system in use at the present time in Parramatta is doing the work which the Liernur system would do if adopted, and unless some such system as the one before the Committee is executed, the river would be polluted, and the nuisance complained of for so long would remain unabated. At the time the Western Suburbs Scheme was under consideration, estimates were prepared giving the relative costs of the water carriage system and the Liernur system for the area dealt with by the scheme propounded by Mr. Stayton, and the result was that while the former was estimated to cost 3s. 10d. per head per annum, the latter was estimated to cost 7s. 1d. per head per annum. With reference to the sanitary aspect of the Liernur, I think it will be admitted that it is scarcely desirable to allow fæces, urine, and foul water to remain in closet pipes and traps for probably twenty-four hours before being removed, as is the case in this system. The water carriage system has come into general use in England, where sanitary engineering, on account of exigency of circumstances, occupies the leading position throughout the world. Engineers in England have had under their personal observation the operation of the Liernur system during the last twenty years, and if there had been any advantage in it, either from a sanitary or economical point of view, I am persuaded they would gladly have availed themselves of it. Up to the present, as far as I am aware, in no case has the system been adopted in England. The places where the Liernur system has been most successful have been in Holland, principally in Amsterdam, where the levels are unfavourable to the adoption of other systems of drainage. At a few other places on the Continent besides Amsterdam it has been adopted, where the population has been concentrated to a high degree; but in sparsely populated districts the cost has precluded it. The population of Amsterdam in 1885 was 121·5 per acre, whereas that of Parramatta is about twelve persons to the acre; showing, I think, that there is no parallel between the case of Amsterdam and that of Parramatta. As long ago as 1876 the system was discussed by the Institute of Civil Engineers, and all the leading engineers were of opinion that it was unsuitable for English cities and towns. Sir John Fowler says:—The chief objections urged against its use are: 1st. That it does not by one operation deal with the solid and liquid refuse of a house. 2nd. That it is more expensive than other systems to adopt and maintain. 3rd. That there is the contingency of failure in operation. 4th. That it is less cleanly, and free from offence than removal

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removal by water carriage. He further says, "I think, where the water carriage of sewage can be obtained, that it is unadvisable to use any other." In 1881, the late Mr. Bennett remarked upon Mr. Kirchener's offer to introduce the Liernur system into the city of Sydney, as follows:—1st. The Director of Works, Amsterdam, is against it. 2nd. Rawlinson and Reid call it a toy. 3rd. William Bazalgette says it cannot be introduced into an English town. 4th. Sir Joseph Bazalgette says it has cost per head four times the cost of the London drainage, and will cost five times as much to work it. 5th. Sir John Hawkshaw rejected it for Glasgow, and Mr. Bateman concurred. It appears to me, in the face of these highly competent authorities, it would scarcely be prudent to adopt the Liernur system for dealing with the drainage of Parramatta.

273. You agree with the authorities you have quoted that the water-borne system is the best system? Certainly, in a case like this.

274. The question of dealing with sewage at its outfall is a question of levels, in other words, if you can get it into the sea it is the cheapest and best way? Yes.

275. And next to that, if you have an inland town, the best way to utilise the sewage is to put it on the land? Exactly.

276. I suppose if you could have got sufficient fall you would have drained directly from Parramatta to the sewage farm? Yes.

277. You have only just sufficient fall to allow it to gravitate to the pumping-station? Yes. We have to lift the sewage to a height of 35 feet when it reaches the pumping-station to allow it to gravitate to the farm.

278. Will the engines be constantly running, or will the sewage be pumped up occasionally into the main? They will be constantly running. It would be costly to provide storage-room for the sewage at the pumping-station, and it would not be advisable to do so. We shall have duplicate engines, and provision will be made at the pumping-station to run the sewage into the river if anything should happen.

279. I suppose the great object is to get the sewage away from the town or place where it accumulates direct to the sewage farm or outfall as soon as possible? Yes.

280. It is the delay in transit from which danger really arises? I think so.

281. How long does it take to reach the farm at Webb's Grant? It travels at the rate of about 3 feet per second.

282. It has to go through a sort of screening process which must retard it for some time? Not to a very large extent. I suppose it would take possibly a couple of hours from the time it leaves Surry Hills to reach the Botany farm. I observed one day, when a storm came on in Sydney, that it took two hours to reach the farm.

283. I suppose you fully agree with Mr. Bagge that you have made ample provision as regards the mains and sewers for the sewerage of this area? I think so. Considering that we have to pump the sewage it is important that we should cut down the provision for storm-water as much as possible.

284. You will have less storm-water running into the storm-water sewers than you have in the case of the western suburbs? Yes, because in the latter case there is no pumping to be done.

285. And the little extra storm-water only enables you to give extra velocity to the sewage? It is desirable to have a certain proportion of storm-water going through the sewers for flushing purposes, but in the case of Parramatta, where pumping has to be resorted to, it is desirable that the cost should be taken into consideration.

286. In all probability if you were gravitating your sewage direct to the farm you would allow a little more storm-water to run through the sewers? I think so.

287. Have you any idea as to what area at Granville could be served by this sewage farm? I do not see why the whole of it should not go into this farm. It might necessitate a little pumping down by the river bank.

288. In going round Granville and Parramatta did you hear any serious objection raised on the part of the people of Granville to the filth of Parramatta being poured into their municipality? I know that the Granville people object very strongly to the sewage farm.

289. Do they still object, or is it an ancient objection? It is two years since we heard from them. I do not think they like a portion of their borough being used for a sewage farm.

290. If, in order to deal effectually with their sewage in the future, it will be necessary to have a farm there, do you think there is any reasonable ground why they should object to its being used by the adjoining municipality? I do not see that there will be the slightest objection to the farm in any way whatever.

291. The storm-water sewers that you have constructed have not a life of sixty years? Well, they might require to be repaired, but it is very good work.

292. A considerable number of cracks are in the work? Yes, I think it is quite impossible to prevent concrete in work of this description from cracking. It is not due to settlement but simply to contraction. In hot summer weather we find it cracks a great deal more than it does at any other time, although we take every precaution to prevent it.

293. The underground sewers would not be so liable to that extreme of contraction? In underground sewers that sort of thing never happens.

294. What life do you give a storm-water sewer? I think these should last twenty or twenty-five years. We are taking into consideration the advisability of lining the concrete with brickwork. In that way we hope to prevent this cracking. If the whole of the channel is constructed with concrete it is almost impossible to prevent cracking in the severe heat to which it is exposed.

295. Why did you introduce these sharp angles into the storm-water sewer—to avoid the resumption of property? We had to keep on the lines of the old creek as much as possible, because if we did not we should have raised complications with the land owners.

296. Would it not have been much cheaper, and in every way much more desirable, to straighten the course of the sewers? It would have been desirable but more costly.

297. Would not the diminished length, owing to its being straighter, have more than compensated for the cost of any land resumptions? I think it would have cost more to resume the land.

298. Do the houses that abut on the storm-water sewer discharge their drainage into it? Some do, but not the whole of them. We have left provision for the house drains.

299. They are allowed to discharge their house slops, pending the construction of the more complete system which is now before the Committee? Yes.

300. And if this scheme is carried out they must use the sewers proper for that purpose? Yes.

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301. Did you visit the various Government asylums? Yes; I went through two or three of them.
302. How do they get rid of their night-soil? I believe they bury it on their grounds.
303. I suppose you merely visited the Government buildings to get the levels? To see how we could intercept the drainage from those institutions.
304. Did you notice whether the Parramatta River (so called) was very foul, owing to the inflow of sewage matter? It lies about the banks, and, especially in summer time, causes a very great nuisance.
305. You think it is very detrimental to public health? I think so.
306. *Mr. Davies.*] Have you given any attention to the treatment of night-soil by fire? I have had no experience.
307. Are you aware that it is so treated in Melbourne? Yes; also at Katoomba, and several other places.
308. Do you know that the treatment is pretty successful in Melbourne? I have no doubt it is very successful. I do not think it is very desirable. It only deals with a very small part of the sewerage question.
309. Are you aware that they filter the liquids, and destroy the solids by fire? I understand that they do so.
310. Would not that system be very much less objectionable at Parramatta than the proposed farm? I do not think so, because it deals with only a very small part of the sewerage question. I understand that the scheme which they are carrying out is to deal with the whole of the sewage of Melbourne, and that what you speak of is only a temporary one.
311. Do you not consider that it would be very much less objectionable to burn the solid sewage in kilns? I consider the best way is that which we propose.
312. Trusting to the sand to filter the liquids and allowing the solids to remain? The solids, by the time they reach the farm, will not exist. My experience is that the whole thing becomes so churned up that it is in a semi-liquid state by the time it reaches the farm.
313. Would not the action of our summer heat on the surface of the farm generate smells which would poison everyone within a radius of 2 or 3 miles? From my experience I should say no. I have had an experience of eleven years in connection with sewage works in England and in this Colony.
314. In connection with sewage farms? Yes.
315. What English sewage farms are treated in the same way? Dudley, Birmingham, and other places.
316. On the same lines? Very similar.
317. The soil is not of the same nature at Dudley? At Dudley it is sandy soil.
318. A hungry soil? To some extent.
319. It filters through a sandy soil there; you have not a clayey subsoil to deal with, as you have here? The clayey subsoil will have to be drained before it can be treated to any large extent.
320. If it is not drained in the way you indicate it must be an absolute failure? I do not think it will be a failure, but it would not take so much sewage matter as it will when it is drained. When sub-soil drains are put 6 feet below the level of the surface, and those drains are filled up with suitable material, it will take a very large quantity of sewage. I should say 700 or 800 people to the acre.
321. That will drain into the river? The effluent will go into the river.
322. You have not provided for the sub-soil drains in your estimate? We have provided for laying out that farm, and in connection with that work the sub-soil drains have been thought of.
323. It is not shown in your proposals; this is the first time we have heard anything of the matter? I have in my hand a plan which shows that we have provided not only for embankments, but also for sub-soil drains.
324. At what depth do you propose to place the sub-soil drains? On an average of 6 feet.
325. That will make a section of land capable of filtering a larger proportion of sewage matter than it would otherwise do? Yes; I consider that when the sub-soil drains are put in, the land will be capable of treating the same quantity of sewage as we now treat at Webb's Grant, that is at the rate of 800 people to the acre.
326. And you are strongly of opinion that no possible nuisance will arise from treating the sewage in this way? Yes.
327. And you also think that there can be no reasonable objection raised by the residents of Granville, or the people on the other side of the river, to the carrying out of this scheme? I think not.
328. *Mr. Neild.*] In your researches into the question of sewage farms, have you dealt with the chemical action of soils on sewage? Not from the chemist's point of view, but from an engineer's I have certainly watched very carefully the effect of sewage on soil.
329. It is proposed to fill up the lower portion of this farm with sand from the harbour;—does sand produce any chemical effect on sewage, in the shape of deodorisation or otherwise? Not the particles of sand themselves. The sand which we will get for filling up will not be absolutely pure sand, but will contain a very large proportion of sandy dirt. I do not think we could get better soil to treat the sewage with than that kind of sand.
330. Do you know of any sewage farm where such soil is used, or is this to be regarded as an experiment? I have had no experience of reclamations being used as sewage farms.
331. Does your study of the question give you any information on the subject? I had experience myself in similar soils to what that will be when it is filled up.
332. Where? At Dudley, in Worcestershire.
333. I suppose Dudley was a natural bed? It was the natural earth, but still it was similar in its composition. It was very sandy, and before it was treated with sewage it was scarcely capable of yielding any vegetable life whatever.
334. Did the sewage become filtered sufficiently to be discharged into the water channels without producing any ill effects? There were no ill effects whatever. The land proved to be suitable in every respect.
335. In the course of years I suppose the character of the farm changed, and it became less sandy? Exactly. It improved very much, and was able to produce very large crops.
336. But then the purer the sand bed, the less valuable for the purification of sewage? I scarcely think that.
337. Pure sand would be like so much shattered glass? It would prevent the particles of solid sewage passing

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passing very far below the surface. In that way it would eliminate all the objectionable portion of the sewage, and nothing but what we know as effluent would pass away.
338. You stated just now that the solids are so churned up in the sewers that to all appearances they become semi-liquids;—are we to understand that its power of filtration is so great that sand is able to retain matter in solution? I should certainly think it would do so.
339. Are we to understand that the running of water through a sand-bed improves its quality, or only removes solids? It eliminates that which the water holds in suspension, whatever it may be. I think myself that the lower portion of the farm at Parramatta will give better results than the higher part, on account of its being probably of a sandy nature.
340. Practically, you propose to use this as a large filter, allowing the product to run into the river? Exactly.
341. Do you know anything of the system in vogue at North Sydney—the International system? We are carrying out sewerage works there, and we propose to use the International system to deal with the sewage when it is completed, which will probably be in three or four years hence.
342. *Mr. Ewing.*] We understand that the scheme you offer for the drainage of Parramatta is in accordance with scientific principles? I believe it to be so.
343. It is the best that the Department can suggest? Yes.
344. You utilise Clay Cliff Creek, practically, as an outlet for storm-water? Yes.
345. Therefore, you use the natural fall of the country for the storm-water sewer? Yes.
346. But it is not necessary to use that natural fall for the sewage? No. We should construct the sewer so as to get a rate of 3 feet per second, and we consider that if we do the sewers will be self-cleansing.
347. You do not trouble about the contour of the country at all? No. The contour of the country decides the position of the sewers, but not the fall.
348. Do not the streets decide the position of the sewers? Yes; we have to put the sewers in the streets, as a rule.
349. The contour of the country does decide it, but you must get your 3 feet a second? Yes.
350. What does that 3 feet per second depend upon? Upon the grade of the sewer to some extent.
351. It depends on two things—the fall and the friction? Yes; fall, friction, and volume.
352. You have to reckon a great deal more in a sinuous sewer than in a direct one? Yes, more friction.
353. Therefore, the turn at Junction-street causes you to have a greater fall than you otherwise would have? I do not quite agree with that turn. I think the sewer, when it is constructed, will go down Wentworth-street, towards the creek.
354. You think that turn is an objectionable feature? I think so. It was noticed too late to be altered.
355. You think it will be altered? Yes.
356. What is the difference in height between the pumping-station and the farm? The sewage will have to be lifted 35 feet by the pumps.
357. That is not the difference between the two services? I do not think it would be more than 12 or 14 feet.
358. It may not be more than 12 or 14 inches from the look of the country? The farm is about 6 feet higher than the surface of the ground at the pumping-station.
359. With thick sewage matter do you think you will get a rate of 3 feet per second, with a fall of 1 in 750? Yes. The sewers are to be constructed with that object in view.

Walter Liberty Vernon, Esq., Government Architect, sworn, and examined:—

W. L. Vernon, Esq. 29 June, 1892.

360. *Chairman.*] The various Government institutions in Parramatta, as far as maintenance is concerned, are under your jurisdiction? The maintenance and construction generally.
361. How many Government buildings are there in Parramatta proper? We have the Gaol, the Lunatic Asylum, the George-street Benevolent Asylum, the Macquarie-street Benevolent Asylum, the Industrial School, and some minor buildings.
362. And the Hospital? That does not come under our Department; I think it is governed by trustees in Parramatta.
363. How do the institutions which are under your jurisdiction get rid of their night-soil and general slops? The night-soil of the asylum is buried in the grounds, which comprise 54 acres; but as regards the other institutions which I have named, I think the night-soil is dealt with by the Corporation, and all their water goes into the river about 20 yards above Lennox Bridge.
364. Does it pass through any filtering process at all before it enters the river? We have traps to prevent the back flow of gases, but no filtering-beds.
365. I suppose some of the house slops are even as objectionable to health as the excreta itself? The smell from decayed soap-suds is a greater nuisance than almost anything.
366. That, of course, goes into the river? All goes into the river.
367. Does the river present a very filthy appearance? Just about the Lennox Bridge it was in a very bad state indeed last year. There is a deep pool just below the bridge; the drains discharge into this pool, and it forms a most sickening spectacle and smell. Every time the tide was down, this deadly putrid mass annoyed the townspeople.
368. Is there no way of dealing with the matter in each institution, such as by deodorisation, or is the quantity so large that it is impossible? Our area is too small for irrigation, and it would be preferable to get rid of the sewage as proposed than to deal with it on the sites.
369. You would certainly be in favour of some general scheme whereby the Government buildings could be sewered? Decidedly. I may state that we are laying down a pipe so as to carry this nuisance down to the flood-gates and training-walls—about half a mile lower down—to the height of the salt water. It will be the same nuisance in a slightly less degree.
370. Do you think it would pay the Government to pay (say) two-thirds more than they are paying, in order to effectually deal with the sewage of their institutions? I should think it would; at the same time, I do not think it would be necessary. I think the payments for one service and another at the present moment are sufficient for that rendered.
371. We are told that the pan system costs Parramatta about 4d. in the £, and that under the proposed system,

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system, in order to pay the principal and interest, the rate will amount to about 11d. in the £;—do you think the game is worth the candle? I have made a calculation which places the present expense pretty well at 1s., on what I estimate will be the ratable value of these institutions. Of course, I have to assume some little part of the calculation, but I have a basis on which to work.

372. Will you give the figures? I valued the four buildings under my jurisdiction—the Gaol, the Asylum, and the two Benevolent Asylums—with the land, at £263,267. I assume, as an investment, they should pay 5 per cent., which would be the same as a rental of £13,327 a year. I strike off the ordinary 10 per cent. for assessment purposes, making a ratable value of £12,041 a year, which at 1s. in the £ will produce £600 a year. The present payments for night-soil service at George-street, Macquarie-street, and the gaol come to £506. On the same basis, I value the asylum at £120, making a total of £626 a year; so that practically they are almost the same thing. One shilling in the £ on the assumed ratable value is £602 per annum.

373. I suppose that once the buildings were connected with the sewers proper it would save a great deal of annual outlay for pans and other things? Yes.

374. As far as these buildings are concerned, you could well pay 1s. in the £ for this service? I think we should be glad to pay it.

375. In view of its being so much better, and available for everything, do you think it might be increased without raising any objection on the part of the Government? I would not raise the rate. It is just possible to raise the rental value, although it would not then be a 5 per cent. basis.

376. Have you given much thought to sewerage schemes generally? I have not given much thought to this scheme except generally.

377. Do you favour the idea of water-borne sewage as against, for instance, the Liernur system? I think it is the best, because it is automatic.

378. Have you had any experience in sewage farms? In two places—at Tunbridge Wells and High Wycombe.

379. Do you think they can be worked without causing any nuisance to the neighbourhood? In one case the water goes into the trout stream.

380. Do the trout live? Yes; I may say that the water goes over chalky country.

381. I suppose no suggestion has been made to remove the occupants of the Government institutions elsewhere? It has been suggested. For my own satisfaction, I have compared the population which the land would carry as a suburb with its present population. The present population of the Government buildings is 2,900, and we are increasing the accommodation of the gaol by 171 persons, making a total of 3,078 on a total area of 80½ acres. Assuming that the land were laid out as a building suburb, I should take off 10 per cent. for roads; I would put eight houses to the acre, that is 564 houses on the whole area, and calculating at five persons to the house, curiously enough it gives a population of 2,820 persons, which is just about the present population in the Government institutions.

382. And there would be a large monetary loss in the way of destroying the buildings and erecting them somewhere else? Yes.

383. I suppose there is very little likelihood of their being removed elsewhere? I do not think the Asylum or the Gaol could be removed, but I think the Benevolent Asylum should be removed, especially the George-street one, as it is most dilapidated, and will in course of time come down of itself.

384. If it were removed, it might be used for the general population? Yes; on the other hand, these are very small items in the calculation.

385. Have you any other figures to submit? No.

386. *Mr. Collins.*] Have you entered into any negotiations with any persons to deal with the night-soil in these institutions? I have not in my Department. As a matter of fact, it is not part of our work; it is done by the several institutions themselves. We used to undertake the Gaol, but that we gave up.

387. You say you believe in this system, rather than burning the night-soil? It has always stood the test of time, and it is so automatic that it is the safer one.

388. *Mr. Ewing.*] Do you think that a clayey subsoil is a good subsoil on which to have a sewage farm? It is always best to have a gravelly soil on the surface.

389. Did you ever hear of sewage farms with clayey subsoils? I have heard of them with the lower soil of a clayey nature. It is always best, of course, to have a lighter soil on top.

390. You will not express an opinion as to the suitability of this position for a sewage farm? No; I am not sufficiently acquainted with the details of the scheme.

THURSDAY, 30 *JUNE*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Sewerage Works for Parramatta.

John Richard Palmer, Esq., Mayor of Granville, sworn, and examined:—

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391. *Chairman.*] You are Mayor of Granville? Yes.

392. How long have you been an alderman? Three and a half years.

393. This is your first year as mayor? Yes.

394. Has your Council considered the proposed Sewerage Scheme for Parramatta? Yes; when it was first mooted. Prior to the gazetting of the farm it was very actively discussed, not only by the Council, but also by the people.

395. Was any objection raised to the proposal? The feeling against it was very strong. It was thought that the farm would be too near a populous district likely to extend in the direction of the works. J. R. Palmer, Esq.
396. But I suppose that if the sewerage works have to be carried out some low-lying land will have to be used for dealing not only with Parramatta but also Granville, in the future? Probably so. It was thought, and is still thought, I believe, by the people, that a site much further away from any centre of population than this site would be desirable. 30 June, 1892.
397. Is the agitation on the part of the Granville people as strong now as it was at first? I believe the objections to be as strong; but, of course, there is not the same amount of active opposition displayed.
398. Do you think that some of the feeling is due, perhaps, to want of knowledge as to the working of sewage farms? There may be a great deal in that.
399. I suppose that ninety-nine persons out of every 100 think that a sewage farm must of necessity be a great nuisance? I think that view is presented to a great number of our inhabitants.
400. Do you think that a sewage farm carried on on the same lines as the sewage farm which you saw at Webb's Grant the other day would be any great nuisance at this particular point? At the present time not a great nuisance to the people of Granville.
401. Have the people of Granville suggested a more suitable site than the proposed site? I think not.
402. Although they complained they could not suggest a better site? No. Of course, at the public meetings the question was looked at in this way,—that the sewage farm would be surrounded by the boroughs of Rydalmere, Dundas, Parramatta, Granville, and Auburn, and that at one time or another each borough would receive a share of the nuisance, just as the wind happened to be moving. There are two tidal creeks running through a portion of Granville, and it is expected that a certain portion of the matter will pass up the creeks and create a nuisance.
403. If it has been proved that the effluent water from the farm will go into the river or creek in a perfectly pure state, of course it will meet that objection? Undoubtedly.
404. Did some of the opposition arise from the fact that Parramatta people would empty their sewage into your municipality; would the objection be as strong if a site had been selected within the boundaries of the Parramatta municipality? Judging carefully, I should say there would have been as strong objection if it had been located near any of these municipalities. There is not the slightest doubt that the fact of the Parramatta Council using a portion of our land as a sewage farm was a strong factor in the objections to this proposal.
405. If the selection of an outside place for the sewage farm would entail a considerable increase in the cost of the system to the Parramatta Council, and other councils by whom it might be used hereafter, do you not think that feature ought to receive some consideration? Most decidedly; but that which presents itself as the least expensive, coupled with the greatest freedom from objectionable features, ought to be adopted
406. We are informed by the officers who are responsible for this scheme that the whole of Granville, except the small portion which immediately borders on Duck River, can be drained into this sewage farm in the future. Do you not think it would be for the benefit of Granville to have a place where its sewage could be deposited at a comparatively small cost? The Council consider that the cost would be very great, as Granville is rather peculiarly situated. I hear now, for the first time, that we should be able to drain into this farm, and I think that is a point which our people do not thoroughly understand. There are many difficulties in our borough—such as, for instance, its straggling nature—which lead the people to believe that the expense would be far greater than they care to bear—at least, at present.
407. Have your Council passed any definite resolution protesting against the establishment of this farm in their borough? We have passed several resolutions, which we have forwarded to the Minister for Works.
408. What was the last one passed? The answer to the last written resolution, which I have in my hand, is dated 2nd January, 1890, and since that time I believe we have endeavoured to protest through the members for the county.
409. As the scheme got more matured the opposition, as far as the Council is concerned, seems to have died out? That is scarcely the way to put the matter, for the agitation was kept up from the initiation of the proposal up to the time that the sewage farm was gazetted. The people then began to regard the case as rather hopeless, and to think that their expostulations had been overriden by the Government.
410. They thought it was no use to protest any further? Yes.
411. Do you concur in the view of the people of Granville that this sewage farm would be a very great nuisance, and should not be established there? I think not at the present time. I said just now that if the farm is conducted on similar principles to the farm which I saw a few days ago it would not be an immediate nuisance or trouble to Granville; but I am of opinion, personally, and I believe I express the feeling of the people, that to establish a farm at all near Granville will be a source of danger to the district.
412. You are aware that nearly the whole of the sewage of Parramatta flows into the river, and that its banks are not only polluted, but that the matter is carried by the tide into Duck River? Yes.
413. If the establishment of a sewage farm would prevent the contamination of the banks of both rivers, from which you also suffer, do you not think it would be better to treat the sewage on this farm than to have the banks lined with offensive matter? No doubt; but the question still remains whether the nuisance would be greater than it is now.
414. In view of your visit to the sewage farm at Webb's Grant, do you think that the nuisance at the proposed farm would be greater than the present nuisance on the banks of the two rivers? Practically, I think not. The odour at Webb's Grant seemed to me to be rather permanent, whereas the odour from Parramatta River is not a permanent nuisance to any particular municipality. It depends on the state of the tide.
415. You admit, of course, that a very great nuisance does exist in the upper reaches of the Parramatta River at low tide? But more distinctly for Parramatta.
416. Knowing some of the difficulties which Parramatta experiences with its sewage, do you think this Committee would be justified in recommending, on sanitary grounds, that this project be carried out, although it may entail a little nuisance to the Granville people? It is unlikely, as far as I can see, that the borough of Granville will fall in with its recommendation. There seems among the majority of the people a strong disinclination to agree to the establishment of a sewage farm there.

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417. I suppose Granville will grow in the course of a short time, and will require a sewage system of its own? Certainly.
418. It cannot for ever drain into the water channels and filter down to Duck River? No; but some scheme might be devised to take the sewage of Granville, Parramatta, and surrounding municipalities some further distance away. It is thought that, with the vast area of land around these districts, some place could be found where the sewage could be disposed of without becoming a nuisance to anybody.
419. How do you deal with the night-soil in your borough? By the earth-closet system, and by burying the soil.
420. Where do you bury the night-soil? We have buried the night-soil for some considerable time at Hudson Brothers' farm, which is within our boundary, and we also bury it on the Rosehill racecourse, which is also within our boundaries.
421. I suppose objections have been raised to that system on the ground of its being dirty and offensive? I had not heard of any objections until a few days ago, when I believe there was a prosecution about some nuisance which had been created.
422. No great objection has, therefore, been raised to your system of collecting the night-soil? None whatever.
423. But a time will come when your area will be thickly built over, and you will be unable to bury your night-soil? Yes; and, unfortunately, we are now debarred from further burial on Hudson Brothers' farm.
424. So you will have to face the difficulty of getting rid of it? We must fall back on our depôt at the racecourse.
425. Sooner or later that may be closed against you? Undoubtedly.
426. And you will have to find a more complete system? I think so.
427. If we are informed that, owing to the low levels, this mode of treatment would be the cheapest, would it not be better to welcome the establishment of a sewage farm, although within your own boundary, so as to get an inexpensive system of sewerage? We must welcome it if no other site can be found. The Granville Council feel, in consequence of some evidence which was given before this Committee, that their rights will be somewhat overlooked if the management of this work is vested in the borough of Parramatta, as was suggested, I believe, by Mr. Barling.
428. They think it would be unwise to place the works in the hands of a municipality which could deal with the territory of another municipality? Certainly. The Borough Council wrote to the Public Works Department, asking that the sewage farm might be re-gazetted, as the terms of the *Gazette* notice appeared to the aldermen to exclude Granville. The Council desired ample proof that it would have a perfect right to take advantage of the farm if it wished to do so. We received a reply, stating that there was no fear of such action taking place as we suggested, the land being vested in the Minister, and ample provision being made in the Water and Sewerage Act for the establishment of joint sewerage works. That, I may say, has never been looked upon as quite satisfactory.
429. You would like to have something more definite—first, that the works shall not be solely under the Council of Parramatta; and secondly, that your Council will be able to use the works as well as Parramatta? Yes.
430. These works are to be constructed under the Metropolitan Water and Sewerage Act, and, unless specifically placed under the control of some other body, will be under the jurisdiction of the Metropolitan Water and Sewerage Board;—do you think that the works should be controlled by that body, in preference to an isolated borough like Parramatta? Most certainly. We desire to be placed on an equal footing with Parramatta, without going into any other aspect of the case.
431. *Dr. Garran.*] The nearest point of your municipality to this sewage farm is the eastern end of the township laid out alongside the Rosehill racecourse? Yes.
432. You go right up to the farm? Yes; the farm was taken out of our municipality.
433. It is in no municipality at all now? No.
434. If the Rosehill township gets built upon, where can you possibly drain its sewage if you are not allowed to drain into the river? I do not see that we could drain anywhere else.
435. The farm will become as useful to you as to Parramatta? To that portion of Granville.
436. And to all that portion that lies between Duck Creek and Parramatta River? Yes; to most of it. There is a large hill a little way from the Parramatta River, on the south side.
437. If you are forbidden to drain into the river and creek it must go into the farm? Yes.
438. You have no idea at present as to where you can make a separate farm for Granville? None whatever.
439. So that you are objecting to this proposal without any alternative scheme? Yes; because at present we are not troubled with the necessity for providing a scheme.
440. The pressure is greater with Parramatta than with you, but it will come with you? We hope so, as far as population is concerned.
441. You spoke of a possible scheme to take the sewage of the united townships further away. Would it not involve some expensive pumping to deliver the sewage at a distance? No doubt it would; but I do not think that aspect of the case has been considered. It has been thought that for a considerable number of years night-soil could be disposed of on land further away than the proposed farm.
442. Is not cartage very expensive? No doubt; but those only who receive the benefit of the cartage are liable to the expense.
443. Is it not a dirty system? Yes.
444. And in the case of typhoid and other fevers, where germs are known to be in the fœcal matter;—is it not a dangerous system? It must be.
445. Is it not a system to be got rid of, if you can? Certainly.
446. You have no arrangement for burning the matter? Not at present.
447. It is notorious that burying does not kill the germs of disease? I believe so.
448. Supposing you had a bad attack of typhoid fever at Granville, and you bury all the fœcal matter in your depôt, you are simply burying the germs of future disease;—is that a good system? No.
449. Admitting that this system would cause the Parramatta people to pay a rate of 1s. instead of 4d. in the £, do you think it would be better worth their while to pay that money for a good system than 4d. for a bad one, as far as health is concerned? Undoubtedly.

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450. What is the view of the Granville people—would they pay a little more? I think so; but you must understand that this question is rather forced on the Granville people, inasmuch as they have no need, and will not for some years to come have any need for a scheme of this kind.
451. It is not forced on the Granville people, for they can go on as they are, and leave the Parramatta people to carry out the scheme? I mean the consideration of the question.
452. If it could be made pretty clear to the people of Granville that the farm would get rid of the nuisance in the river and creek, and that whatever nuisance there might be in the farm, it would not be half as bad as the existing nuisance in the river and creek—do not you think that would rather reconcile them to the project? It would go a very long way.
453. You have seen the banks of the river and creek sometimes in summer very slimy? Yes.
454. And the sun licking up moisture from the foul banks? Yes.
455. Do you think any exhalation from a sewage farm such as you saw at Webb's Grant can be equal in its mischief to the health of the people or its disgustingness? I cannot say that I ever experienced as bad an odor from the Parramatta River as I experienced in parts of that sewage farm.
456. Does any part of the sewage of Granville run into Duck Creek? None whatever; only the storm waters.
457. All the manure dropped in the streets goes into the creek? Undoubtedly.
458. You are helping to befoul the banks of the creek? We must be.
459. It may grow to a point at which you may be compelled to deal with this nuisance? Certainly.
460. Do any house slops drain into the creek? The house slops do; but not the closet slops.
461. What will you do when you are prevented from depositing your pan slops on the racecourse? We shall have to look for another depôt; in fact, we are now looking for another depôt.
462. You cannot have a depôt inside your boundary very well? We are not desirous of finding one.
463. Do you think any of your neighbours would like to have it? We do not propose to pass it on to any of our neighbours, we rather thought of taking it further away to unincorporated land.
464. A previous Committee, when considering the Western Suburbs Sewerage Scheme, found the suburban municipalities had the greatest possible difficulty even in carting their stuff through another municipality. You may be met with that objection? We may be, but we have not been yet.
465. There is a very great difficulty in carrying out a pan scheme when it gets to any magnitude? Yes.
466. At present you only have the system on a small scale, but as your population grows you will feel this difficulty very greatly? I think we must feel it greatly, in common with others.
467. Is it not worth their while to see if they cannot make common cause with Parramatta in regard to this sewage farm? That is their object if Parliament decides to have a farm there, but I suppose they naturally think that if it can be placed further away from the centres of population it will be better for everyone.
468. It can only be taken away by cartage or some mechanical means. Both schemes are more or less expensive? I believe there are points on the Parramatta River similar to this point, but much further down, where it would not be to the same degree the nuisance which it will be at this point.
469. Would you not get into trouble with Homebush, Concord, and Strathfield if you did? I scarcely think we would if it were taken to some of the flats.
470. We have it in evidence that there are sewage farms pretty close to considerable townships elsewhere, and that they are successfully carried on. Why should we be so frightened of making one a mile or half a mile from Parramatta? Personally, I am not afraid of the sewage farm at all. I think that the Webb's Grant farm could be made much less objectionable than it is now.
471. Do not you think it would be a very grand experiment, in the interests of Granville, to see how this scheme works? As an experiment, no doubt.
472. You gain all the benefit of it as an experiment, and you will be at no expense? Certainly.
473. The only possible reason you can see is that the wind, when it is north-east, may blow the odour of the farm on to Granville? The wind very rarely blows from that direction on to Granville. Our only fear is in regard to the creeks.
474. Have you not been reasonably satisfied that the effluent water is such that it does not materially damage the creeks? One creek has a very little fall, and an accumulation might take place.
475. Can the effluent water be anything like the contamination that is going into the river and creek now? No; certainly not.
476. How do you get rid of the house slops at Granville? Where the allotments are large the house slops are in many instances drained into the grounds, but there are some cases, very objectionable, where they are allowed to flow into the gutters.
477. Is there any screening or deodorising? Deodorising in some cases, but not generally.
478. That is all spread out in the gutter for the air and sun to lick up? Unfortunately it is.
479. The gutters are swept occasionally, I suppose? Yes.
480. Where your streets are kerbed and guttered, where does it flow? Into the creeks.
481. All the house slops contaminate the creeks, and if you are forbidden by law to contaminate the creeks you will be compelled to do something? Certainly.
482. Granville is really a contaminator of these creeks? To a minor extent.
483. And will become increasingly so as the population increases? That must follow.
484. The difficulty is a growing one, which you must face? Yes.
485. Your only alternative at present may be a sewage farm? I think so, and this sewage farm.
486. If it is to be a sewage farm, and possibly this sewage farm, why set up your backs against this one? Only for the reason I have stated. If it could be placed further away it would be more satisfactory. We fear that it will militate against the increase of our population and the progress of the district.
487. The ground is very low round the farm, and not very suitable for building on? Not at all suitable.
488. Supposing the Government were to resume a belt of ground round the farm, and plant it with trees, it would not affect anybody? Certainly not injuriously.
489. That is a perfectly feasible thing to do? Perfectly.
490. There is no building on the Rosehill township at present? No, not one.
491. Are the proprietors of that land opposed to the establishment of the farm? I cannot say.
492. *Mr. Neild.*] How many resolutions were passed by your Council in opposition to this scheme? Several resolutions. I have evidence of only two here; one is dated November, 1889, and the other May, 1891.

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493. Have you forwarded a copy of the resolutions to the Minister? Yes; to the Secretary for Public Works.
494. Since May, 1890, your Council has taken no action? Only through the members for the county.
495. Have any of your aldermen an intimate acquaintance with the scheme, or was their opposition of a general character? Some appeared to be acquainted with the circumstances, others, I think, were ignorant of the full circumstances.
496. Were you Mayor at the time? No.
497. Do you think that the members of your Council possess a more intimate knowledge of the subject now than they did then? Although the Council has altered in its composition, I scarcely think that its opinion has been altered.
498. You have seen the advertisements in the press calling for evidence? I cannot say that I have.
499. I suppose the aldermen who are opposed to the scheme know that it is under investigation now? They do now.
500. Have they asked you, as Mayor, to call a meeting? Last evening we held a meeting, and the aldermen left the matter in my hands, after I had expressed the opinions I have expressed here to-day, requesting me to answer any questions in much the same manner as I have done.
501. It would appear that the Council of to-day are not so opposed to the scheme as the Council of a year or two ago were? The Council of to-day, like the Council of a year ago, seem to have accepted the inevitable; and as it is useless to further expostulate with the Government, the best thing for us to do is to see that our rights are protected, and that we are placed on an equal footing with the Parramatta Council.
502. The disposal of night-soil and refuse has been a troublesome question with your Council for many years? It has not been a question with us at all up to the present. We have easily disposed of our night-soil since the time of our incorporation. I may mention that there is a vast area outside our municipality which is not incorporated in any borough.
503. You hope to pass it off there? We hope to find some spot there.
504. In what direction—to the westward? To the south-westward.
505. Would that not be on the watershed of Duck River? No, more in the direction of Guildford.
506. Would there not be a tendency for the sewage matter, if so deposited, to be taken back by the storm-water into your municipality? I think not.
507. Would not the south and south-west of Granville be absolutely on the watershed of the Parramatta River? Certainly not.
508. On what watershed would it lie? George's River, in the direction of Guildford, would be the nearest one.
509. Unless the sewage were deposited on a sewage farm there would be a risk in times of heavy rain of the obnoxious material being distributed by the storm-waters? If not properly disposed of.
510. Would it not be much more expensive to the ratepayers to cart your stuff to some unknown locality south-west, instead of passing it through ordinary sewers on to this farm? I think it would be at least equally expensive.
511. And nothing like so efficacious? No.
512. *Mr. Ewing.*] I presume you believe that public opinion in your municipality is against this proposal? It has been in the past, and I have no reason to believe that it has changed.
513. Still, I gather that you believe it is based on wrong reasons? No doubt a great deal of it is.
514. If the people of Granville had a full knowledge of the nature of a sewage farm, you would not have this erroneous opinion public? There would not be as strong public opinion, still there would be an objection to the project.
515. You believe that with full knowledge and proper information with regard to a work of this kind, this strong public opinion would disappear? It would be considerably lessened.
516. *Mr. O'Sullivan.*] Granville is the site of several large industries? It is.
517. Those industries are likely to grow more numerous in this district? We hope so.
518. If so, are they likely to go towards the Parramatta River? Yes.
519. So that the river, which is partly navigable, will become very valuable to the industries? Very valuable.
520. Under those circumstances, do you think it is wise to have a sewage farm on this site at all? I think that is one of the main objections to it.
521. If the farm were placed 1½ mile down the river, there would not be the same likelihood of that objection arising? I think not. I may say that when Duck River is deepened, as we hope it will be some day, the Borough of Granville will be a vastly more important place than it is now.
522. There is a good deal of what may be called waste country further south? A great deal.
523. If the sewage farm were established there, it is not likely that the surrounding country would be used for residential purposes? I think not; it is too low-lying.
524. If it could be so removed, it would remove all the objections from the industrial standpoint, and possibly remove many other objections? Yes.
525. *Mr. Humphery.*] Which of the two evils would the residents of Granville prefer—to have the existing condition of things, with the sewage flowing up Duck Creek, or to have a sewage farm and a clear creek, deepened and used, as it can be made navigable for small craft? Of course, they prefer to make use of this creek, which we think is capable of being made very useful to the borough.
526. *Mr. Hoskins.*] Did you see the effluent water running from Webb's Grant into Botany Bay? I did not see that particular portion.
527. You are not aware that the effluent water from that farm is as clear as the water in this glass? I saw some water which was represented as being very clear, but I am not certain that it was taken from the spot to which you allude. The water which I saw was certainly very clear.
528. If the water from the sewage farm at Parramatta is as clear as that water, would it cause any injury to the creeks which you fear will be contaminated? No, I think not.
529. In that case the principal objections urged by the residents of Granville would disappear? In that respect, undoubtedly.
530. You must admit that there is not much danger of any contamination of the creeks? Not much further contamination.

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531. Did you experience any great inconvenience or nuisance at Webb's Grant, except at one place—the tower? In various parts I noticed a very strong odour, especially in the irrigated beds, where the water was stagnant.
532. I suppose you know that the water is only kept on for a few hours? I was given to understand so.
533. Even that odour, which is not very overpowering, would only last a few hours? In that particular portion of the farm. I also noticed that a stronger odour appeared to rise from the solids, which, under the action of the sun, would be highly objectionable. I saw the farm under the best conditions—on a cold day. I expect that had the visit been made in the summer a stronger odour would have been noticeable.
534. Did you experience as much inconvenience from that odour as the residents of this locality would from half a dozen night-carts going through the streets? I think not; for the time being the night-cart would be the worst.
535. Are you aware that at Adelaide, a city of 30,000 or 40,000 inhabitants, no inconvenience is experienced from its sewage farm? So I read.
536. You know also that no inconvenience arises from the existence of sewage farms near large towns in England? I am given to understand that.
537. Although Croydon, which is near London, has a sewage farm, it has a lower death-rate than the greater portion of London, does not that show that the sewage farm does not cause any serious sickness in the locality? It does.
538. *Mr. Davies.*] What is the population of your borough? Between 4,000 and 5,000.
539. What is the area? I am not certain. We adjoin Auburn, Prospect, Sherwood, and Parramatta; and there is an unincorporated piece between that and Guildford.
540. It is a very large municipality? Yes.
541. What is your income? About £5,000 a year.
542. Have you raised any loans? Yes; our debt is about £16,000.
543. No solid sewage passes into Duck Creek as far as you know? None whatever.
544. You have never had any unpleasantness arise from the dry-earth system? None whatever.
545. What is the charge per house, or per pan? I think we charge 3d. per pan. It is based on the amount of the contract for the year.
546. *Chairman.*] The charge is per pan per service? Yes. Some households require the attention of the nightman twice a week; they pay for the double service.
547. *Mr. Davies.*] What is the total annual cost of the service? I think it is about £300.
548. Have you any cesspits? I think there are a few.
549. You permit them to be used? They have been permitted in the past, but wherever we can we do away with them.
550. Are the cesspits emptied by the same means as the pans? Under the supervision of our officers.
551. In the event of your borough being unable to dispose of its night-soil, would not cremation be the only safe and proper means to destroy all germs of disease? I believe the aldermen prefer that process to a sewage farm.
552. Would it not be a more effective mode for treating the sewage of a borough where there is no proper drainage than the establishment of a sewage farm? It most certainly does away with the possibility of disease: a great thing for a populous district to consider.
553. At Webb's Grant you saw large flats covered with fœcal matter and the smell was not very pleasant, although it was a very cold day? Yes.
554. In the middle of summer, do you not think a very strong poisonous vapour would be generated by the action of the sun on that filthy matter? I do; and it was that which caused me to feel that I could not conscientiously tell the Council that I was in favour of establishing a sewage farm near Granville. It is a very objectionable feature of a sewage farm.
555. Such a state of things at the proposed farm would not be conducive to the health of the people? Certainly not.
556. Would it be a means of preserving the lives and health of the residents of the other municipalities? It would be highly objectionable and, I think, prejudicial to the health of all.
557. Are you aware of your own knowledge that any sewage goes into the Parramatta River? No; but I am given to understand that it does.
558. Have you any knowledge of the treatment of the night-soil and sewage of Parramatta? I am given to understand that it passes into the river to a large extent.
559. *Mr. Humphery.*] By the crematory process you would get rid of the solid matter, but not the house slops? That is all that could be treated.
560. How do you propose to deal with the house slops? Unless some special provision were made they would still have to pass into the gutters.
561. Notwithstanding the establishment of a crematorium and a sewage farm? Unless some proper system of house-to-house sewerage were adopted, but that is somewhat impracticable as far as our borough is concerned.
562. Is it because the population is too scattered? Yes.
563. *Mr. Davies.*] The house slops, and horse droppings, and storm-water, would find their way into the storm-water sewers, and not into the main sewer? Yes.
564. Consequently, they must pass into the creek or river? They must go as they do now.
565. No matter what system is adopted? Yes.
566. *Chairman.*] You are under a misapprehension, you are probably not aware that the whole of the house slops, and a portion of the storm-water would go into these sewers, and consequently into the sewage farm? No.
567. *Mr. Neild.*] You have been considering the crematory process of dealing with solid matters? Not in the Council.
568. It would not relieve you of the liquids? I take it it would not.
569. Do not the municipalities experience great difficulty with the slops in the gutters? Yes.
570. Therefore, a crematory system would not give them anything like the relief which a water-carriage system would give? Certainly not.
571. Besides that, the fouling of the ordinary water channels would continue as at present? Yes.
572. Is not the fouling of your water channels of some importance to the health of your people? It is a very serious trouble.
573. And the difficulty is getting greater from year to year? Yes.

Charles Joseph Byrnes, Esq., Mayor of Parramatta, sworn, and examined:—

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574. *Chairman.*] You are Mayor of Parramatta? Yes.
575. How long have you been an alderman of Parramatta? About twenty years.
576. How long have you been its Mayor? Twelve years.
577. Do you know the nature of the scheme before this Committee to deal with the sewerage of Parramatta? I have seen the scheme delineated on a small plan which was furnished by the Government.
578. Has it been submitted to your Council for definite approval, or have they offered any suggestions? I am not aware that it has been considered by the Council as a body; the aldermen, individually, have considered the matter, and, as far as I know, have approved of it.
579. I suppose from time to time they have urged the Government to carry out the sewerage scheme? I think about seven years ago an application was made to the Government to bring the borough under the operation of the Water and Sewerage Act.
580. And the Borough Council was content to leave the maturing of a sewerage scheme to the officers of the Department? Yes.
581. The aldermen, as far as you are aware, concur in this scheme? Yes.
582. Is there a very great nuisance caused by sewage matter flowing into the Parramatta River? An intolerable nuisance, arising principally from the Government establishments.
583. But the residents of those establishments, I suppose, are not more than a fourth of the whole population of Parramatta? About a fourth.
584. How do you get rid of your night-soil? By the pan system. It is carted to the orchards round about the town and deposited there.
585. Is it done by the Council or by contract? By the Council.
586. Any cesspits? A few.
587. Are you discountenancing any increase in their number? We were doing so, but we have somewhat stayed our hand until we see what system is to be adopted.
588. What proportion do the cesspits bear to the pans? It would be very small.
589. The cesspits, I suppose, are also emptied under the supervision of the Council? Yes.
590. In getting rid of this matter have you to pass through any other municipal area? No.
591. Did you at any time have to do so? I think not.
592. This sewage farm would be outside your municipal boundary? Yes; by about a mile.
593. Do you think it is likely to create any great nuisance? From what I saw at Webb's Grant farm, and the Adelaide farm, I should think not.
594. So that if it were established inside your boundary, instead of inside the boundary of another municipality, you would still have no objection to the proposal? No; but I think on all these farms there should be some dessicating machinery to destroy the solid matter, so as to prevent any possibility of a nuisance arising.
595. Or a larger staff to dig the solids immediately into the ground? I do not like that system; I prefer to see the solids baked or destroyed.
596. That would mean a certain amount of nuisance? Not if a dessicator were placed near the main building we saw at Webb's Grant farm. I think that, instead of carting the matter over the river in a tram, they might have a dessicator close by and destroy the stuff at once.
597. At all events you think that very little nuisance would arise in connection with the proposed farm? There should not.
598. What is the debt of your municipality? About £50,000.
599. You have borrowed up to your full limit? Yes; I think that, like the Government, we can show very good assets for the money.
600. What is your annual municipal rate? One shilling for general purposes, and 1s. for special purposes; that is 3d. for lighting and 9d. for water, independent of the cost of the pan service.
601. What does the 2s. rate realise annually? £3,792 4s. 1d.
602. What does your pan system cost? About £20 a week.
603. Is it worked at a loss? Yes; during the last twelve months—that is, since the Council reduced the charge from 6d. to 3d. per pan.
604. What is the annual interest on your debt? The money has all been borrowed at 6 per cent.
605. Have you not borrowed beyond your limit—five years' rates? If the amount is £50,000 we have; but we had the permission of the Government to borrow all we borrowed.
606. I presume there was a slight profit on your pan service prior to the reduction of the charge? Yes.
607. Do you attend to the Government institutions? With the exception of the Lunatic Asylum we attend to the others.
608. Do you charge the Government the same as you charge ordinary ratepayers? No; I think it is 10s. a night for each institution. Last year we received £674 12s. 3d. from the Government.
609. Where does the Lunatic Asylum bury its night-soil? On its farm, as they are allowed to do under a recent Act.
610. Will you enumerate the various Government institutions which you serve? The George-street Asylum, the Harris-street Cottages, the Macquarie-street Asylum, the Industrial Schools, the Gaol, the Court-house, the Post Office, the Railway Station, the Public Schools, and the Old Couples' Homes in Wentworth-street.
611. What do you get from the public per annum for this service? I could scarcely say. I shall furnish the information through the Council Clerk.
612. We are informed by the Department that this sewerage scheme will mean a rate of 11d. in the £, which is 7d. more than you now pay; is your borough able to bear that addition? I think so, if the Government are brought under the operation of the scheme.
613. Do the people of Parramatta like being taxed? I do not think they object as long as they get a *quid pro quo*. I have not heard any expression of opinion adverse to the scheme.
614. Has the cost of the scheme been put before them as well as the scheme itself? It has, during the last week or two, and yet I have not heard any demur made to the proposal. Something will have to be done, because we are simply poisoning each other with the stuff which is allowed to run into the streets in the shape of soapsuds.
615. There would not be any disposition on the part of the ratepayers to shirk their responsibilities? I think not.

616.

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616. Are they likely to forget the pit from which they were dug and say they are paying too much? I think not.
617. Has Parramatta shirked any of its financial responsibilities? Not that I am aware of.
618. You have heard no suggestions as to the improvement of this scheme? None whatever.
619. You are aware that a portion of the borough, especially on the north side of the river, is left out of its operation? Yes.
620. But that provision is made for the sewerage of that portion on the sewage farm and also in the sewers? Yes.
621. You are also aware that the storm-water sewer which has been constructed, and the one which is to be constructed, are to be included in the cost of the scheme? I am not aware of that. I think some of the aldermen have not realised that yet.
622. What do you think will be the result when they wake up to the fact that it is included? It may surprise them a little at first, but I do not think it will have any very bad effect. It is a most useful channel that has been constructed.
623. When this scheme is constructed the house slops will be diverted from the storm-water sewers into the sewers proper? Yes.
624. A very great nuisance existed at the site of the storm-water sewers before they were constructed? An intolerable nuisance.
625. Why did not the Council tackle the nuisance? It was beyond our financial position.
626. Have you heard of any protest on the part of the Granville people against your municipality casting its filth in their municipality? Only in this room.
627. They have not sent any threatening letters to your Council? Not that I am aware of. I may state that about five years ago our Council purchased a Farmer's dessicating machine, to be erected on a piece of land which was obtained from the Government for the purpose, but some objections were raised to the proposal. Two of these machines may be seen in operation at the Sydney Meat Preserving Co.'s works, and six are at work in Melbourne. I think they would be a very great success on the sewage farm.
628. Were you going to deal with your night-soil with this machine? The night-soil and garbage only.
629. Do you still propose to erect that machine? It is now proposed that it should be erected on this sewage farm. We have obtained the permission of the Government to put it there if we wish.
630. Do you look on the sewage farm as the property of the Parramatta Council alone? We simply asked the permission of the Government, who, we presume, are the proprietors of the farm at present.
631. Is it not rather unkind to take your garbage to another municipality to be dessicated? I do not see any objection to it myself, seeing that it would pass only one or two houses on its way to the place. I am certain that no nuisance would be created by the machine.
632. In that case would you not save a considerable amount of money in cartage if you treated your garbage within your boundaries? We had only one spot on which to erect the dessicating machine, and objections were raised.
633. You would still continue to use the pan system till you could send the stuff on to the sewage farm? Yes.
634. *Mr. McCourt.*] Is it in consequence of your application of seven years ago to bring your borough under the Act that this scheme is proposed? I presume so.
635. Did you ask that the works, when completed, should be placed under your management? To the best of my recollection we did.
636. And not under the control of the Water and Sewerage Board? No.
637. Do not you think it would be better under the control of the latter body? I am not prepared to say. I have sufficient confidence in the municipal ability of the people of Parramatta to think they are able to conduct their own affairs.
638. Cheaper and better? Quite as well.
639. Do you think that your ratepayers will be able to pay a rate of 2s. 11d. in the £? I think so. I never call a water rate a rate, because you get value for your money.
640. Do you know of any municipality which levies that amount of rates? No.
641. Will your Council enter into an undertaking with the Government to pay the interest on the money and to provide a sinking fund? I should imagine so.
642. Before it is handed over to your Council, do you not think it will be fair for the Government to ask for such an undertaking? I think so.
643. And you think that the Council will be willing to give an undertaking? I do.
644. *Mr. Wall.*] Have you any special basis for rating the Government buildings within your borough? No.
645. It is simply a matter of agreement? The Government pay for their water by special contract. They also pay for the removal of the night-soil by special arrangement. We cannot levy any rates on the Government buildings, not having power to do so under the Municipalities' Act.
646. I find from the figures which have been given in evidence that the cost of your pan system is £1,260 a year, on which the Government pay £674, and the whole of the ratepayers pay only £586? The whole of the ratepayers do not contribute to the night-soil fund, for in many places where there is a bit of land the people are allowed to bury their night-soil there.
647. Have you had any system submitted to your consideration for rating the Government properties? None whatever.
648. Have you any idea as to the amount likely to be realised from the Government institutions if the rates were fairly distributed between those buildings and the private buildings in the municipality? It all depends on the basis of the valuation; but if the rate is struck on the cost of the buildings we should get a considerable revenue from the Government.
649. The system which has been submitted by the officers of the Department is to levy the rate in proportion to the population within the walls of the institutions;—is not that an unusual mode to adopt? I think so.
650. The rule is that those who own the property and benefit by the expenditure of the rates should pay the taxes? Yes. If the expenditure on these extensive establishments is made the basis of calculation, I think you would get at half the value of the borough.

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651. A system of sewerage which would drain Parramatta would be almost useless for Granville, unless you had some pumping machinery? Yes. The land on which this sewage farm is to be established is the natural boundary of Parramatta; but for some extraordinary reason, when Granville was incorporated it was altered, and Granville was brought down to the river, getting behind Parramatta altogether.
652. This farm could be utilised for both places in the future, if necessary? Yes.
653. *Mr. Dawson.*] What has been the increase of population in Parramatta during the last ten years? About 15 per cent., I suppose.
654. There has been a considerable increase, too, in the number of the inmates in the Government institutions? The benevolent asylums have increased a good deal.
655. If the Government institutions were taken out of Parramatta, would this scheme be urgently needed? I think so.
656. You do not think it would be better for the Government to build Government institutions in some healthy locality outside Parramatta at a cost of £67,000? I should be very glad if they would; but that would not do away with the necessity of providing a sewerage scheme for Parramatta.
657. Are the people of Parramatta generally in favour of this sewage farm? As far as I can judge.
658. Would it not be better to have the solid matter burned? I think that if there is to be a sewage farm there should be some machinery provided for burning the solids.
659. Parramatta is warmer than Sydney in the summer? In some parts it is very hot.
660. Did you notice a particularly offensive smell at Webb's Grant? No. I thought there was nothing very strong about it, but I was smoking at the time.
661. Do you not think that, in view of its hot climate, a sewage farm would be very offensive at Parramatta in the summer time? Not if properly constructed.
662. *Mr. Sutton.*] I suppose the boundary of the municipality is the same as the boundary of the electorate? Yes.
663. *Mr. Collins.*] If this Committee should recommend that this work should be put under the management of the Water and Sewerage Board, would your Council object? The question has not been raised, but I should imagine not when Granville is connected with it; but I think that a joint control of the two Councils would be better.
664. *Mr. Ewing.*] This work will increase the total obligation of your borough to about £125,000? Yes.
665. Do you think Parramatta is willing to accept an obligation of £10 per head for every man, woman, and child in the borough? I think so. I think that with a better train service there is a great future for Parramatta.
666. Still, £10 per head for everyone in the municipality is very heavy? It is tolerably stiff, but we have good assets.
667. You believe you see your way to pay the interest on the money? Yes.
668. *Mr. O'Sullivan.*] Do you think that the junction of Duck Creek and Parramatta River would be a valuable site for industrial establishments in the future? I do not know any particular reason why it should be a great manufacturing district.
669. We have indications that Granville is likely to be a manufacturing centre, and we are told by its Mayor that it is likely to extend up the river. If it does the junction of the two rivers must be a valuable site for those establishments? Yes.
670. On account of the water carriage? The river will have to be deepened very considerably.
671. It is navigable to a certain extent for shallow craft? I have been stuck in a small pulling boat.
672. There is a probability that this locality will be very valuable in the future for industrial establishments? I do not think so. Perhaps some day or other large dumping stores may be erected there, but for manufacturing purposes I do not see any particular advantage in being there.
673. You see nothing very strong in the argument to prevent the State from utilising this site for a sewage farm? I think not.
674. Although it is likely that the people of Parramatta may be rated to the extent of 2s. 7d. in the £, yet you, as their Mayor, feel yourself justified in saying that you believe they will be willing to bear that burden? Yes.
675. *Mr. Humphery.*] Assuming that this scheme is carried out at a cost of £75,000, and the annual charge for interest is about £3,000, would you expect the Government to contribute in the proportion in which they are now contributing, that is about £2,200? I should not expect them to pay a bigger proportion than they would be legally entitled to pay, but I think I pointed out that the pan system does not apply to anything like the whole of the borough. I should object to the assessment being fixed on the basis of the population within the walls of the institution. If it is fixed on its capital value they will have to pay a very much larger amount than they now pay. In that case, if a rate of 11d. in the £ is struck, it will fall uniformly on the Government and ratepayers.
676. So that the Government would have to contribute a much larger proportion than they do now? I think so.
677. On the basis of capital value, almost the entire cost of this service would fall on the Government? No, I think I said that if you take the capital value of the Government property it would come to almost one-half of the capital value of the property in Parramatta.
678. But they are paying seven-tenths of the cost now? Owing to the way in which they are paying, the proportion is not as correctly shown as it would be if a uniform rate were levied.
679. *Mr. Hoskins.*] Have your Council at any meeting expressed an opinion either for or against this proposal? Not that I am aware of.
680. You are not prepared to say, officially, whether your Council are in favour of the scheme or not? Only from the fact that they applied to the Government to be brought under the operation of the Water and Sewerage Act, and to prepare a scheme for the borough.
681. It is customary for a municipal council to express its opinion on a work of this kind before it is undertaken? If the scheme is submitted to the Council, and our endorsement is asked, I imagine that its opinion will be expressed, as you suggest.
682. *Mr. Davies.*] What is the annual assessment of the various properties in Parramatta? Last year the assessment was £75,875.
683. An increase on the previous year's assessment? I think it was much about the same.
684. What is the capital value of the Government properties? I could scarcely say. Owing to the purpose for which the buildings are used it is impossible to fix any value; you can only go on the expenditure and the value of the land.

685.

685. Is the dessicator which you imported the same as that which is used at the Glebe Island abbatoirs? I do not know; it cooks the stuff. C. J. Byrnes, Esq.

686. Would it not be better to destroy the solid sewage in kilns than to cast it on the soil? That is what I have said; but you have soap-suds and house slops to deal with also. 30 June, 1892.

687. Is it a fact that the storm-water sewers will take a great deal of the drainage from the gully shafts and the streets? I imagine that not much storm water will be run into the sewers, but that they will be used purely for night-soil and house slops

688. Do you drain your streets into gully shafts? It depends on the level. Some drains run direct to the river. There are one or two gully shafts.

689. Will they not empty themselves into the storm-water sewers? The soap-suds will not be allowed to go into the water-tables.

690. All the water which comes off the streets into the gully shafts will find its way into the storm-water sewers? All the storm water.

691. From your knowledge of the sewage farm at Webb's Grant, is the locality which has been selected for the sewage farm at Parramatta a desirable spot? I think it is an admirable spot.

692. At Webb's Grant it is sand, here it is clay? It may be a clayey subsoil, but all that flat is a deposit.

693. What is the nature of the soil below the clay? Shale.

694. That would not be a good soil for dealing with sewage? I think it is pretty leaky.

695. Would it compare with the sand at Webb's Grant? Perhaps it would not be so good as that, but as far as I remember, the Adelaide farm is not so highly favoured as is the Webb's Grant farm in that respect. I think it is much the same as this spot.

696. You have no great apprehension that any nuisance will arise from this sewage farm to Granville? I have not.

697. Do you believe that if the sewage is dealt with in the way you have indicated it will be an improvement on what you saw at Webb's Grant farm? A very great improvement. I think the whole of the sewage of Birmingham is dessicated with Farmer's machines. I believe that six of these machines have been introduced into Melbourne, and that more are to be used there.

698. To cremate the whole of the house and yard refuse of Melbourne? Yes.

699. You would favour the treatment of this solid matter at the sewage farm with a dessicating machine? I would, and I think water carriage is certainly the cheapest mode of carriage.

Peter Behrendt, Esq., Civil Engineer, sworn, and examined:—

700. *Chairman.*] You are a civil engineer by profession? Yes. P. Behrendt, Esq.

701. You have had a large experience of sewerage works? I have had a good experience. For the last four or five years I have studied sewerage and sanitation from every point of view When I came from the southern part of the colony a few weeks ago and heard of this inquiry, I thought it my duty, as a naturalised citizen of this country, and as a married man, to give what evidence I could on the subject. 30 June, 1892.

702. What actual practice have you had in conducting sewerage works? I have had no actual practice except in Berlin, and Professor Hobrecht, who carried out large sewerage schemes there, was my teacher.

703. You have had no actual practice, but you have been taught by men who have had practical experience of sewerage works? Yes; at the same time I had practical work in Berlin, in constructing and designing sewers.

704. How long were you so engaged? Three or four months.

705. Is that the whole of your practical experience in that respect? Yes.

706. So that it is from reading, and coming in contact with those who have had a larger experience than yourself, that you have gained your knowledge? Exactly.

707. Do you know anything about the scheme we have under consideration? Yes.

708. Do you know its principles? Yes.

709. It is what is known as the water-carriage system? Yes. As my position is somewhat anomalous, I have prepared a short statement which, with the permission of the Committee, I shall now read:—"Sewerage works must be considered from a national-economic point of view, and, therefore, carried out with due regard to the future welfare of the inhabitants, and based on the highest achievements, for the time being, of sanitary, economic, and engineering science. I maintain that—1. Every sewerage scheme must be, from a sanitary point of view, rejected which does not admit of disinfecting, by exposure to boiling heat, the fœcals and waste water of houses with contagious diseases, before being mixed with other sewage or public water; 2. Every sewerage system must be, from an economic point of view, rejected which does not admit of restoring to the soil all those substances which are essential to the production of food-substances; 3. Every sewerage system must be, from an engineering point of view, rejected which does not fulfil, according to the present status of applied science, the sanitary and economic conditions The (water carriage) sewerage system as proposed for Parramatta does not fulfil those conditions mentioned, for—1. It is a fact that the sewers and ventilators are the means of distributing all round dangerous germs, and the sewer-walls are hot-beds for the propagation of the same; even with the most perfect irrigation farming, the water-carriage system results in the pollution of public water through its inevitable storm-water outlets and surplus of sewage matter on the farms, and can, therefore, never comply with the public demands on that subject. 2. It is a fact that the water-carriage system is economically a failure, as it has been proved that sewage farming does not pay for working the farm even under favourable circumstances. The idea of sewage farming is based upon an insufficient knowledge of agricultural chemistry, and a mixing up of water irrigation. The character of the liquid is such that it contains too much nitrogen and too little phosphates, consequently favouring leaf formation and not grain. Grass and vegetables can, therefore, alone be grown, but the latter require much labour, and sewage grass cannot be well dried, and it becomes mouldy, being very hygroscopic. The preparation of the farm is expensive, as it must be drained with earthenware pipes. From an agricultural point of view, the sewage of eight persons is sufficient for

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one acre, but as sufficient suitable land cannot be obtained, the sewage of fifty persons and more is used per acre, which results in a great waste of fertilising matter. The value of fœces and urine per head and year is:—

	s.	d.
Nitrogen, 5·2 kg. at 2s.	10	4
Phosph. acid, 1·26 kg. at 9d.	0	11
Potash, 1·08 kg. at 3d.	0	3
	11	6

This value ought to be realised, especially in Australia, where large areas of agricultural land are already worn out, and where the manure question will in future be the vital question of agriculture. 3. It is a fact that engineering science has completely solved the problem in question, by the ingenuity of Captain Liernur. We are able to build to-day a sewerage system at two-thirds, even half, of the cost of the old system, which fulfils all the necessary conditions, and can be carried out in sections, according to the requirements of the inhabitants and the gradual expansion of the city. I beg to state that I am willing to design a scheme and prepare an estimate for the sewerage of Parramatta, under the control of the Government.

710. I gather from that statement that you are a strong advocate of the Liernur system, as against the water-borne system? Yes, because it is the only one that fulfils all necessary conditions.

711. I suppose you admit that there are men in the world who believe that the Liernur system is immeasurably far and away inferior to the water-borne system? That is a question difficult to answer, because it involves very peculiar psychological questions. One of the greatest champions of the water-borne system was my highly-esteemed teacher, Professor Hobrecht, and only an unprejudiced study of such an important question has brought me to this present position. It has not been generally accepted by the members of my profession, probably through not being sufficiently acquainted with the high degree of perfection of sanitary science, agricultural, and chemical science.

712. Has Liernur's system made any great progress during the last few years? It has been worked in Amsterdam for ten years. It has also been used in Leyden. But, from the practical scientific point of view, it is not necessary that it should have been used anywhere if it is absolutely correct in every point.

713. You state that Liernur's system has been used in Amsterdam and Leyden; what proportion does that bear to the great number of sewerage works that have been constructed in various parts of the world during the last ten years? What can anything new bear to an old system in that respect?

714. When was the first instalment of his system completed anywhere? In answer to your question, I will read this letter—

Dear Sir, Office of Public Works, Leyden, 2 November, 1889.

In answer to your favour of 28th October, in reference to the working of the pneumatic sewerage system in this city, I am happy to state that since 1871 it has given, without any interruption, great satisfaction, and that, in consequence thereof, negotiations are now pending for applying the said system to the whole city. According to the project in question, the entire pneumatic tube-net will be worked from one central pumping-station, which is to be provided with vacuum-evaporating apparatus for the reduction of the fœcal matter collected to a dry manure powder.

THE CITY ENGINEERS,
Knuttel.

Charles T. Liernur, Esq.

715. If it dates back twenty years it can hardly be called a new system? I consider that is a very short time, considering that new ideas frequently require centuries to be adopted by the world at large.

716. But, as a matter of fact, the principles on which he based his opinion have received very considerable attention from scientific men in various parts of the world, and have not been widely spread in application? Exactly.

717. How long have you been in these colonies? I arrived here in 1881.

718. Have you been engaged in your profession in any of the colonies? I had my own office in Melbourne for eight years, as a consulting civil engineer and architect.

719. Are you the representative of any firm? No.

720. Are you the agent of Captain Liernur? No.

721. Have you any direct communication with him at all? No.

722. Have you carried out any sewerage works in the colonies? No, except that I have given evidence on these matters in Melbourne.

723. As years have gone by, and since your residence here, you have become more confirmed in your opinion that Liernur's system is based on right principles? Yes.

724. Can you mention any other places where it has been adopted? I have had no direct communication for two years, but I know that two years ago Captain Liernur was in direct communication with some cities in Spain and Italy.

725. You do not know whether anything has been carried out in those countries? No, but the fact that it had not been carried out there would not affect my opinion.

726. You do not know of any other places than those you have named where it is in operation? No.

727. Under this system the excreta is drawn through sewers or pipes by suction to a pumping-station, and then delivered, either by pipes or vehicles, to the farm? No, it is not brought to the farms. The fœcal matter is submitted to a boiling process, and the result is a brownish powder which fetches all over the Continent of Europe from 7s 6d. to 10s. a cwt.

728. Is it at the pumping-station that it is converted into a valuable manure? Yes.

729. No house slops or soap-suds are allowed to go into the drains? Yes; firstly, all the chamber-pots have to be discharged into the closets; secondly, the waste water from the bath is discharged into another pipe, as it is a double system. Instead of putting everything into one pipe, he takes all the valuable substances, containing 94 per cent. nitrogen, into one pipe, and the ordinary waste water in another pipe.

730. The effectual carrying out of the system depends on the perfection of the construction and the working of the pumps which draw the stuff to the station? Exactly. Every machine depends on that, an air-pump is not more dangerous than a steam-pump.

731. You do not think any greater nuisance will be caused if the engine at the pumping-station breaks down than if the Liernur pump broke down? No.

732. Under the water-borne system all this water would come by gravitation to the station, and if the pump got out of order the accumulation of stuff could be diverted into the river or somewhere else, but if Liernur's pump got out of order all this filth would remain in the closets, and the pipes between the houses and the pumping-station? In any proper arrangement of that kind there is undoubtedly a double air-pump,

air-pump, so that if anything should happen to a piston or cylinder the other could work. Within the pipes themselves such mishap is impossible. P. Behrendt, Esq. 30 June, 1892.

733. Under his system there are two channels to convey the two kinds of material? Yes.

734. From your extensive reading and knowledge of his system, what do you think it would cost to drain effectually the area we have under consideration, and the cost for maintenance? I do not know the area of Parramatta, but as regards the cost it would be two-thirds of £75,000. I made a preliminary estimate for Bendigo, which is, I suppose, somewhat similarly situated to Parramatta.

735. To a layman it appears to be a very rough way of arriving at an estimate, to say that if a water-borne system will cost £75,000, Liernur's system will cost two-thirds of that sum, when you do not know the area to be drained, or the extent of the sewers to be constructed? There is an excellent relation between the two, because the superficial area is the same for both.

736. As a general principle, then, whenever his system has been brought into operation, it has been done at a third less cost than the water-borne system? As a general principle, yes.

737. *Mr. O'Sullivan.*] Am I right in concluding that you believe that Liernur's system can be constructed at a third less cost than the water-borne system, and that the manure which is produced at the farm can be sold for at least £7 a ton? Yes.

738. *Mr. Neild.*] Does it deal with liquids as well as solids? Yes.

739. What area of land would be required for the necessary works? Not more than you require here for the pumping-station.

740. No pumping-station would be required? No, certain works are erected where the fœcal matter is converted into powder, and from that place it would be carted away to the market and sold.

741. It would be only necessary to deal with the sewerage of Parramatta as a gravitation scheme, as far as bringing the matter to the works? No; it is removed by a vacuum to the works. The pipes—9-inch iron pipes—are laid a few feet under the ground.

742. Is the solid matter delivered by pipes or by workmen? It goes into the down-pipe, and is removed by exhausting the air, just as letters are transmitted in large cities.

743. Can such matter be brought up an incline? Yes.

744. Your system would not involve the cost of pumping? No.

745. You would have to create a vacuum by machinery, instead of pumping by machinery? Exactly.

746. When you say that the cost of your system would be a third less than the cost of this scheme, the real meaning is, that the produce would be so much more valuable that the cost would be reduced? No; the cost of the work itself is smaller, as you can easily see, by having only 9-inch pipes instead of these huge channels and canals. The production of manure only reduces the cost of maintenance. If you have a large agricultural community, it would make a profit.

747. Of course, you are not prepared to produce any estimates? No; if I get sufficient data, I am prepared to submit a scheme within a comparatively short time, and at almost no cost worth speaking of.

TUESDAY, 5 JULY, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman.)

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Sewerage Works for Parramatta.

George Henry Stayton, Esq., M.I.C.E., sworn, and examined:—

748. *Chairman.*] You are a member of the Institute of Civil Engineers, and practising as a civil and consulting engineer? Yes. G. H. Stayton, Esq., M.I.C.E. 5 July, 1892.

749. For some time you were Sewerage Engineer to the Department of Public Works of New South Wales? For several years.

750. In conjunction with Mr. Bennett you designed the Western Suburbs Sewerage Scheme? Yes, I devised that scheme.

751. Also of the scheme for Manly and the scheme for North Shore? Yes.

752. Several years ago you came out from England at the special request of our Government? No; I came out in 1885 solely on account of my health.

753. And our Government availed themselves of your extensive knowledge of sewerage matters after you arrived? Yes.

754. You severed your connection with the public service a year or two back, and since then you have visited the old country? Yes, in 1889.

755. At the request of the then Minister for Public Works, you furnished a report on "Sewage Purification"? Yes, on my return to Sydney.

756. It is dated 26th February, 1891, and was laid on the Table of the Legislative Assembly on the 26th May following? Yes.

757. I understand from your report that you inspected twenty-eight different sewerage systems? I did.

758. Of which nine discharged the sewage directly into the sea, four dealt with the sewage by broad irrigation, six by precipitation or chemical means only, and six by precipitation and irrigation? Yes.

759. At the time of your visit Manchester was about to adopt the precipitation mode? Yes; on a very large scale.

760. Glasgow was also contemplating the adoption of the irrigation or sewage-farm system? Yes.

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761. You also found that the treatment of sewage by electrolysis had not made any progress—had, in fact, been discontinued? That is so.
762. Amongst the places which you visited, and the sewage of which was dealt with by irrigation, were Croydon, Edmonton, and Birmingham? Yes.
763. Have your exhaustive inquiries led to any alteration of your opinion as to dealing with sewage by farms or by emptying direct into the sea, or do you still favour, where it is possible, the taking of the sewage direct to the ocean? Certainly.
764. And where that is impossible do you prefer broad irrigation or sewage farming similar to that which we have at Webb's Grant? That entirely depends on the local conditions. There can be no hard and fast rule laid down.
765. But where you have an area which is suitable for a sewage farm, without any large centres of population immediately about it, do you then prefer the broad irrigation or sewage-farm mode of dealing with sewage? Yes; all other conditions being favourable.
766. But every locality has to be judged on its surroundings and circumstances? Certainly.
767. Are you fully convinced that the electrolysis system has been put on one side? I am.
768. For what reason? Because it is too costly, and also because it is not thoroughly efficient.
769. Other systems being more efficient than it? Yes.
770. Do you know if any sewage is being dealt with by electrolysis at present, or have those systems all been discontinued? They have all been discontinued.
771. The system has been tried at the out-fall sewers at Barking and Crossness? Crossness, Salford, and Bradford, I think.
772. Have you given any further attention to the system of Captain Liernur since you were examined by a previous Committee? None whatever.
773. You have not altered your opinion as to its being an isolated system? No.
774. Has it been adopted at all extensively during the last few years? Nowhere to my knowledge since my report in 1888.
775. You are still of opinion that the water-borne system is the best? I am, clearly and emphatically.
776. A year or two ago, when the Western Suburbs Scheme was before a previous Committee, some of the witnesses thought that the Liernur system was applicable and useful to small isolated localities; I do not know whether you gave in your adherence to that principle or condemned its applicability to large as well as small areas? If I remember rightly, I said that it may have been specially adapted to some Continental cities, but it was used only for conveying fœcal matter. The liquid sewage had to be provided for by sewers, separately. There is no advantage, so far as I can see, in providing merely expensive mechanical means for removing fœcal matter when water-carriage sewers will carry away both fœcal and liquid refuse.
777. You do not think that this small isolated locality would be a convenient place to adopt the Liernur system any more than the western suburbs would have been? Certainly not.
778. Have you given any consideration to the scheme which is before this Committee to provide for the sewerage of Parramatta? I have only given consideration to the material which has been placed before me, and which consists of the evidence and a small plan. I have had no opportunity whatever of inspecting the *locus in quo*, or of examining the levels of the outfall works and the surrounding locality.
779. Have you seen the large plan of the scheme? I see it now on the easel.
780. The part tinted yellow on that plan is the area which will be drained into the sewers, which are shown by broad red lines; about a third of the Parramatta Municipality will be left out of the drainage area, because its population is comparatively small, but it can come in afterwards; the sewage will flow by gravitation down to the pumping-station, which is situated within the borders of the Parramatta municipality, and will there be pumped up to a height of 30 odd feet to a cast-iron main, by which it will be delivered on to the sewage farm, which is at the junction of the Parramatta and Duck Rivers, and which is within the territory of the municipality of Granville; the area of the farm is some 62 acres, of which 40 acres are above high water-mark, and 22 acres are to be reclaimed with sand dredged from the harbour, fascine banks having been already erected;—with that brief explanation of the scheme, do you think that it will meet the requirements of Parramatta, and that a sewage farm can be established there without causing any nuisance to the adjoining localities? I gathered as much as you have stated from the evidence, but that information is meagre, and I am quite unable to give a direct answer to the question. The information is not sufficient to give a decided opinion one way or the other on a scheme of this kind. I have no knowledge of the levels, and I do not even know the site. I have attended here in accordance with the request of the Committee, but, so far as the special merits or demerits of the scheme are concerned, I can only give what I may term a somewhat light opinion in the absence of the information which one certainly ought to have in considering a scheme of this kind.
781. The Committee will be glad to have even the light opinion of so weighty an authority as yourself? I recollect when I was in the Department, I saw some papers which, if I remember aright, foreshadowed a scheme of this kind. Mr. Bennett asked me to take the matter up when the Western Suburbs Scheme was through, but when that time had arrived I had left the Department. I have, however, made one or two notes of what points I consider should be mentioned. Subject to correction, it seems to me that this proposal, as it is now presented, is not put forward in the best manner, and is scarcely in accord with the latest practice. It is somewhat crude, and I think that on further consideration it might be modified in one or two essential points. It strikes me that it is costly, and that it may not be found to be so efficient as it ought to be. If I remember aright, the first cost is intended to be £76,000, and eventually it will be increased to £110,000. The present population is 12,000, and the prospective population is 48,000. I have in my mind's eye one of the latest works of this kind which has just been completed, and was in progress when I left England. The town of Sutton, in Surrey, has a population of 12,000, and the works provide, I think, for a prospective population of double that number. There the whole system, including precipitation tanks and filtration area, was to cost only £20,000; and it seems on the face of it that there is a large expenditure on this scheme which, on reconsideration, might be cut down.
782. Did the Sutton scheme include the buying of land for dealing with sewage, and all that;—was it a pumping scheme? I cannot say as to the land, it was partly a pumping scheme.
783. Therefore, this work would be saddled to the extent of a pumping scheme? Only partially so.
784. Does that expenditure of £20,000 provide for an increase of population? Yes.
785. Without any increase of cost? Yes.

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786. Is Sutton mentioned in your report? It is mentioned there as a town in the vicinity of London.
787. But no scheme is attached to it? It is under the description of the International system; the town itself is not mentioned. Paragraph 2, page 8, reads:—"The first-named plans have recently been designed for a town near London, and for a prospective population of 25,000 persons."
788. At page 4 of your report you mention the fact that the local Government Board had sanctioned the use of the International system at Tottenham, Sutton, Crompton, and Royton? Yes.
789. That work has since been carried out and is in operation? Yes.
790. How far is the depôt for dealing with the sewage from the sewerage area? At Sutton it is close to the town, something like 300 yards.
791. Of course, in contrasting the cost of this scheme with the cost of the scheme for Sutton, you have taken into consideration the higher rate of wage and other things in the Colony? Of course, every allowance must be made for that; I merely mentioned the matter, as it struck me that the proposed expenditure is a large sum for the population; but every case must be considered on its merits.
792. Did the sum of £20,000 include any large expenditure for storm-water sewers, or was nearly all the storm-water mixed up with the sewage? No; it merely included main sewers, branch sewers, and works for the reception and treatment of sewage; also for the sludge filter presses and duplicate presses, pumping engines, and so forth.
793. But there would be a larger annual outlay in dealing with sludge and so on, than in dealing with the sewage on a farm? That entirely depends on circumstances. For instance, in this case the annual outlay was only to be £505 for the treatment of the sewage.
794. Added to that will be the interest on the capital expenditure? Yes.
795. How much storm-water would be allowed to go into these sewers in the case of Sutton? From my recollection, simply from the roofs and paved yards.
796. You do not know whether their storm-water channels were dealt with in any way outside the system? No. Of course, in the old country storm-waters are not so serious to deal with as here.
797. If it has been found necessary to expend a large sum to deal with a large quantity of storm-waters, such as we have in this Colony, that is something to which Sutton would not be liable? Obviously.
798. That would go as a set-off against the extra cost? Yes.
799. Will you kindly proceed now with your remarks on this proposal? There is another point on which I was certainly not quite satisfied. I had not the information before me with regard to the levels of the out-fall works and surrounding locality; but I rather gathered from the evidence which I read—that some portion of the out-fall works will at times be liable not to flooding—on account of the protection which has been afforded—but to surcharging. In other words, during flood time, if I am correct in my assumption—of course, I am speaking in the dark as to actual facts—the filtration area would be liable to be surcharged, in the same manner, for instance, as a sponge would be filled up.
800. We have been informed that the surface of the farm will always be some feet above flood level;—it is a question, therefore, as to what depth of soil or sand you require for the filtration process? Not only as to the depth, but as to the quality of the earth. I have no information whatever before me to justify any opinion. I can only speak generally, that if the filtration area is liable to be surcharged—in other words, if it be liable to be waterlogged—such soil will cease to purify sewage for want of aeration, and then the sewage simply passes through—leaving it practically in the same condition as it was when it passed in. In a hot climate like ours, if anything of this kind should happen, it is absolutely certain that under varying atmospheric pressures there would be offensive gases given off at times.
801. What depth of soil similar to the soil at Webb's Grant would be necessary for the filtration process? I think Webb's Grant is almost unique; I know of no other place in the world so suitable for sewage filtration as it. But broadly, if there is a depth of 5 feet above high-water mark and flood level—that is, above saturation level—and the material is suitable, I should think that there would then be sufficient purification.
802. That is just about the height above high water or flood water at Webb's Grant? I think Webb's Grant is much higher than that in places.
803. Where they are operating as a farm? If I remember rightly, the sewage was delivered at 10 or 12 feet above high-water level.
804. But is there not a great difference between where it is delivered and where the beds are? I cannot say, as I have not had an opportunity of going to Webb's Grant for two or three years.
805. From 4 to 5 feet above surcharging point would be sufficient? Probably so. Where broad irrigation, as it is called, is most successfully practised in England, it is, as a rule, on a very large scale, and not more sewage than that from 100 to 200 persons per acre is dealt with in that manner. Now, both at Parramatta and Webb's Grant, as far as I can see, the rate will be something like 800 persons per acre under the prospective population. While 800 persons to one acre may do very well at Webb's Grant, I question whether it would do at Parramatta—whether it would not be a failure. I do not remember any sewage farm in England where broad irrigation is practised alongside a tidal river, or where it is liable to be flooded, or where the site has had to be reclaimed, as proposed here. But there, again, I cannot say absolutely what the merits are of this particular site.
806. Is not the sewage farm at Barking close to the river? The outfall works are, but there is no irrigation there.
807. Does not filtration take place? Yes; tanks have been made for precipitation.
808. The sludge is shipped out to sea? Yes. I think one of the most successful of modern systems of sewage purification is precipitation combined with filtration, or as it may be termed here, irrigation. It is certainly economical, and on the whole one of the best systems. Precipitation is, and can be carried on within a very short distance of populated districts, and without the smallest smell and annoyance whatever, the effluent being discharged quite inodorous.
809. I judge by what you say that you are strongly in favour of dealing with sewage by precipitation, the effluent water being filtered through land? Yes, with purification through a small filtration area.
810. Even where you have a good site for a farm, away from the centres of population, would you still go in for precipitation, in preference to putting the sewage on the land? Those conditions would, of course favour a sewage farm without precipitation.
811. It is only as you get nearer population that you bring in the precipitation process? Yes. The precipitation and filtration system is a considerable step in advance of crude irrigation; it may be done, and is done without the smallest nuisance. I drank some of the effluent waters myself at the Acton works.

812.

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812. Looking at the position of the sewage farm at Parramatta, do you think it would be advisable to deal with sewage there by precipitation and filtration, so as to prevent any possible nuisance arising to the adjoining localities? I have not sufficient knowledge of the local circumstances to say yes or no to that question.

813. But I take it from your report that if precipitation is necessary from local conditions you would prefer the International system to any other? Either the International or the A B C.

814. You place the International system first? Yes; because it is cheaper and equally efficient. Within the last twelve months it has been adopted in several other places, and is making great headway. The simplicity of the system commends itself to those who have had experience in these matters.

815. The sewage farm in connection with this scheme is situated in the Granville Municipality, and the people of Granville object to the sewage of Parramatta being brought into their domain, because they think it may create a nuisance; but I understand from your remarks that you believe the sewage could be dealt with by the systems you refer to, even if the population surrounds the works, without any nuisance arising? I am perfectly clear on the point.

816. Although there may be some nuisance arising from a sewage farm pure and simple, yet combined with precipitation no nuisance will arise? That is so.

817. Are there any other points upon which you would like to touch? Of course, had I been investigating this particular scheme, I should not only have examined the site, but also have had some trial shafts sunk so as to ascertain the nature of the soil. I rather gather from the evidence that there is clay there, inasmuch as there is a certain amount of water lying on the site now. I do not know whether it is a basin or what it is; I have no facts to guide me.

818. The water lies on the land near the low banks of the creek; the area of 40 acres is above the influence of the tide, and consists of a clayey, gravelly kind of soil; whilst as regards the 22 acres to be formed, that land to a depth of 4 or 5 feet will be composed of sand dredged from the harbour? Looking at the plan, and providing the levels and the surrounding conditions were satisfactory, there is no reason why the whole of the sewage of Parramatta could not be treated near the site of the pumping-station by precipitation, and the effluent water passed through filter beds and discharged either into the river or the creek. In other words, given favourable circumstances, these operations could be carried on without the smallest nuisance, and so render unnecessary the expense of conveying the sewage from the pumping-station to the farm, and which will eventually entail a very large outlay when the works come to be duplicated.

819. We have been informed that one of the reasons why that particular locality has been chosen as the site of the sewage farm is, that it will be convenient not only for Parramatta, but also for Granville, and Auburn, and Rookwood. If that is so, would it not be better to have one depôt for the treatment of the sewage of four or five municipalities than to have four or five depôts within a small radius? Yes; if the work can be efficiently carried on, but at the present moment there is only this one scheme, as far as I can gather.

820. *Mr. Neild.*] I understand that in your researches you have not heard of a sewage farm established on the banks of tidal waters? I cannot recall a single instance.

821. Do you know of a sewage farm made of sand dredged from below salt water? I cannot recall any instance.

822. Do your researches enable you to express an authoritative opinion as to the value of such silt for the purpose of a sewage farm? No; I have had no occasion to consider it in any way.

823. What has been the nature of the soil of which such farms are usually composed, as far as your knowledge extends? They vary considerably, from gravel, sand, loamy clay, and clay.

824. Would not such soil have a useful chemical action on the sewage—a purifying effect? That is the advantage of the use of suitable earth; it washes the dirty water, and purifies it.

825. Would sand have a similar effect on sewage? Sand would certainly clean the water.

826. Would sewage matter passing through a bed of (say) 3 feet of loam, be better purified than if it were passed through an equal depth of sand? The sewage matter itself would not pass through either sand or silt; it would be retained on the surface.

827. I want to know the effect on the liquid—whether it would be more or less purified passing through the loam or the sand? Either sand or loam in sufficient quantity—that is depth—is quite capable of purifying sewage.

828. Whether it be loam or sand—for sanitary purposes the result is equal? Providing the soil is kept free and in a healthy condition, as it is called.

829. Supposing the silt were deposited for a depth of 3 or 4 feet above the level of the present water on the land, would that be sufficient, in your estimation, for the purpose of purifying? I do not think 3 or 4 feet would be reliable at all times under such conditions. Of course, it depends on the nature of the material with which it is filled.

830. I am speaking of the question of filling with silt? I gathered that only 20 acres are to be reclaimed, and that 40 acres are sufficiently high above high-water mark.

831. With a combination of precipitation and filtration, you would not require a sewage farm at all? No.

832. What would you do with your solids? The solids could be burnt, or, if the outfall works were near the river, could be barged away, or sold to market gardeners. These three alternatives have been adopted, according to the local conditions, where precipitation is in use in England.

833. Is the tendency in England to adopt precipitation and filtration, or simply irrigation? Every case must be considered on its own merits.

834. Speaking generally, do you think a sewage farm where this broad system is carried out adjacent to tidal waters, would be as dangerous, from a sanitary point of view, and as inexpensive as precipitation and filtration? I should certainly give the preference to combined precipitation and filtration.

835. Both from the standpoint of public health and public economy? Certainly, from the standpoint of health and efficiency.

836. I think you said it is very much the cheaper system? Much cheaper where the conditions are favourable. If the scheme on the map could be foreshortened, and the precipitation works carried out at or near to the site of the pumping-station—I know not whether it is practicable or not—that is all that would be necessary.

837. In that event it would be much cheaper than the proposal before the Committee? Yes.

838. You speak of the soil of the farm being surcharged;—to what extent would capillary attraction take water above high-water mark? That entirely depends on the nature of the filling material. G. H. Stayton, Esq., M.I.C.E.
839. Supposing it is sand? I do not think the saturation would extend many inches, because the natural tendency of the water would be downwards. 5 July, 1892.
840. Do you think there is a risk of the escape and dissemination of noxious gases in hot weather, in a hot climate like this, to a greater extent than exists in the case of sewage farms in a colder climate, like that of England? Certainly not where there is efficient purification.
841. You do not think the difference in temperature would make any material difference in the dissemination of gases? Not very material.
842. *Mr. Ewing.*] Your advice, I gather, is not to have a sewage farm, but to have the precipitation and filtration process? I am not prepared to advise that; certainly I said that I should first consider such a system if I had the matter in hand.
843. You believe it is a more modern and better way of dealing with sewage matters? It is more modern, and I am certain it is better where the conditions are favourable.
844. You have had a great deal of experience, and it leads you to the conclusion that precipitation and filtration is the best way to deal with this question? It does. I saw the sewerage systems of thirty different towns at home, and I think that gives one a very good idea of the best systems. Having been away from England for four or five years, and then having seen all these systems, I came to the conclusion that wherever it is practicable, the precipitation system can be most efficiently and economically carried out. At Acton they do not have irrigation after the precipitation. The clarified sewage filters through the polarite beds and then flows right away at once. It was that water which I drank. It had not gone through earth at all.
845. You say, however, that there may be some special conditions that would control affairs so much that it would be better to have a sewage farm? There may be.
846. You cannot say whether those conditions obtain here? Not from the information before me.
847. You could say with very slight inquiry? I could. If I saw the plans and sections on the spot, and the class of material to be used for filling in there, I could say definitely whether the best system is proposed.
848. Is the solid which you talk of burning or taking out to sea of much value? It depends on the treatment. My report shows that in some places it is fetching £3 10s. a ton. At Kingston-on-Thames they have sold 10,000 tons of baked sewage sludge, called guano, and it has realised £35,000.
849. What is the population of Kingston-on-Thames? Forty thousand.
850. You say that the works at Kingston cost £20,000? Yes; the outfall works for precipitation.
851. Not dealing with the drainage operations in the municipality itself? No; the outfall works. They used to discharge the sewage into the Thames. These works were constructed in a very ornamental manner I may say, and became show works. The sewage is treated as near to dwelling houses as the Treasury is to this building, without causing any nuisance whatever, and the effluent passes into the Thames as clear as the water in the bottle on this table. I saw some men catching fish where the effluent was discharged.
852. The outfall works would then take the place of the pumping-station, and the sewage farm? Yes; provided the levels and conditions were favourable.
853. The other part of the scheme would be simply fitted on to the scheme you describe? Yes.
854. *Mr. O'Sullivan.*] Your recent visit to England has posted you in the latest information on sewage matters? Yes.
855. And you recommend that a cheaper and better system than this scheme should be adopted? Not exactly. I should be sorry to mislead the Committee in any way. I could not advise definitely as to the scheme, not having seen the plans, levels, sections, or the locality; but had I been considering the question, I should have endeavoured to ascertain whether the conditions would not be favourable to precipitation instead of a sewage farm, and, if so, I have foreshadowed the precipitation system, which would be the most economical and efficient.
856. If the conditions were favourable, you believe that a system such as that which obtains at Acton ought to be carried out at Parramatta? Yes.
857. Is there any reason why Parramatta could not be connected with the Western Suburbs Scheme? It would entail a huge outlay to raise the sewage to the necessary height to enable it to be conveyed to Webb's Grant.
858. In your report you described very minutely the two systems you prefer—the International and the A B C—and yet you seem to give the preference to the International? Because, as I have said, the A B C system is more costly in its working. The ingredients they use and the chemicals are more costly. Where a market can be secured for the product they get £3 10s. a ton, but you cannot rely on that. The International system is much more simple. There are no expensive ingredients, and the effluent is satisfactory. In other words, the purification is as good as you can possibly desire for all ordinary requirements.
859. It would be quite possible to devise a scheme to serve the municipalities of Parramatta, Granville, Auburn, and Rookwood on the International plan? Oh, yes. If you can treat the sewage of 20,000 persons by it, you can also treat the sewage of 100,000. It is done at Salford, where the population is 200,000.
860. The system which is sufficient for a small town like Sutton is also sufficient for a large town like Salford? Certainly.
861. *Mr. Humphery.*] According to your report, the population of Acton thus drained is somewhat similar to the population of Parramatta? Yes; 11,000 as against 12,000.
862. In your report, on page 5, you say, "It appears that the company are now purifying the sewage of a population of 11,000 persons by passing the tank effluent through polarite filter-beds having an area of one-ninth of an acre only, and are obtaining much better results than when the sewage was put over a large quantity of land"—you do not quite explain why the first system became objectionable? Formerly they treated the sewage with lime—the lime precipitation process; and then they tried various methods at more or less expense. The meaning of the paragraph is, that the polarite filter-beds have a much higher efficiency than the former filter-beds, and the more fact that they had not to put chemicals in now tended to greater efficiency and a very much better effluent is obtained.
863. I gather from your report that less than an acre of land would serve a very large population, whereas formerly they would require 600 acres? Not "less than an acre of land," but less than a ninth of an acre of polarite filter, whereas formerly they had a much larger filtration area.

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864. In your report, at the bottom of page 5, you say, "It is therefore asserted that one acre of polarite filter-bed will do as effective work as 666 acres of land—am I to understand that a farm of 666 acres of land would be necessary to do the work which can be performed satisfactorily by a polarite filter-bed of an acre? That is exactly what is meant.

865. How many towns did you visit during your stay in England? About thirty, I think.

866. Did you go to the Continent? I went to the Continent, but not to examine any sanitary systems.

867. You did not examine the sewerage systems in operation in Germany and France? No, but I got full particulars of the sewage farm at Berlin.

868. You are quite familiar with every system of sewerage in operation in Europe, America, and, I suppose, Australia? I know nothing, except by reading, of the systems in existence in America—they mostly follow on the English lines; but I know all that has gone on in England, and keep myself thoroughly in touch with the latest works.

869. *Mr. Hoskins.*] Were the sewage farms which you visited in England regarded as a nuisance by the residents? No.

870. Complaints have been made with more or less foundation? Where a farm is efficiently managed there ought not to be the smallest ground for complaint. Sometimes, through the neglect of careless workmen, a nuisance may have arisen.

871. Have you ever visited the farm at Croydon? Yes; I lived close to it for six years.

872. Is it regarded as a nuisance by the residents? Not now.

873. They complained of it at first? It used to be rather bad at times some years since. I have sometimes smelt it rather badly in close muggy weather.

874. But latterly it has been much improved? Yes.

875. Generally a sewage farm is not complained of as a nuisance by the residents of the locality? No.

876. Are you aware that there are some rather disagreable smells at the Webb's Grant farm now? I have not been there since 1888 or 1889.

877. It has been given in evidence by the Mayor of Parramatta that if desiccators, such as are used at the meat-preserving establishments at Auburn and other places, were used there could not possibly be any exhalation from the farm which could be regarded as a nuisance—is that your opinion? No.

878. Would the use of desiccators in an efficient way tend to prevent noisome exhalations? There would be no noisome smells or emanations where there is efficient irrigation. I know of no place where fœcal matter is burnt alongside the operation of irrigation. It seems an unnecessary proceeding.

879. Can you suggest any means by which the sewage farm at Webb's Grant, or Parramatta, could be improved, so that no reasonable complaint could be made of a nuisance being created? Not without fully considering the matter and knowing all the conditions.

880. You have suggested that the best way to dispose of the Parramatta sewage would be to have filtration beds near the site of the pumping-station;—suppose there is not sufficient land there, or suppose the residents of Parramatta made an outcry against the proposal, how would you manage? I should, firstly, endeavour to get sufficient land, and secondly, to convince the dissatisfied people, as far as possible, that there would not be the smallest annoyance there.

881. But suppose sufficient land were not available nearer than the site of the proposed farm,—how would you manage? I could scarcely suppose that, I think.

882. I think you could, as I believe it cannot be got nearer than that? If so, that is an answer.

883. A good many people are under the impression that the best way to get rid of fœcal matter is by burning,—is that your opinion? It is not; because the solids are not the only offensive parts of sewage; liquid sewage—slops—contains so much that may be offensive if not properly treated.

884. Supposing the Committee should desire you to inspect the route of this sewerage scheme, and examine the character of the farm of sewage, would you have any objection to undertake that duty within a reasonable time? I should be glad to do so next week.

885. *Mr. Davies.*] There are no strainers or filters in connection with the farm at Webb's Grant? If I remember rightly, there is a straining chamber on this side of Cook's River.

886. Do you remember the size of the strainer? No; but I have seen the strainers at work.

887. Would not solid fœcal matter pass through the strainers into the open channel which takes the sewage to the farm? It is possible, but I really do not know. The strainers were not erected, I take it, with the view of keeping back the fœcal matter, but the larger debris which comes down.

888. Are you aware that there is no provision for tanks or filters in connection with this scheme for Parramatta? I gathered that there is nothing of the kind.

889. Do you think a system which does not provide for either deodorising or filtering the sewage which it is proposed to cast into open beds would be a proper one for treating a large quantity of sewage? I am not in a position to give a definite answer.

890. It is proposed to have certain beds on the farm, and to flood those beds with the sewage from time to time without its having passed through strainers, or any filtering process;—do you think that would be a wise course to take? That is scarcely a fair question for me to answer, as I do not know sufficient of the local conditions. I have foreshadowed what my idea is, but that is all subject to confirmation.

891. If sewage matter, both liquid and solid, is deposited in beds on a fourth of this large farm at different times, do you not think that very serious consequences might result from its exposure to a hot sun to the surrounding population? With neglect or improper supervision there certainly would be that risk.

892. If the sewage matter is not dealt with in the way you have described, it would pass in a very crude form on to the sewage farm without filtration or deodorisation? If that is so, and the soil and surrounding conditions are not suitable, then, as I have already stated, there would certainly be a considerable element of nuisance.

893. It is proposed, after raising the embankment, to take out of the river silt and sand to form a filter;—would that material make a good filter? I certainly think that such a material would make a good filter filter for the effluent after precipitation.

894. Would it not be already to some extent surcharged? Not if it was sufficiently above high-water level. In fact, if I remember rightly, in connection with the North Shore scheme, we proposed to reclaim 2 or 3 acres at the head of the bay, and to have the surface 6 feet above high-water mark, and after treating the crude sewage by precipitation, to pass the effluent through the reclaimed strata of earth. Those conditions, of course, are very different to the proposal for Parramatta.

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895. You submitted a proposal to the Government for the sewerage of North Sydney? Yes. It was before the Committee in 1888, and was approved.
896. That system, if properly carried out, would be free from any objection? Certainly it ought to be.
897. What extent of land would be required to deal effectually with the sewage of 12,000 persons near the site of the pumping-station? I should think, speaking off-hand, that an acre and a half or two acres of land is all that is wanted for buildings, precipitation tanks, the polarite filter, and a cottage.
898. What would it cost to erect the necessary buildings to treat the sewage of 12,000 persons in that way? It is impossible to say, off-hand.
899. It would be very much more economical, I presume, than the proposed scheme? I think so.
900. It would certainly be the most effectual way—it could not possibly fail? There is no room for failure where it is properly carried out as I have seen it.
901. Consequently, it could cause no possible injury to the comfort and health of the residents? No.
902. *Dr. Garran.*] Do you say you know of no sewage farm near tidal water? Not in so close a proximity as this proposed farm.
903. Is not Botany Bay a tidal water? I was speaking, then, of sewage farms in England.
904. Did you ever notice at all, whilst engaged on the Webb's Grant scheme, any effect at highest flood from Cook's River on the moisture of the soil? I never was there under those conditions.
905. There is no capillary attraction to draw up the water? I have no experience with regard to floods at Cook's River.
906. The reclaimed land at North Shore will be built up much in the same way that this farm will have to be built up at Parramatta? Yes, I presume so.
907. With silt brought by dredges? Yes.
908. How high above highest flood would it be necessary to build to make it safe? It was proposed to build it 6 feet above high water-mark.
909 If this were made 6 feet above high water-mark it would be as safe as that? Certainly.
910. It would be much easier to treat it on the land after it has been first treated in tanks than to treat it direct from the pump? Certainly.
911. Do you know if it is at all determined by medical men whether this precipitation on the International or other system in any way affects the vitality of the germs of disease? No; I do not recollect any special opinion to that effect, but Professor Frankland, one of the very highest authorities, says, "I need scarcely add that the effluent from the filter is not only clear, but inodorous and inoffensive, and it may be admitted in large volumes into running water without creating any nuisance. It is in a state of purity greatly exceeding that prescribed by the standards of the Rivers Pollution Commission." Several medical men—sanitary authorities—have reported on the system, and in every case they have written most strongly in favor of this system of purification.
912. If you put the germs on to the sewage farm do you do anything to kill them? The system adopted is to burn the solids or sludge taken out of the tanks after precipitation. Of course, a certain amount of the sludge contains fœcal and other matter, and that is collected by means of a sludge pump, pressed, and burned at a temperature of 212 degrees.
913. So far as that is concerned the burning would kill the germs? Effectually.
914. It would not affect what goes off in the water? No; but I am scarcely prepared to follow you into that question.
915. At page 4 of your report, you say, "It is now generally admitted that sewage is not purified by chemicals, but only clarified," and afterwards you say, "The oxide being porous and magnetic, parts with its polarised oxygen, and thereby helps to disinfect and deodorise the sewage and sludge. It attacks the molecular constitution of that portion of the organic matters in solution which cannot be removed by precipitation in the settling tanks"? That would probably support your views as to the liquid sewage.
916. You speak, in the second paragraph, as if the International system did disinfect, whereas in the first paragraph you say that no chemicals have that effect, only clarifying? I think the two go together very well, because with regard to the International system there is, first of all, "Ferozone" precipitation, and then there is filtration through the polarite beds. It is the polarite bed following the precipitation that is supposed to have special merit.
917. Supposing there is a disinfecting virtue from the precipitation; and there is no equal disinfecting virtue in simply distributing it over the soil of the farm, then, other things being equal, for sanitary reasons precipitation would be the better? Yes.
918. Is there any medical evidence as to the merits of the two systems? I feel sure there is, but I cannot recall any at this moment.
919. You spoke just now as if it would be very easy to combine a number of local towns with one system: but if your scheme were carried out of making a filtration bed at the pumping-station, Parramatta would deal with its own sewage exclusively by itself, and leave the others to deal with theirs by themselves? Yes.
920. So that if it were dealt with at that point, Parramatta would not have to go outside its own boundary, which is the creek? Yes.
921. That would get rid of one difficulty, that it has to traverse other municipalities to carry out this system? Yes. I was not aware that there had been a difficulty of that kind.
922. Supposing precipitation tanks were established at the pumping-station, would it be inconvenient for the residents of Parramatta in the way of creating a nuisance? Not the slightest.
923. There is no question whatever that this system can be carried on without any smell, inconvenience, or annoyance? No.
924. Twenty yards away from the site you would not perceive a smell? No.
925. If there is ample ground there to provide sufficient area for precipitation works there would be no danger? If there is ample ground in a convenient position, perhaps a couple of acres, the whole business could be carried on there as far as I can see.
926. We should want some pumping there at some point? I have no doubt of it. At the Acton works the low-level sewage comes in 30 or 40 feet below the surface, and is immediately pumped up and discharged at such a level that it flows into the first tank.
927. We should have some pumping expense if we adopted that scheme? Yes, but you would not have so great a lift.

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928. We should not get rid of the pumping? I should think not.
929. *Mr. McCourt.*] Has the International Company a representative in Australia? Not to my knowledge.
930. If the International system were adopted, would it have to be conducted through the Company? Not necessarily.
931. It is not a patent? I do not think it is patented here. The Government could buy the material and lay down the filters.
932. I suppose the gentlemen who prepared the plans of this scheme considered all these various systems before adopting this one? I do not know. I am under the impression that this scheme was foreshadowed many years ago, and that it has not been revised to date.
933. And having seen the ground and the nature of the place, do you not think that they would be competent to judge of the best system? That may be a fair assumption.
934. *Chairman.*] Is there an inexhaustible supply of polarite? I believe so. It is obtained in conjunction with coal-beds. The Company are sending some out to India now, where the system has just been tried.
935. *Mr. Neild.*] In any plan for sewage irrigating the matter would necessarily be exposed on the surface of the ground while in course of distribution? Yes.
936. If the sewage is discharged without being subjected to some process of precipitation, is there not a danger of noxious gases arising during hot weather? Not where the arrangements are effective.
937. It would take an hour or two to sink into the ground? Yes, but the sewage, when delivered on a farm, is fresh, and decomposition has not set in.
938. Would not decomposition rapidly set in when it is exposed to the sun in the shallow manner in which it must necessarily be? With care, I do not see anything to object to on principle.

Thomas Michael Williamson, Esq., Mayor of Ermington and Rydalmere, sworn, and examined:—

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939. *Chairman.*] The Municipality of Ermington and Rydalmere is bounded on the west by part of Parramatta, on the south by the Parramatta River, on the east by Ryde, and on the north by Dundas? Yes.
940. The greater portion of your borough is opposite the site of the proposed farm at Parramatta, and the main which flows from the pumping-station to the farm? Yes.
941. Has your Council had this proposal under its consideration? Not directly.
942. Occupying the position of Mayor, and having resided there for three or four years, you are well acquainted with the views of the people, and watch their interests very attentively? Yes.
943. If this proposal is carried out as submitted, do you think it will be objectionable to the people of your municipality? I do, when a southerly wind blows.
944. You have listened to the evidence of Mr. Stayton, has it modified your views as to danger or nuisance being likely to arise from the southerly winds? With regard to the principle of precipitation it does modify my views; but if it is conducted on the principle of the Webb's Grant farm it does not.
945. You are well acquainted with that farm in its original as well as its present state? Yes.
946. You live almost immediately opposite the site of the proposed farm at Duck River? Almost directly opposite it.
947. There are a number of residences all along the banks of the river on the northern side? On the opposite side, within a quarter of a mile, there are a large public school and a large number of other dwellings, whilst lower down is the Newington Asylum.
948. You think, then, that if the sewage were dealt with by precipitation instead of being spread over the surface of a farm, there would be very little objection on the part of the people of Rydalmere to the scheme? I do not think there would be any objection on the part of Rydalmere considering, of course, that you propose to burn the solids.
949. Have you heard of any objection on the part of the Granville people to the establishment of this farm within their municipality? Some of them do not object to the proposal because they believe that a southerly wind will blow away the stench that will arise from the farm.
950. I suppose you think there is something in the objection and that it is not made merely because they have a difference of opinion with the people of Parramatta? No. Some years ago the Government granted 70 acres at North Parramatta for a sewage farm, and the Council purchased a desiccator at a cost of about three thousand pounds, but neither one nor the other has yet been utilised because the people of North Parramatta brought sufficient influence to bear on the aldermen.
951. Ermington and Rydalmere are only sparsely populated? There is a population of between 1,400 and 1,500 persons.
952. How do you deal with your night-soil? Each person buries his night-soil in his orchard. There are no regulations whatever; the Nuisance Prevention Act does not extend to our borough.
953. It will be a long time, owing to your large area, before you will have to face the difficulty of disposing of your night-soil? Yes.
954. Is it a fact that Parramatta disposes of its night-soil in your borough? No; it did at the junction of Kissing Point Road and its northern boundary.
955. I suppose that you, as Mayor, would object to their disposing of their night-soil on your territory? Yes. We did object because a very strong odour arose from the burial of the night-soil at that place. Some petitions were sent in to our Council, and we communicated with the Parramatta Council, and the practice was stopped.
956. But it was within their boundary? It was within what is called no man's land; it is within no municipality.
957. It is a fact that Parramatta is very much in want of a sewerage system? Yes.
958. Have there not been frequent complaints that filth has been poured into the Parramatta River and that it lodges on your southern boundary? Yes.
959. Even supposing there was some risk of a nuisance arising from the sewage farm, would it not be better than the pollution of your foreshores as at present? The foreshores are polluted chiefly by the inmates of the Government institutions, but if the farm were carried out we should have the whole of the sewage of Parramatta concentrated there.
960. You have no objection if it could be proved satisfactorily that sewage could be disposed of or dealt with without giving rise to any unpleasant smell or creating a nuisance, but you object to its being dealt

dealt with on the particular spot marked as a farm? On the principle set forth by Mr. Stayton, I do not; but of course I object to a farm on the same principle as the Webb's Grant farm. The greater portion of the piece of land which is marked for a farm is 3 feet under water during spring-tide, and the rest of the soil is of an ironstone nature and you could not grow a carrot there, let alone anything else. T. M. Williamson, Esq. 5 July, 1892.

961. You maintain that at least half the area of the proposed farm is subject to tidal influence? Yes.

962. The other portion is, we have been told, to be raised 6 feet above high-water mark, and it is proposed to fill up the depression to a height of 4 or 5 feet with silt or sand brought from the harbour? Anyone who knows what that silt is must admit that it will take three or four years before you can utilise the farm.

963. You are speaking of the silt dredged from the Parramatta River? Yes.

964. We understand that the sand to be deposited there is equal in purity to that at Webb's Grant, and that it is to be obtained from Long Cove. Have you seen the sand-pump at Long Cove, filling up the reclamation? No.

965. We are informed that very pure sand is being got there; if they use ordinary silt from the Parramatta River you think it would take some time before it was fit for the purpose of filtration? Yes, it is of a peculiar clayey formation. When it is exposed to the action of the sun it becomes quite stiff, and it is only under the action of the weather that it dissolves and becomes sand. The river was dredged thirteen years ago, and there are deposits of this stuff to be seen now on the banks, showing that this silt would not be fit for garden purposes.

966. If in the near future it is necessary for your municipality to face the question of dealing with its own sewage, would not this farm be rather a convenient depôt if you put a syphon under the river? I think that question will not come under our consideration for the next fifty years. There are so many large areas at our disposal.

967. *Mr. Davies.*] If the sewage of Parramatta is treated on this farm in the same way as the sewage is treated at Webb's Grant farm, would it not be a very great nuisance to the locality? I think it would, because the people of Botany are already commencing to complain, when the wind blows from the south-west, of a stench coming across the bay.

968. Do you think it would be a nuisance not only to your borough, but also to the surrounding districts? I think it would.

969. The soil at the proposed farm is very different from the sandy soil at Webb's Grant farm? There is no comparison between the two. The soil where they propose to have the farm is of a very retentive character and holds the water. If you dig fourteen days after a shower of rain you will find rain within 18 inches or 2 feet of the surface.

970. At Webb's Grant you have sand 100 feet deep? Yes.

971. Still the farm at Webb's Grant is a nuisance in your opinion? Yes, the people complain.

972. *Chairman.*] Is there anything else you desire to say? Only that alongside the north-west corner of the sewage farm it is proposed by the Minister for Public Works to erect a bridge to give an outlet to the people on the north side of the river to the other side.

972½. Is that the site which was chosen for a bridge by the promoters of the Simpson's Railway Bill? No. It is nearer the proposed sewage farm. It is also proposed to construct a road to enable us to get to Granville. I may point out that the land adjoining the Rosehill race-course has been subdivided and disposed of, and that one or two buildings have been erected facing the tramway line. On the eastern side of Duck River a number of buildings are going up.

973. The fascine bank has, I suppose, improved it to some extent? Yes, considerably.

WEDNESDAY, 6 JULY, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Sewerage Works for Parramatta.

Frederic Norton Manning, Esq., M.D., Medical Adviser to the Government, sworn, and examined:—

974. *Chairman.*] You are Medical Adviser to the Government of New South Wales? Yes. F. N. Manning, Esq., M.D.

975. Various Government institutions are under your control? Yes.

976. A large number of these institutions are congregated in the Municipality of Parramatta? Yes.

977. Is it true that very great inconvenience has arisen in dealing with the night-soil and sewage generally of those institutions? In some of them there has been very considerable difficulty, but one or two that possess a sufficient area of land have had no difficulty in dealing with the night-soil. The slop water flows into the Parramatta River from all of them. 6 July, 1892.

978. With those institutions which have not a sufficient area of land you have had some difficulty in disposing of the night-soil? Yes.

979. And also of the slops from all the institutions? With the slops from all.

980. Does the drainage of the slops into the river at times cause an intolerable nuisance? I have no doubt it has formed part of the nuisance which exists, but you cannot dissociate the drainage of the public institutions from the drainage of the town of Parramatta.

981. The Government institutions, like the residents of Parramatta, drain their slops into the river? Yes.

982. And that has created a very great nuisance, which is dangerous to health? Certainly it is dangerous to the health of anyone living near the river.

983. Have any of the inmates of the Government institutions suffered from their proximity to this nuisance in the river? I am not aware that they have done so. The sewers from the Government institutions, especially

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especially on the north side, are good, except that they want a little more ventilation. There have been cases of typhoid fever in the Gaol. I attribute it to the fact that it is situated at the head of the sewer. The sewer ought to be ventilated by means of a shaft. On the whole there has been very little sickness in the Government institutions. For instance, I have had no case of typhoid fever in the Hospital for the Insane, which contains 1,000 patients, for the last fifteen or twenty years.

984. The inmates of the Government institutions do not suffer any more than the rest of the inhabitants of Parramatta from the nuisance which may exist in the river? I do not think they suffer as much from disease, because they are well looked after, and the institutions themselves kept clean.

985. There is no doubt at all in your mind that the discharge of the slops and sewage into the river is detrimental to the health of all the inhabitants, whether in the asylums or otherwise? There is no doubt.

986. For a number of years there has been a desire to deal with the matter in an effectual way? Yes.

987. Do you know anything of the scheme before the Committee? No; I do not know anything of details. I know it includes a sewage farm.

988. The Borough Council contracts with the Government institutions which do not deal with their own night-soil? Yes.

989. We are informed by the Mayor that it costs the Council 4d. in the £ to deal with the night-soil alone, and it is estimated that the proposed scheme will entail an additional cost of 7d. in the £;—do you think that in the interests of the people of Parramatta, as well as the inmates of the Government asylums, it would be worth while to pay the extra sum of 7d. in the £ to get this comparatively perfect system of sewage? It is certainly advisable to alter the present system, but as to the exact cost to which you should go I am not competent to give you an opinion. There is no doubt that the present system is as bad as it can be. It is an utter failure. The ditch which now exists on the upper part of the river is simply filthy. But your question is a wide one.

990. From a sanitary point of view, you think that any expenditure within reason ought to be incurred to do away with the nuisance? I do.

991. Have you given much attention to systems of sewerage? No; only in a very general way.

992. You are not wedded to any particular system? No.

993. Have you ever visited the sewage farm at Webb's Grant? Yes.

994. Is that farm carried on without any very serious nuisance or danger to public health? I believe there is very little danger to public health there.

995. Would a farm conducted on similar lines at the junction of Duck Creek and Parramatta River be a menace to the health of the people? No; I have the effluent from the sewage farm at Botany examined by the Government Analyst once every two months, and I find that it is innocuous. It still contains sewage matter, but in a very diluted form; it is innocuous as far as smell is concerned.

996. Where do you take the water from,—where it goes into the river, or after it passes over the beds where it is used? It is taken in pits after it has passed through the filtration beds.

997. So that it has still a body of sand to go through before it reaches the river or the bay? It has.

998. On the whole, you think that if the sewage at Parramatta is taken down to this particular farm nothing very objectionable or injurious to the health of the inhabitants will arise? From my experience of other sewage farms, and also of the Botany experiment, I have no doubt that there will be no danger to the public health if it is treated in the way proposed.

999. At such institutions as Gladesville and Callan Park Asylums do you carry out on a small scale the principle of putting the sewage on the land for irrigation purposes? No.

1000. In all these institutions the night-soil is collected in pans and dug into the ground if the area of land is sufficient? Yes; the slops are run into the river.

1001. I suppose the slops become very objectionable unless dealt with in some way? Extremely objectionable. At very large public institutions slops are particularly offensive, especially if there is a number of sick people.

1002. If the system under consideration would deal not only with the slops but also with the solids, it would be better than a separate system for each? Undoubtedly.

1003. Do you know anything of the International system? Not in detail; I have only a general knowledge.

1004. If there had been any great increase in the death rate of people in the vicinity of the Webb's Grant farm it would have been brought under your notice as Medical Adviser to the Government, and you would have inquired into the complaints? Had there been complaints no doubt they would have reached me.

1005. No complaints have reached you to the effect that the residents have suffered from the existence of the farm? No.

1006. *Mr. Ewing.*] Has there been any injury to the health of the inmates of any of the institutions that you can trace to a bad system of sewage? With the exception of the necessity for ventilating the drains at the Gaol.

1007. There has been no direct effect on their health? The sewage poison comes directly from the drains, but most of the institutions are some distance from the present sewer.

1008. You believe there is a direct effect from the present system of dealing with the night-soil and slops? Undoubtedly, as far as the Gaol is concerned there has been.

1009. Does it amount to anything serious? There have been four or five cases of typhoid fever within the last year or two.

1010. Which you believe can be directly traced to the system of dealing with night-soil and slops? With the slops.

1011. Would it be possible to go on with the pan system, and get rid of these evils, or are they inseparable from the pan system? If you go on with the pan system as long as you like you will not cure the evil in the present sewer.

1012. You say, simply, that there is an evil, and that the evil wants curing? Undoubtedly.

1013. But you can suggest no way by which it can be cured? It hardly falls within my province to suggest a way.

1014. But, in general terms, sewage farms are not supposed to be injurious? No.

1015. *Mr. O'Sullivan.*] The site of the proposed farm would be close to the population of Granville, Parramatta, Auburn, and Rookwood in the future? Possibly, yes. For many years it will be a long way from any large amount of population.

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1016. Do you think the sewage farm will prove injurious to the health of the population by which it will be surrounded in the future? I do not, if it is properly administered. Of course, the management of sewage farms differs very much indeed. I have seen some in England which were managed very badly, and others that were managed without causing the slightest offence.
1017. *Mr. Humphery.*] You did not say anything about the solid matter which you saw deposited on the sewage farm at Webb's Grant;—would that be offensive to the population in proximity to the farm? No; as far as I saw the operations at Webb's Grant, there was nothing offensive at all.
1018. Within that distance of a sewage farm do you think people may reside without experiencing anything offensive? I think you might live within 200 yards without being aware of it.
1019. There is no danger to health? No.
1020. *Mr. Davies.*] How many inmates are there in the asylums at Parramatta? I think there are over 3,000 inmates in the five institutions.
1021. You have not experienced any great inconvenience with regard to the health of the inmates from the use of the pan system? No; but still it does not deal with the slops.
1022. Did you notice that the solids and liquids lie on the beds at Webb's Grant? Yes.
1023. Did you observe any disagreeable smell? There was a slight smell, but it was not very offensive—nothing that you could consider injurious to health, at all events.
1024. At what time of the year did you make your visit? In the summer; but I cannot state the month.
1025. Would not a similar state of things at Parramatta, with a hot sun fermenting and generating offensive gases, be injurious to the health of the residents? Not if it were managed properly.
1026. Not if it were managed on the same lines as the other farm? No.
1027. At Webb's Grant the whole of the matter is distributed over the surface of the beds;—did you notice the treatment on the different farms which you visited in England? I went particularly into one or two farms, especially the Northampton farm—a large one, which takes the whole sewage of the town.
1028. Was it treated in the same way as the sewage at Webb's Grant? It was even more elaborate. It extended over a large area. It was utilized in farming to a greater extent than is done here. At Webb's Grant much of the sewage is taken to large sand beds and simply filtered. But in England it is taken over the surface by irrigation to a much greater extent than is done at Webb's farm.
1029. After passing through filters? No; before.
1030. In its crude state? Yes.
1031. How close would a sewage farm be to the population? In several places the population is close round the farm. For instance, the Meadows at Edinburgh is a good case. At Stafford there is a farm quite close to the town.
1032. The germs of disease which might be carried away in the fœcal matter, and cast upon the beds in the sewage farm, would not be destroyed? They are not destroyed. In the course of time, and by exposure to sunlight, they no doubt die. There is not the destruction that there would be by fire.
1033. Would not the germs germinate under a hot sun, and be carried away by the wind, and so be inhaled by the residents in the neighbourhood? I do not think there is any danger to be apprehended.
1034. Are not some diseases of a dangerous character? In England, at all events, sewage farms have not been found to be injurious, either to the near residents or to the employees on the farm.
1035. Is not the English climate largely in favour of the treatment of sewage farms in that way? There would be an advantage in the case of our climate, as the absorption would be very much quicker. In a wet climate the sewage would remain longer on the surface.
1036. You know the character of the soil at the proposed farm? A good deal has to be made yet, I understand, from dredgings.
1037. The soil at Webb's Grant is of a very different character to the soil that now exists at the proposed farm? Yes, it is sandy; but I understand that this farm is to be made, to a great extent, with silt.
1038. Would the silt and sand which is to be dredged out of the river be good material for a sewage farm? I think it would. There is a considerable amount of sand in it, and the remainder is, for the most part, light silt.
1039. You have no apprehension of danger to health if this scheme is carried out? No; providing the farm is properly managed.
1040. *Dr. Garran.*] Do you happen to know whether precipitation, by means of chemicals, in any way acts on the germs of disease? In some forms it would undoubtedly. In any form in which bichloride of mercury, or some forms of iron are used, it would undoubtedly affect the germs of disease.
1041. In the International system iron is used considerably? Yes.
1042. Will one system be more likely to kill the germs of disease than the other? I think precipitation is more likely to kill the germs.
1043. Other things being equal, that would be an argument in favour of precipitation? Undoubtedly.
1044. Burying the germs in shallow earth does not kill? No.
1045. Spreading them out on the surface of the ground, as at Botany, cannot kill? Yes, by exposure to sunlight and air.
1046. And being spread out, would the germs be carried down with the filtration or remain on the surface? They would remain on the surface, but in the course of time they would, no doubt, be very much changed and would die, and disappear, especially if vegetation were grown.
1047. Exposure to the oxygen of the air would tend to neutralise them? To some extent.
1048. That exposure would of itself take away their vitality? Yes.
1049. Even admitting that, if the other system is equally cheap, it will have some sanitary advantage? The advantage of directly killing the germs.
1050. You say that at the Lunatic Asylum you have fortunately been very free from typhoid fever. If you had an attack there you might bury the typhoid fœces? Not until after I had thoroughly destroyed them with disinfectants.
1051. What do you do at Little Bay with typhoid fœces? They are run into the ocean by means of a sewer.
1052. You have had to adopt that plan? Not on that ground altogether, because they were thrown into the water before over a shoot.
1053. Any germs in the fœces from Prince Alfred Hospital go straight in the sewer to Bondi, I suppose? Yes.
1054. And the same from the Sydney Hospital? Yes.

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1055. How many people have you in the Lunatic Asylum, Parramatta? Upwards of 1,000.
1056. We were told yesterday by the Mayor that the persons in the Government establishments, including the Police Court, Gaol, Telegraph Office, and Railway Station, form about a fourth of the whole population. If you take out the thousand persons in the Lunatic Asylum, the Corporation would not have a fourth of the total population to deal with with the pan system? No.
1057. Have you anything to do with the arrangement of the terms on which that system is carried out by the Corporation? No; as far as the Hospital for the Insane is concerned we are exempt. I have nothing immediately to do with the management of the other institution.
1058. The figures put before the Committee show that the whole of the people of Parramatta pay only £856, whilst the Government is charged £674 for less than a quarter of the total population. That is a very unfair distribution? Decidedly unfair. I thought the charges proposed in the case of the Asylum were enormous. As it had a sufficient area of land I had the place exempted from the operation of the Amending Act of last Session.
1059. If I remember rightly, a clause was inserted in the Legislative Council exempting the Government establishments? The Government establishments which provided for dealing properly with their own sewage.
1060. But for that clause you would come under the Corporation? Yes.
1061. Would you not have some control over the money to be paid? I am afraid that we should have been entirely at their mercy.
1062. Is it not evident that the Government pay the lion's share of the taxation? Yes.
1063. Your Lunatic Asylum only fouls the river as far as the slops are concerned? Yes.
1064. The banks of the river are not very much deteriorated just at the point near the Asylum? Our slops do not go into the river there, but are brought down below the bridge by a sewer.
1065. The poor people who are lodged close to the eastern end of the town are very near where the banks are fouled? Yes.
1066. Do you find any difference between the health of the inmates in these establishments and the health of the inmates in the Lunatic Asylum? I am not able to say. They do not come under my immediate inspection.
1067. It would if there had been anything remarkable? Yes.
1068. If any place in Parramatta would suffer from the state of the banks these two Asylums would? Decidedly; because it is there that the smell is worst.
1069. I understand you to say that though the Government may be a sinner in fouling the river, it cannot be the greatest sinner? No; it is not this only one in this case.
1070. We sometimes hear that all the stench is necessitated by the Government establishments; but that is not the case, because the drainage from the north of Parramatta, and a considerable part of the south side, goes into the river? I doubt if the drainage of private houses is quite so offensive as that of public institutions in some respects.
1071. You do nothing to disinfect your laundry slops? No.
1072. If this scheme is not carried out because of the expense, could you do anything to disinfect these slops before they leave? Yes; something could be done.
1073. You might have a little precipitation? Yes; they might be deodorised or precipitated.
1074. As far as the Government establishments are concerned, the nuisance they create is manageable to some extent? Yes; whatever is done should be done at each establishment, and not by means of a general system.
1075. That would get rid of the nuisance as far as they are concerned? To a great degree it might.
1076. Did you find that the people who lived in the neighbourhood of sewage farms in England did not complain? There were no complaints, so far as I could ascertain, from people living in the immediate neighbourhood.
1077. Do you think a belt of trees planted round the sewage farm would be a check on any exhalation of bad air? I do not think it would have very much effect. It is different from the miasma that you get near Rome; that, no doubt, is stopped by trees to a great extent; but I do not think the smell from sewage would be stopped to the same extent. At one or two sewage farms where I noticed there was no nuisance there were no trees.
1078. If it is the smell only, without any miasma, the smell of itself would not be injurious to health, although it might be disagreeable? No.
1079. So that the farm might be disagreeable and yet not unhealthy? It might be that. Of course, all smells rather tend to deteriorate general health and render people more liable to take disease.
1080. It is very desirable that the sewerage of Parramatta should be improved? Yes; most necessary.
1081. And, as a contributor to the nuisance, the Government should be a party to the cost of that improvement? I think so.
1082. *Mr. Wall.*] Was the water which you had analysed taken from the farm after it had been through the process of filtration? After it had gone through the filter beds.
1083. Any germs of disease would have remained on the surface? For the most part.
1084. Is there any danger to public health from inundating vegetables that are almost fit for market, allowing this filtration to take place, and then placing them in the public markets for sale? As far as has yet been shown there does not appear to be any danger. I am only speaking from my experience on other farms.
1085. If any germs of disease existed in the sewage during the filtering process they would remain on the vegetables if so inundated? They are not altogether inundated. Very little gets on to the leaves. It is about the roots where it gets.
1086. During our inspection they were completely inundated? That is not often the case.
1087. In that case the germs would remain on the vegetables? They would.
1088. Would it be dangerous to dispose of those vegetables in the public market? It would all depend upon whether they were properly boiled; that would at once destroy all germs.
1089. Are you aware that the sale of vegetables from English sewage farms has fallen off 50 per cent. during the last year? No.
1090. You have no reports to that effect? No; I know the sewage farms have been largely employed in England of late years in growing green crops for feeding cattle for the most part, and also for growing osiers and ash poles.

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1091. You think that would be a less dangerous mode of conducting these farms? Undoubtedly.
1092. *Mr. Neild.*] Where basket-making is carried on on a large scale, the osiers would give a revenue; probably they would give no revenue here I suppose the growth of some form of vegetation is almost a necessity? If you are to make any profit from the sewage farm, undoubtedly.
1093. Would it not be necessary to relieve the soil? Yes.
1094. If the farm were carried on without the growth of vegetation, would it be likely to become a nuisance? I think it might. Some form of vegetation is necessary to purify the soil again.
1095. Suppose green crops, such as lucerne, were flooded with sewage matter, such as is done at Webb's Grant, is it not possible that the germs of disease may be consumed by the cattle which eat the lucerne, and be passed into their milk? I think it is possible.
1096. It is a fact that fever germs will pass from the water that a cow drinks to its milk, and so on to the patients? Yes.
1097. There is a possibility of a similar risk happening to the consumers of vegetables from a sewage farm which has been flooded periodically with sewage matter? I have known cases where people have refused to buy milk where the fodder was grown on a sewage farm. In England, of late years, in several cases which I know, the green stuff has been used to feed cattle and not for milk producing purposes.
1098. *Mr. Ewing.*] Did you ever examine the sewage going on to Webb's Grant? I have not had it analysed; I do not suppose it differs very much from ordinary sewage.
1099 It would contain these injurious germs? Yes.
1100. And, therefore, they have disappeared at Webb's Grant between the going in and the coming out of the water? I must explain that it is not a question of examining microscopically for germs, but a question of whether the chemical constituents have disappeared or not.
1101. There is no great attempt made to get rid of germs in Edinburgh, and you say people are absolutely living among them, and are just as healthy as any other people? That is the case.
1102. If that be the case, and if that be the unanimous opinion with regard to sewage farms, do you not think we may make a little too much ado about the germs? It is possible we may.

Henry M. de Montemas, Esq., Civil Engineer, sworn, and examined:—

H. M. de Montemas, Esq. 6 July, 1892.

1103. *Chairman.*] You are a civil engineer? Yes.
1104. What certificates or diplomas do you hold? I have passed the examination of the School Polytechnic, in France.
1105. Do you hold any English qualifications? No; not necessary.
1106. Have you resided in the Colony long? Since the Exhibition of 1879.
1107. Have you been engaged in the practice of your profession since that time? Yes, I was employed for seven years by the Government as a draftsman in the Architect's Office.
1108. Are you still engaged in that office? No, I severed my connection in March, 1889, of my own free will.
1109. To practice your profession outside? Yes.
1110. Are we to understand that your experience has been particularly in connection with architectural work? No, sanitary work; but I was employed there as a draftsman till I could find something to do.
1111. What sanitary works have you been connected with? I was connected with all the sanitary works which took place in Paris, between 1867 and 1871. I was also connected with some sanitary works in Algeria.
1112. In what capacity were you connected with sewerage works in Paris for four years? I was a sub-engineer.
1113. Was any portion of the sewerage works of Paris carried out under your direction? A great quantity, particularly with regard to the sewage farm.
1114. Do you know anything of the scheme which has been submitted to this Committee for the sewerage of Parramatta? I am pretty familiar with it.
1115. Have you come to any conclusion as to whether it is a good scheme or otherwise? I think it is not. It is twenty years behind the times. In England, in France, in Germany, and in Algeria, they have given up sewage farms completely, not only because they were financial failures, but also because they were a great drawback to the health of the inhabitants. In Algeria, which has a climate about the same as the climate of New South Wales, and where we treated the sewage on a farm like the farm at Botany, we were obliged to stop the farm in four years, because the air was so contaminated with typhoid fever, which had never existed before in the district, and which became not an epidemic, but an endemic disease in the district. At Botany they can carry on perhaps for two or three years; but you will be obliged to stop the farm there. As regards Parramatta, I was instructed to go there seven months ago by Mr. Vernon, and I said that it was no use to do that kind of business there, as the soil is not fit for a sewage farm, being of a clayey nature. It is of no use for filtration. You will get all the sewage of Parramatta on the top of the ground, and you will see what it is in the summer time.
1116. You think that the treatment of sewage by sewage farms is going out of date? Yes.
1117. In Algeria, where the soil is sandy, the farm became so charged with sewage matter that it brought about fever and other diseases which were not known there before? Yes.
1118. And in your opinion the farm at Botany will be much the same directly? Much the same, I am sure.
1119. Are you aware that they have a very large area at Botany for future use. Could they not give the present farm a rest for several years as it becomes charged with sewage matter and use virgin ground? Yes; but the sewage farm at Paris, which consisted of 30,000 acres, we were obliged to stop in three years' time for the reason I have explained.
1120. In the case of that farm they dealt directly with the sewage on the land without any filtering or precipitating process? Nothing at all.
1121. The same system which is adopted at Webb's Grant? No, as it is proposed here—to pump it up to the farm.
1122. How do you know that? I was told so.
1123. The same system which is adopted at Webb's Grant, at all events? Yes.

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1124. If you have come to the conclusion that sewage farms are going out of use, and that the site of the proposed farm at Parramatta is of such a clayey nature that it would not give good results for a sewage farm, what do you propose in lieu thereof? They have adopted lately for the district of Barnes, on the banks of the Thames, in England, the very same thing that I was proposing to Dr. Manning and the Government, to adopt seven months ago without knowing that they were going to do it at Parramatta.
1125. Do you advocate a system by which the sewage will be brought to a given point, the solids extracted and disinfected, and the fluids allowed to filter through, giving afterwards an almost perfect effluent? Yes; a system of that sort for Parramatta would cost between £20,000 and £25,000.
1126. What disinfectant is used, and how are the solids dealt with? Salts of iron have been found most effective in these matters.
1127. Have you any knowledge of the International system of dealing with sewage? No.
1128. You have not been in Europe since when? I left Europe in 1879, but since then I may say that I have received all the periodicals, French and German, and am perfectly posted up in all the latest inventions in civil engineering.
1129. You challenge this scheme, only so far as dealing with the sewage after it is brought to a given point? I challenge it because it is a great deal behind the times, because it is too costly, and because it will never pay. It is a complete failure in whatever shape you consider it.
1130. That is the sewage farm? Yes.
1131. That is a comparatively small matter compared with the sewers conveying the sewage? Yes; if you make that sewerage system with 6, 9, 12, and 16-inch glazed pipes, it will last for 100 years, and Parramatta will be so much the better for it.
1132. You advocate the putting down of large glazed pipes in place of building either concrete or brick sewers? Yes.
1133. That is where the great saving would be effected? Yes.
1134. But as far as the question of dealing with the sewage is concerned, you would still bring the sewage by the water-borne system to a given point, and then deal with it as you suggest—extract the solids and so on? Yes.
1135. *Mr. Ewing.*] You say you use salts of iron as a disinfectant, but suppose there is iron in the soil on the sewage farm—suppose it is basaltic soil—would it affect it? No.
1136. *Mr. Dawson.*] Do you represent any company? I am the inventor of some patents.
1137. With reference to sewage? No; for dealing with sewage matter, such as night-soil.
1138. Have you done any sewage work in the Colony? No.
1139. Not at Bathurst? That was only a small thing;—a crematory to destroy the night-soil of the gaol.
1140. You would deal with the solids by cremation? If the thing is arranged to go to the sewer, the stuff can be burned. My patents are only to deal with night-soil in its ordinary state.
1141. Are you doing any work at North Shore with your patents? No; but I have tendered for the work. I got a tender for Ipswich, and I am promised a tender for Brisbane.
1142. You may tender for this work? Perhaps so. When I asked for permission to come here, it was not with the idea of tendering for this particular suburb, for I was instructed by Mr. Vernon, long before this scheme came before the Committee, to go to Parramatta and see the Asylum, when Mr. Taylor, the Member, was making such a row about the poisoning of the river. They proposed a scheme only for the Government institutions.
1143. What would be the cost to the Government, if your scheme of sewerage were carried out with your patents, if you like, to provide for the sewerage of the whole of Parramatta? Between £20,000 and £25,000, and it will last the municipalities of Parramatta and Granville for the next 100 years.

Sydney Maxted, Esq., Director of Government Asylums, sworn, and examined:—

S. Maxted, Esq. 6 July, 1892.

1144. *Chairman.*] You are Director of Government Asylums? Yes.
1145. How many of the Government institutions at Parramatta are under your control? Three; namely the George-street Asylum, on the river bank, containing nearly 1,100 inmates, the Macquarie Asylum, containing 300 inmates, and the Cottage Homes for Aged and Destitute Couples, containing about ninety inmates.
1146. Has there been considerable difficulty in dealing with the slops and sewage generally of these institutions? There has.
1147. How is your night-soil dealt with? It is taken away by the Borough Council under the pan system.
1148. How do you pay the Council? Last year it cost £444; this year it probably will cost £500 for the three institutions.
1149. Do they charge you at the same rate as the ordinary ratepayers? No; less.
1150. They charge the ratepayers 3d. per pan per service? That is what they charge us.
1151. The Mayor states that up to a short time ago the charge was 6d. per pan per service and that it has been reduced to 3d. per pan per service; how long have you paid the reduced rate? For a year at any rate, so far as I can recollect.
1152. Is the charge per pan per service? For every pan taken away we pay 3d.
1153. What is done with the large amount of slops other than solids? It is drained into the river.
1154. Is a very great nuisance caused, not merely by the institutions under your control, but by other institutions and Parramatta generally draining into the river? I think a nuisance undoubtedly exists. I have smelt it, particularly on hot days.
1155. The neighbourhood of the Old Men's Asylum would be one of the worst places in and about Parramatta? I suppose it would; because we not only get our own nuisance but the nuisance which comes from higher up the river.
1156. Who is your medical officer? Dr. Waugh.
1157. Has any comparison been made of the death rate at that institution with the death rate in other parts of the municipality? I do not think so. The death rate at the Old Men's Asylum during the last three and a half years has decreased by nearly 50 per cent.; it is attributable to better food and other things.
1158. How does it compare with the death rate outside? Very favourably.
1159. What is the death rate? Last year it was 19 per cent.

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1160. You do not know how it compares with the death-rate for the rest of Parramatta? I did prepare an average, striking ages as far as I could, but I cannot speak accurately without looking at the records. I get all the aged people. I suppose the average age would be about 65 years.
1161. As regards the Macquarie Asylum do you deal with the night-soil in the same way? In the same way at the three places.
1162. And your liquid sewage goes into the river? From the urinals, bath-houses, and other surface slops.
1163. The Macquarie-street Asylum contributes to the nuisance which is deposited at the doors of the George-street Asylum? That is a fact.
1164. We are informed that this scheme, if carried out, would deal with the slops as well as the solids, and would involve a rate of 11d. in the £ on the assessed value of the institutions? That will, I suppose, mean an expenditure of £1,500 a year.
1165. Mr. Barling put the matter before the Committee in this way; that the present cost of the pan system in Parramatta is 4d. in the £, and that under this scheme the rate would be increased to 11d. Now as the officer responsible for three of these large institutions, do you think you would be justified in recommending the Government to incur a rate of that kind in order to deal more effectually with the sewage? Certainly not. My idea is that these institutions ought to be removed to a large estate where we could deal with our own sewage—either at Rookwood, where there is an ample area of Crown land, or at Liverpool, where we are now renting land—an estate.
1166. But whilst the institutions remain at Parramatta, do you think you will be justified in recommending the Government to pay a rate of 11d. in the pound to get rid of its sewage matter? That is a question which it is rather difficult to answer. I am not prepared to say to what extent the payment of the extra rate would affect the health of the general public as well as the health of the inmates of these institutions. That point must be considered first.
1167. If called upon for a report, the probabilities are that you would use the imposition of the increased rate as one of the reasons why these institutions should be shifted out of Parramatta? I would do that. The sale of these institutions would almost pay the expense of putting up new buildings.
1168. Who do you think would buy the institutions? You can sell the materials and the land. The land is very valuable; it has a river frontage.
1169. Does not the presence of the Government dependents give to this land a value which, if the institutions were removed, would decrease? I have no doubt it does, because it means the expenditure of a great many thousand pounds per annum in the town of Parramatta.
1170. And if you deprive Parramatta of that very large amount of its annual income, you would decrease the value of property? I am thinking solely of the interests of the Government and the interests of the inmates of these institutions.
1171. In your opinion if the institutions were removed, and the Government expenditure were stopped, would it not decrease the value of the freehold which is occupied by these people? In my opinion it would.
1172. The residents of Parramatta state that these institutions are a nuisance, and wish them to be removed, but the business people of Parramatta are not of that opinion? I am sure they are not of that opinion.
1173. I suppose the Macquarie-street land would not decrease very much in value by the removal of the inmates? I do not think it would.
1174. Is it at all likely that in the near future the inmates of these institutions under your control will be shifted? I am unable to answer the question.
1175. That is a matter of policy? I cannot say that. I may say that I made certain recommendations.
1176. You have urged it upon various Governments? Yes; I urged it in my last annual report very strongly.
1177. I suppose you have given no attention to sewerage matters at all? It does not come within my province. I have a report on the Botany sewage farm. It was made five years ago, when the aldermen of Parramatta were considering the question of disposing of the sewage. I did intend to report on the farm myself, but I was unable to go, and my brother prepared a report.
1178. We understand that you do not think the Government should pay much more than they pay now for the disposal of their night-soil, even if a more efficient system were introduced? No. We pay nearly £500 a year for the institutions. They must make a considerable profit out of it.
1179. If, as we are told, the pan system is being carried on at a loss, and the Government institutions are only charged the same as ordinary ratepapers, you have not very much to complain about? I wish they would allow us to take the night-soil away and put it on our Newington farm. I am sure we could do it for considerably less. We are prevented by law. We took the advice of the Crown Solicitor at the time the Council made these charges, and we were told that we were completely at the Council's mercy.
1180. You are suffering no injustice, as compared with the rest of the ratepayers? Not at all; but it means a considerably larger outlay to collect from 100 houses than to collect from one institution.
1181. *Mr. Ewing.*] You believe that, in the interests of the country, these institutions should leave Parramatta? Yes.
1182. Why? We could deal more efficiently with the inmates. We could classify them better. We could make the place very nearly self-supporting. We could grow nearly all our own produce; we could have all our own workshops, as they do in other countries.
1183. You believe that eventually that will obtain? It seems to me reasonable that it should be done. On the grounds of humanity it should be done. I have 1,100 inmates cooped up within an area of 2 or 3 acres of ground. They have no exercise. They think of nothing but breeding mischief. They go out and get drink, and become a nuisance. We cannot keep them in.
1184. As regards the sewage, we have no right to regard the future as being dependent on the presence of the institutions at all? No.
1185. *Mr. Humphery.*] How many inmates are there in the three institutions under your control? About 1,500.
1186. Have you 300 deaths a year? Yes. I suppose more than 50 per cent. of our inmates come from the metropolitan and country hospitals. They come in the last stages of disease, and live a few weeks only. The others are all old people. Before an inmate comes into an institution he is examined in Sydney by a medical officer, and he is certified to as being infirm as well as destitute. Our death rate ought not to be compared with the ordinary death rate outside.

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1187. Is 1,500 about your average? Yes. It must be brought down. The place is overcrowded. I am taking steps to bring down the average. For instance, in the George-street Asylum we have 1,100 inmates, when we should not have more than 750.
1188. *Mr. Neild*] Did the death rate fall off during last year by 50 per cent.? No; during the last three and a half years.
1189. Fifty per cent. per annum? Very nearly. It was about 37 per cent. before that time. It is now only 19 per cent.
1190. I suppose the Asylums are more crowded than they were? Yes; we have more hospital inmates.
1191. You attribute this decrease in mortality to the supply of better food and better comforts? Better comforts altogether. The medical gentlemen are of the same opinion.
1192. Are the medical officers the same? No; but the medical officers at the time really had no voice in the matter. Such things were regulated entirely by the manager of the Government Asylums.
1193. Is it not very startling that there should be such a decrease in the mortality? It is very startling, but it is a fact nevertheless, and in the face of conditions which should have made it otherwise.
1194. Have you visited the site of the proposed farm? No.
1195. Was the report which your brother made on that farm favourable to that method of treating sewage? Very favourable indeed.
1196. I suppose if these institutions were removed elsewhere, as you have recommended, it would place them under better control and render the disposal of such matters as sewage much less expensive? That is so. I intend, of course, to include the Liverpool Asylum, if we get a sufficiently large estate for the purpose.
1197. Amongst your representations on this subject have the reformatory buildings at Rookwood come under consideration? Yes.
1198. Has the present or any previous Government considered the question of removing these institutions from Parramatta? I could not say.
1199. You do not know if any Ministerial action was taken on your representations? I do not know what has been done.
1200. If the institutions were so moved, the cost of this scheme would bear much more heavily on the private residents of Parramatta? Yes. It would bear on them to the extent of £1,600 a year more.
1201. How do you arrive at that estimate? I take the ratable value of the George-street Asylum, the Macquarie-street Asylum, and the Cottage Homes at (say) £36,000; and nine-tenths of the capital value, at 5 per cent., comes to about £1,600 a year.
1202. The closing of the Government Asylums would, in respect of this proposal, be a serious factor? There is no doubt about that.
1203. Have you any knowledge of the treatment on sewage farms in other countries, and of the process of precipitation? No.
1204. Notwithstanding the complaints that have been made of the intolerable nuisance which is caused by the discharge of sewage into the river-bed, there has been this material startling decrease in the mortality in the institutions? Yes; but the decrease might be still greater if the sanitary arrangements were better.
1205. Are the smells arising from the river troublesome at the Asylums? Yes; sometimes I have hardly been able to make an inspection.
1206. The people have to live in this stench? Yes; we use plenty of disinfectants about the place.
1207. You cannot disinfect the surrounding atmosphere? No; nor the river.
1208. The stench is so bad that you were almost unable to make a proper examination of the Asylum? It is almost unbearable on hot days; it is almost enough to make one sick.
1209. Do the medical officers attribute any serious portion of the mortality to vitiated air? I do not know; the question has never arisen.
1210. You would strongly assume that the impure air has a deleterious effect on the health of the inmates? As a matter of common sense, it must have.
1211. Consequently this deleterious air causes an increased expense in the matter of medical comforts? Yes.
1212. Pure air would not only improve the longevity of the inhabitants, but also their health, and reduce the cost of medical attendance? Of course, if the hospitals were not so largely filled the medical comforts would not be so costly, but I am not in a position to say anything on that point because the question has never been raised.
1213. *Mr. Humphery.*] How do you arrive at your statement that the cost of this system to the Government would amount to £1,600 a year for these institutions? I was under the impression that the Chairman said that it would mean a cost of 11d. per pan, and not a rate of 11d. in the £.
1214. Assuming that the rate would be 11d. in the £, what would be the annual charge to the institutions of which you have the management on your estimation of their ratable value? I have made no calculation.
1215. If, in your opinion, the capital value of these institutions is about £36,000, the annual value for ratable purposes would be about £1,700 a year, and you would have to pay 11d. in the £ on that sum? Yes.
1216. So that the annual charge to the institutions would be reduced from £500 to less than £100? I misunderstood what the Chairman said. The municipal rate would, upon this calculation, be as you have stated.

WEDNESDAY,

WEDNESDAY, 17 *AUGUST*, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM MCCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee further considered the proposed Sewerage Works for Parramatta.

George Henry Stayton, Esq., M.I.C.E., sworn, and further examined :—

G. H. Stayton, Esq., M.I.C.E. 17 Aug., 1892.

1217. *Chairman.*] Since you were last examined you have visited the site of the proposed sewerage works and have drawn up a report, which you now submit? Yes.

1218. The conclusion you have arrived at is, that the site proposed for a sewage farm is not suitable for the purpose? Yes.

1219. And you think the best plan would be to deal with the sewage of Parramatta on the boundaries of the municipality—somewhere about the proposed pumping-station, by what is known as the International system? Yes.

1220. Do we understand that to deal with it at the place, and by the system I have mentioned, it will cost an extra £40,000? No; it would cost, approximately, £40,000, as against £60,000 for the present proposal, with precipitation and filtration added, and raising the land to the requisite level.

1221. You say that if the proposed sewage farm is made it will be dangerous to use it unless there is also a system of precipitation? Yes.

1222. Adding the cost of precipitation to your sewage farm would bring it up to £60,000? Yes.

1223. But by dealing with it by the International system, at the site of the pumping-station, it might be kept down to £40,000? Yes.

1224. You have taken the Departmental figures for reticulation and so on? Yes.

1225. And you start with your inquiry, as it were, at the pumping-station? At and below the pumping-station.

1226. In the estimates of cost above the pumping-station you have taken the Departmental figures as being correct? Yes.

1227. We understand, then, that the total of £40,000 deals with reticulation, on the Departmental estimated plan? No; that is not so. When the site of the pumping-station is reached, I say that one scheme, to be perfect, would entail an outlay below that point of £60,000, whereas, by stopping short and adopting precipitation and filtration, on the International system, at that point or near thereto, would mean an outlay of £40,000 or thereabouts.

1228. We understand, then, that to deal with the sewage on the proposed farm effectively, by precipitation and filtration, would cost £60,000 from that point, or, intercepted and dealt with by the International process at the pumping-station, £40,000, plus all the expense above it? Yes.

1229. Your estimate of £60,000 in the one case, and £40,000 in the other, would both include a pumping plant? Yes.

1230. In other words, your pumping plant would be more expensive for the £60,000 than the £40,000 scheme? Yes.

1231. *Dr. Garran.*] The total cost in the estimate originally put before us was £76,000? Yes.

1232. Have you made any estimate of what the total cost will be under your scheme? The figures I have given are the ultimate total cost.

1233. What do you make the total cost, abandoning the sewage farm altogether? I can put it in this way—that under the Departmental estimate the present outlay and the prospective outlay for sewage disposal—that is, pumping and treating the sewage—amounts, according to the evidence, to £42,375. Against that I have already mentioned that if the proposed site is made effective, plus precipitation and filtration, that outlay would be increased by £18,000 or £20,000.

1234. Then your estimate for your plant is about what their estimate for their plant was, only you make out that their plant could not be carried out for that estimate? Yes.

1235. You do not cheapen the scheme as a whole below their original estimate? No; but I submit very strongly that the original estimate is insufficient. I make out that the cost of the alternate scheme I have proposed would be £40,000. On the other hand, the £42,785, plus the extra amount, would bring it up to over £62,000. In that case there would be a difference of £22,000.

1236. In your judgment, the Departmental scheme will cost more than they think, whilst yours will come to about the same amount as that at which they fix their estimate? Yes.

1237. So that the cost to the Parramatta people will be the same by your scheme as it would be if the Departmental scheme had been perfect? I think it would be less. The annual cost would also be less. There would be less capital outlay, and there would be less pumping power.

1238. But the capital under your scheme would be the same as that proposed in regard to the other? Yes.

1239. The diagram shows that the sewage farm has rather less than one-third of its area above high-water mark? Yes.

1240. I understand that we get the clay very soon after disturbing the surface? Yes.

1241. And that would not let the sewage through? Not unless it is subsoil drained.

1242. And to prepare that for a sewage farm some expenditure would have to be incurred in draining the land first? Yes.

1243. In going up the Parramatta River, and nearing Parramatta, there is clay on the banks? Yes; there is a marly clay.

1244. Unsuitable for a sewage farm? Unsuitable for crude irrigation, certainly.

1245. I gather that your opinion is that the proposal of the Department does not raise the level high enough? Yes.

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1246. They only take it to 1 foot above high springs? My difficulty has been to ascertain what the exact proposal was, but assuming that the level of the fascine bank is the proposal, the figures you state are correct.
1247. And to make a satisfactory sewage farm it ought to be 4 feet above the highest springs? Yes.
1248. That would be sufficient depth for an adequate filtration? Of course there would be a gradual rise towards the green area marked on the plan.
1249. To raise the whole of that to a level of 4 feet would require a great deal of filling in? Yes.
1250. Did you calculate the quantity of stuff which would have to be put in? I stated that, approximately, it would require 400,000 cubic yards of filling.
1251. What would be the best stuff to put there for a sewage farm? If they could ensure a sufficient quantity, the lighter and more sandy material would be the better.
1252. Do you not know what sort of stuff we generally dredge out of the river? A great deal of mud.
1253. That would not be very good? No; the lighter it is the better.
1254. The dredgers in our harbour are not raising much sand? I do not know.
1255. If we have to fill this with sand, we shall have to get the material from those parts where it is being raised? Yes; and that would mean additional cost.
1256. If we have to select our dredgings we shall be put to more expense than if we could take material from the nearest point? Yes.
1257. So that the cost of filling this up to 4 feet has not been fairly and thoroughly worked out? I think not.
1258. And if we are to raise the bulk of this to 4 feet, we must raise the fascine bank to that height? That is practicable, but it might be avoided by sloping the filling at the back.
1259. Still, there would be an extra expenditure? Yes.
1260. You do not think the bank, raised to that height, would be weak? No; because it would be backed up thoroughly.
1261. What basis do you go upon for estimating the cost of the purification works, seeing that we have no works of the kind in the Colony to judge from? The basis I have taken is founded upon similar works in England. I know, for instance, what the relative cost of labour and material is. So far as the difference in the price of polarite or ferozone is concerned, that one can easily calculate. I have, to the best of my judgment, and after checking various figures, come to the conclusion that, for the sum stated, the work could be carried out properly.
1262. Do we not generally find that it costs a great deal to make first experiments? But we have the benefit here of the mistakes which have been made in older countries.
1263. There would be no difficulty in our getting this material from England? No.
1264. Is the supply so abundant? I am informed it is practically inexhaustible.
1265. Is it found in South Wales? A company has secured the rights of an immense quantity—almost a mountain of it.
1266. It is a stratum in the mountain? Yes, I believe so.
1267. Is it worked like a seam? I think it must be.
1268. Do you think we could find anything like it in our own coal-fields? Possibly so.
1269. You feel reasonably sure that if an establishment of that kind is put up there will be no nuisance to anyone outside 100 yards of it? I do, but I should prefer it alongside the river.
1270. And make the discharge right into the river? Yes.
1271. *Mr. McCourt.*] You reported on the Western Suburbs Sewerage scheme? Yes.
1272. Did you not recommend the resumption of some land out there—part of Webb's Grant? Yes.
1273. Is it not a fact that a large portion of land which you recommended to be purchased is under water-level? Yes.
1274. Is it not the same in regard to Parramatta? Yes, but I fear that you have missed the most important point of all. My recommendation was that the work of irrigation, as proposed then, should be augmented by precipitation.
1275. That has not been carried out? Not yet—the necessity has not arisen, and will not do so for some years.
1276. Will it arise immediately at Parramatta? I think it will, because the area of the green portion on the plan is barely sufficient; in fact, I do not regard it as sufficient for the present population of Parramatta.
1277. Did you not allow the same number per acre for the Western Suburbs as for Parramatta? I think so, but that was for a totally different soil—totally different conditions in fact.
1278. *Mr. Neild.*] In the second paragraph of your report you state that you found that no levels had been taken, or sections prepared, for the intended sewage farm—a somewhat remarkable omission. Is that correctly printed? Yes; that fairly represents what I found.
1279. Are we to understand that this matter has been placed before the Public Works Committee in so incomplete a form as is indicated by the absence of levels? Those are the facts, so far as I know.
1280. Further on you state that "the actual height of the fascine bank, as will be seen by the section, is 1·88 feet above mean high-water level, or about 1 foot only above highest spring tide. This is confirmed by information obtained from the Harbours and Rivers Department, the Departmental instructions having been to make the bank 2 feet above mean high-water mark, or 1 foot above highest springs"? Yes.
1281. If this filling of the portion marked pink on the plan was, according to the design of the Department, to be only to the extent of 1 foot above high springs, would it afford anything like a sufficient depth for filtration purposes? Clearly not.
1282. Would it afford a proper outfall to the river? I think not.
1283. The absorption by the soil of the water, capillary attraction, and so forth, would tend to render almost useless that 1 foot? It would, to a great extent, at high springs.
1284. The portion coloured pink on your plan, which represents more than two-thirds of the total area, is at present more or less under water at high tide? It is fully covered with water at high spring tides.
1285. Would the effect of placing 1 foot of soil or sand on the top of it be to dry it to any depth at all, or would the water still remain on it? The subsoil water would not be affected in the least by putting earth on the top.
1286. Would a couple of feet on the top force the water out of this saturated ground? No.
1287. If it remained full of water, as at present, it would be absolutely valueless for the purpose of a sewage farm? That is what I contend.

1288.

1288. The only portion which would be of the slightest value for sewage purposes would be the stuff put there? Yes; so far as that particular area is concerned. G. H. Stayton, Esq., M.I.C.E.
1289. And the portion coloured green on your plan would require subsoil drainage to make it valuable? It would require the usual subsoil drainage. 17 Aug., 1892.
1290. There has been no subsoil drainage at Webb's farm? I do not know.
1291. Where you have sand to operate upon you do not require subsoil drainage? That depends on the nature of the sewage. Crude sewage may necessitate some such provision.
1292. You draw attention in your report to an answer given to Question 322, the answer being that the estimate provides for laying out the farm, including subsoil drains, 6 feet deep;—I suppose those subsoil drains would be the ones proposed in the portion coloured green on your plan? Yes, but I really do not know what the witness referred to there.
1293. Do I understand that the Departmental ideas with reference to the farm are in so crude a condition that you are unable to fathom the mystery of what was proposed? So far as the plan is concerned, that seems to be satisfactorily designed, but there were no levels given, no sections supplied, and it is impossible to in any way form an accurate opinion in the absence of that information.
1294. Do you know the life of fascine banks? No.
1295. I take it that the higher fascine banks are built the greater the risk, and probably the less duration? I do not think there need be any apprehension on that point, because they could be repaired from time to time, and they would be solidly backed up.
1296. Which of the two plans do you consider would entail the greater cost—filtration and precipitation by the International process, or the carrying out of works upon this 60 odd acres of sewage farm? Considering the whole of the circumstances and conditions, I think clearly that the precipitation and filtration system—otherwise the international system—would be found to be cheaper.
1297. Have you estimated the difference in cost between one and the other? Only approximately. I could not give any definite figures without the whole of the scheme being properly formulated. I think, however, if it were gone into thoroughly, there would be no question as to which would be found to be the cheaper.
1298. To any appreciable extent? Yes.
1299. Do you think it would be 20 per cent.? I cannot answer off-hand.
1300. Still you think the difference would be sufficient to make it of considerable moment in determining which of the two plans should be finally determined upon? Yes. I put above the question of £ s. d. that of efficiency, and, undoubtedly, the present proposal, unless supplemented by the other works, would not be efficient.
1301. To sum up your evidence, as regards the question of cost, in order to have an equally efficient scheme you would require an expenditure of £20,000 additional upon a sewage farm scheme, as compared with the International process, and there would be a further saving in the annual cost of the works by the International process as against the sewage farm process? There would.
1302. *Mr. Ewing.*] You have the Departmental figures, as given in the evidence? Yes.
1303. If your contention be correct their scheme will cost about £94,000? I cannot say.
1304. You say they have made a mistake of £18,000, inasmuch as £60,000 will be required east of the pumping-station, and they say £42,000 will be required; therefore, if their original estimate was £76,000, and they have made a mistake of £18,000, the Departmental works, if carried out, will cost £94,000? I do not say they have made a mistake. I say the question of judgment and experience comes in there.
1305. Do you think the Department have under-estimated the cost east of the pumping-station? Yes.
1306. To the amount of £18,000? The figures I have given relate to the entire area of the farm, and to the ultimate scheme which was foreshadowed in the evidence.
1307. By how much do you think the Departmental estimate will be exceeded east of the pumping-station? That depends upon the amount of the work done in the first instance.
1308. Can you tell us how much it will be in carrying out this scheme? I have not separated the green from the red areas on the plan. We have to treat the whole.
1309. Will the Departmental estimate, as placed before us, be exceeded or not? Undoubtedly; if the work is to be carried out in an efficient manner.
1310. Do you object to a sewage farm on general principles? No.
1311. You do not object to a sewage farm, supposing we get the proper material? No, if supplemented by precipitation.
1312. Why was it necessary, in that the site of the sewage farm is only the bed of the operations, to go under the bed to dig shafts? To ascertain what the nature of the subsoil was.
1313. But the proposal is not to make a sewage farm, but to place a certain amount of material on the top, which is the sewage farm? One could not form an opinion as to what the effect would be without knowing the conditions underneath.
1314. You frequently refer to that soil as being full of water? As being surcharged.
1315. You say with regard to Question 168, that you find the Department say they are going to place 4 or 6 feet of suitable material upon this land? Yes.
1316. How does that differ from your idea of a sewage farm—you say 5 feet a little lower down? My object in pointing this out was that there are various heights stated, and if 4 or 6 feet of suitable material were put there it would be necessary to supplement it by precipitation.
1317. Therefore, does it not appear that they intended to make just the kind of sewage farm you suggest yourself? No; on account of the level of the fascine banks.
1318. That appears to bear you out to a little extent; but would you put a perpendicular sewage bank, with a great mass of material such as that, 5 or 6 feet above high water? Of course, it would be put on a batter or slope.
1319. Supposing you were going to make a sewage farm, you would put your perpendicular bank above high-water mark. When you get above high-water mark you put a greater batter on? Yes.
1320. Therefore, what is below high-water mark is, approximately, perpendicular, compared with what is over high-water mark? I do not think so—that is only a matter of detail.
1321. The fascine bank is in course of construction? No; the level has been fixed.
1322. Did you take the fascine bank as being as high as the Department intend to make it? Certainly.
1323. You believe this fascine bank, for the rest of the length, if it is put as high, must be put on the slope? Yes; it must naturally have a batter on the face.
1324. And they will increase it in the future? Yes, I should certainly think so.
1325. And it might have been as well to have delayed that work until they had filled in some of the bed? Naturally.

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1326. Therefore, it may be reasonable to suppose that it is a work in course of construction? From the information I have procured, it is not. This vagueness is what I object to.
1327. The Department, as far as I can gather, intend to make a filter-bed 4½ feet above high water? I cannot follow you there. I can only go upon the information I obtained, and that was that it was intended to be 2 feet above mean high-water level, and to fill in gradually.
1328. Are the Department controlled by the sludge or stuff they will get out of the Parramatta River to make the filter-bed? I do not know. I should think they can get it where they please.
1329. Therefore, if they make a judicious choice of material, and have the filter-bed 4½ feet above high-water mark, it will be a sewage farm which you will not object to? Yes; if suitable material is procured.
1330. Supposing Question 168 is correctly answered, and it is 4½ feet above high water, and the Department use proper judgment in selecting the material, you will have no professional objection to the sewage farm? No, provided that precipitation is also included in the prospective works.
1331. Therefore, the question resolves itself into whether the Department can raise this bank to 4½ feet above high water, and get suitable material for the sum they mention? That is the first point. The next is as to the efficiency.
1332. If they make it drain properly, and get proper material, you have no objection to it? No; but I say distinctly that the area which is proposed there, unless augmented by precipitation, even under the conditions you name, would not be effective for the prospective population of the place.
1333. You say that with a proper filter-bed they will still have to increase that expenditure? It depends on the nature of such a filter-bed.
1334. The matter resolves itself into this—whether the Department are correct in forming their estimate, or whether you are correct in forming yours? That may be so; but it is a question of efficiency.
1335. If the Department can prove to us that they can make a filter-bed 4½ feet above high water, and get proper material for the amount they mention, what becomes of your contention? My contention then is that the complete scheme there will not be efficient unless precipitation is included. I am clearly of opinion that precipitation must follow on there with their future work.
1336. What do you mean by future work? If I understand it rightly, the present estimate is for the existing population. It is foreshadowed that that population will be eventually increased to 48,000, and that the provision for sewage purification will have to be increased. To put the sewage of 48,000 people upon that area, under a system of crude irrigation, will not give satisfactory results.
1337. You say, then, although it might do for the present, it will not do for the future? Yes.
1338. *Mr. Hoskins.*] Are the Committee to infer from your views and report, that if the proposed sewage farm is carried out as originally intended by the Department, it will be calculated to create a nuisance, and that the objections which have been raised by some of the residents are justifiable? I think they are.
1339. Why do you think it would be objectionable? I deem the proposal objectionable because the purification of the sewage could not thus be carried out without creating a nuisance.
1340. And one of the reasons which have led you to arrive at that opinion is because the subsoil, as tested by the trial holes you sunk, indicates soil which is not suitable for filtration purposes? Yes; unless it is properly prepared, and even then it will only take the sewage of a limited number of persons per acre.
1341. The original proposal of the Department was to have a fascine bank, with the soil deposited on the farm at the back, to a height of 1·88 feet above high-water level. It has been stated here that it may be carried to 4½ or even 5 feet. Supposing that modification is made in the original scheme, would it not entail largely increased expenditure in the cost of the work? I think so.
1342. Supposing subsoil drains were made in this clay, and there was only a shallow depth of 1 foot 8 inches or 2 feet of material placed upon it, would these subsoil drains have the effect of making that ground which is below the soil deposited there suitable for filtration purposes? Yes; to a certain extent. It could be made to purify a limited amount of sewage without nuisance.
1343. You approve, at all events, of the sewage being precipitated? Yes.
1344. That would largely increase the original estimated cost of the work? I have stated that it could be dealt with, as far as the disposal works are concerned, for £40,000. That is, the complete prospective works could be carried out for £40,000, whereas to thoroughly prepare the lower or farm area, and supplement that with precipitation, would cost 50 per cent. more.
1345. Do you, or do you not, think that the original proposal, which does not provide for precipitation, if carried out on the tract of land allotted for a sewage farm, would, looking to the climate we have here in summer, and to the soil of the farm, be calculated to prejudicially affect the health of the inhabitants of the neighbourhood? Undoubtedly. I may say that since I was here last, and since the date of my report, I have received some information from England which I think confirms the views I have submitted, and I should like to read the particulars, which are as follows:—

INFORMATION concerning the sewage disposal systems of certain towns and other places on the river Thames and its tributaries (June, 1892).

Oxford.—Population, 46,000; irrigation farm of 334 acres; highest level of farm above the river, 47 feet; lowest, 13 feet.

Abingdon.—Population, 6,000; irrigation farm of 44 acres; farm level, from 2 to 7 feet above the river.

Reading.—Population, 60,000; irrigation farm of 700 acres; farm level, from 3 to 7 feet above the river; subsoil, chalk.

Windsor.—Population, 12,000; A.B.C. system of irrigation; 20 acres of land at Ham Island; farm level, 7 to 10 feet above river: subsoil, chalk.

Cirencester.—Population, 7,500; irrigation farm of 57 acres; farm level, from 35 to 40 feet above river.

Old Swindon.—Population, 6,000; irrigation farm of 200 acres; farm level, 5 to 15 feet above river; subsoil, clay.

New Swindon.—Population, 27,000: irrigation farm of 100 acres; farm level, from 5 to 15 feet above the river; clay subsoil.

Wokingham.—Population. 2,000; irrigation farms of 21 acres; farm level, from 32 to 38 feet above river level; London clay subsoil.

High Wycombe.—Population, 13,000; (*vide* Q. 378); subsoil, chalk; farm level, from 8 to 10 feet above the river; precipitation and irrigation.

Slough.—Population, 5,400; irrigation farm of 10 acres on chalk subsoil; farm level, from 9 to 11 feet above river.

Uxbridge.—Population, 8,200; precipitation and filtration process on 6 acres; chalk subsoil; farm level, 5 feet above river.

Guildford.—Population, 15,000: International system of precipitation, filtration, and irrigation; farm, 18 acres (Feb., 1892).

Walton.—Population, 7,000; irrigation farm of 60 acres: gravel subsoil; farm level, 8 feet above river.

In

In various towns and other places on or near to the Thames, the disposal of the sewage is effected thus, viz :— G. H. Stayton, Esq., M.I.C.E. 17 Aug., 1892.

Name.	Population.	Area of farm or works.	System.
Kingston	40,000	3 acres.	A.B.C. system.
Teddington	10,000	22 ,,	Precipitation, filtration, and irrigation.
Twickenham	16,000	4 ,,	Precipitation and filtration.
Barnes	6,000	11 ,,	,, ,,
Isleworth	13,000	22 ,,	International and irrigation.
Brentford	14,000	3 ,,	Precipitation and irrigation.
Chiswick	22,000	5 ,,	Precipitation.
Acton	24,000	5 ,,	International.
Ealing (North)	24,000	22 ,,	Precipitation, filtration, and irrigation.
Hanwell	6,000	12 ,,	Precipitation and irrigation.
Willesden	62,000	18 ,,	Precipitation, filtration, and irrigation.
Finchley	17,000	72 ,,	Precipitation and irrigation.
Hendon	16,000	23 ,,	International.
Harrow	5,700	28 ,,	Irrigation.
Epsom	9,000	120 ,,	,,
New Maldon	3,500	9 ,,	Precipitation and irrigation.
Southall	10,000	11 ,,	Filtration and irrigation.

I also find that since January last, the following schemes for sewage disposal have been adopted in England, viz :—

Name of Place.	System.	Remarks
Hayes, Middlesex	International	The disposal works cost £10,500.
Birkdale, Lanc.	International.	
Cranleigh, Surrey	International	
Sale, Cheshire	International.	
Stone, Staff.	International.	
Royton, Lanc.	International	The total outlay for the sewers generally, for 15 acres of land, and for the purification works, pressing machinery, refuse destructor, and everything complete, amounted to £51,500.
Loughborough	Precipitation & irrigation	The farm is 33 acres in extent. The total cost of sewers, pumping engines, outfall works, and land amounted to £20,000. The population is 18,000.
Whitby and Ellesmere	International.	
Wincanton	International.	
Abergwynfy (S. Wales)	International.	
King's Norton	Precipitation, filtration, and irrigation.	Entire scheme estimated to cost £10,500.

In a letter from the International Company, dated the 7th July, 1892, the Managing Director states :—

I have no doubt you will be interested to hear that the International process is the only system that is making progress in England, and we are now laying down 24 polarite beds for the purification of the sewage of Huddersfield, having a population of 100,000." I may here remark that this is a manufacturing town, where the sewage is particularly foul. Mr. Candy also says—"the Local Government Board have sanctioned it for Guildford. Dr. Frankland and Mr. Mansergh gave evidence in its favour at the Birkdale inquiry—Mr. Baldwin Latham has obtained the Local Government Board's sanction for adopting our process for the sewage of Horsham, and is preparing a scheme upon our system for the purification of a large district in Staffordshire.

1346. Several of those towns on the river Thames are not subject to tidal influences? Some are and some are not.

1347. In your opinion would the soil proposed to be deposited on the farm, if taken from the bed of the Parramatta River, be the most suitable which could be found for irrigation purposes? Not the soil I saw them dredging there on two recent occasions, but there may be patches of sand of which I am ignorant.

1348. You are of opinion that the soil deposited on the farm should consist of a large portion of sand for the purpose of purifying the sewage water? Certainly.

1349. *Mr. Davies.*] In your estimate you include not a partial system but a thorough system for the drainage of the whole area of Parramatta? Yes

1350. Then your estimate in figures would be very near the estimate in figures of the Department—that is, taking in the whole estimate? That is, taking in their present figures? What I have submitted is this, that with regard to the complete scheme as proposed by the Department, the estimate is insufficient by £20,000, to provide for an effective system.

1351. That is from the pumping-station to the proposed sewage farm? Yes.

1352. That is where the additional expenditure would be necessary? Yes.

1353. There is no doubt in your mind that if the proposal submitted to the Committee were carried out upon the lines upon which it has been submitted, it would be very defective and inefficient in its operation? Yes.

1354. For the reasons assigned in your report? Yes.

1355. Irrigation or farming is not a part of your system? Not if the purification works were established within the boundary.

1356. How do you propose to deal with the sludge and solid sewage matter? By filter pressing.

1357. Have you taken into account the cost necessary for machinery and plant for dealing with the sludge? Yes.

1358. If the crude liquid and sewage matter were cast into open beds, what would be the result? A nuisance would be created if crude sewage matter were poured on the land, as proposed in the scheme.

1359. How far from the building which it would be necessary to erect, would population be unaffected by fumes or smells from the sewage matter? I do not think there would be any smell outside the works.

1360. Have you seen the principle carried out in any other part of the world? Yes, as stated in my report on sewage purification works. I have seen it in several places.

1361.

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1361. You are of opinion that one of the primary matters in dealing with sewage and drainage should be efficiency, independent of cost? Undoubtedly.
1362. And you have no misgivings as to the failure of the process submitted to us from the Department? That is clearly my opinion.
1363. *Mr. McCourt.*] You recommend the precipitation and filtration scheme for Parramatta? Yes.
1364. In your report on the Western Suburbs scheme you say, referring to the Parramatta:—

> It does not appear that a suitable site can be procured on the south side of Parramatta River for the adoption of local systems of treatment, such as precipitation and filtration. Even if practicable, however, such systems would certainly be open to serious objection.

What is the serious objection? For one thing, the process of precipitation as then practised. I was speaking of 1887 or 1888. Since then there has been a great improvement in sewage precipitation.
1365. And there would be no serious objection now? None whatever.
1366. What was the objection then? Then the principal process was that of lime precipitation. That system is being rapidly superseded.
1367. You speak also of the Shone system? That is only a method of raising sewage from lower levels to a moderate height. That is not a question of disposal: it is only a means of transit as it were.
1368. If the area which is at present left out of this scheme on the northern side of the river were brought in, would it mean an increase in our pumping plant? No; this estimate is for the complete pumping plant. The Departmental figures amount to about £12,000.
1369. You are aware that, in the Departmental scheme, sufficient provision is made for the area to be drained, but to complete the pumping plant for the whole of the area an additional amount of £7,900 will be required. Your plant is sufficient to cope with the whole area which may be brought in in future? As far as I can gather from the evidence, the Departmental estimate is £12,040 for the complete pumping plant.

TUESDAY, 6 SEPTEMBER, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Sutton.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Neild, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Sewerage Works for Parramatta.

Robert R. P. Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges, and Sewers, sworn, and further examined:—

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1370. *Dr. Garran.*] In the report which you have been good enough to make on Mr. Stayton's report, you say, "I contend, therefore, that his conclusions, being based on incorrect assumptions, are of no value, and are quite misleading." Will you state, categorically, what the incorrect assumptions are? The incorrect assumptions are, that the level of the sewage farm will be 1·88 feet—practically 2 feet—above high-water, and further, that he has taken samples from a portion of the land that will not be used as a filtering medium.
1371. Do you agree with him that we want not less than 4 feet of good filtering soil? Yes, I have said so in my evidence.
1372. There is no dispute between you on that point? No. I put it at from 4 to 6 feet.
1373. An average of 5 feet? I would not average it at 5 feet. It is from 4 to 6 feet—4 feet at the lower end, gradually rising in terraces to 6 feet at the upper end.
1374. But there ought to be from 4 feet to 6 feet of good permeable soil? Yes.
1375. And soil of a character that would filter? Yes.
1376. On the eastern end of the farm you will have to put the whole of that 4 feet? Yes.
1377. And you will put less and less as you go towards the west? Yes, less sand.
1378. But the value of the filter will depend on there being 4 feet of good permeable soil? Yes.
1379. But as we come up towards the west it appears that the clay comes very nearly to the surface? Yes, in places.
1380. Therefore, if you merely put sand on the top of that you will not have 4 feet of good filtering? I think we will. I may say that since this report was written, I asked Mr. Smail, Engineer for Sewerage, Metropolitan Board of Water Supply and Sewerage, to thoroughly examine the place with the manager of the farm, and he is present to-day and is prepared to give evidence in connection with the upper portion of the farm, which has turned out better than I expected. I did not expect it would give a good result, but he has all the particulars.
1381. I suppose we had better get that information from him? Yes, he is here ready to give it. I may say, generally speaking, that a great portion of this upper part will be used for the purification of the sewage.
1382. Not for filtering? And for filtering as well; it will turn out to be a good portion of the farm for growing strong crops such as rye grass.
1383. You separate the idea of purification from the idea of filtering? Yes.
1384. And you give a first rough purification on the upper part of the land? Yes.
1385. And then you would pass the effluent water on to the more eastern portion? Yes; and it will go down terraces until it gets to the river.
1386. So that the sewage will go through a double process? Yes.
1387. First of purification and then of filtration? Yes.
1388. And the slope of the ground is favourable to that arrangement? It will be laid out to meet that arrangement.
1389. Then you only want to put this 4 feet of sand on the portion you devote to filtration? That is all.

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1390. What portion of the area will be the filtration area? I think, speaking roundly, about one-half of it. It will all be used to a greater or lesser extent for filtration. Of course I need not say that the pure sand will filter much better than clay or loam.
1391. You are going to bring this sand from a distance and put it on the ground? Yes.
1392. And you calculate on covering one-half the area with this sand? Yes.
1393. Leaving the other half in a state of nature? Yes.
1394. And making a sub-soil drainage, if it is required, on the upper portion? Yes.
1395. Then so far as this imported material is concerned, we have only to consider the quantity required for half the area? Yes.
1396. Is that the quantity you calculated in the original estimate which you gave us, of some 400,000 cubic yards? The original estimate included the filling up of the sand from 4 to 6 feet. Of course it did not include putting sand on the upper portion.
1397. This 400,000 cubic yards was really calculated to cause a depth of 4 feet of available soil on half the area? Yes.
1398. And you adhere to the opinion that that is quite sufficient soil? Yes.
1399. Only I gather that you are not going to build up the banks perpendicularly to the requisite height, but to give them a considerable batter inwards with turf? Yes.
1400. Not to raise the fascine above the present level? No.
1401. Then some of the percolations will come through this turf bank? Yes.
1402. Some of the effluent water will ooze out of it? Yes; it will ooze out through the slope and through a portion of the embankments.
1403. Through the fascines at low water? Yes.
1404. You are not going to produce any effluent pipes? If they are necessary, but I do not think they will be necessary. If they are necessary about a dozen will do.
1405. The intention is that the water should go out through the 4 feet of sand? Yes.
1406. And get into the river? Yes.
1407. Through the banks? Yes.
1408. There will be no danger to the banks from the water oozing through? No.
1409. It will not weaken them in any way? Not the least.
1410. In what respect does the statement you now make differ from that made by Mr. Stayton. You say he formed an incorrect assumption? He assumed that we proposed to have the finished level of the sewage farm at the present level of the fascine banks—that is 1·88 feet above high water. Of course, if that were the case, it would be wrong.
1411. You are going to put much more soil on than he calculated? Yes; I have stated so in my evidence before.
1412. You stated it was to be 400,000 cubic yards? The yard measurement really does not matter very much, because we get the stuff for nothing. We get any sort or any quantity of material we like. I am authorised by the Harbours and Rivers Department to say that. The question of height is really what governs us.
1413. Then, I understand you do not wish to be tied by this estimate of 400,000 cubic yards? I think it is about right.
1414. But you take the result that it will be 4 feet at the lowest part? Yes.
1415. Would you have to remove any of the existing surface soil in order to ensure there being 4 feet of good filtering material? No. As a matter of fact, there will be at the lower end some 8 feet of sand.
1416. Then you will really have more filtering material than you will require? It will not be used as filtering material, because a portion of it will be below high water. It is only the portion from the finished level of the sewage farm to high water which will be of any use as a filtering area.
1417. What will go out in the low-water period will be what has soaked in at the high-water period? Practically.
1418. Whilst the tide is rising, will there be any capillary attraction through this sand, to cause the upper part of it to be charged with water? No.
1419. It will all be good permeable material in spite of water being on two sides of it? Yes.
1420. Because the water from the river will soak up to the level of your 4 feet? Yes.
1421. And you do not think it will rise? No.
1422. It will not destroy its value in any way whatever as a filtering-bed? Not the least.
1423. What was the second incorrect assumption of Mr. Stayton? He took samples from the material at the bottom end—that is to say the eastern end of the site of the proposed sewage farm, and brought that as a sample of material, which would certainly not be very good for filtration, but it will not be used as such.
1424. I understand that he brought the material from the western end? Yes.
1425. Showing that that was too clayey? Yes. I am prepared to show that he was wrong in that. Mr. Small conducted experiments himself, and he will give you the evidence firsthand.
1426. After all, the point of difference between you is not such a tremendous one. It only relates to the quantity of stuff you are going to put in? That is the main thing.
1427. And is the calculation you made of cost one which exactly covers the state of the case you have now presented? I am quite satisfied that the amount of money we have submitted for the cost of the work, will carry it out fully.
1428. In answer to a question you were asked some time ago, you said something to the effect, that if you could get the right sort of material you would have no doubt, whatever, as to the efficiency of the banks? Yes.
1429. I understand you now to say, you have made arrangements to get the right sort of material? I was pretty certain I could get any material I liked, but to put that matter beyond doubt, I consulted Mr. Darley, a few days ago, and he has authorised me to say I can get any class of material I like, and any quantity, from pure mud to pure sand.
1430. Where will you get it from? From the dredges.
1431. At which points of the harbour? I can get the pure mud on the site, and the pure sand in the harbour. As a matter of fact it will mostly come from the harbour.
1432. The pure mud on the site will have a good deal of loamy clay? Yes.

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1433. Will that make a good material? No; I would not put that in.
1434. You would not put it at the bottom? I might put some at the bottom.
1435. But practically you go lower down? Yes.
1436. And get it where it is sand? Yes.
1437. And will the towing of the punts up to this point cost a little more than you originally calculated? No; the cost for towing up to there will not cost more than the towing to sea. The Harbours and Rivers Department have a vote for the towing to sea, so that there is no charge for that.
1438. Had your original calculation counted on getting it from any part of the harbour? No; but I knew we could get it from the harbour.
1439. Will the Harbours and Rivers Department bring it to you free of cost? Yes.
1440. It will cost them no more than if they went to sea? No.
1441. And they would rather deliver it to you than deliver it into the ocean? Yes.
1442. So that that part of the work is really done for nothing? Yes.
1443. They will dump it down at the edge, and you will lift it again? They lift it again for us. It is all done by their machinery in the same way as is the reclamation at White's Bay, Iron Cove, and other places.
1444. You will only have to level? Yes; in fact it levels itself.
1445. But it will not make the terraces? The levelling is a very trifling matter.
1446. Then the question as between the two proposals really comes to this: Is it worth while to deal with the sewage without the sewage farm, or to deal with it by means of the sewage farm? Yes.
1447. And I gather from you that with the existing population, the cost of either scheme would be much about the same? Practically.
1448. So that there is no economy to the people of Parramatta in adopting one plan or the other? There is a great deal of economy in the working expenses.
1449. And in view of the larger area which may hereafter be drained? Yes, and the probability of taking in other townships.
1450. The cost of your scheme will not increase with the increase of population availing themselves of it? Not in proportion.
1451. You fix a certain cost for the population included within the area coloured yellow, which you say is £4 per head. The completed scheme, which will cover a larger area, and accommodate a larger population, would only cost £2 per head? It will not increase in the same proportion.
1452. You maintain that your scheme will not be costly hereafter, in proportion to the increased use made of it? No.
1453. But that Mr. Stayton's will? I do not think that is fair to Mr. Stayton's scheme. If you were to compare his scheme on the same lines, it probably would increase in about the same ratio as mine.
1454. Then, so far as the present population is concerned, there is not much to choose in the cost between the two? Very little, as I have pointed out in three different estimates.
1455. Then, with regard to the future increase of population, there would not be much to choose in the cost of either? No, they all go close together. There are £6,000 or £7,000 between them.
1456. Then the issue between the two schemes is not one of cost? It is in the working expenses.
1457. I include the working expenses? With regard to the working expenses, I have shown that there is a great deal of saving in the sewage-farming scheme.
1458. You contend that your scheme, taking everything into consideration, will cost less for the larger population? Yes.
1459. And that the other scheme will cost relatively more for the larger population? Yes. But there are two ways to look at the matter. There is the first cost and the working expenses.
1460. I am including the working expenses? Including the working expenses, ours shows very favourably for the larger population.
1461. Which will be more burdensome for a larger population hereafter? Mr. Stayton's scheme.
1462. There is no doubt about that? Not the slightest. That will be from the very first. I thought I explained this very fully. In the original amount I put down for the working expenses I have quoted a sum of £500. I have given myself no credit at all for the sale of vegetables from the sewage farm. We know, as a matter of fact, that in time the sewage farm will pay. I am quite satisfied it will pay, whereas on the other hand it is doubtful whether we could even get the sewage in the cakes from the International system taken away from the ground. In England, where manure is more valuable than it is here, they find that they cannot sell it. If I were to include the cost of getting rid of it, it would show that the working expenses of our sewage farm would be much cheaper.
1463. You have nothing to sell in the shape of manure under your scheme. You simply sell the produce grown in virtue of that manure? Yes.
1464. I understand you to say that the investment of capital is about equal in either system? Yes.
1465. And that the working expenses are greater under Mr. Stayton's scheme than under yours? Yes.
1466. And there is no produce derivable from his scheme, but there is from yours? No; of course it is just possible that the manure derivable under his scheme may sell at a small rate, but I do not think it will. If we have to send the manure to sea, from Parramatta, it puts all idea of his scheme out of the question, even if the first cost is cheaper than the first cost of our scheme.
1467. How much will be accumulating per day or per week under his scheme, which will require removal? It comes to about 1,460 tons per annum.
1468. That requires to be removed? Yes; which may have to be sent to sea.
1469. But you might carry it on to low land in the neighbourhood, belonging to the Government, and make a farm? The only thing we could do then would be to cart it on to a sewage farm. You could not cart it on and leave it there. We should have to dig it into the ground. We could not spread it in heaps over the place.
1470. Would it be offensive if put on the surface? In time it would. In any great quantity it would.
1471. Even the farmers if they carted it away ought to dig it in pretty soon? They would have to do so as manure.
1472. From a financial point of view you hold that yours is the better scheme? I am perfectly certain of it.
1473. And on sanitary grounds, have you any doubt as to whether this would be a nuisance? Not the slightest. I think the quotations I give in my report answer that point. They are taken from a book dealing with every known sewage disposition in Europe up to the year 1886.

1474.

1474. Is there any one which has ever been complained of? No; I cannot find one.
1475. And the uniform experience of sewage farms is that they are not objectionable? Yes. Mr. Mansergh, an engineer of experience who was sent to Melbourne to report on the sewerage proposals for Melbourne, is unanswerable in what he says in connection with this matter.
1476. If Mr. Mansergh, who is a great authority, had approved of the scheme which Mr. Stayton recommends, could he not have applied that scheme to Melbourne instead of making the two large sewage farms he has done? No doubt he could.
1477. We are not entitled to infer from the fact that he recommended a sewage farm that he did not prefer it to the plan of precipitation? I think we are. Of course all his reports go strongly to show that he prefers the sewage farm in every case.
1478. You think we may take his authority in that respect? There is one paragraph here which is a very strong one, which I did not quote in my report. Mr. Mansergh said:—"The French authorities, so recently as 1888, determined to extend the area under sewage cultivation, with the concurrence and approval of the residents in the locality, although on the first establishment of the farm, there had been great opposition." That is from their experience of the farm after working it for several years.
1479. And if the Mayor of Rydalmere objects to the farm, you think he does so on no sufficient grounds? I am satisfied of that.
1480. There is nothing in the experience of other neighbourhoods to justify his alarm? No.
1481. *Mr. Neild.*] Does your estimate of cost include the filling up you now speak of? Yes; it includes the whole of the scheme as submitted.
1482. When the Committee visited the ground did you not point out the pegs in the little fascine embankment representing the height to which the filling-up was to be made? Yes.
1483. Those pegs represented anything but 4 feet or 5 feet? 1·88 or 2 feet above high water.
1484. Then you add now that that is not to be the height of the filling, but that it is to be filled up much higher? I do not add it now. I said from the first that the sewage farm was to be from 4 feet to 6 feet above high water, and it is quite immaterial whether the banks were below or above high water. The sewage farm has to be 5 feet above it.
1485. You are still of opinion, then, that there will be no risk of annoyance to the public from these works? I am quite satisfied of it.
1486. Who is the officer who first designed the farm—was it yourself? The farm was in contemplation before I took charge of the office.
1487. Do you know the name of the officer who first designed it? Mr. Bennett, I presume, was the originator.
1488. Was it not Mr. Smyth? He was one of the surveyors.
1489. It was upon his report that the whole thing originated, was it not? As far as I know he was Mr. Bennett's surveyor, and surveyed the place with the view of submitting a scheme for the sewage of Parramatta, and Mr. Bennett, I presume, fixed upon this site as a sewage farm.
1490. Is it not a fact that Mr. Smyth's report forms the basis of the whole proceedings? Mr. Bennett's report.
1491. Do you know whether Mr. Bennett went over the ground? I could not say, but I have no doubt he did.
1492. You think Mr. Smyth made the surveys? I believe so.
1493. Is the gentleman in question in the Department now? He is in the Roads Branch at Albury.
1494. He came from one of the other colonies? Yes, from Adelaide.
1495. Do you know whether his original report has ever been departed from? Very considerably; especially when he submitted a scheme to Mr. Bennett which was, I believe, to cost £16,000 for the whole.
1496. Was that £16,000 to represent the sewage farm, or the reticulation of the sewage through that town? I believe the whole of the sewage of Parramatta.
1497. Do you know whether it is the case that Mr. Smyth came to the colony on a Friday, and was required by the Department to complete his survey and report, and to have it by the following Monday or Tuesday? I do not. I think it is highly improbable, because it took him several weeks to make the survey.
1498. But supposing he makes that statement? I could not say. I was not here.
1499. I think at that time you were located at Newcastle? Yes.
1500. Then your action, and knowledge of the matter, does not extend to the inception of the proposal. No.
1501. You came into office and took up the proposal as you found it? No. I cannot say I did. I had a complete survey made. There has been a survey made since Mr. Smyth's survey.
1502. Is it a fact, as stated in Mr. Stayton's report, that the levels of the sewage farm have not been taken? It is not.
1503. About what date were they taken? When I had the survey made.
1504. About when was that? Eight or nine months ago.
1505. You have read Mr. Stayton's report? Yes.
1506. I think he states in it that on applying to the Department for the levels he was informed that there were none? There were no levels that he asked for. That is quite a different thing from the levels of a sewage farm. There was the level at the western end, and the levels all round the eastern end, and they were quite sufficient to connect the two ends together, considering that the intermediate space was to be entirely artificial. If it had been filled up, levels would have had to be taken very accurately.
1507. Then there is this difference between your view and Mr. Stayton's—while Mr. Stayton intimates that there were no levels, you state that there were levels at the eastern and western ends? Yes, Mr. Stayton draws attention to the fact that there were no levels in the centre of the sewage farm, but he quite omitted to mention the fact that he did not even take the levels of the beginning or end of the farm at Botany, his own scheme for the western suburbs sewerage. He did not take the levels there at all, and it seems to me a most extraordinary thing for him to draw attention to the apparent omission in this case, considering that the levels were not necessary here. This is a pumping scheme with a rising main. We could pump the sewage matter to any height we liked. At Botany the case is different. That is a reticulation scheme, and the level at which we would discharge the sewage matter is limited to a few inches. If it had turned out that this Botany sewage farm was too low—that is to say, that there was not sufficient room between high-water and the level of the outlet of the sewers—the whole Botany sewage farm

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farm would not have been worth the reports which were written about it. As it is, we have the very greatest difficulty in arranging our gradients along the outfall of the sewer at Arncliffe, to fall in with the Botany sewerage scheme.

1508. Did Mr. Stayton apply to you for the levels? Not to me, but to the Minister.

1509. Was his desire for the levels communicated to you by the Minister? I saw his letter.

1510. Was Mr. Stayton supplied with the levels of the eastern and western end? No, the Minister would not give them to him.

1511. Then it is quite possible that Mr. Stayton might have been misled as to the Minister's answer as to the question of levels? I think, judging from his report, he was misled all through.

1512. But I am asking the question simply in reference to one point. Is it possible that the Minister's refusal to grant Mr. Stayton access to the eastern and western levels may have misled him as to the non-existence of levels? I cannot tell what influenced Mr. Stayton to be misled.

1513. You say he made no application to you? No, I thought he would have come to me, and asked me a question about it; in fact, I put myself out of the way to give him an opportunity, but he purposely avoided asking me anything about it. I should have been glad to have given him every assistance in my power.

1514. *Mr. Ewing.*] The fourth paragraph of Mr. Stayton's report says:—"Such land as this is certainly not fitted to effectually purify the crude sewage of the existing population." You have told Dr. Garran that you never intended to do so, but to put a bed of sand above it? Yes.

1515. The next paragraph states:—"I submit that the result of this examination shows clearly and distinctly that before this large area can be used with safety as a sewage filter it should be raised with suitable material to the level shown upon the sections"? Yes.

1516. You have also told Dr. Garran you intended to do so? Yes.

1517. The next paragraph deals with the height of the fascine bank? Yes.

1518. You say that although the fascine bank was that height you intended to put a turf batter above it, and something to enclose the sewage farm which would be above that? Yes. I thought at first of putting the fascine banks to the full height, but Mr. Tillett, of the Harbour and Rivers Department, consulted one of my officers, and strongly recommended him not to do it.

1519. Therefore, with regard to paragraph 6, dealing with the fascine bank, there is really not much difference between you and Mr. Stayton. You intend to have the height which Mr. Stayton says ought to be the height? Yes, from 4 feet to 6 feet, and Mr. Stayton says 5 feet.

1520. He agrees with you in regard to that? Yes.

1521. You say you will not raise the fascine bank, but you do practically the same thing by having a turf bank and a batter? Yes.

1522. You intended to have your bed 4 feet or 6 feet above the low-water mark? Yes, quite irrespective of what height the fascine bank was.

1523. You thought the fascine bank would have enclosed it, but you found it would be better to put it on a batter? Yes.

1524. With regard to the quality of material, you dispose of that matter by saying you can get any class of material you like? Yes, from pure mud to pure sand.

1525. Therefore you can get such material as will best make a sewage farm? Yes.

1526. Mr. Stayton, in his report, says:—"It is obvious to my mind that the proposal to pour crude sewage upon this land is ill-considered, and not in accord with the latest practice in sewage disposal. Such a farm would certainly create a nuisance." Would it do so if you had proper material, and it was 6 feet above high-water mark? Certainly not.

1527. So that the idea that it would create a nuisance appears to be a misconception? I cannot understand how he arrived at that conclusion. Sewage farms, badly managed, are a nuisance, but if properly managed, they are no nuisance whatever.

1528. Passing now to the conclusions at which Mr. Stayton has arrived. He states:—(1) "That the proposed system of sewage disposal is crude and incomplete." Supposing your farm is 5 feet high, and formed of suitable material, will it be crude and incomplete? Certainly not.

1529. You can urge no more against it than you can against the system of sewage disposal by means of farms generally? No, and that, I maintain, has been dealt with by men of far longer experience than Mr. Stayton, myself, or any one else in the Colony.

1530. Therefore, if a sewage farm is wrong under the circumstances under which you intend to carry it out it must be wrong everywhere? Yes.

1531. Then if it is not defensible as you propose to carry it out it will be defensible nowhere? No.

1532. Mr. Stayton goes on to say:—(2) "That the site of the intended irrigation or filtration area cannot be rendered thoroughly effective without largely increasing the proposed outlay." What is your opinion with regard to that? It is quite wrong. I am quite satisfied that the amount we have put down will cover the whole work.

1533. Therefore it simply resolved itself into a question of the sewage farm *versus* the International system? Yes, practically.

1534. What is your opinion of the International system? I believe it is a very good system. I believe that where you cannot get either discharge into the ocean—which, I suppose, after all, is the best thing, —or return the manure to the soil, the International system is about one of the best artificial systems. There are several artificial systems in use, and I believe that is the best.

1535. Mr. Stayton, states, (5) "That, if by reason of the land having already been resumed for the proposed farm at Duck River, it is considered necessary to adhere to the original proposal; I am strongly of opinion that such scheme should not be permitted, unless the method of treatment is supplemented by the beforementioned process of precipitation and filtration." What is your opinion of that? That simply means that sewage farming all over the world is a mistake.

1536. Supposing Mr. Stayton is right in his opinion that precipitation and filtration should obtain before using the sewage farm, then your estimate would be exceeded? Yes.

1537. By how much? The cost would be enormous then. On the 5th page of my supplementary report, I gave the estimate of the two schemes, based on his suggestion. On the first scheme—that is for the present population—the extra cost would be £27,800. For a population of 32,500, the extra cost would be

be £22,870; and for a population of 48,000, when the place is fully inhabited, the extra cost would be £7,637.

1538. You have already stated that it resolves itself into a question of sewage farm *versus* International; and the establishment of a sewage farm resolves itself into a question as to whether it is well to put the crude material on, as you say, or as Mr. Stayton says, by using precipitation and filtration at first? Yes; and the cost of the two schemes as well.

1539. Can you satisfy the Committee that a sewage farm will be satisfactory without these precautions? I can refer to reports on nearly every sewage farm in Europe, up to 1888, and there is not a single case which I can pick out, in which a sewage farm has had to be given up, because it has been detrimental to health.

1540. You believe sewage farms all over the world have been satisfactory? There is no doubt about it.

1541. You say that Mr. Stayton, in principle, does not agree with you as to what would be an efficient sewage farm? No.

1542. But he says that even with an efficient sewage farm, filtration and precipitation will be required? He says that in this report, but I go back to the report he made after visiting all the sewage farms at home.

1543. But may he not have more knowledge now than he had then? This was written after he was at home. After he had been home and inquired into the matter he might have said "I have reason to correct this;" but this was drawn up after his visit home, and it was at my instigation that the Minister had the report made public.

1544. And he does not recommend those precautions now? Not at all.

1545. *Mr. O'Sullivan.*] Have any complaints been made against the Botany sewage farm. Has it been a nuisance? Not to my knowledge. Mr. Smail will be able to tell you better.

1546. You state in your report that Mr. Smail asserts that it is paying and profitable? Not yet. It is paying about half the working expenses now.

1547. But before long it will make a small profit? I quite believe it will.

1548. That of course is from the sale of vegetables grown there? Yes; and from the sale of cattle and pigs.

1549. You appear to think you will get a small return from the proposed sewage farm at Parramatta? I see nothing to prevent it.

1550. I notice from that comparison you have made between your scheme and that of Mr. Stayton's, that the two are almost identical as far as the pumping stations are concerned, and the cost is the same? Very much the same.

1551. *Chairman.*] As a matter of fact Mr. Stayton takes your figures up to that point? Yes. I did not go into the comparative cost of this pumping scheme very closely, for this reason:—that the only economy you could have in regard to the pumping station, under Mr. Stayton's scheme, is in the engine itself. The engine itself will no doubt be a little less powerful, but considering that the engine is only a matter of £800, it is evident you can only save about £100, and it was not worth while going into.

1552. After you pass the pumping station, according to your figures, Mr. Stayton's scheme will cost £571 more than yours? Yes; that is my estimate of Mr. Stayton's scheme, but if you take Mr. Stayton's own estimate which is given on another page you will see there is a very great difference. He puts his own scheme at a much higher cost than I put it. I do not know why; but that is my estimate of Mr. Stayton's scheme.

1553. What will be the difference, according to Mr. Stayton's estimate? He puts down a round sum of £40,000, and he applies it to the whole of the three schemes. He applies it to the scheme for the 12,000 inhabitants; to the one for the 32,000 inhabitants, and to the one for the 48,000 inhabitants. I think that is an unfair way of treating his own scheme, because it can hardly be possible that you want to spend the whole of the £40,000 at once.

1554. But, as applied to the scheme under consideration, and the proposal by Mr. Stayton to spend this amount—what would be the difference, according to Mr. Stayton's own figures? According to my figures, in regard to Mr. Stayton's scheme, I think the difference is only about £500; but according to Mr. Stayton's own figures I make the difference £27,800.

1555. And you contend that the working expenses of his scheme will be more than the working expenses of your scheme? Yes.

1556. There will not only be no return from his scheme, but there will be the cost of the removal of sludge? Yes; I am quite certain there will be no profit from the sludge. You may get it taken away for nothing, but it is more than likely that it will have to be removed with considerable cost.

1557. *Mr. Humphery.*] I do not quite gather from your answer to Dr. Garran, whether the 400,000 cubic yards of filling would be valueless to the Government if it were not put upon this farm. Is that so? It would go out to sea.

1558. It would have to be wasted? Yes.

1559. Therefore you have not charged the scheme with anything in respect of this filling? No.

1560. Because it would be absolutely wasted if you did not make use of it? Yes; it would be sent to sea.

1561. What will be the additional cost to the Harbours and Rivers Department to deliver the whole of this material on a sewage farm? None; it costs about the same to send to sea as to discharge on land.

1562. Would the estimated cost of sending it to sea include the probable additional cost of having the sand-pump worked? Yes.

1563. Including the whole cost and the cost of delivery, it would be less than wasting it by towing it out to sea? Yes. I may add that I know it costs less at Newcastle.

1564. Have you included the possible or probable cost of the towage? That is, of course, taken into account. The towage up there is less than the towage to sea. Again, in towing to sea, you are dependent on the weather. There are days when the tugs are not out at all. You have to maintain the crews all the time, and the cost goes on.

1565. Therefore it is quite unnecessary to charge your proposed scheme with anything in respect of the filling up to the extent of 400,000 cubic yards, or even any larger quantity? Quite unnecessary.

1566. *Mr. Hoskins.*] Can you say when the portion of land which has been the subject of inquiry, was acquired for a sewage farm? About two years ago.

1567. Was it before you took charge? No, since.

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1568. Are you responsible for the selection of that land? Yes; I am responsible for recommending the Government to resume it for a sewage farm.

1569. Before you recommended it, did you have trial holes sunk with the view of ascertaining what was the nature of the soil? No.

1570. Did you not think it was necessary? Quite unnecessary.

1571. It was not necessary to ascertain whether the land embraced in the farm was of an absorbent character suitable for a sewage farm? Quite unnecessary, because the land for a sewage farm was not there. If it had been up to its level of 4, 5, or 6 feet, whatever it might have been above high water before, of course it would have been necessary to make very careful examination—to have sunk shafts all over it—but it was of no use examining the place when the material for the sewage farm was not on the spot.

1572. Do you not propose to have subsoil drainage, with the view of draining the water off what I may call the porous clay of that land? That is on the upper portion. That, of course, could be seen, because there were several holes in it. I am speaking now of the lower portion, which I thought you were referring to.

1573. There will be a considerable amount of subsoil drainage there before the land is suitable for receiving the sand? For the upper portion. The 25 acres above spring tide will all have to be subsoil drained. We have allowed for that in our estimate.

1574. Do you include in your estimate of the cost of the work, the subsoil drainage which will be required? Yes, I have allowed £90 or £95 an acre for this work. I think I have explained in my report that in the case of Webb's Grant, resumed by Mr. Stayton, a sum of £112 per acre was allowed. In that, all the concrete carriers for the discharge of the whole of the western sewerage drainage are included. He has allowed the sum of £112 an acre to provide carriers for the sewage from three 6-feet sewers. We have allowed £96 for the carriers from our 1·21-inch pipe.

1575. I notice in your comments on Mr. Stayton's report, that you refer to the fact that Mr. Stayton, who recommended the acquisition of the land at Botany for a sewage farm, did not have any trial hole sunk. Was not that because it was known that whatever depth you chose to go you would find nothing but sand? That sand is of no earthly use, for it is below high-water.

1576. If the land was known to be composed of sand for a great depth, was there any necessity for sinking trial holes? As a matter of fact, it is not sand to a great depth. It is very much of the same nature as the Mangrove Swamp and the Parramtta sewage farm.

1577. Your estimate of £75,926 has no reference to the cost of hauling or bringing to the farm the soil which you propose to put upon it? No; it is level enough after it is there.

1578. Therefore it cannot be said that to put this land for a sewage farm will only cost £75,926, seeing that the larger portion of the soil will be brought from a considerable distance for nothing. Your Department will not even have to pay for the towage? No; it does not cost the Harbours and Rivers Department anything extra to bring it up there.

1579. With regard to the statement as to taking the silt raised by the punts to sea;—is it not a fact that there is scarcely any sent to sea now, but it is used on the Parramatta River and other places for reclamation purposes? A great deal is used now.

1580. Supposing the Committee recommend, and Parliament assent to the proposal for establishing the sewage farm, and you obtain the silt by the means you describe, seeing that the punts and tugs are now used for taking silt to the banks of the Parramatta and other places, how long do you anticipate it would be before sufficient silt would be brought to the proposed sewage farm, so that it might be ready for further operations? I believe we would have the sewage farm made as soon as the rest of the scheme was carried out.

1581. That means that the other reclamation work would be placed on one side for it? Not necessarily. They are every day increasing their means for landing material.

1582. When you speak of the difference in the working expenses of your scheme and that of Mr. Stayton's, you give your expenses at £4,268 a year? Yes.

1583. What will be the working expenses under Mr. Stayton's scheme? The working expenses will be the same, minus the sewage farm, and against the sewage farm you have to put the cost of the ferozone and other artificial materials which he will have to use, which I estimate at £565 15s. a year, against our sewage farm of £500 a year, and not giving our farm credit for the sale of anything from it. Supposing, for a moment, that we do not sell a vegetable off the farm, our scheme shows £65 15s. upon that of Mr. Stayton's—practically the same of course. I maintain, however, that our £500 will, in a few years, be reduced to a minus quantity—that is to say, we shall make a profit.

1584. Looking to the fact that there is land surveyed for sale in allotments close to the proposed sewage farm, and that the township of Granville is within a mile of it, and the township of Rydalmere opposite—the Mayor of Rydalmere having complained of the proposed scheme—do you consider there will be a danger of the sewage farm being a nuisance to the residents of the neighbourhood? I am perfectly satisfied it will not, and I am borne out in this statement by authorities, which, as I have said before, I quote above Mr. Stayton, myself, or anyone else in the Department.

1585. You are aware that very few people are living adjacent to the sewage farm at Botany? Not many.

1586. And you will admit that there is a smell emanating from that farm now? Yes, there is a little.

1587. The Committee visited the place in winter, and the probability is that the smell will be intensified in the summer? It is about the same the whole of the year round.

1588. Do you anticipate that there will be the same noxious smell from the proposed sewage farm, as there is from the farm at Botany? Not so much.

1589. Why? Because, owing to the syphon which we have in Cook's River we are not able to bring the crude sewage direct upon the ground. It has to be collected, and during this process, which takes some time, it decomposes, and smells more than if we brought it straight on to the sewage farm and worked it up immediately. That view is borne out by Mr. Mansergh, and others of large experience in sewage-farming.

1590. Then you propose to get rid of all the solid sewage by bringing it on the farm? Yes.

1591. Do you think that under Mr. Stayton's plan there would not be a demand for this sludge, solids, treated with the International system, on the part of owners of orchards and farms in the neighbourhood? I can only speak from my own small experience in my own house. I am very glad to get the manure of my stables taken away without receiving a penny for it. I do not think we can anticipate any sale from the manure under Mr. Stayton's proposal.

John Moore Smail, Esq., M.I.C.E., Engineer for Sewerage, Metropolitan Board of Water Supply and Sewerage, sworn, and examined :— J. M. Smail, Esq., M.I.C.E. 6 Sept., 1892.

1592. *Chairman.*] You are Engineer for Sewerage, Metropolitan Board of Water Supply and Sewerage? Yes.
1593. Have you held that position ever since the initiation of the Board? Yes.
1594. And you are in charge of the works connected with the sewerage of the Metropolitan district? Yes.
1595. The Committee understand you have recently visited the site of the proposed sewage farm at Parramatta? Yes.
1596. Will you state what you have done with the view of gaining information as to the suitability of that particular area for a sewage farm? I examined the ground generally all around the area which has been resumed for a farm. I examined the soil—that is the soil above high-water mark, and I took some of it away with me. I examined it myself, and directed the manager of the sewage farm at Botany to visit the site also, and he took a sample of the soil and tested its filtering powers.
1597. What quantity of material did you take from the sewage farm at Parramatta? A very small quantity.
1598. Whereabouts was it taken from? Mr. Brooks, the manager of the farm at Botany, who took the material, will be able to give you the information.
1599. So that you only know from him that the water in the bottle produced, purports to be the effluent water from the soil treated? Yes. The water in the bottle produced, is the effluent from the sewage which now finds its way on to the Botany farm, treated with the Parramatta soil.
1600-1. The turbid kind of water is the effluent which has gone through the Botany sand? Yes.
1602. And the clearer effluent has gone through the soil taken from the proposed sewage farm at Parramatta? Yes.
1603. The sewage used in both cases being the same? Yes.
1604. You did not conduct the experiments yourself? No.
1605. Do you think the site at Parramatta a suitable one for a sewage farm? Taken on the whole, and considering what it will be in the future, I consider it to be a very suitable position.
1606. Supposing nothing more were done with it, could the Parramatta sewage be treated on the land which is above high-water mark? Yes.
1607. Did you see certain holes which had been sunk there? No.
1608. How do you judge then of the capabilities of the soil on the upper portion of the site? In examining the ground you see a break about 4 or 5 feet deep close to the tramway line. You get a very good idea of the strata from that.
1609. The section shown by the cut-away at the tram-line gives you a fair idea of the quality of the soil? Yes.
1610. And you think it would be suitable for the purposes of a sewage farm? Yes; the sewage could be efficiently filtered there.
1611. Supposing you had to treat a limited amount of sewage on that particular piece of land—the western portion—what would you think it would be necessary to do to make it efficient? It would have to be subsoil drained.
1612. Can you give the Committee any idea as to what quantity of sewage could be dealt with on that land now above high-water mark? I have taken the population of Parramatta, as given to me by the Public Works Department, as 13,247; that includes the Asylum. I have taken 30 gallons per head per day as the water supply. That gives 397,410 gallons per day. If I take the maximum filtration required to deal with that—that is, allowing one-half to pass off in the eight hours—that gives 24,838 gallons per hour. That practically means that you have one-fifth of a gallon to every square yard of ground on the 26 acres, which I take to be the ground above high-water mark.
1613. And you think it could be efficiently dealt with on that area? Yes.
1614. You have no doubt about that? The figures are plain enough.
1615. You think that the portion now available for immediate use is as good a filtration soil as the soil you have at Botany? I would not say that. I would say that it is better as a farm; that is, as a reproductive farm. For instance, you could grow better crops, and get a better return from the farm there than from the one at Botany.
1616. But its filtration is not quite so good? The only fault I would find with it is this: that the filtration is suspended. It is not so quick as at Botany, and that, to a certain extent, is against the Botany farm, because the filtration is too rapid. It would be far better if it were slower. We should have a clearer effluent.
1617. But if the filtration is slower, would it not be likely to give off worse odours? No; when you put the sewage on ground like that, you would naturally crop it; and the ground will hold the moisture longer, and the crops will get the benefit of it.
1618. But would not the soil upon the Parramatta farm become overcharged more rapidly than the soil at Botany? Of course it would, naturally; but you would have to have a larger area to deal with an equal quantity.
1619. And by cultivation you would soon free it, if it were clogged or likely to be clogged? Yes; by ploughing up and cropping. There are some crops which are greedy feeders upon sewage—rye-grass, for instance, which would take large quantities of the liquid.
1620. Supposing a sewage farm is established at Parramatta, on the proposed site, do you think it could be created without causing a nuisance to the surrounding neighbouroood? I see no reason why it should not.
1621. And if there is not a sufficient area at present above high-water mark, the other portion could be filled up as required, and used? Yes; I would look upon the lower portion in the same light as our large filtering tanks at the Botany sewage farm, as our safety valve; because if you got a quantity of sewage which you had not available area for on the 26 acres, you could easily pass it down to the sandy portion, and it would be absolutely lost. I may say that, notwithstanding the immense amount of sewage which goes upon the Botany farm in summer, we cannot get any effluent for testing purposes. It is all taken up by the crops or lost in the sand somewhere. The effluent wells are absolutely dry.
1622. *Mr. Wall.*] Did you design this sewerage scheme? No.

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1623. Do you think there is any objection to an open sewer through Parramatta? Yes; I would not have an open sewer anywhere. I might mention that I had the flow of sewage on to the Botany farm gauged during the last hot weather, and the quantity which passed on to the farm was equal to serving 40,000 people. All this sewage was dealt with on 26 acres of ground, which is equal to about 1,400 people per acre.

1624. *Mr. Sutton.*] We have it in evidence that it is necessary to put from 4 feet to 6 feet of earth on the top of the sewage farm before it can be rendered available for filtering the sewage. What is your opinion on that. Do you think it will be necessary to place such a large amount on the surface as that? You want at least from 5 feet to 6 feet there.

1625. *Mr. Ewing.*] You have given a good deal of consideration to the question of sewage farms? Yes.

1626. I suppose you have considered the question from a professional standpoint? Yes.

1627. Is there no better method of dealing with sewage than by pouring it in a crude form upon a sewage farm? Circumstances alter cases. If you could not get a farm you would naturally treat it in another way.

1628. But if you could get a farm you would always use it? Decidedly.

1629. And could you make as good a farm here as anywhere else? I see no objection to that farm being successful from a sanitary standpoint. It could also be made to pay its way.

1630. There is no more to be said against the sewage farm there than against one in any part of the world? No.

1631. And is there anything to be said against sewage farms as a rule? Of course there are sewage farms and sewage farms.

1632. I infer that they have failed? Why have they failed? I suppose they have failed from a commercial standpoint, and very often because the soil of which they are composed is not suitable for a sewage farm. For instance, a heavy clay would be of no use unless you took it up and burnt it. You must have a friable soil.

1633. And they fail from bad management? Yes.

1634. I suppose there is no danger of bad management here? I hope not.

1635. They may fail because the filter-beds are unsuitable? Yes, if not properly attended to.

1636. *Mr. O'Sullivan.*] You have said that in the summer-time the effluent at Botany had disappeared to such an extent that the wells were dry? At times we could not find any effluent in the wells. We send the effluent every quarter to the Government Analyst for examination, so that we can ascertain its purity or otherwise.

1637. Do you think it evaporates? No. The ground is very open, and we crop very heavily. For instance, we put in sorghum and lucerne, and crops of that description, which take up an immense quantity of sewage.

1638. But if it did evaporate, would it prove deleterious to the atmosphere of the neighbourhood? I should not think so. Chemists might say so, but I doubt it.

1639. Then, in your opinion, there is no danger to health from a sewage farm near population? Decidedly not, if it is properly managed.

1640. *Mr. Davies.*] You have charge of the sewage farm at Shea's Creek, Botany? Yes.

1641. Do you regard it as a successful means of treating the sewage of the city? Yes.

1642. You know the locality upon which it is proposed to construct a sewage farm at Parramatta? Yes.

1643. Are the two localities in any way similar? One is on the banks of Cook's River, and the other is on the banks of the Parramatta River—both tidal rivers.

1644. Are they similar in regard to the character of the soil? No.

1645. Are they similar in regard to the locality of the surrounding population? When we first started the farm at Botany there were very few houses on the Rockdale side, but that district has gone ahead.

1646. Is not the population very much further removed from the Botany scheme than it will be from the scheme under consideration? No. I think in the near future the population will be right on the borders of the sewage farm.

1647. At Botany? Yes.

1648. You have had charge of that scheme for a number of years? Six years.

1649. Is there any population settled round about it? There is a population at what is called the Botany village, which is close by.

1650. That is a considerable distance from the farm? Not far. It is across the river, alongside the Botany waterworks. The only place I find near the Parramatta scheme is Ermington.

1651. Then the character of the soil of the proposed sewage farm is very different from the character of the soil at Botany—one is a sandy and the other a clayey substance? There is no comparison as regards the soil.

1652. You have brought with you two bottles of sewage matter which has been filtered? Yes.

1653. Where was the clear liquid taken from? Both the soils were treated with the same sewage, taken from the same place.

1654. Where from? From the main carrier at Botany.

1655. What was the method of treatment? The manager informed me that he took the bottoms out of two bottles, and put the Parramatta soil in one bottle and the soil from Botany farm in the other. He then poured the same quantity of sewage into each bottle.

1656. The clearer effluent is that which has passed through the earth from Parramatta? Yes.

1657. Did it take the same length of time to go through the Parramatta soil as did the effluent going through the Botany soil? No. It took six hours for the lighter effluent to go through, and one hour for the darker effluent to go through.

1658. Do you wish to tell the Committee that sewage beds, built up by fascine banks, and filled up with silt and sand, at the proposed sewage farm, and the sewage afterwards passed in a crude form at the top of the beds, will be a sanitary way of treating the sewage at Parramatta? Yes, and effective.

1659. And it will not be a nuisance? I cannot see where the nuisance will come in.

1660. The only way in which you propose to get rid of the solids, after the liquid matter has filtered through the beds, is by growing crops to absorb it? Not only the solid matter, but we absorb a good deal of the liquid matter.

1661. Do you wish the Committee to infer that the solid matter which will remain upon these beds in the heat of summer will in no way be injurious to health, or affect the people in the locality? I have already stated that if the farm is properly managed there should be no nuisance.

1662.

J. M. Smail, Esq., M.I.C.E. 6 Sept., 1892.

1662. What do you consider to be the proper management of a sewage farm located in a thickly-populated district like this, taking Granville on the one side of it, and Parramatta on the other? It is a fair distance from the populated centre of Parramatta, and a still longer distance from Granville. Ermington is the only place likely to suffer, and I would not have any objection to live there.
1663. Do you not think that strong winds in the summer months will carry a vapour which will destroy the health of the people, from the crude sewage? That brings me back to my first answer, that it all depends upon the management.
1664. What will be the management which will prevent anything of that kind happening? I can say from experience that when the water or sewage passes to the farm at Botany from our main carrier it has certain solids in suspension. That passes between the ridges on the farm. The liquid percolates through the ground, and leaves a film of stuff consisting of decomposed fat and fœces. I have been on the farm with the Government Analyst about two hours after the water has been left upon it under a strong sun; and you may take the film, which is really nothing else but sewage, and put it in your pocket, and take it away, as there is not the slightest smell. That is where the sun and the air, the natural elements, do all the chemistry work you want.
1665. You trust to the sun and the air to deodorise the solid matter? Yes, with the natural soil.
1666. You stated just now that you objected to open sewers? In densely-populated places.
1667. But will not this be a very large open sewer. It is a great flat, with all the crude sewage poured upon it? Not necessarily. It runs along between the ridges and spurs, and is percolating down through the ground. It is not like a sewer.
1668. The whole face of it will be open to the heat of the sun? All the better.
1669. Certainly it must develop a vapour which will be carried far and wide from the sewage farm beds? I am only giving my opinion of the experience we have already had. You may walk along the main carrier at Botany, which conveys the sewage, and you will get no smell. The only smell you are likely to get is from what is called sludge.
1670. The sludge will remain on the face of the sewage beds? The sludge will be ploughed in, and the earth is the best deodoriser out.
1671. But before you plough in the sludge, the mischief will be done to public health? I think the danger is very remote, indeed.
1672. The circumstances at Botany are different from what they are at Parramatta? They are different as regards the soil and other matters. The only place likely to suffer from any nuisance is Ermington. There are habitations as close to the sewage farm at Botany as at Ermington. I think it is a very good test to take the men who are working on the sewage farm. You will not find healthier families anywhere, and they have been working there for six years. The men are never sick.
1673. *Mr. Hoskins.*] You say it will depend upon the management of the farm as to whether it will become a nuisance or not. Do you consider the Botany farm well managed? Yes. I do not call it a farm at all in the true sense of the word. It is nothing else but raw sea sand.
1674. Can you tell us from experience of any stench emanating from the sewage farm at Botany? No; the only smell arises from what we call the sludge, and we are going to have a different way of dealing with it, which will prevent it.
1675. Do you not think that a stranger going there will experience some inconvenience from the smell which emanates from there? It all depends. If a person goes there expecting to find a smell he will find it.
1676. *Dr. Garran.*] The soil from Parramatta, which treated the water in one of the bottles, was taken from the upper part of the farm, not subject to tidal influence? Yes.
1677. We have been told that at that part there is a little surface soil first, and then you go down to a loamy clay. Do you know whether the earth used in that experiment was the surface soil or the loamy clay? I could not say. Mr. Brooks will answer that question. I told him to take the average soil which the water would have to filter through.
1678. It would have to filter through the loamy clay? There is a little ironstone gravel in it.
1679. Would there be any danger, if this farm were built up of loose material close to the water, of it slipping into the river? I do not think so.
1680. The material of which this is formed will never consolidate—it is all sand, and will press against these artificial banks? Only to a certain extent.
1681. And it will all be saturated with liquid matter oozing out? But that can be intercepted. It should not be allowed to pass through the fascine banks at all.
1682. But Mr. Hickson has told us that it will ooze through the banks all along? That is a matter which can be dealt with by an after arrangement. We can put a boundary drain in, and catch it all.
1683. But if we do leave it to ooze through, will the pressure of this never-consolidating sand tend to cause the banks to slip into the river? The banks will consolidate in course of time, because the filling in of the lower portion will be, as nearly as you can make it, the same as the Botany sand, which is nothing but the detritus from the streets deposited in the harbour.
1684. If we are going to fill that up with detritus from the streets, it will not be the same as the sea-sand from Botany. That will be the disintegration from the bluestone?
1685. It will not be pure sand? No.
1686. What I mean is, that the detritus washed down from the roads to the harbour is very different material from the sea sand washed up at Botany? Yes, but it will form a good filtering-bed.
1687. It will have much more clay in it? Yes, and it will be better for growing crops.
1688. But it will be equally good for filtering? Yes.

Mr. William Frederick Brooks, Superintendent of the Sewage Farm, Webb's Grant, Botany, sworn, and examined:—

Mr. W. F. Brooks. 6 Sept., 1892.

1689. *Chairman.*] You are in charge of the sewage farm at Botany? Yes; I have been upon it for five years, and have had charge of it for nearly two years.
1690. You recently visited the site of the proposed sewage farm at Parramatta? Yes. Mr. Smail asked me to visit it, and to form an opinion as to whether it was suitable.
1691. Did you take any soil from there? Yes; a small quantity, in my hand-bag. I took it from the little cut on the higher portion of the ground, where the tramway runs through. I took it about halfway between the boundary and the high-water mark.

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1692. Did you see any test-holes which have been sunk? Yes; but they were partly filled in.
1693. So far as you could see, was the nature of the soil similar to that which was disclosed by the tramway cuttings? It was.
1694. Was the soil you experimented with similar to the soil above high-water mark? Yes.
1695. How did you test it? I made a simple filter with an inverted bottle, and filled it three-parts full of soil. I then poured the sewage into it and let it filter through.
1696. Sewage of a similar quality was passed through two bottles? Yes.
1697. Did you have a bottle to deal with the Botany sand? Yes.
1698. One was filled with the soil from Parramatta, and the other was filled with the soil from Botany? Yes.
1699. Do the two bottles you now produce contain the effluent water from both? Yes.
1700. The more turbid liquid is the effluent water from the sewage after passing through the Botany sand? Yes.
1701. The clearer effluent is that which has passed through the Parramatta soil? Yes.
1702. The effluent water from the Botany sand was obtained after it passed through for an hour only? It passed through very quickly. I passed a gallon through each filter. It passed through one in an hour, and through the other in six hours.
1703. Which took the six hours? The Parramatta soil.
1704. A gallon of the ordinary metropolitan sewage, coming down the main carrier, was poured into these two simple filters? Yes.
1705. And a gallon of sewage passed through the Botany sand in one hour? Yes.
1706. And the turbid effluent is the result? Yes.
1707. The other took six hours, and the clearer effluent was the result? Yes.
1708. Do you think the soil on the Parramatta site is suitable for sewerage purposes? It is a very good filtering ground.
1709. It would not filter as rapidly as the Botany soil? No.
1710. Would it be better for growing purposes? Yes.
1711. Could you carry on a farm with the land now above high-water mark, without causing a nuisance to the neighbourhood? I believe so, supposing we had sufficient area. We should require more area to operate upon, for a given quantity, than we have at Botany.
1712. Have there been any complaints of the nuisance from the Botany farm? I have heard of none.
1713. Did Mr. Oxley die of any complaint originating at the farm? I think he died from pleurisy.
1714. When the Committee last visited the Botany farm it was not so sweet as it might be—what was the cause of that? I do not know. It is worse some days than others. I think there was a great deal of silt lying about at that time. It was tipped on the side of the railway, and had not been ploughed in.
1715. *Mr. Wall.*] You saw the fascine banks at Parramatta? Yes.
1716. If this land were covered over with 5 or 6 feet of sand, it would not be the land you took the soil from at all? Where I took it from is above the level.
1717. But that is only a small portion of the area? Yes.
1718. Therefore the character of the land for agricultural purposes will depend upon the character of the stuff placed there? Undoubtedly.
1719. Is it the intention of the Department to filter through soil similar to that which you took away, or to cut it away and replace it with sand? I do not think it would be replaced where it is cut away, because it would help to fill the hollow.
1720. The evidence before us is that the filtering beds will be composed of sand. Therefore you would be cultivating that sand if the filtering beds were made of sand? Yes.
1721. And it would make very little difference as to the character of the soil; it is simply a question of what character of soil they would put there to form filter beds? Yes.
1722. *Mr. Neild.*] What would you do with your sewage farm at Botany in the event of the city being visited by an epidemic, or by pestilence; do you know whether any provision has been made for dealing with sewage at Botany which might become contaminated, or which might be the means of spreading pestilence? I do not know of anything.
1723. When you put the Parramatta soil into the filter, did you ram it tight? No; I merely shook the bottle and consolidated it.
1724. Would the condition of the stuff in the bottle be analogous to the condition of the soil on the ground? Yes.
1725. But to what depth do you propose to break it and work it? Nine or 10 inches.
1726. Would that be sufficient? I think so. Of course it will not do without the underground drains.
1727. Do you think the ironstone clay, on the upper piece of ground coloured green on the plan, will ever allow water to pass through it. Will it not hold water wherever you scoop a hole? It will hold it a long time unless there are drains.
1728. Where would the drains take it? To wherever it is discharging.
1729. Then you would be running crude sewage into the river? No, it would be filtered by putting in pipe drains 3 feet 6 inches deep.
1730. Do I understand you to propose to break up the whole surface to something like 1 foot in depth, and then to break up certain strips, and lay drains underneath at a depth of several feet? Yes, 3 feet deep.
1731. Your filtration would be really confined to the trenches you cut to sink the pipes? No; if there were pipes to cause it to drain it would filter through the whole of them.
1732. How near would the pipes be together? I should have about three to the chain.
1733. Do you think, in view of the character of the soil there, that pipes 20 feet apart would drain the whole of the ground? Yes.
1734. Have you a knowledge of such operations as this? Yes.
1735. Whereabouts? Upon some of the stiffest ground in Cumberland—the Rookwood reformatory.
1736. There is no large body of liquid matter dealt with there? No; but we put the drains in to test the ground, and they drained it perfectly. When it rained the drains were running full.
1737. How long does the sludge lie alongside the railway before it is in a condition for removal? Sometimes two or three weeks, perhaps a month.

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1738. Do you think that that is a proper state of things in the vicinity of a populated district? No; I am trying to do away with it, and I shall do so directly.
1739. *Mr. Davies.*] You state that large quantities of sewage matter are piled in heaps, and you cannot shovel it until it is dry? Yes.
1740. Is not that a great nuisance in the summer months? It is a slight nuisance, but it does not lie so long in the summer months, it dries quickly.
1741. If there is a stench arising from the solid matter your system cannot be a perfect one for the treatment of sewage? No, not as we are doing it now, but we have a project on foot whereby I can tip it daily, and not have it thrown on the ground, as at present. Instead of tipping it on the ground I am going to have a large tank erected. I shall fill it into carts somewhat similar to night-carts, run it on the ground, and plough it in immediately.
1742. Will that be the means of preventing the nuisance? To a great extent.
1743. Do you not think that sewage matter, pumped from Parramatta and then deposited in tanks, will be a source of great danger to the health and lives of the people of the district? I do not think so any more than it is with us.
1744. You are further away from the population at Botany than they will be at Parramatta? I think we are nearer to the population.
1745. Where is the nearest house? The nearest house is just across the river—Mr. Potty's. There is only the width of the river between us.
1746. What is the width of the river? One thousand feet. We are not more than three-quarters of a mile, as the crow flies, from the dense population of Botany.
1747. But you admit that the present system of treating the solids at Botany is imperfect? Yes.
1748. And you are going to adopt some new method of treating it? Yes.
1749. Has that been brought under the notice of Mr. Smail? Yes; it is going through the office now.
1750. There is no scientific treatment—it is merely a matter of taking the solids in carts and depositing them on different parts of the farm? Yes; and getting them buried at once.
1751. *Dr. Garran.*] You say you took the sample soil from the cutting made by the tramway, and that it consisted of reddish ironstone clay? Yes.
1752. Did you take a fair sample of the whole of the section? Yes; I took it in the vein where the top soil lies, 6 or 8 inches deep.
1753. You took it where the little surface earth joins the clay? Yes.
1754. You did not take it right down the section of the clay? No.
1755. Then part of what you brought up was the surface soil and part was the reddish ironstone clay upon which it rests? Yes.

WEDNESDAY, 7 SEPTEMBER, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	WILLIAM CHANDOS WALL, Esq.
The Hon. JAMES HOSKINS.	WILLIAM McCOURT, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	JOHN CASH NEILD, Esq.
The Hon. ANDREW GARRAN, LL.D.	EDWARD WILLIAM O'SULLIVAN, Esq.
The Hon. JOHN DAVIES, C.M.G.	CHARLES COLLINS, Esq.
THOMAS THOMSON EWING, Esq.	HENRY DAWSON, Esq.

The Committee further considered the proposed Sewerage Works for Parramatta.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and further examined:—

J. Barling, Esq. 7 Sept., 1892.

1756. *Chairman.*] When you were last examined, Dr. Garran, on behalf of the Committee, asked you to prepare a statement showing the indebtedness of the various municipalities to the Government for water-works and other works which had been constructed on their behalf? Yes.
1757. Have you prepared such statement? Yes.
1758. Will you kindly read it? Perhaps I had better take up the first question with regard to sewerage, and I presume in speaking of sewerage that the Western Suburbs Scheme, the Sydney sewerage, and the North Shore sewerage will be left out. Leaving these out, I may say that practically there is no debt to the Government in connection with sewerage. I should like to qualify that remark slightly by saying that practically it is so. We have spent £500 at Bungendore; but there is no regular sewerage scheme there.
1759. Do I understand that the sum of £500 is a charge against the local municipality? Bungendore is not a municipality. I am only showing what we have spent in sewerage matters. Then at Orange we have spent £3,573, and there is a further sum which will yet have to be spent in connection with some sewerage we are carrying out there; but there is no debt against the municipality in connection with it at present. I have no doubt, however, that if at any time we carry out a drainage scheme for Orange it will be taken as part of the debt.
1760. That is really money spent on sewerage works by the Government, without any responsibility being put on the local Council? Yes.
1761. In other words, political representations rather than municipal? It was merely a local work which we have carried out in the same manner as many other local works which we have carried out elsewhere.
1762. But the municipality has undertaken no responsibility in the matter? They did undertake a responsibility to pay a certain proportion of that sum, which has been done. I forget the exact amount, but it was some few hundred pounds. At Plattsburg and Wallsend we have spent £588 7s. 10d. in connection with land which we have resumed, in view of a sewerage scheme which will eventually be carried out. That, of course, will be accounted for in the sewerage debt when that is dealt with.
1763. Will that come under the Hunter River Water and Sewerage Board? I think so, eventually. Then we have paid £1,000 to the Queanbeyan Council. In this case we have taken a bond from the Queanbeyan Council that this amount shall be included in the sewerage debt when the sewerage works are carried out. The intention is that the whole of that will be repaid.

J. Barling, Esq. 7 Sept., 1892.

1764. We understand, so far as Queanbeyan is concerned, that the Government have advanced £1,000 for the municipal council to carry out certain works, receiving a bond from them to the effect that if in the future a sewerage scheme proper is carried out it will form part of the indebtedness against them? Yes; under those expressed conditions £1,000 were granted.

1765. Is any interest being paid upon it at present? Not at present, but we shall, of course, add interest to it.

1766. There is nothing in the bond providing for the payment of interest pending the time when they take it over? I think not.

1767. How long is it since this was done? I think it has been paid over twelve months, although I am not quite certain. I am not sure that it is not less than that. I have now given particulars of all the expenditure in connection with country towns sewerage. Perhaps the Committee would like to know also that we have made investigations with regard to the sewerage for a large number of towns in the Colony. We have made investigations in the following towns:—Albury, the estimated cost of the work was £21,617; Ballina, £7,383 2s. 8d.; Bourke, £16,223; Casino, £9,027 4s. 4d.; Cootamundra, £8,350—the town proper would be £8,000 and the south town £350; Fredericktон and Smithtown, £841; Grafton, £46,000; Hay, £17,700; Lismore, £7,174 7s.; Cottage Creek I need not mention; Styx Creek, £6,468; Sandgate Cemetery, £6,500—that is for draining the cemetery which is almost water-logged—the coffins are almost floating; Plattsburg and Walisend, £10,825, which I daresay will come under the Hunter River Water and Sewerage Board.

1768. Does the Hunter River Water and Sewerage Board have jurisdiction over that. Is that within their border now? Not at present, but eventually it may come under their jurisdiction. Of course these are merely estimates. Wollongong, £33,800; Merewether, £10,000; which will undoubtedly come into the Newcastle sewerage scheme, if carried out; and Deniliquin, £8,023.

1769. Can you tell the Committee what the preparation of each of those schemes cost? I have not that return with me, but it can very easily be obtained.

1770. Supposing, in the future, any of these schemes are carried out, will the cost of their preparation be ascertained and charged against capital? I think so, undoubtedly.

1771. Has that been the custom heretofore? I do not think we have had a case in point.

1772. Take the metropolitan area. Have not you always charged the whole of the cost of the preparation of the scheme against it? I think the whole cost has been included.

1773. The cost of importing Mr. Clarke, for instance? I cannot answer that question right off. I will ascertain.

1774. The expense of the various surveys and maturing of these schemes is borne out of the general vote taken for that purpose? Yes, for the country towns.

1775. And so far as you know, when a scheme has been taken in hand, the cost of preparing it and initiating it has been charged against it? I should not like to say that is so in every case. I am speaking, however, from memory. I do not think it was charged in the case of the Deniliquin waterworks.

1776. Will you furnish the Committee with a statement of the cost of bringing those schemes up to their present stage? Yes. I may be wrong in regard to Deniliquin, but I do not think I am. But supposing, as I think, that we have not charged the preliminary expenses of Deniliquin, I may say we were quite within the scope of the law in not doing so. If you refer to the Country Towns Water Supply and Sewerage Act, 44 Vic. No. 14, you will find that section 125 states:—

> Upon the completion of any such works, the said Minister shall report the fact to the Governor, and the Governor shall notify such completion in the *Gazette*: and thereupon the council of the borough or municipal district within, and for the purposes of which the said works shall have been constructed shall take over the same, and the administration and management thereof, upon the terms and conditions hereinafter prescribed, and upon any further terms or conditions which the Governor may in any case appoint, viz.:—(1.) The whole amount (subject to such partial remission as the Governor may think just under any special circumstances) expended upon any such works as certified under the hand of the Minister for Public Works, shall be a debt chargeable upon the general revenues from whatever sources derived of such borough or municipal district until defrayed as hereinafter provided.

1777. Under that section, you think, there is a discretionary power vested in the Minister to charge, or not charge a certain proportion of the expenditure against the scheme? I think there is no doubt about it.

1778. That is the Departmental reading at all events? Yes; and I think it is clear.

1779. *Mr. Hoskins.*] Has the present Minister, or any previous Minister, made a pledge, or given a promise, to have any of these sewerage schemes carried out in any of the towns you have mentioned? I think not. I think I can say most positively that no such promise has been made.

1780. Has the present Minister, or any previous Minister, thought out any scheme by which, if a system of sewerage is carried out in any of those country towns, a sufficient rate should be levied on the people to pay interest on the money expended in the construction of the works? Yes; I think I can say that in the Bill, which is being prepared, the sixty years system will come in to pay off in sixty years; and, I suppose, the system would not be recommended, unless we could see that the rates which they can levy will be sufficient to meet the charges you speak of.

1781. But, I suppose, you are cognisant of the fact that the Minister has had published in the newspapers to-day, a report of a number of places which have been supplied with water; and it is proposed that they should pay under the sixty years system, a rate sufficient to cover the interest and the cost of working the schemes, and yet in the aggregate there are arrears of £6,600? Yes; but I am speaking of the sewerage; the principle is the same. I have had a conversation with the Minister on the subject, and he authorises me to say, that the matter is one which he intends to bring specially before the Cabinet with the view of seeing what measures should be taken to remedy the state of affairs shown by that return.

1782. *Mr. Davies.*] When taking over the assets and liabilities of the Metropolitan Sewerage Works from the municipality, the Government took over the whole of the sewerage works? Yes.

1783. These sewerage works, under the rate which has been struck, give a return on the capital cost of about 4½ per cent.? The percentage of revenue on capital debt is 5·01 per cent.; the interest on capital debt after paying expenses is 3·86.

1784. That is likely to increase, of course? I should think so, most certainly. I do not know whether the increase will be shown at once, because the debt is largely increasing, and, of course, as the debt increases, so the revenue will increase; but probably the full result will not be shown until all the houses have been connected with the sewerage.

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1785. But the law provides that all houses within a certain distance have to connect, and even if they do not connect they are liable to the payment of rates? Undoubtedly.
1786. Even when they are not connected the rates are levied and collected? Yes.
1787. Consequently the revenue must largely increase? Yes; but what I mean is that the full value of that would not be seen for a year or two hence, because the work is going on. We hand over portions of the sewers, as they are completed, to the Board.
1788. With reference to Queanbeyan, there is a municipal council there—is there not? Yes.
1789–90. Can you tell us from memory what was the nature of the case which was represented to the Government, and which caused them to place £1,000 at the disposal of that municipality for sewerage works? I would have brought the papers with me if I had known that I should have been questioned on the matter. There was a drain there—one of the main drains of the town I suppose—which was a source of great danger. What has been carried out by the Council is a concrete sewer which will no doubt form a part of the general system by-and-bye; and the Government secured itself by taking this bond from the Council—that that should be included in the sewerage debt when the sewerage scheme is carried out.
1791. Then some special representations that it was a bad case must have been made? Yes, it was an urgent case.
1792. And the Government of the day stepped in to assist the Council? Yes.
1793. Under the Municipalities Act have any of the Councils power to raise loans for the purpose of carrying out works of that character? I think they have.
1794. Is it not a great departure on the part of the Government of the day to spend money whilst a municipal body exists, having that power? Queanbeyan is not a very strong council from a financial point of view, and it may have been a rather difficult thing for them to raise a loan. They may have gone to the full extent of their borrowing powers. I am only putting the case hypothetically, because I have not inquired into it. Country municipalities are in a difficult position. They are not like the Sydney municipalities—with large numbers, and I think they must have a great struggle indeed to carry on their necessary works.
1795. Have you any knowledge of the annual income from rates and taxes at Queanbeyan? I have not, but it can easily be found out.
1796. I suppose most of the municipalities would be glad to get money to carry out local works on the same terms and conditions? Yes. I do not remember a case of refusal.
1797. Something like £1,400 or £1,500 have been received altogether by Queanbeyan for sewerage works? No; £1,000. Bungendore has received some money.
1798. All for purposes of sewerage? Yes.
1799. Was any bond taken for that £500 received by Bungendore? No. Bungendore I do not think is incorporated, so that we could not do it.
1800. I understand you to state that in dealing with the question of sewerage hereafter, this £1,000 will be taken into account as a debit against the municipality? Unquestionably.
1801. And you are not aware to what extent the municipality of Queanbeyan has borrowed? No.
1802. *Mr. Collins.*] Out of what vote were these sums given? I think there was a special vote for Bungendore.
1803. And Queanbeyan? I think so.
1804. And Orange? Yes. I know that in connection with Orange there is a special vote, and I believe in connection with the other places there was a special vote.
1805. *Chairman.*] If that is so, both the Upper and Lower House Members had an opportunity of seeing it? Yes; undoubtedly. I am not quite so certain in regard to Queanbeyan and Bungendore; but I am certain in regard to Orange. I am quite certain of this, that if there was not a special vote we took it out of a vote which it was quite legal for us to take it from. With regard to the water-works which we have carried out—the towns in which we have carried out water-works are as follows:—Albury, Bathurst, Bourke, Balranald, Cargo, Deniliquin, Forbes, Goulburn, Hay, Jerilderie, Lismore, Orange, Wagga, Wilcannia, Wentworth, the Hunter River, and Manly; and there are three other works which are either completed or just verging on completion, namely at Moama, Cootamundra, and Richmond. The expenditure at Albury was £36,187 15s. 6d. I think I have explained before that it is the intention to introduce a Bill by which the sixty years system will come into force.
1806. At present it is limited to twenty-eight years? Yes. The late Minister, before going out of office, prepared a minute under which, pending the passing of this amending Bill, he instructed the Department to find out the cost of all the water-works, to capitalise the interest at the rate of 3½ per cent. to the 1st February of this year, and then upon that commenced the sixty years basis.
1807. *Mr. Wall.*] With regard to the sixty years basis—has the Minister considered the fact that in some cases the sixty years basis, according to the present revenue, will not enable the municipalities to pay the interest on the money advanced up to the present time? The Minister is considering that now. He has got that fact before him, and he is seeing how the returns will work out. We have taken the actual cost of the works and then we have capitalised the interest due up to February 2nd 1892. In capitalising we have done so under a system of yearly rests. At Albury the net cost was £36,187 15s. 6d. Capitalising the interest brings it up to £52,367 13s. 11d. The date of handing over the works was the 15th February, 1887. Bathurst, net cost £48,319 8s. 1d., capitalised £59,972 12s. 9d. Bourke, net cost £11,251 2s. 2d., capitalised £16,145 8s. 4d. Before passing from Bathurst I may mention that this debt will be increased again, because we are putting up another reservoir there, which has been found necessary. The expenditure upon that I cannot give at the present moment.
1808. What do you expect the total to be? There will be several thousands more to add to it. Balranald, net cost £7,768 5s. 11d., capitalised £8,490 10s. 8d; Cargo, net cost £1,635 8s. 7d., capitalised £2,098 12s. 9d.; Deniliquin, net cost £17,268 3s. 4d., capitalised £21,977 4s. 5d.; Forbes, net cost £9,025 7s. 11d.; capitalised £10,016 19s. 5d.; Goulburn, net cost £47,486 14s., capitalised £63,743 14s. 4d.; Hay, net cost, £7,072 5s. 9d., capitalised, £7,858 19s. That has only recently been handed over. They carried it out themselves. We have paid the amount of the debt. Jerilderie, net cost £1,061 7s. 4d., capitalised £1,354 8s.; Lismore, net cost £7,890 16s. 8d., capitalised £9,673 10s. 8d.; Orange, net cost £23,139 13s. 4d., capitalised £32,389 3s. 8d.; Wagga, net cost £34,484 14s. 9d., capitalised £43,677 17s. 3d.; Wilcannia, £8,160 0s. 6d., capitalised £8,949 10s. 7d. This was another of the cases in which the municipality carried out work themselves. Wentworth, net cost, £8,225 3s. 2d., capitalised £10,893 17s. 6d. The Manly works have only just been completed. They cost £26,326 1s. 9d. They will really

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really come, I think, to a little more, because I think some land has not yet been paid for. The Moama works are estimated to cost £5,000; the Cootamundra works, £110,50; and the Richmond works, £9,250.

1809. *Chairman.*] What is the amount of the total indebtedness on the completed schemes for water, excluding, of course, the Hunter River and Metropolitan districts—Manly, Moama, Cootamundra, and Richmond will also be excluded? Excluding Moama, Cootamundra, Richmond, and Manly, the total net cost would be £268,976 7s., and the capitalised cost would be £349,610 3s. 3d.

1810. When was the Albury scheme completed? It was handed over on the 15th February, 1887.

1811. Can you tell the Committee whether the net cost of the scheme was the same as the estimated cost by the Department? No. Perhaps you will allow me to take the four together—Albury, Bathurst, Wagga, and Goulburn. There has been a great deal of misconception with regard to these four places. I think I am correct in saying that the Department gave no estimate with regard to them. I believe the late Mr. Clarke made a rough estimate with regard to them, but I do not think the Department was responsible for any estimate; and undoubtedly a much larger sum has been spent on these schemes than even the Department first supposed would be necessary, but it is due to a very large extent to the much greater amount of reticulation which was carried out in each of those places.

1812. But is it a fact that it is principally owing to the increased amount of reticulation? I did not say principally, but largely owing.

1813. Largely increased by the larger amount of reticulation which was done? Yes. I am well aware that the Department has incurred a great deal of odium on the supposition that they have so largely exceeded their estimate.

1814. Then we understand that in the case of Albury, Bathurst, Goulburn, and Wagga, the Department did not furnish any estimate of the cost of the projects? I think the Department is not responsible. It was rather the estimate of Mr. Clarke in all these cases.

1815. Can you tell us whether, in these four cases the local governing body urged the carrying on of the works without knowing what the indebtedness would be? Yes. They passed a resolution in each of these cases to the effect that they would be responsible for the cost whatever it might be. This was the resolution in connection with Deniliquin and it was the same in connection with the other places:—

> That the council and municipality of having taken into consideration the question of water supply for the town of do hereby request His Excellency the Governor, with the advice of the Executive Council to take such steps and cause such works to be executed and completed as will be necessary to provide a water supply for the town of , and the said council on behalf of the municipality of hereby agree to do and undertake all the liabilities and obligations mentioned in section 125, Act 44 Vic. No. 14, and it is hereby expressly agreed that such liability is accepted for the total amount to be expended on such works whatever such amount may be.

1816. Is that the form provided under the Country Towns Water Supply Act or is it the regulation resolution which was furnished them? The Act does not provide any such resolution as that.

1817. Was it a Departmental form of resolution furnished to them? It was a Departmental form to make assurance doubly sure.

1818. Do you not think the Department were doing a most unjust thing to these people in the country in getting them to sign a resolution of that kind without giving them some idea of the cost of the works? I daresay they had some idea of the cost before them at the time, but subsequent to that the Department was again and again approached by the municipalities to extend the reticulation.

1819. Taking the four towns to which you have just referred—has the Government received any contribution from them in connection with these works? For the first few months—I forget exactly for how long—the Department obtained the actual rates received from the different persons who had the water. That was before we were in a position to legally hand over the works to the municipalities referred to. We were able to supply water, and by arrangement with the town councils, the town council clerk collected the revenue and paid it to the Treasury.

1820. You used the municipalities in order to get the money from persons to whom you supplied water? Yes.

1821. That did not touch the council's payments to you for water? No.

1822. Before the works were ready to be handed over a demand arose on the part of the people who were near the reticulation to be supplied? Yes.

1823. The Department supplied them using the municipal machinery for the purpose of getting in the money? Yes.

1824. In no way affecting the responsibilities of the municipal councils or diminishing the payment they had to make? No.

1825. They accepted the direct contributions of the consumers for the Government, but received no money themselves? You are only referring to the four—from them we have not received anything in the way of repayment.

1826. Why? Has no demand been made on the part of the Government to these municipal councils since the works were handed over, for them to pay something towards the cost? It is necessary I should give a little explanation. I may mention that when these works were finished it was soon seen that the councils could not pay under the existing Act. They could not possibly carry out the obligations of the Act under the twenty-eight years system, and the question then arose as to what should be done. It is necessary under the provisions of the Act that the Governor should gazette a statement showing the cost of the works, but the clause I read to you provides: "subject to such partial remission as the Governor may think just under any special circumstances." The question then presented itself—What was to be done? Were we to make these remissions, or was an Act to be passed to extend the term of repayments? And so the question stood until a decision was come to by, I think, Mr. Bruce Smith and by Mr. Young when Secretary for Public Works, penning the minute I have referred to, namely that we should start without the Act under the sixty years system. So that if that can be carried out the Government can lose nothing, because the amount is capitalised, and we shall get the interest on that capitalised amount. The legal notice, therefore, has never been put into the papers with regard to these four municipalities. Therefore they can hardly be called defaulters.

1827. But are you aware that some of the towns you have referred to have received large sums of money for the supply of water, and that they have those sums of money still to their credit? I have no statement before me showing it, but I have no doubt some of them must have. It would alter our statement

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to this effect—they could easily pay the money over and so reduce their debt, or if they did not pay it over and wanted it to extend their works the debt would remain at the larger amount. In either case the Government would get the interest on the capitalised debt.

1828. Take Goulburn, which has an indebtedness of £63,743;—do you think under the sixty years system they will be able to meet your demands upon them? If the statements are correct which I have got—and remember they are not verified by the Department—it would rather appear that they cannot do so, but possibly—and I am only speaking my own individual opinion—a stricter supervision of the collection of the rates, and a reduction of the working expenses, could bring out a very different result.

1829. Why has the Department fixed the period of sixty years; is that what they consider to be the life of water-works generally, or is it merely to bring it within the range of possibility of these people paying? It would be a combination of the two things. I do not suppose the pipes would last for sixty years, but the renewal of the pipes ought to come out of revenue from time to time. We know that the engine-houses—these are all pumping schemes—and the engines themselves, if properly looked after, ought to be as good 100 years hence as they are now. I believe there are in England engines of the same kind working, which are 100 years old.

1830. So you look upon them, practically, as indestructible, and therefore you could extend the time to 100 years? I would not say that. I am only dealing with the engines as a part of the expense.

1831. If the principal portion of these works—reservoirs and engines—may have a life of eighty years or more, why should you not, in view of the probability of the people being unable to pay under a sixty-years basis, extend it further on? I do not think it would be absolutely unsafe to do it. The engines and engine-houses would last for 100 years if they were looked after, but, of course, the pipes would not.

1832. Leaving these four places out of the question, have you received any revenue from any of the other towns which have been supplied with water? Yes.

1833. What towns, and what have you received? Take Deniliquin. We received the first year's instalment—that is under the twenty-eight years basis—of £1,033 6s. 5d.

1834. Was that the proper amount to receive under the twenty-eight years basis? Yes. They only paid the first year. The works were handed over to Deniliquin in 1884, but it was seen immediately afterwards, that it was simply impossible, from the revenue they received, to pay up. Wilcannia paid £480 in 1889. Lismore has paid one amount of £442 10s. 6d. Lismore was handed over in March, 1890. Hay made its first payment in June, 1892, under the sixty years basis, of £315 1s. 1d.

1835. Of course the Department recognise that they are doing an illegal thing in receiving under the sixty years basis? Not according to existing law, but in anticipation of legislation.

1836. Are these all the payments which have been made? Yes.

1837. Then, because of the Department's remissness in getting legislative power to extend the period, all these towns have been hanging back in their payments to the Government? I do not think the Department can be charged with remissness. It is for the want of legislative power.

1838. Do you know whether it is the intention to introduce the Bill this session? I think so.

1839. And are all the schemes which are now under consideration for water supply to be considered on the sixty years basis? Yes.

1840. You have laid that down as a rule now? Yes.

1841. In the case of Hay the work has been carried out, and the first payment made? Yes.

1842. *Dr. Garran.*] The figures you have given us are substantially the same which were published in the newspaper this morning? I think so.

1843. It is in the preparation of this return for the Committee that all these facts have been grouped together? No; I cannot say that. This return has been got out in pursuance of instructions given by Mr. Secretary Young. Of course it has taken some time to get it out. I have obtained the amount of the annual payments under the sixty years system in connection with the various municipalities referred to.

1844. Then the matters for which this Committee moved were in course of preparation when they were moved for? Yes.

1845. Have the Government pointed out to any of these townships which have paid one instalment, that if they could pay once they could pay twice? I cannot remember now what communications have passed, but they have been applied to, and they have pointed out that they could not pay. Under the twenty-eight years system we have only got one payment from Deniliquin, Wilcannia, and Lismore. Under the sixty years system I do not suppose we shall have so much trouble.

1846. If they could give you a first payment why could they not give you any more? I suppose they found that their rates would not enable them to do it.

1847. The Department has received no explanation from them as to why they did not pay? I have explained, already, that the whole question has been in abeyance pending the legislation proposed, and we have got over the difficulty by capitalising the interest due from that date, so that if this is carried out the Government lose nothing.

1848. But that is throwing on to future years the debt which ought to belong to the present time? To a certain extent it is.

1849. Do you know whether these increases in expenditure are due mainly to increases of reticulation, or increases in the cost of providing the water? They are largely due to increases of reticulation.

1850. Do you think that has entered into the increases in every case? Very largely.

1851. Then if that is the case more has been done than was provided for in the original plans? Undoubtedly.

1852. So that neither Mr. Clark nor the Department are to be blamed for that? No.

1853. A larger number of people have been supplied? Yes.

1854. You have not made any division of the increased cost between the two? No. It would involve a great deal of work to do that. If the Committee wish the information I will endeavour to obtain it.

1855. The reason I asked is this. Supposing the municipalities should say, "We expected we should only have to pay on a certain amount, and we find we have to pay on so much more." There would be no justification in that complaint, if the increase was in regard to reticulation? None whatever. I wish it to be understood that I am not putting it wholly upon reticulation, but I merely use the word "largely."

1856. But, so far as it is an increase of reticulation, it has been done in every case at the request of the Council? Yes.

1857.

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1857. Therefore, they cannot say they did not know the extra expense was to be incurred? No.
1858. You do not know whether they have made any claims for stronger or larger works than in the original plans? Yes; Bathurst has. We are now putting up another reservoir for them. We have done the same at Albury. At Goulburn we have put up a weir. It was found that the Wollondilly was not to be relied on in all seasons.
1859. Was all this work done at the request of the Council? Yes.
1860. Then, in those cases, even the increase on the first cost of the works of providing the water has been done at the request of the Council? Yes.
1861. You say that Mr. Clarke was responsible for most of these estimates? I think he was for some of them.
1862. But Mr. Clarke did not visit the localities and make inquiries as to wages and cost of material? I think he visited Bathurst, but I am not sure he visited all the four places.
1863. The Department was responsible for telling him all about the cost of material and wages? It may be so. I do not know that the Department gave him the information in every case.
1864. He gave his engineer's opinion that the scheme put before them was a suitable one for the particular township? Yes.
1865. And he did not himself go into details as to the cost of labour? It is very difficult for me to answer that question, but I should think he did not.
1866. In any case if he did do that, before the Department recommended the Government to adopt the scheme they would revise the estimates? Yes.
1867. Therefore, practically the Department was responsible before the works were actually commenced? They were responsible of course for the works they undertook and for the estimates of those works, but they were not responsible for the estimates given by Mr. Clarke.
1868. But they were responsible for telling Parliament that that work could be done for that money? I am not sure that Parliament was ever told what the estimate would be. I believe all these works were paid from a general vote. In connection with these waterworks I think that in no single case has a separate vote been proposed to Parliament. It has all been taken in lump sums such as £100,000 and so on.
1869. But still it would be a Departmental custom for the Minister to ask his engineering adviser whether Mr. Clarke's estimates were trustworthy? I have no doubt that prior to carrying out the works the Minister must have had before him what was our estimate.
1870. Then the Department really came between Mr. Clarke and the municipality? Yes.
1871. But it has never been worked out in detail how much of this extra expense is due to the request of the municipality itself? No, I think not in every case.
1872. But if the claim should be made that the increase should be rubbed off, it would be necessary to see how much was done at the request of the people? Yes. No doubt that could be done.
1873. You have already told the Committee that the situation, as it is now disclosed, is under the consideration of the Cabinet? Under the consideration of the Minister who is going to bring it before the Cabinet. You have referred to the newspaper paragraph. I think I have guarded what I have said to this extent—that I do not vouch for the correctness of the Councils' statement. We are merely taking the statement of the Councils. I think they would require the most rigorous investigation.
1874. *Mr. Davies.*] In every case you have referred to, where these country towns have had a water supply at the expense of the Government, municipalities exist? When we carried out the works at Jerilderie there was, I think, no municipality, but I believe there is a municipality now. I do not think Cargo has a municipality; but that is a very small matter.
1875. What is the amount in connection with these two places? Jerilderie, £1,061 7s. 4d.; Cargo, £1,635 8s. 7d.
1876. Is there not a proposal to increase the present water supply at Jerilderie? Yes.
1877. You say that in every other case there is a municipal council existing? Yes.
1878. And has the Department made application to these councils for the payment of the portion which they are entitled to pay every year? The whole question has been allowed to stand, pending a settlement as to how they were to be dealt with, and if the sixty years system proposed can be carried out it will be plainly seen that the Government can lose nothing, because we capitalise the interest which is due.
1879. What power has the Government to enforce payment in case the municipalities decline to pay? If you look at the third sub-section of section 125 of the Country Towns Water and Sewerage Act, 44 Vic. No. 14, you will find that the following provisions exist:—

If default shall be made by the Council of any such borough or municipal district in making any payment prescribed by this section for a period of thirty days after the same shall have become payable, the Colonial Treasurer shall be entitled forthwith to take such proceedings to enforce payment, by procuring the appointment of any number of persons not exceeding three, to be receivers of the rates and other revenues of such council as may now or hereafter be taken by a mortgagee or other secured creditor, or by the holder of the debentures of a municipal council under the "Municipalities Act of 1867," or any Act amending the same.

1880. According to that, the Legislature has made due provision for the enforcement of payment? Yes.
1881. And in every case the Government has failed to insist on payment where default has taken place? You use the word "default." Will you allow me to modify it?
1882. It is default if payment has not been made? As I have explained before, we have not put the municipalities in such a position as to say they were in default, because we have not published a statement of cost required by the Act, for the reasons I have explained, viz., the whole thing has been under consideration as to how they should be dealt with. It was seen that it was useless to deal with these councils under the twenty-eight years system.
1883. If the municipalities are not in default, I suppose the Department must be in default? I do not think the Department is in fault either. I think rather that the Act is in default.
1884. But the Act is all-powerful to enforce payment? Yes; but it is impossible to exact payment where no money exists.
1885. But the Act gives power to the representative of the Government to step in and strike the rates and collect them? The meaning of that would be to practically stop all municipal works.
1886. Would they not have the power the same as debenture holders would have in the case of a loan for a municipality? They would have the same powers, but the cases are hardly parallel, because the Government must look upon the people in a parental spirit, whereas debenture holders would, of course, obtain their pound of flesh.

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1887. There can be no difficulty in collecting a rate, especially for water? If the statements given to me are correct, the municipalities have levied the full amount which the Act authorises, namely, one shilling in the pound.
1888. On the assessed value of their properties? Yes; I have pointed out the necessity for investigating these statements. Of course you may at once answer me by saying, "If they are getting the full rate, what room is there for hoping that by more rigorous management the result would be altered." That may be answered in this way; that it seems almost certain that in their statements of working expenses, they must have charged the expenses of the watering of the streets. That ought not to be charged to the water account. It may be also that there is a very lax system of supervision, and the water may go to waste, which means a large increase in the cost of pumping. In all probability we should find that the working expenses, if rigorously examined might, in some cases, be knocked down one half. I am only stating this to explain the apparent inconsistency between my two answers.
1889. Do I understand that the municipalities of Goulburn, Wagga, Bathurst, and the others named by you, strike a water rate of 5 per cent. on the assessed value of their ratable property? That is what they should do.
1890. And collect the rate? That is another thing which ought to be looked into. We know very well that in Goulburn there are large arrears, although I have not particulars. I think, however, I am correct in saying that they are applying for a special Act of Parliament to enable them to recover rates.
1891. If they strike and collect a rate, who gets the money? The municipalities themselves.
1892. And they never return a shilling of it to the Government? They have not for the reasons I have stated; but when the final account is made out that can easily be arranged. If they have a balance to their credit they can pay it into the Treasury, and so provide for a reduction of the debt, which I think would be the right thing to do. If they have no balance they will pay interest on the capitalised sum, and the Government will not lose in either case.
1893. You are not quite certain as to the amount raised by a water rate by the municipality of Goulburn? They have given me their revenue during the last municipal year as £2,500. That is the water revenue. But they have stated that the actual revenue during last year was £4,341. But that includes arrears of previous years.
1894. Is that total amount from water alone? Yes. They give their average amount as £2,500.
1895. How long is it since they made any payment on account of the capital cost of the water works? They have made no payment.
1896. They actually received £4,000 last year, and did not pay one shilling to the Government? No, they have not. Of course that is their gross earnings—the working expenses have to be taken out of that amount. The working expenses they give me as £1,337 per year, but it is just possible that it might be found that charges are made which ought not to be made.
1897. You state that the Department has made frequent applications to them for payment? No, for the reasons I have stated.
1898. Do you know when the last application was made? I do not think in the case of Goulburn any application has been made, because as I have already explained we have never put the legal statement of cost in the *Gazette* pending the settlement of the whole question.
1899. Coming to the question of the water supply of Bathurst—what is the rate struck there? I see they have returned it as one shilling.
1900. What is the amount of their revenue for water? For the last year they give it as £3,049.
1901. What are the expenses to be deducted from that? £1,278.
1902. How long is it since they have paid anything into the Treasury? The only amounts we have received from Bathurst and the four towns, are the rates collected direct.
1903. You have not received any revenue from the Municipal Council of Bathurst? No.
1904. What is the amount of revenue received at Wagga? £1,622.
1905. And the expenses? £667.
1906. What proportion, if any, was received by the Department from Wagga? Nothing, excepting the direct rates at the first.
1907. Then, in connection with all these large municipalities, where this large expenditure has taken place, no repayment has been made? No.
1908. Though they have collected the rates? Yes.
1909. And applied it to their own purposes? They may have a balance in hand in regard to water works.
1910. But you have no return to show what balance they have, if any? No, that of course will be done before we finally adjust the matter.
1911. They may have applied the income to ordinary municipal works? If they have done that the debt will be so much the greater.
1912. Which is the largest municipality outside the four of which you have spoken? Orange had the largest amount spent upon it.
1913. What was the income from water rates received by the municipal council of Orange? I asked for that information—this is one of the works which has only recently been finished—and they only gave me the return for the half year.
1914. What was the income from Albury? They have given the revenue during last municipal year as £1,819.
1915. What was the capital expenditure? £52,367 13s. 11d.
1916. What was the expenditure in connection with the administration of the supply? £1,324.
1917. Has any application been made by the Department for the payment of revenue derived? No, because Albury is in the same position as the towns I have mentioned. We have never published the legal notice as to the cost.
1918. Then there must have been great default on the part of the Department? I do not think so, because we have been instructed to allow the matter to remain over. It has been anticipated that every year this matter would be settled. Year after year it is passed by and it has not been settled.
1919. How long then has this matter been hanging fire? Albury was handed over in 1887, so that the first payment would be due in 1888. It has been standing over since 1888.
1920. There has been nothing done since, beyond the collection of the rates by the municipality? No, with the exception of the Minister's instructions to prepare a bill to provide for the sixty years payment, and Mr. Secretary Young's instructions to bring it to February, 1892, and charge interest on that.

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1921. I want to find out one of the works in which the Department has made direct application, and which does not come in the same position as the other municipalities? I think application has been made in the case of Wilcannia, Deniliquin, and Lismore. I believe the Treasury made application. The Treasury have been anxious to make application in the other cases, but have not been able to do it, simply because they have not been in a legal position to do so, since we have not stated what the debt is.

1922. If I understand your evidence with reference to these municipalities, legally, there is no claim for any back revenue which has been received by them by reason of the fact that the notification has not appeared in the *Government Gazette*? To a very large extent, that must be so.

1923. So that really there will not be a legal charge against the municipalities for the interest upon the capital cost? Of course we should take good care in our Act—in fact it has been provided for—to make this perfectly plain. You will see exactly what is proposed to be done from the Hunter River Act. If I had the Act here I could point out the provision. The same clause will appear in the new Act.

1924. That is the clause to deal with existing works? Yes.

1925. But what was the result of the application made by the Treasurer for payment, from the several municipalities you have spoken of. Have they paid? No, they simply could not pay what we could legally demand.

1926. *Mr. McCourt.*] With regard to Bathurst—before the works were carried out, was there an estimate made of what they would cost? Mr. Clarke made what I think must be a rough estimate of what the works would cost.

1927. Was there an estimate of the working expenses? I daresay it was made.

1928. *Mr. Wall.*] In making those advances to the various municipalities did the Department inquire what was the value of their ratable property? It is only in two or three cases that we have made advances. We have carried out works for them.

1929. We will commence with Goulburn. The capitalised debt of Goulburn is £63,743. The interest is equal to £2,550 at 4½ per cent.? Yes, they would have to pay each year £2,549 14s. 5d.

1930. The working expenses at Goulburn are £1,337? Yes.

1931. That, added to the interest, will give an annual cost to the municipality of £3,886? Quite so.

1932. Two thousand five hundred pounds is their revenue? Yes.

1933. And with that amount they have to pay an annual charge of £3,886 which leaves them, under the sixty years system, with a deficit of £1,386 per annum? Something like that.

1934. Bathurst has an indebtedness of £59,973? Yes, but it will be more when we have completed the additional work I have previously referred to.

1935. They have a revenue of £3,049? Yes.

1936. Their expenditure is £1,278? Yes.

1937. If we take £1,278 from the revenue, it leaves them an actual revenue with which to pay interest of £1,771? Yes.

1938. Their annual interest is £2,398? Yes.

1939. It leaves them a deficit of £627 18s. 5d. per annum? Perhaps you will not ask me to say that the calculations are absolutely correct, but the principle is the same.

1940. The capitalised cost of the works at Albury is £52,368? Yes.

1941. Upon which their interest is £2,094? Yes.

1942. Their working expenses are £1,324? Yes.

1943. Which leaves them £495 with which to pay an annual interest of £2,094, or in other words a deficit of £1,599? Something like that.

1944. Under those circumstances, with the limitation of the charges under the Bill of 5 per cent., do you think the councils will be able to pay this interest? I explained before, that I am only giving their statements, and I think it will require the most rigorous investigation before we can in any way say that these figures are correct. Although they ostensibly charge 1s. rate it may be that they have been very lax in the collection of revenue. It may be also that their statements of working expenses are unnecessarily large.

1945. I may point out that in the case of Goulburn, they have made out a better case for you than they were able to make out before us when we took some evidence there. The Council Clerk at Goulburn, stated that their revenue was £3,500. He has reduced that revenue to £2,500, and we are basing our calculations on £2,500? In regard to Goulburn I explained that they pointed out that the revenue received during the last year was £4,341, but that included arrears on previous years. They put down their average revenue as £2,500.

1946. What will be the capitalised cost of the sewerage works at Parramatta, including all expenses? I forget what the figures are, but I think it has been given in evidence before.

1947. *Mr. Neild.*] I understood you, when speaking of Goulburn, to inform the Committee that the municipal authorities there, included street watering as justly chargeable to the annual cost of working the water supply of the town? I did not say that. What I said was this—that the figures given you are the figures supplied me by the various municipalities. Before we can accept them as correct they will require a very rigorous examination. I said it had struck the Department that they must have included expenses which ought not to have been included.

1948. Under the terms of the Municipalities Act it would be quite wrong to put down street watering as an expense chargeable in connection with the waterworks constructed under the Act? Most improper.

1949. Do you know what has become of the funds obtained by the municipalities? I suppose that in some cases they have it out at interest, but all that will have to be ascertained.

1950. Has your Department given any instructions to the municipalities who are in arrears of payment, that they should place their water rate funds to special accounts, pending the adjustment of these difficulties? I do not think they have been advised to that effect, because we have been hoping every year to have the difficulty settled.

1951. It appears that the amounts outstanding in respect of these various advances is something like £349,000? Yes, excluding Manly, Moama, Cootamundra, and Richmond.

1951½. This money, I suppose, was raised at an average cost of about 4 per cent.? I do not think the loans average as much as that.

1952. We may assume that the money would be quite worth 4 per cent. to the country at the present time, seeing that the last advance obtained was at 4¼? Yes.

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1953. Therefore, the money could be reckoned at 4 per cent. That means, then, that £14,000 per annum of interest is being lost to the State by reason, as you say, of some defect in the legal machinery for recovering these payments? But I have explained that with the plan we are adopting the State will eventually lose nothing because we are capitalising the interest due.
1954. But is not that very much after the method of Theodore Hook, who wrote a promissory note to his wine merchant, and said, "Thank God that is paid." Is it not simply loading in advance? It is loading to a certain extent.
1955. Has not that been the process of investment which has lately had some ruinous examples in connection with public companies? Yes; but I think the cases are hardly parallel. There can be very little doubt that these towns have been conserving the rates they have received so that when the final adjustment comes they will be able to say, "We have so much lying at interest." I have heard that some councils have been putting their money at fixed deposit.
1956. But is there any legal disability on the part of the Government to receive these payments if the municipalities choose to make them? I do not think so.
1957. Do you not think it would be to the public interest for some serious effort to be made for the payment of accounts by these municipalities. The payments on account could not possibly prejudice any legislation which might hereafter be passed? I certainly think it would be desirable to do it, unless we could see a pretty good prospect of having the amended legislation passed quickly. That is under the attention of the Minister now.
1958. But I understand that it has been under the attention of some Minister for five years? Yes.
1959. Has a Bill been prepared? Yes.
1960. Has it been prepared long? For eighteen months. The Bill will deal with other matters than this. Defects have been shown to exist in the working of the Acts, and this Bill will remedy them.
1961. I suppose, then, altogether there must be quite £400,000 lying out on these various waterworks? Yes.
1962. And yet no serious attempt has been made to cope with the matter? I do not think it is correct to say that no serious effort has been made, because a Bill has been prepared to deal with it.
1963. You read an extract from the Act a little while ago;—does the extract you read with reference to the power of the Department give to the Government the power to form water and sewerage rates as mortgagees in possession? It says, "The Colonial Treasurer shall be entitled forthwith to take such proceedings to enforce payment by procuring the appointment of any number of persons, not exceeding three, to be receivers of such rates and other revenues of such Council."
1964. But yet it would be quite competent for the Government under that clause, apparently, to form the water and sewerage rates, and leave the rest of the municipal affairs to the government of the municipal bodies? This has never been acted upon; but I should think it would be quite possible to do it.
1965. What I mean is, that it would not be necessary to do as you indicate in the reply given a little while ago, namely, to bring the municipalities to a standstill, but it would be only necessary to deal with the water and sewerage rates? When I said at a standstill, I meant to say completely taking the municipal management out of their hands—that there would practically be a complete deadlock, as far as municipal matters are concerned.
1966. Apparently under that Act the Government would have the power of stepping in and assuming the receipt of the whole of the revenue? Yes.
1967. Would it be competent under that Act for the Government to step in and to receive the revenues only appertaining to water and sewerage? Yes.
1968. That would not bring any one of the municipalites to a deadlock? I did not mean it to be interpreted in such a strict sense as that; but what I meant was, that it would be such a serious interference with municipal matters that it would be almost tantamount to a deadlock, because the management of affairs would be taken out of their hands.
1969. You recognise the fact that there are a great number of municipalities in the Colony which have no water or sewerage arrangements. Therefore such action on the part of the Government would only be interfering with the municipalities to whom these advances have been made, to an extent which would still leave them perfectly free to carry on all their other municipal functions? Yes; but I think I pointed out that we should have to levy under the twenty-eight years system—and I think it is shown pretty clearly that the revenues of the councils will not stand that strain—so that the balance which would be available to be handed to them would not be sufficient to enable them to carry on their borough concerns.
1970. They are only empowered to charge 1s. in the £? Yes.
1971. Is that deemed insufficient? It would be insufficient under the twenty-eight years system.
1972. Can you say whether the Bill which has been prepared provides for a 60 or 100 years system? I think the Bill gives power to the executive to extend it to 100 years, provided the works are of such a durable character as to justify it; but I am speaking subject to correction.
1973. I think you stated that it was intended to introduce the Bill in the present session of Parliament? I think so.
1974. It was not named in the Governor's Speech? I think it was.

THURSDAY,

THURSDAY, 8 *SEPTEMBER*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Sutton.	William Chandos Wall, Esq.
The Hon. James Hoskins.	William McCourt, Esq.
The Hon. Frederick Thomas Humphery.	John Cash Nield, Esq.
The Hon. Andrew Garran, LL.D.	Edward William O'Sullivan, Esq.
The Hon. John Davies, C.M.G.	Charles Collins, Esq.
Thomas Thomson Ewing, Esq.	Henry Dawson, Esq.

The Committee further considered the proposed Sewerage Works for Parramatta.

George Henry Stayton, Esq., M.I.C.E., sworn, and further examined:—

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1975. *Chairman.*] Since you furnished your report to the Committee you have had an opportunity of perusing a subsequent report furnished by Mr. Hickson? I have done so.

1976. And you have also had an opportunity of hearing his examination upon that report? Yes.

1977. Do you desire to offer any remarks to the Committee, based upon the report of Mr. Hickson, and upon his further evidence of Tuesday last? I should very much like to avail myself of the opportunity.

1978. We should be very glad to hear anything you may have to say in reference thereto? In the first place, I should like to say this, clearly and emphatically, that whatever has transpired since I was last examined has not in the smallest degree shaken the views which I presented to the Committee, both in my report and in my evidence. If anything, especially after the evidence which was given on Tuesday last, I am still stronger in my assertion that this scheme is not by any means perfect, and that if carried out it would certainly create a nuisance and trouble. I would like to say that, having had the opportunity of listening to a portion of Mr. Hickson's evidence on Tuesday and of considering his report, it is obvious that I could scarcely expect his views to coincide with my own; but I am certainly astonished at the manner in which he has dealt with the question at issue. Strongly as I might feel on the subject, I very much feel that strong words ought not to be used. It is not good policy. Therefore, I refrain entirely from anything of that kind, and shall confine my remarks absolutely to a consideration of the report and the evidence. My only desire, and my great desire, is to endeavour to prevent sewage farming or sewage disposal, which is only in its infancy in this colony at present, from being brought into disrepute, and also to save the possibility of costly litigation and heavy charges on the ratepayers, which might occur if a nuisance were created. In England very many thousands of pounds have been wasted in litigation in consequence of the inefficiency of sewage farms, or of the arrangements for the disposal of sewage—in other words, owing to inefficient out-fall works—and it is only quite recently that a municipal corporation, that of Stratford-on-Avon, in Warwickshire, was sued for polluting a stream, or creating a nuisance at their sewer out-fall works. They were fined £1,000, and had to pay very heavy law costs, and ordered within a very short time to adopt another system. The system which they adopted was that of the International. What strikes me at first as unsatisfactory, is the fact that there appears to have been no reconsideration of a scheme—in this case that of Parramatta—which was formulated somewhat hastily about eight or nine years ago. I remember the latter circumstance from reading the papers, and I think that £16,000 was the estimate of the cost of the works on that occasion. It is true that subsequently a survey of the district was made, and plans and sections of the sewers were prepared; but still the proposal as it then existed, was for establishing a sewage farm for crude irrigation at Elizabeth Farm. The present scheme appears to be only an enlargement of that proposal; but there is no satisfactory revision of the disposal works, or bringing them up to date to my mind. I had strongly hoped that my report on the disposal of sewage in 1891, which was presented last year to the Works Department after my return from England, might have opened the eyes of the Department to the fact that in these days there is something better than crude irrigation, especially under conditions which are far from satisfactory. There is no indication that the recent great strides which have been made in England in sewage disposal have been noted. Mr. Hickson has not advanced one single argument which leads me to in anyway modify my opinion. Side issues and mere trifles, or technicalities, ought not to be considered. The main point is efficiency. In my rejoinder to Mr. Hickson's report, I should like to point out where he has fallen into error, and perhaps the most convenient manner would be to take such paragraphs *seriatim*. This may save a number of questions being asked. Mr. Hickson, in his report, referring to the Sutton works says:—

> My mind was somewhat relieved, however, when further on, in reply to questions 850 and 851, he says that £20,000 only refers to the outfall works.

Unfortunately for Mr. Hickson, his comment on these questions absolutely falls to the ground. Kingston and not Sutton was alluded to. The revised evidence shows that it was an error in the proof. Afterwards he refers to the cost of various sewerage works as set out—Parramatta, Manly, North Shore, Western Suburbs, Adelaide and Melbourne. All I have to say is that it is no good going into these details. Each of these places was estimated for under varying conditions, and a much greater volume of sewage per head was provided for; 70 gallons per head per day in the case of the Western Suburbs, Manly and North Shore. In those cases 70 gallons per head of dirty water were provided for. In the case of Parramatta only 25 gallons per head is provided for. Consequently the dimensions and cost of the sewers and works are very much reduced per head of population. Another statement which Mr. Hickson makes is:—

> The other statement to which I would wish to draw attention is that made in reply to queries 820 and 821, where he says he cannot recall a single instance of a sewage farm established on the banks of tidal waters, and made up of sand dredged from below salt water.

To this I reply that my answer clearly referred to my researches, meaning, of course, outside this country. That was the obvious intention of the question, and I took it to arise out of my answer to question 805. I was asked whether, during my researches in England, I had seen certain things. Obviously I could not forget the Webb's Grant arrangement. The next paragraph in Mr. Hickson's report is that commencing:—

> Speaking generally of his report, the greater portion of it is, I find, taken up with adverse comments on a sewage farm which is not yet in existence, &c., &c.

I will only notice the portion of this paragraph which refers to seeing Mr. Hickson before reporting. At the commencement of my investigations I applied for certain information as to levels and sections of

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the site of the farm. Mr. Hickson, himself, told me that none had been taken, and I feel bound to say, that there seemed to be a manifest indisposition to afford the desired information. I had a few minutes talk with him one evening, but my idea being that the Committee wanted a perfectly independent report upon the merits of the scheme, as it was actually put before them at that time, free from Departmental afterthoughts or suggestions, I thought it best to proceed without further reference. There was not the slightest intention of discourtesy, or anything of the kind, but I took it in that sense I have explained. In another paragraph Mr. Hickson regards my remarks, as to the creation of a nuisance, as inexplicable. I can only say that there has been no incorrect assumption on my part, but it is not for me to say whether my conclusions are of no value, or quite misleading. In paragraph 2, Mr. Hickson raises a point with regard to sections being a somewhat remarkable omission, and he seems to hold the view that it was not absolutely necessary to submit sections. All I have to say on that point is this, that in any scheme which is presented to a Parliamentary Committee in England—and I have had a good deal of experience of such Committees, both in the House of Commons and the House of Lords—it is usual to submit sections from top to toe, as it were, of the entire scheme; otherwise the Committee would make very short work of it under the standing orders. I also desire to say that it is absolutely incorrect to say that no levels were taken over the proposed area of the reclamation for the western suburbs sewerage scheme, or that no trial holes were sunk. Mr. Hickson makes a clear assertion that I neglected to do it there, and yet pointed out the necessity for it in the case of Parramatta. That I deny *in toto*. The levels were taken, the ground was examined by myself, and I spent several days in all, going over the site from Botany Bay to Cook's River, and from east to west. It was in consequence of what I found, that more land was not included in that resumption. I also worked out myself the approximate quantity of filling and levelling required there. My statement that there were no levels or sections of the farm at Parramatta, also that the plan was not correct, remains unaltered. In paragraph 3, Mr. Hickson thinks that I confuse the highest spring-tide level with that of mean high-water mark. I say that there is no confusion whatever as to the tidal levels. I am perfectly cognisant of the difference between highest spring-tide level and mean high-water mark. I used the term, which appears on Mr. Hickson's plan, and which he gave in reply to question No. 60, when he said that the farm contained 62 acres, the western portion of which is above spring-tide level, and the eastern portion of which is below mean high-water level. I would like to draw attention to the fact that in answer to question 61, he said that about one-third of that, which would be about 21 acres, was below the tidal level; but now, according to his report, he admits that it is 39 acres. Paragraph 4, states:—

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> In preparing the scheme, it was recognised that the higher portions of the farm would require draining, and other preparation.

The remarks I have to submit in regard to this are, that the higher part having a level at least 5 feet above high water, is only about 20 acres, as I stated; which, for the present population of Parramatta, estimated at 12,000, would mean the sewage of 600 persons per acre; so that even with the drainage and the other preparation shown on the design, the very nature of the subsoil is sufficient to show that it ought not to be so worked. Indeed, the evidence given on Tuesday is to my mind conclusive on this point. It is true that only a small experiment had been made. It opens up, however, a very crucial point, namely, that the soil of this upper end—the portion coloured green on the plan—took six times as long to filter the sewage, as the sand at Webb's Grant did. The results obtained only bear out the experience elsewhere. Of the two bottles of effluent which were submitted to the Committee on Tuesday, the clearer effluent came through soil taken from Parramatta; the other came from soil taken from Webb's Grant. Webb's Grant is not expected to take more than the sewage of about 800 persons per acre. If sewage through Parramatta soil takes six times as long to go through a depth of only 6 or 8 inches—as was explained to the Committee—I would ask the question, how long would it take to go through 3 or 4 feet, even with the subsoil drains 20 feet apart? However, for this purpose, I will assume that it takes six times as long. If so, instead of 800 persons per acre, it would mean that the sewage of 133 persons per acre should be applied to that land for efficient purification. In that case, taking 20 acres as the available area above a 7 or 8 feet level, that would mean that the sewage of a population of 2,260, instead of 12,000, should be applied to that land, in the way of broad irrigation or filtration. I would like to show the Committee some specimens of the soil which I took at the time the holes were formed. This soil [*produced*] was taken at a depth of 4 feet, from what I will call Hole No. 1, and, as the Committee will see, it is almost like brick earth. When I obtained it, five or six weeks ago, it was plastic, since then it has become hard. This specimen [*produced*] is a lump of the surface soil which I had dug out from the same part, in the middle of the area marked green on the plan. This has also become perfectly hard and solid. I have also a sample of the soil which was taken at a depth of 18 inches. The reason I bring these specimens before the Committee is this—that the manager of the sewage farm at Botany stated the other day to the Committee that he had only taken the soil at a short distance below the surface. This is a specimen [*produced*] of what I call the river mud, which was taken lower down in Hole No. 2, at a depth of 9 inches.

1979. Whereabouts was that hole? On the red area and under tidal influence. My object was to show what the strata is there, and what might fairly be expected to be found in certain places in the bed of the river, when dredging operations were undertaken.

1980. That is, of course, if the material was taken from that part of the river? True. Having so far explained this to the Committee, I would like to draw attention to the answer to question 305, where the witness stated that he considered that when the subsoil drains are put in, in the land coloured green on the plan, it would be capable of treating the same quantity of sewage as was now treated at Webb's Grant—that is, at the rate of 800 persons per acre. The same witness also stated in answer to question 330:—

> I think myself that the lower portion of the farm at Parramatta will give better results than the higher part, on account of its being probably of a sandy nature.

With regard to paragraph 5, as to the suitability of the material, I have already referred to the object of my examination. I say that the object of my examination of the subsoil is obvious from my report. I wanted to ascertain whether it was sandy or otherwise, and whether it was fairly dry. I have answered those points in questions 1,312 and 1,313. I have also mentioned that a knowledge of the strata was desirable as to the possible bed of the river and quality of the material to be dredged therefrom. The result would also affect the construction of the intended effluent outfall sewer and the subsoil drains, which, in bad ground, would obviously be more costly to construct.

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construct. Paragraphs 6 and 7 refer to the level of the fascine bank. The question as to the actual level of the fascine bank itself is unimportant. My answer to question 1318 shows clearly that I contemplated the batter or slope mentioned by Mr. Hickson. There is, therefore, no confusion as to the level, as asserted by him. Mr. Hickson told me in conversation that if it was not high enough it could be raised. Mr. Williams, of the Harbours and Rivers Department, who is carrying out the work, also informed me to the same effect. All this, however, is a matter of detail, and does not in the least affect the conflicting statements I alluded to in paragraph 6, or the doubt I expressed in paragraph 7 as to the uncertain nature of the material to be dredged. With regard to paragraphs 8 and 9, as to the quality of the material to be dredged and used for filling up, I can only rely on the statements in my report; they are very clear. (*Vide* par. 9.) I am confirmed in this view by Mr. Williams who told me that I could judge of the nature of the material by what is now being got by the dredges in the vicinity. This certainly is sandy mud and silt—in which case it cannot possibly be equal to the natural soil of Webb's Grant. I understand that in Homebush Bay and other places they may come across stray patches of sand, but possibly not to the extent of 400,000 cubic yards. What, therefore, becomes of Mr. Hickson's assertion that he can get any material he likes? This work would be carried out by the Harbours and Rivers Department, and not by the Sewerage Branch. Mr. Hickson lays great stress on the fact of my recommendation for the western suburbs sewage farm. Now let me say in the first place that I clearly stated, that "precipitation" would have to follow. (*See* p. 27, *a* and *b*.) This is very important, and if the Committee will pardon me, I will read a few lines from my report:—

> As the population further increases, it will become necessary to enlarge the effective area from time to time, and to adopt the process of "precipitation" for a portion of the additional sewage, the effluent being subjected to aeration and earth filtration, or further chemical treatment. With a total area of 550 acres it will thus be practicable to utilise and purify the sewage and rain-water from a population of about half a million persons.

Later on, I say with regard to progress in improving the effective area:—

> The swampy area would gradually be reclaimed and the level brought up to the requisite height above high water. An effective area for purification of a precipitation effluent need not necessarily have its surface more than 5 feet above high-water mark spring tides.

If Mr. Hickson had said clearly that he intended to reclaim the whole to a 5-feet level,—similar to Webb's Grant in every particular, as I did, then I should have known better how to consider the matter. Here let me say that in the light of recent practice in England, as I saw it last, and especially after the evidence given last Tuesday as to the working of Webb's Grant, if I had been devising a sewage-disposal scheme for the western suburbs now, instead of in 1887–8, I tell the Committee frankly that precipitation would have been to the fore instead of coming on at a more remote period. My main objection is, that the complete scheme for Parramatta involves putting too much crude sewage on too little land, and a filtering material not of the best. The sewage of 800 persons per acre is too much, and it is an utterly unknown amount, where purification by irrigation is desired. As to the statement referring to the Birmingham sewage farm, it is incorrect to infer that precipitation followed irrigation, as proposed for Webb's Grant. Precipitation was started at Birmingham in 1853. Then, again, it is a lime system of precipitation which is in vogue there, and that is a system which could not be tolerated for one moment at Webb's Grant, or in this country. Even now, late as it is, I should personally be inclined to reconsider the Webb's Grant system before mischief is done. I feel certain that greater efficiency could be secured, and I am inclined to think that many thousands of pounds could be saved. In paragraph 10, Mr. Hickson says that the cost of filling Botany would be greater than that of the Parramatta reclamation. All I have to say is this, that if £7,000 or £8,000 worth of work is to be done at the cost of another Department, and is not to be charged to this work, it does not very much matter one way or the other. The estimate of £5,950, as referred to by Mr. Hickson, is clearly not the whole expense of preparing that portion. With regard to paragraphs 11 and 12, the system in operation at Botany is not at present on reclaimed land, but on sand which will take the sewage of 800 persons per acre. This is not so at Parramatta, nor can it be so after a short time. I maintain that my proposal for Parramatta is strictly in accordance with the latest practice, whereas the Government scheme is not. In support of that I would call the attention of the Committee to the list of places which I presented when I last gave evidence, in reply to question 1345. If consideration is given to that for one moment, it will be seen that both as to level and as to the number of persons per acre, by far the majority, if not nearly all, are very different indeed to what has been proposed for Parramatta. Irrigation farms are provided for, as a rule, at the rate of from 100 to 200 persons per acre. Where land is not available the Committee will see that precipitation, filtration, and irrigation is the system adopted in the majority of instances. I may say that I have obtained all this information from the latest sanitary and scientific papers. It has not been supplied to me in any other way. Most of the work which has been, and which is now being carried out in England, is that involving precipitation and irrigation. In no instance, to my knowledge, is broad irrigation at the present moment being carried out, and even if it is, it is only at the rate of about 100 persons per acre. I have no remark to offer with regard to paragraph 14, but with regard to paragraph 15, in which Mr. Hickson says that he considers the extra expenditure of £17,000 unnecessary, I may remark that I am more than confirmed in my opinion as to the desirability of remodelling this scheme, with a view to adding precipitation. Of course, if the reclaiming work is to be paid for by the Harbour and Rivers Branch, the extra cost would be reduced for the complete scheme. Now that I have the figures of the Departmental estimates before me, I see that the extra cost by the addition of precipitation, would be about £20,000. Mr. Hickson shows now that his complete scheme for a prospective population of 48,000, is to cost £131,000. I had only noticed it as £111,000 before. With regard to paragraph 16, even if I had misunderstood the Government proposals of sewage disposal before, which I clearly deny, I do not now, and am firmer than ever in the conclusions which are set forth in my report. With reference to paragraph 17, as to the cost of the works—I have gone more carefully into this since I was here last, and now submit the following estimate:—That the cost of the works for the first section, that is, for the present requirements, if the International system is adopted within the municipal boundary, will be £67,306. In addition to that, it would appear that there should be a sum of £3,408 covering the item of other works, out of the balance of £16,000. I do not know what it is for, but I have put it in here in order that it may compare with the scheme which is before the Committee. That scheme—the Government scheme—for the same population, with the precipitation tanks and filter beds added, I make £85,426 instead of £75,926. I do not think it is desirable to discuss the question of the intermediate provision, that for 32,500 inhabitants, but I will pass to the scheme foreshadowed on the top of page 3—that is, the

cost

cost of the works for the International system if it were similarly adopted for a prospective population of 48,000. That amount, including the £3,408 described, I bring up to £132,317, as against the cost of the Departmental scheme, with the provision for precipitation added, of £151,054. I take it that in both instances there appears to be no special provision for contingencies. Now, as to the working expenses of the present proposal. It is stated by Mr. Hickson that there is a balance of £65 15s. in favour of the sewage farm. That opens up the question of the treatment and the cost of the treatment of sewage sludge. I would like to direct the attention of the Committee to this: that the Parramatta sewage will not contain any storm waters—that is, any of the debris which is usually carried down the street gullies into the sewers, and that it will also not contain any appreciable manufacturing refuse. In the London sewage, where lime is added, that sewage only produces about one ton of sludge for every 50,000 gallons of sewage. The dried lime sewage sludge, as compared with that treated by ferozone, is in the proportion of 2½ to 1—that is, ferozone sludge is only about 1 to 2½ in bulk of the lime process. Nearly all the observations which have been made in this report, as to the treatment and as to the weight of sludge, and so forth, refer to the treatment where lime is added. Ferozone, as I have stated, reduces it very materially. And I conclude from this that a very large allowance for Parramatta would not equal more than 7 tons a day of wet sludge, and that if the ferozone treatment were adopted, there would not be more than 2 tons of pressed cake per day for the first section at the outside. I therefore submit that the cost of the pressing instead of being, as stated, £261, would only be at 4s. a ton—a very liberal allowance—£146—and that the annual cost of treating 500,000 gallons of sewage a day by ferozone will only be £291, or a total of £437. That gives a balance in favour of the International system, even on the present population, of £63 a year, irrespective of any value which may be got out of the 730 tons of poudrette. The other day a good deal was said about that,—in fact it was rather discounted whether anything would be got from it. All I can say is that at Acton, which is in the middle of market gardens, the authorities get 30s. a ton for it. But if you only get 10s., or even 5s., it has such manurial value that it must produce something. My own impression is, that after it has been tried here for a time there would be a considerable demand for it. Further on Mr. Hickson refers to what Mr. Mansergh says, and to my remarks with regard to the outfall works. In reply I say that these remarks refer to lime sludge, and that I have dealt with elsewhere. The next paragraph is as to the relative cost of the two schemes and other things, and as to the objection to sewage works being near a town. I would point out in the first instance, that the scheme which is now before the Committee is certain, to my mind, to prove objectionable—that, although it is not near a town at the present moment, it is alongside a building estate which is subdivided, and upon which there are now one or two houses. With reference to Mr. Hickson's remarks that I discard all the evidence given as to the proposed height of the reclamation, I do not think I did discard such evidence. Paragraph 6 of my report shows this. It was only the uncertainty I referred to. If Mr. Hickson had sent in a section showing the intended finished level to be 5 feet above, all this doubt would not have arisen. I have already told the Committee that the holes in the swamp were to ascertain its nature and condition. No one would ever dream of such a thing as that the soil at that level was to be used for filtration purposes. At the same time it gave me an idea of what might be found in the river. I regret that Mr. Hickson fails to see the importance of making trial holes, even in the higher area. I distinctly say that the means of ascertaining the actual formation of that subsoil were not ample without sinking a shaft in the middle of that area. Now, as to what he says are the intentions of the Department under the headings of Nos. 1, 2, 3, 4, and 5. With regard to No. 1, I say distinctly it was not so, as the precipitation was therein included from the first. With regard to river sand and silt, all I do is to refer to Mr. Hickson's reply to question 63, and to Mr. Davies' question 329, where he said there would be sand and silt dredged up. With regard to No. 4, that is, as to the eventual necessity for treating crude sewage by precipitation, I simply submit that precipitation, according to the evidence, was not a part of the scheme. It was never mentioned until now. In reply to question 77—"Is your sewage farm to be of the same character as that of Webb's Grant, or that which you propose to construct at North Shore," Mr. Hickson said:—

> We do not propose to deal with the sewage by chemical means, but practically the same as at Webb's Grant.

With regard to No. 5, Mr. Hickson stated, in his evidence on Tuesday last, as I have already mentioned, that the expense of filling the farm would be borne by the Harbours and Rivers Department. Certainly, the £96 an acre mentioned by him for drainage and preparation would not cover any filling in. I may say that my estimate, upon which I had previously based this, was £100 per acre, so that we are practically agreed on that point. As to the Botany experience, I submit that this cannot be taken as a precise guide to Parramatta. The conditions, as I have already pointed out, are different. With regard to the first three paragraphs on the top of page 4, I have already explained them, and I need not go into them again. Mr. Hickson refers to the opinion of Sir Robert Rawlinson and Dr. Littlejohn, and other gentlemen. I have some very important information which I would like to read to the Committee. Before doing so, I would like to say that in each instance the number of persons applied to the farm per acre is from 100 to 180. Sir Robert Rawlinson, who, as the Committee know, is a leading sanitary authority and who has been for many years at home, states:—

> Crude sewage put on the land while it is fresh and without storage is the best system.

He further says:—

> Do not drain clay-soil or a sandy-soil for the purpose of sewage irrigation, as the land cracks under those conditions or becomes so open that unpurified sewage passes through and creates a nuisance.

I think that what Sir Robert states is, in a very great measure, borne out by the experiments demonstrated by the bottles which were produced before the Committee. Where there is too rapid filtration, the purification is not so complete. Mr. Hickson next refers to the opinion of Mr. Santo Crimp, in a recent work on sewage disposition. I may say I have known Mr. Santo Crimp for years. He was surveyor to the Wimbledon Local Board of Health, and their sewage works are described in my report. At Wimbledon, they first of all had intermittent downward filtration. That system created a great nuisance and it had to be abolished and precipitation adopted in its place. They have now precipitation and irrigation. There are several institutions abutting upon the sewage farm, and there is no nuisance, but the conditions are very different now from what they were a few years ago. I may also draw the attention of the Committee to what Mr. Santo Crimp has said with regard to the International system. He says:—

> I have found magnetic feris-carbon and ferozone the best deodorant of sewage, when used as a precipitant, that I have used. The polarite filter does its work very well indeed, and the effluent is always satisfactory.

This

G. H. Stayton, Esq., M.I.C.E. 8 Sept., 1892.

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This was in December, 1888. Dr. Alfred Carpenter has given his views, based on the experience of the Beddington sewage farm. I would remind the Committee that this is a farm established at an enormous outlay—I think £200,000, and that only the sewage of about 140 persons per acre is utilised by broad irrigation, and there is no underground drainage at all. The difference between broad irrigation and filtration is very marked. Broad irrigation, which is the one which is so successfully adopted, only allows the water to flow over the surface, so that it soaks in, and scarcely any effluent runs off at all. As Sir Robert Rawlinson says, the soil and the sun do the work of purification. There is no swamping whatever. Dr. Carpenter, who is a well-known sanitary authority, has submitted his views as mentioned in Mr. Hickson's report; but on the other hand, at the conference of the Society of Arts, at which I was present, Dr. Dupré, a Fellow of the Royal Society, made this statement, and I may say this gentleman lived within a very short distance of the farm, and used to go through it every day:

> He passed the sewage farm at Croydon twice every day, and although during the greater part of the year it was not a nuisance, it was distinctly a nuisance on a calm summer day. If that were so, a London sewage farm of the area proposed would simply be a terrific nuisance. With regard to a sewage farm at Leicester where irrigation is practised, he might say that he had recently seen that, &c.

At this same meeting Sir Robert Rawlinson was advocating that a sewage farm should be established for London, of 50,000 acres in extent—in other words the same provision of 100 persons only per acre. I pass by the report of the Judges of the Royal Agricultural Society, which is a matter of ancient history, bearing date 1879, and I come to the remarks of Mr. Mansergh who has prepared a scheme for Melbourne. Mr. Mansergh says, practically, that he thoroughly believes in land sewage farming, and he has in his report on the city of Melbourne sewerage, adopted the same principle. I perfectly agree that he has said that; but he has always contended that broad irrigation, that is, a moderate quantity of sewage per acre, is the best if you can get the land. That is on the recognised principle of 100 persons per acre. He has carried that out in Melbourne, inasmuch as his scheme provides for a sewage farm of no less than 5,350 acres. That, of course, is an enormous extent. There it will only be a case of just damping the surface, as it were, and so getting perfect purification. As to Mr. Hickson's last report, dated 19 August, I have only to say this: that the figures he has put there under the head of A with regard to the £40,000, are of course obviously wrong. When I named £40,000 as the cost of the International purification works it referred, as stated in the evidence, to the cost of the complete scheme—that was for a population of 48,000 persons. I say now that instead of the cost amounting to £103,756 it would only amount to £70,714. With regard to the complete scheme, under the letter C, for 48,000 inhabitants, I say that instead of it being £138,609 as stated by him, it would be £132,317. I have already stated that in another place. That entirely scatters to the wind the credit balances for the Departmental scheme as stated by him. I do not think that his report calls for any further comment. I should like, however, to say one or two words with regard to Mr. Hickson's evidence on Tuesday last. He stated that sewage farming never had to be given up in any part of the world. That is so. But irrigation or filtration only, has had to be supplemented by precipitation and filtration in numerous instances. I notice that in his evidence he frequently refers to books. I go distinctly beyond that stage in the opinion I have expressed, and submit that some weight should be extended to a practical knowledge of all the circumstances, which I have of the different sewage systems mentioned in this report and otherwise. In confirmation of that view I also submit various opinions of sanitary men. These opinions show clearly that some of the views he has quoted are now modified to a considerable extent, and that their recommendations in all the cases referred to only the sewage of from 100 to 200 persons per acre being applied to irrigation. I would like to remind the Committee that the International system was only brought out about the time I was preparing the Western Suburbs Sewerage Scheme. It was not invented at all, until after the report of Lord Bramwell's Royal Commission, mentioned by Mr. Hickson. During the first two years they had naturally a very up-hill work to perform to demonstrate the efficacy of that system; but as will be seen by the evidence I have given the Committee, it is now going ahead very fast, and amongst its latest supporters are such men as Mr. Baldwin Nathan, Mr. Mansergh, Mr. Lemon, Professor Robinson, and others of eminence. All this has occurred recently, which shows clearly what they think of its progress, and of the headway it is making. The Adelaide sewage farm has been referred to by some of the witnesses. I would remind the Committee that there the sewage of not exceeding 200 persons per acre has been provided for. They have a farm, I think, of 500 acres, but in addition to that—that rate being rather above the 100—a filtration area is provided as a safety valve. Operations are carried out there, not only of grazing, but of growing crops; and after ten years working, their last year's return showed an absolute loss of £583 on the year's working. They seem to have fallen off again, because when I presented the report on the Western Suburbs Scheme they were paying their way. I am told by a gentleman who recently visited that farm, that they are getting somewhat uneasy about the condition of their filtration beds. They are becoming clogged, and the effluent which passes out from them is by no means satisfactory. That is the kind of thing which will happen at Webb's Grant unless very great precautions are taken. But it surely will happen if the areas are flooded with an undue amount of sewage. The sewage farm at Dudley was referred to by Mr. Davies in question 302. Mr. Davis was asked as to the bed of the sewage farm at Dudley, and he said:—

> It was the natural earth, but still it was similar in its composition. It was very sandy, and before it was treated with sewage it was scarcely capable of yielding any vegetable life whatever.

I have ascertained within the last day or two, from the proceedings of the Institution of Civil Engineers, that the soil there is poor and sandy—that it is absolutely barren. The corporation of Dudley have arranged for the use of no less than 5,000 acres, the population of the town being 46,000 persons. At the present time they are only using 722 acres. That is for the sewage of about sixty persons only per acre. These works cost complete, £55,000. Now, here is an important point. Their engineer says that the sewage at Dudley is applied intermittently and in a sparing manner. The consequence is that they have no effluent whatever to deal with. The earth swallows up the whole of the liquid sewage. That is one of the latest and one of the most perfect instances of successful broad irrigation which I could possibly bring under the notice of the Committee. Mr. Smail mentioned in his evidence that he had calculated that the maximum quantity of sewage, if spread over the whole of the upper area, coloured green on the plan, from the present population, would not be more than one-fifth of a gallon per yard per day. I would point out, however, that during the maximum period of sewage flow of six hours per day, coupled with wet weather, as foreshadowed in the report, instead of there being one-fifth of a gallon per square yard per hour,

hour, there would be three-quarters of a gallon per square yard. The maximum dry-weather flow would be one-fifth of a gallon per square yard, whereas the other would be three-quarters of a gallon. That is a very material difference, and it is altogether too much. It would give the ground no time whatever for restoring its purification qualities, and in a very short time it would get sour. Sewage farming, to secure satisfactory sanitary conditions, must be specially effective, particularly in a hot place like Parramatta. I do not like the idea of crude sewage, without deodorisation, being poured over such land in such quantities. The Committee were told on Tuesday by the superintendent of the Webb's Grant farm that on some days the smells were worse than on others. That is a very important matter, and it shows unquestionably there are smells at that farm. And if there are smells at this early stage, with only the sewage of 30,000 or 40,000 people draining to it, what will it be when the whole of the suburbs are brought into operation? I consider that to put the sewage of the present population on to the green area on the plan is at least five or six times too much for so slow a process of purification as was demonstrated to the Committee. I have only one or two other remarks to make. I have already mentioned in my report what Sir Robert Rawlinson has said. I have also called attention to the fact mentioned in my 1891 report that there were some thirty or more places in England where irrigation has been in use for a number of years. That is about the whole number of sewage farms proper where broad irrigation is carried out in England, out of hundreds of other systems. The tendency, as I have already stated, is unquestionably to adopt precipitation and filtration. The Croydon sewage farm, as I have already mentioned, only takes the sewage of 140 persons per acre. The Edmonton farm takes the sewage of 200 persons per acre. Berlin has been referred to in Mr. Hickson's report, and I would like to draw the attention of the Committee to this fact, that the total area of all the farms has now reached 16,477 acres. That is as nearly as possible 100 persons per acre. With regard to the Birmingham farm, I would call the attention of the Committee to this one point, that the annual loss on the working of that farm—that is, the disposal of the sewage, apart from sinking fund and interest on outlay—is £14,000 a year. They are content to pay it. There the sewage of 500 persons per acre is treated, but that is after precipitation, and it is also in view of the fact that there are an enormous number of privies still in the city, from which nightsoil is separately removed, and does not go on to the sewage farm. Going back for one moment to the question of sewage sludge, which was referred to by Mr. Hickson, I may say this: that in the proposal which was made to the London County Council, to treat the sewage of London by the International system, it was stated that the cost of treating the sewage of 150,000,000 gallons per day, and of dealing with 4,000 tons of sewage sludge per day—that the cost of the presses delivered and fixed, including everything complete, would be £40,000; and they undertook that the cost, including wear and tear, filtering, and pressing the dry sludge, would be only 2s. 6d. per ton of cake, and that this 4,000 tons of wet sludge would be reduced to 900 tons per day. I have in another report shown that this enormous bulk was considered too much to treat, and that they found it cheaper, before this proposal was made, to have steamships to take the whole of it out to sea. Having ordered these steamships, each of which I think cost £8,000, the London County Council were not in a position to entertain this proposal at that time. I do not know whether the Committee would like to be told that in addition to the names I have mentioned, given in my report and evidence, the International system has received the approval of some of the leading men in England. Mr. Candy's circular says this:—"That the sludge deposited in the city tanks, having been deodorised by ferozone, is completely inoffensive, unlike that produced by lime and other processes. The quantity too is less, being only about one-half that produced by the lime process. Hence it is richer in manurial value, and requires less labour and machinery to treat it." I think I have nothing more to say than that I am perfectly clear in my views. I fully realise the importance of recommending a scheme which is counter to the Departmental one, but I feel sure that if the Government scheme is carried out in the manner now proposed there will be failure; there will be trouble, and there will be law proceedings. If broad irrigation, pure and simple, is required for Parramatta—if it is really wished for—I submit that inquiry should be made to see whether 400 or 500 acres of suitable land could not be obtained in the vicinity of the borough on the other side. The sewage could be pumped up, and then be distributed on the strict principles of broad irrigation. If that were done, there could be no possibility of a nuisance whatever; but whether that is practicable at a reasonable cost, I am not in a position to say. That is the only alternative I could in the least foreshadow to the proposal I have already submitted to the Committee, and which I strongly recommend.

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1981. Then you believe that if the farm as proposed by the Department is established at Parramatta, it will, unless preceded by precipitation, become a nuisance? I say distinctly and emphatically, that it is not in accord with the recognised and well-known principles which have been established by experience.

1982. If you were now dealing with the sewage from the western suburbs, instead of putting crude sewage on to Webb's Grant, you would use precipitation to some extent first? Certainly, to absolutely ensure efficiency.

1983. You think the sewage of Parramatta can be dealt with in its own boundary by the precipitation process, without any nuisance to Parramatta or the surrounding district? I do, clearly.

1984. You think the first cost for dealing with it within its own boundary by the International precipitation system, will bring the scheme up to something like £70,714? For the present requirements.

1985. And that when the additional area is brought in it will bring it up to £132,317? Yes.

1986. Supposing the sewage is treated by precipitation within the boundary of Parramatta, would it be necessary to keep the area for a sewage farm at all? Not for the purpose of sewage purification.

1987. Then that may be disposed of for some other purpose, or sold, because it would not be required even when the sewage system of Parramatta were extended to its utmost? That is so, and in that case it would form an asset.

1988. *Mr. Humphery.*] Do you say that your estimate of £70,714 would deal with the area for which the Government provides, at a cost of £85,426? No. The Government scheme is £75,926.

1989. But you say, including precipitation tanks, it will be £85,000? That is so—that is that it would be £15,000 cheaper than the Government scheme, if the precipitation tanks were provided.

1990. You say that the Government scheme will not be complete without precipitation tanks? I say so clearly.

1991. Do you further say that your estimate of £132,317 will be nearly £20,000 less than the Government scheme, with precipitation tanks added, providing for 48,000 inhabitants? That is so.

1992. And you also say that that scheme will be incomplete without precipitation tanks? I do.

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1993. *Mr. Hoskins.*] In the event of its being decided to establish precipitation tanks and the arrangements required to carry out the system of sewage by precipitation, how much land do you think would be required? I have estimated for 2 acres.

1993½. *Dr. Garran.*] You examined the ground by sinking certain pits? Yes.

1994. And you have brought some of the samples of earth you took out? Yes.

1995. I judge there is only about 1 foot of loose soil on the surface? There is a foot of lighter soil.

1996. And the specimen you gave us, even of lighter soil, forms into a hard lump? Yes; it is that soil of which we see a good deal in this country, which becomes very hard in dry weather.

1997. Would that top foot of sand be very good for purification or filtration? It would be if it were kept open and loose.

1998. Supposing it was thoroughly ploughed and kept open, and the subsoil were drained every 20 feet, what would happen, if we distributed by the broad irrigation system, the sewage on the surface of that 25 acres;—what would become of the liquid? Providing that not more than the sewage of 100 to 130 persons per acre were put upon it, and spread over the whole gradually, it would soak into the earth, and the moisture—that is, the water which found its way through—would eventually be carried off by the subsoil drainage; but if it were put on at the rate of 600 or 700 persons per acre it could not pass through, and it would have to run off without proper purification.

1999. You would thus distribute a lot of foul liquid on the surface of this ground? Yes.

2000. It will pass through this first foot of comparatively loose and open soil? Yes.

2001. It would then go on to the hard clay? It is not absolutely hard at first, as I stated in my report, because at a depth of 2 or 3 feet down water trickled into the bottom of the shaft.

2002. It comes on to this more clayey soil? Yes.

2003. Which is itself on a slope? Yes.

2004. Would not the effect be for the liquid to go down on the surface of that harder clear clay to the nearest drain? Yes; but there is a considerable area which is practically level before the slope begins.

2005. And you think it would soak down into this reddish stuff before it would make to the nearest drain? Yes; the drains would be at a depth of 5 or 6 feet, and it is a positive fact that they would carry off some moisture from the ground.

2006. But would it not be partly due to the fact that the water goes down the slope of this clayey stuff and makes to the nearest drain? That is the natural tendency.

2007. Then we should not get the benefit of filtration through really more than 1 foot in that case? I think you would, because the change is not so sudden as all that. I think you would get an excellent effluent from the first 18 inches or 2 feet there with the subsoil drainage.

2008. But we have been told we want at least 4 feet of really first-class draining matter to make a thorough filtering-bed? That is when you come to provide for a larger number of persons per acre.

2009. Still, as the matter stands now, the top foot is not first-class filtering-soil? Not as it stands now, but I think it could be made fairly so.

2010. Below that it is still less desirable for filtering purposes? No. I regard that material as very fair filtration subsoil for a moderate amount of sewage.

2011. Even without its being broken up? The surface must be broken up, otherwise it would certainly not take a fair amount of sewage and give complete purification.

2012. Supposing the upper dry part of the farm is treated as proposed, with drains, and all the rest is built up;—do you consider then that it would be safe to put on the sewage of more than 200 persons per acre, taking that number all round as an average? Not without precipitation—not the crude sewage of 200 persons.

2013. Then, for the size of that farm, precipitation is an absolute adjunct? I say so distinctly. The more I consider it, the more I can see the necessity for it.

2014. The population of Parramatta is 12,000, and if we only take 200 to the acre, 60 acres will be required. The whole piece is only 62 acres? Yes; but this scheme foreshadows a population of 48,000.

2015. As a mere sewage farm it is only just equal to the requirements of the present population, if 200 persons to the acre is given as a maximum? Yes; I think it might possibly run to 200 persons per acre, seeing the difference between the climate here and that in England.

2016. I understood you to say that if the International system had been as advanced when you made your recommendations with regard to Webb's Grant as it is now, you would have recommended it then? I am clearly of that opinion.

2017. Can not we still apply that system on this side of Cook's River before the effluent goes on to the farm? I think it could be done.

2018. So that even if there should be a nuisance at Webb's Grant we have this system to fall back upon? Yes.

2019. So that there is no fear of our having gone into a wrong system with regard to Webb's Grant? No. My only object in mentioning that was that it should not be lost sight of, and that too great an expenditure in the way of reclamation or other work at the west end need not necessarily be undertaken.

2020. In the absence of any such reclamation that recommendation will be absolutely necessary? Yes.

2021. Then the choice will be between making this reclamation and introducing precipitation? Yes; reclamation and precipitation formed part of my scheme. Precipitation was put last.

2022. With regard to the drainage of the upper portion—the portion coloured green on the plan—it would not do to take the pipes to drain that straight to the river—the effluent would not be clear enough? The effluent would be clear enough if not too much sewage were put upon it.

2023. But we must rigorously limit the quantity of sewage in order to make it safe to pour that effluent into the river? Clearly.

2024. And if we do not pour it into the river we must pour it on to the lower part of the land? Yes.

2025. That could be done, I suppose? There might be a somewhat difficult question as to carrying off that effluent water from the ground; but that is only a matter of detail. It could be done.

2026. So that if we overcharge the portion coloured green on the plan, we must take care to pour the effluent on to the bank? But it would be extremely unwise to overcharge the green area, because it would make the land sour.

2027. The scheme of the Government provides for purification first, and filtration afterwards? No.

2028. I understood, Mr. Hickson, that it was so? No.

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2029. He proposed to purify on the upper levels and filter through the lower? No; the complete scheme for the 62 acres is as if there were no difference between existing and artificial lines.
2030. With regard to the cost, I understand you to say that, in addition to the reticulation, by the time the sewage is all brought down to the pumping-station, you will only require £20,000 more for the present population? Not for the present population—for the present requirements. I will put it in this way, that if the International system is adopted within the municipal boundary the cost will be £70,000. If the Departmental scheme is carried out at Elizabeth Farm, plus precipitation, the cost will be £85,000.
2031. I thought you said your expenditure, in addition to all the reticulation, would be that? I think that the £20,000 relates to the complete scheme—the provision for 48,000 people.
2032. Have you any idea what all the pumping and International apparatus would cost at the pumping-station? Yes; it is all included in the Report.
2033. Assuming that the reticulation were complete and brought the stuff to that point, how much would it be? The difference is this: between the £54,700 referred to as works above the pumping-station and £67,300, the first total. The pumps, boiler-house, residence, fencing, settling-tanks, filtering-beds, machinery, land—all come between the £54,700 and £67,300.
2034. Mr. Hickson, if I understood him aright, said that the first cost of either of the two schemes would be very much alike for the present population; but that the cost as the population increased would be greater under your scheme than under that scheme? Yes.
2035. Do you agree with that? No. The figures are much to the contrary.
2036. The cost, of course, of your scheme will increase with the increased quantity of sewage you have to deal with, because you have to pump it up, and you require the ferozone? It would increase gradually from £70,000 to £132,000. The other would increase from £85,000 to £151,000, if made efficient.
2037. You distinctly maintain that your first cost is less than the others, and that your increase will be less per annum than the others? Yes, and the working cost will be less.
2038. So that in every one of the three points your estimate is below the estimate of the other scheme? Yes.
2039. You referred to Mr. Mansergh as having given a strong recommendation in favour of the International system. You are aware that he has recommended two sewage farms for Melbourne? Yes.
2040. He has not recommended the International scheme? No; but he made that recommendation after visiting Melbourne in 1889, and at that time the International system had not come to the front so much as it has now. This year he recommended the International system for Guildford.
2041. Has he sent out to Melbourne to say that with his larger knowledge he would advise them to apply the International system? I should not think he could possibly do that, because the contracts have been let for the outfall sewers, and arrangements have been made for the acquisition of the land; besides there could be no objection to the Melbourne system. It is laid down on perfectly scientific sanitary principles. They only provide for the sewage of 100 persons per acre.
2042. And you do not think there is any necessity for super-adding the cost of the International system to that? No.
2043. His recommendation for Melbourne is no justification, in your mind, of the sewage farm here? Not in the least.
2044. Do you think there is any risk of this farm, if built up of soft stuff, slipping into the river because of the wet constantly oozing through? No.
2045. *Mr. Dawson.*] You say you are satisfied that the Webb's Grant scheme can be improved upon? I have not had the opportunity of seeing it for three years, but after the evidence which was given here on Tuesday it struck me that there must be some ground for complaint and dissatisfaction. There is a great evil in rapid filtration through the sand.
2046. In the middle of winter you ought not to be able to smell these places a quarter of a mile off? No.
2047. *Mr. Neild.*] Do you know anything of the nature of the soil on the proposed farm at Melbourne? Not personally.
2048. Do you know in what district it is situated? At Werribee and Mordialloc. I believe that at Werribee there are 2,000 acres, and the balance at Mordialloc.
2049. How many holes did you sink on the portion of the ground coloured green on the plan? Two or three.
2050. To what depth? About 5 feet.
2051. Did you meet with the same material all through? It varied. There was a slight band of what you might term ironstone gravel in one case, but most of the other was marl, and then marly clay and a little thin layer of clay.
2052. Would not such a small bed of ironstone gravel as that to which you refer act directly as a means for the sewage to travel along it rather than pass again into the marl? Yes; but it was some distance below the surface.
2053. Did you find any alteration of material, as you sank? It was practically the same. It was plastic marly clay, and moist.
2054. Did the moisture increase towards the bottom? Yes.
2055. You must have been down to something like high-water level? No, because the surface there was 7 feet above high-water level.
2056. Do you think the discharge of sewage matter upon this marly soil would have the effect of consolidating it and rendering it less fit to act as a filter? No, unless it were overcharged. I think, with the surface loosened as stated, it would fairly take the sewage of from 100 to 130 persons per acre.
2057. But not something like seven or eight times the number? No; that is totally out of the question. I should like it to be understood that at the commencement of operations, or perhaps for the first two or three years, things would go on fairly well, but afterwards there would certainly be inefficiency.
2058. If the discharge of sewage matter on the ground is excessive, there would be no opportunity for the ground to purify? No.
2059. You said it would become sour? Yes.
2060. By that I suppose you mean it would become foul? Yes. It would become congested, as it were.
2061. Then it would be certain to give off noxious vapours? Yes.
2062. And would become a source of danger to the locality? Yes.
2063. You heard the evidence given on Tuesday to the effect that it was proposed to put in drains about 20 feet apart? Yes.

G. H. Stayton, Esq., M.I.C.E. 8 Sept., 1892.

2064. Do you think they would be near enough together? Yes; that is the usual distance apart for sub-soil drainage.
2065. In ground as heavy as this? Yes.
2066. Would not some of the samples you have produced make fair puddle? No. I do not think they are sufficiently tough for that.
2067. Would they make bricks? They look like what is called brick-earth in England.
2068. Supposing the land is not to be utilised for the purpose of a sewage farm, the portion coloured green on the plan might be utilised as a brick-field? It might, but perhaps that is quite another question.
2069. Supposing the portion coloured green on the plan were not trenched, would the sewage matter filter through it as quickly as it is alleged to have filtered through the soil placed in the bottle filter which was described last Tuesday? If the surface were not trenched and it was in a hard condition, of course the sewage would not enter the ground at all—it would flow over the surface.
2070. In its present condition it is hard? It was when I saw it.
2071. As you based certain calculations upon the supposition that the sewage would take six times as long to pass through that soil as through the sand at Webb's grant, the calculation would be entirely dependent upon the suitable preparation of the soil? Yes; it must be prepared.
2072. In its present condition it would not pass through in six times the length of time it passes through sand? No; because it is obvious that when that experiment was made it had a free outlet underneath.
2073. You will remember me asking the question as to whether, in making the rough filter, the soil was rammed? Yes. They stated that the bottom was placed over a bucket. Obviously that is different to what it would be for filtering through soil in its natural condition underneath.
2074. With regard to the risk to health in the matter of the dissemination of fever or pestilential germs of any kind—would the International system be more calculated to conserve the health of the people in connection with the stoppage of epidemics, than the broad system of irrigation? Undoutedly; because the sewage would be deodorised while it was fresh. All the heavier matters would be precipitated to the bottom of the tank.
2075. Are you in a position to give evidence as to the chemical effect of polarite upon fever germs? I have some evidence upon that point, but it is more a question for medical men.
2076. You do not know anything about it of your personal knowledge, or as the result of reading? Professor Frankland, one of Her Majesty's Commissioners to inquire into Rivers Pollution, in speaking of effluent after the sewage had been deodorised by ferozone and filtered through polarite said:

> The effluent is not only clear but inoffensive. It is of course not fit for drinking purposes, but it may be admitted in large volumes into running water without creating any nuisance.

2077. Do you think it would be a desirable state of things, in the event of there being a pestilential attack of any disease in this city, such as cholera, or small-pox, to allow the works at Webb's Grant to proceed just as they are doing at present? I am afraid I can scarcely answer that question off-hand. I should require to investigate matters first.
2078. However, you are of opinion that the risk would be infinitely less to use the filtration and precipitation process known as the International,—it would be infinitely safer as regards the public health to adopt that system in the vicinity of human dwellings than the broad sewerage system which is proposed in the scheme now before the Committee? Certainly less than the broad irrigation scheme under those conditions.
2079. Under which conditions? The conditions relating to the scheme before the Committee. What I mean is that broad irrigation with the sewage of 100 persons per acre and suitable soil is good, but with the sewage of 800 persons per acre and unsuitable soil it is to be condemned.
2080. But even with 100 persons to the acre, precipitation and filtration would be more likely to intercept the dissemination of fever germs, would it not? Possibly so.
2081. You were speaking in favour of dealing with the sewage of 100 persons to the acre; but I gather from a reply you made just now that even those conditions would not be as likely to prevent the dissemination of fever germs as would the filtration and precipitation system, where chemical matters are applied to the sewage before any distribution takes place? In the vicinity of a town it certainly would be advantageous from a sanitary point of view, but where broad irrigation could be effectually carried on several miles away, if all other circumstances are favourable, that system might safely be adopted.
2082. You suggested the possibility of a large area being obtained on the north side of the Parramatta River;—are you acquainted with the country on the north side? Not sufficiently.
2083. Then you are not aware whether there is level ground or not? I should not so much mind it being level ground.
2084. Supposing the declivities are very steep? That is quite a matter of detail, because sewage farms are in existence in some places where the slope is very considerable.
2085. But with a town lying as low as Parramatta, that would of course necessitate extra pumping? Clearly.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and further examined:—

J. Barling, Esq. 8 Sept., 1892.

2086. *Chairman.*] The Committee asked you certain questions with reference to the indebtedness of various municipalities, and you promised to obtain some further information? Yes, I was asked yesterday several questions in connection with the action of the Department, in not taking more definite steps in insisting upon the municipalities paying up the amount of their indebtedness. I have not had much time since yesterday to look up all the papers, but I have looked up sufficient to show the action of the Department. The first minute I have on the subject is signed by Mr. John Sutherland, late Secretary for Public Works. It is dated January 20th, 1888, and it is brought about in this way. Mr. William Clarke, who was then Member for Orange, brought under the attention of the Minister the large cost of the Bathurst waterworks. He pointed out in his minute that the Bathurst people could not possibly pay the amount which had been spent, and he suggested that a considerable abatement should be made in the capital cost. Mr. Sutherland, upon that, stated that he would bring the whole question before the Cabinet. It was pointed out to Mr. Sutherland that if Bathurst were dealt with in this way it would be necessary to deal similarly with the other country towns for which water supplies had been provided. Some time after that the matter was again brought before the Minister, and he pointed out that he had not had an opportunity of bringing it before the Cabinet, but that he was ready to do so. The Auditor-General had

had written a great many letters to us, pointing out the default of the municipalities in not paying up their contributions, and Mr. Sutherland then wrote this minute in reply to the Auditor-General, dated the 9th October, 1888: J. Barling, Esq. 8 Sept., 1892.

I regret to say that owing to the very short recess, and the great press of business before the Cabinet, I have not yet had an opportunity of dealing with this very important subject, which, in fact, involved the Department in a very far-reaching policy. The whole case in all its bearings is prepared, and I hope to be able in a very short time to get it settled.

This minute was forwarded to the Auditor-General to enable him to see how the matter stood, and subsequently the Auditor-General wrote again:

Re-submitted for information as to whether the question therein raised has been yet settled.

That was dated 14th March, 1889. Mr. Bruce Smith subsequently came into office, and he wrote as follows:—

The Auditor-General may be informed that I shall submit this matter to the Cabinet at my earliest convenience.

The matter, I think, was subsequently brought before the Cabinet, and then a determination was arrived at to introduce a Bill with the sixty years currency. The Auditor-General, however, again wrote on the matter; and Mr. Bruce Smith, on the 15th June, wrote another minute in which he said that the matter could not be definitely dealt with until the question had been sifted in Cabinet, and that it would be submitted at an early date. This was in 1889. In March, 1890, we had some correspondence with the Treasury on the subject, and I may say that correspondence with the Treasury has continued up to the present time. I was absent from Sydney, I think, on one occasion, and during my absence something was done in the matter; but the full information was not sent to the Treasury, and I consulted with the Minister on the subject, and I find in the books there is a minute of mine dated March, 1890:

In forwarding this letter, which was sent to the Treasury during my absence, I have to point out that none of the towns, excepting Deniliquin, have been put in a position to undertake the repayment, as, in a very early stage of the matter, it was seen that they were not able to do so under the terms at present laid down by the Act. It has now been decided to extend the period in which the loan should be repaid to sixty years, and the amount of interest due to date will be added to the amount of the principal. A Bill is now in course of preparation to this effect, and will be introduced early next Session. Until this becomes law, the Minister does not think anything can be done in the matter."

I find that I have another minute of Mr. Bruce Smith, but though in his own handwriting, it is not signed, in which he refers to his intention of introducing the Bill. Instructions were issued to prepare the Bill, and it was prepared, but changes in the Government again took place, and it was also found necessary to add other provisions to the Bill from time to time to those already referred to, and so from one cause or another the matter remains in *statu quo*. Mr. Neild, yesterday, asked whether it would not be a good thing to call upon the Councils to pay into the Treasury the rates which they had collected. It would, I think, be rather a dangerous thing to do that. It would be calling upon them to pay in moneys which we had no control over whatever, and if once that system came into force the municipalities would have no interest whatever in raising the rates which they ought to raise. I mentioned yesterday, that Mr. Secretary Young gave instructions to the Department to prepare the figures under the sixty years system, showing the annual amount we should collect, but that will be seen to be a very different thing from the proposal to get the rates as they come in, because that would be collecting the rates under some well-defined system. There is one other thing I should like to mention. I was yesterday asked a question as to to the propriety of extending the term of repayment to 100 years, and I pointed out that it would be perfectly safe in regard to some of the works, for some parts will practically last for ever, and others will last for 100 years. I mentioned the instance of the engines at Albury, Bathurst, Goulburn, and Wagga, and I carefully abstained from mentioning the engines of any other towns, because they stand in an entirely different category. I think the Chairman rather doubted the accuracy of what I stated, so I took care to-day to have the matter looked up, and I think the Committee will be pleased to know the result of the inquiries made. The object is to show that the engines for the four towns mentioned, although they cost a large sum of money, are really worth what was given for them, simply because of their durability. I have been supplied with the following notes in regard to the matter:—

Re compound, vertical, condensing beam engines, as used at the Albury, Bathurst, Goulburn, and Wagga Water Works.

Average cost of engines and boilers	£6,409
Average cost of engine and boiler-house	£5,680

Horizontal, duplex, non-condensing engines as used at the Bourke, Balranald, Wentworth, and Lismore Waterworks:—

Average cost of engines and boilers	£915
Average cost of engine and boiler-house, &c.	£1,058

The latter are, however, of much smaller power and capacity than the former.

Advantages of the former type—Durability.

Humber, on water supply, says (p. 165):—"Beam engines and horizontal engines may be thus compared: In the former the piston, cylinders, and pump barrels wear equally all round; whereas in the latter the wear is greatest on the lower side of the parts named, and, as a consequence, the cylinders sooner require re-boring, and the packings wear unequally. . . . . On the other hand the foundations that will suffice for a horizontal engine are far less costly than those required for a beam engine of corresponding power."

In the Kent waterworks, London, a pair of vertical beam engines, erected by Boulton and Watt about 1812, are still at work.

In the East London waterworks, a pair of vertical engines erected about 1808, were doing good duty in 1888.

I also saw Mr. Darley on the matter, and he informed me that when he was in England some time ago, he ascertained that in the year 1783, James Watt erected a pumping engine in the works, I think, of Messrs. Truman, Hanbury, and Co., London, and in 1883 the same firm, or their successors, were asked to tender for the erection of an engine to take the place of the original engine which was still at work. Then I was asked some questions about the Parramatta sewerage works, but I find I have no more information to give than I have already supplied. That information showed clearly enough that a rate of 11d. in the £ would pay principal and interest and working expenses; and in reckoning the working expenses nothing was allowed whatever for the sewage farm bringing in any revenue. At Botany the sewage farm now pays half its cost, and Mr. Smail hopes that in a short time it will pay the whole of the expenses. If the same result occurs in regard to the Parramatta sewerage works, it will be seen that even a better statement can be given than that which I supplied to the Committee.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

Sewerage Works for Parramatta.

APPENDIX.

A.

[To Evidence of R. R. P. Hickson, Esq., M. Inst. C.E.]

ANALYSIS OF EFFLUENT FROM SEWAGE FARM, BOTANY.

Board of Health Office, 127, Macquarie-street, Sydney, 17 June, 1892.

Sir,

I have the honor to enclose you copy certificate of analysis of two samples of effluent from the Sewage Farm at Botany, forwarded by the manager of the farm on the 3rd instant.

I have, &c.,
EDMUND SAGER,
Secretary.

The Secretary, Water Supply and Sewerage Board, Sydney.

GOVERNMENT LABORATORY, SYDNEY.

Results of Analysis of Potable and Polluted Waters.

Mark or number of sample.	Description	Expressed in grains per gallon.				Expressed in parts per million.				Examination for organisms.	Appearance in the standard 2-foot tube.	Poisonous metals.
		Total solid residue dried at 220°.	Chlorine as chlorides.	Nitrogen as nitrates and nitrites.	Phosphates from animal impurity.	Free ammonia.	Albuminoid ammonia.	Oxygen absorbed in 15 min.	Oxygen absorbed in 3 hours.			
	Effluent from Sewage Farm.											
...	No. 1	42·28	9·20	Traces	Traces	10·00	·35	2·89	4·00	Present	Light brown	None.
..	No. 2	35·56	9·80	do	do	20·00	·55	7·20	14·00	do	Brown	do

General observation on the character of the above water :—

These effluents may be discharged into rivers without creating any nuisance.
There was no unpleasant odour in either of the samples.

WILLIAM M. HAMLET,
Government Analyst.

14th June, 1892.

A1.

PARRAMATTA SEWERAGE SCHEME.

REPORT BY R. R. P. HICKSON, ESQ., M. INST. C.E., ENGINEER-IN-CHIEF FOR SEWERAGE, ON MR. G. H. STAYTON'S REPORT.

To the Chairman of the Parliamentary Standing Committee on Public Works,—

Sir,

As this question has now assumed rather an important aspect, I think it advisable to commit to writing any remarks that I consider it necessary to make in reply to the report furnished by Mr. G. H. Stayton, dated August 9th.

Before, however, dealing with the report, I should like to draw the attention of the Committee to two statements made by Mr. Stayton in his first examination.

In reply to question 781, he says, "it strikes me it is costly," and goes on by way of illustrations to mention the town of Sutton in England with a somewhat similar population to Parramatta, where "the whole system including precipitation tanks and filtration area was to cost only £20,000." I confess I was somewhat taken aback when I heard this statement made, and began to think, was it possible the Department had made some egregious blunder in the scheme submitted? This statement was somewhat further emphasised in his reply to question 792—where he says, "it merely included main sewers, branch sewers, and works for the reception and treatment of sewage, also for the sludge filter presses and duplicate presses, pumping engines, and so forth." In fact everything but storm-water channels. My mind was somewhat relieved, however, when further on in reply to questions 850 and 851, he says the £20,000 only refers to the outfall works.

I would not have drawn attention to this if it had not been for the fact that Mr. Stayton in his report tries to make capital out of an apparent discrepancy in the evidence given by Mr. Davis and myself—I say apparent, as I will be able to show further on, that there is no discrepancy whatsoever in our statements.

For the information of the Committee, I submit herewith a relative statement of the cost of various sewerage works.

	£	
Parramatta, now under consideration :—		
Cost of scheme for present requirements.....	4·6	per head.
When completed	2·7	,,
Manly, designed by Mr. Stayton :—		
Present	11·3	,,
Completed	1·8	,,
North Shore, designed by Mr. Stayton :—		
Present	8·8	,,
Completed	3·5	,,
Western Suburbs, designed by Mr. Stayton :—		
Present	11·8	,,
Completed	3·8	,,
Adelaide (on estimated future population)	3·0	,,
Melbourne :—		
Present	13·5	,,
Completed	4·1	,,

It

It will be thus seen that Parramatta is not costly, and bears a very favourable comparison to other colonial sewerage schemes.

The other statement to which I would wish to draw attention, is that made in reply to queries 820 and 821, where he says he cannot recall a single instance of a sewage farm established on the banks of tidal waters, and made up of sand dredged from below salt water. He must have forgotten, or perhaps was unaware of the fact, probably the latter, as he did not think it necessary to have any trial shaft sunk or levels taken at Botany, that about two-thirds of the land resumed for a sewage farm at Botany on his recommendation is below tidal influence, and will have to be filled up with dredged material from Cook's River.

Further comments on these two statements appear unnecessary.

Speaking generally of his report, the greater portion of it is I find, taken up with adverse comments on a sewage farm which is not yet in existence. As well might he have reported on, say a street which it was proposed to wood-block, on seeing the roadway prepared for the wood-blocking, that the blocking was most unsuitable. If he had carefully read the evidence, or better still, come to me for any information which he required, and which I certainly expected he would have done, he would then have found out that what was to be seen now on the ground was not the sewage farm, but rather the place on which it was proposed to make one, and also that it was intended that this place should be filled up with sand, and made in every respect similar to the Botany Sewage Farm.

His remarks as regards the farm creating a nuisance are most inexplicable, and not in accordance with previous reports of his, nor those of others who have made a life long study of the matter, and to which I will refer further on.

I contend therefore, that his conclusions being based on incorrect assumptions are of no value, and quite misleading.

Dealing now with his report in detail, I have, for convenience of reference, divided it into paragraphs, and reply to them consecutively.

Paragraph 2.—Mr. Stayton states that his "investigation was delayed and rendered more difficult from the fact that no levels had been taken or sections prepared of the intended sewage farm," and expresses the view that this was a "somewhat remarkable omission." In this scheme, where the sewage is to be raised by pumping to the required level, and where conversely the height of the reclamation on the farm can be fixed as required, levels were unnecessary for a preliminary report. That this was so, is instanced by the fact that, before recommending the resumption of a sewage farm for the Western Suburbs Sewerage scheme (a much more important one than this), Mr. Stayton did not deem it necessary to take levels over the area, or to sink any trial-shafts; even in view of the fact that it was a gravitation scheme, while that for Parramatta is a pumping one. Levels have, however, been taken on the Parramatta sewage farm to the end of the delivery main, which will be the highest point on the farm. The areas below highest spring-tide and down to mean low water have been ascertained, and these levels being known, they practically constitute a system of levels covering the whole area, sufficiently near for a preliminary report. Even this information was not obtained on the Botany sewage farm, and still Mr. Stayton was able to make an estimate. The area of the farm—62 acres—given in evidence is that of the land resumed: besides this, the Harbours and Rivers Branch have enclosed some of the land under water level, along the bank of Duck River, so making the extra area to which Mr. Stayton refers, and at the same time giving the farm a deep-water frontage.

Paragraph 3.—Mr. Stayton confuses "highest spring-tide level" with "mean high-water mark," and uses them in this paragraph as convertible terms. As a matter of fact, about 25 acres are above highest spring-tide, 21¾ acres between highest spring-tide and mean high water, and the balance of 17¼ acres below that level.

Paragraph 4.—In preparing the scheme, it was recognised that the higher portions of the farm would require draining and other preparation, and these have been provided for in the Estimates on a design which was submitted to the Committee.

Paragraph 5.—The swampy area below high spring-tide will not be used for a filter; material being deposited on it by sand pumps for that purpose. It is, therefore, quite beside the question, to discuss the suitability of the material as disclosed by the trial-holes put down by Mr. Stayton as to its filtering capacity.

Paragraphs 6 and 7.—Mr. Stayton has evidently confused the present level of the fascine bank with the finished level of reclamation. The latter will be raised, as stated by me, to a sufficient level to give adequate filtration. The present level of the fascine bank is quite immaterial to the question. I may state that an officer of the Harbours and Rivers Branch has been consulted, and he considers it injudicious to raise the fascine banks above their present level, as they would not be sufficiently stable to resist the extra pressure from the increased depth of sand, but that the reclamation must be sloped up and sodded from the banks to the desired level of the farm.

Mr. Stayton is correct in saying that the surface level at the pumping-station is about 9 feet, and the summit level at the farm about 10 feet above datum. The sewage will, however, have to be lifted about 5 feet above this (see answer to question 257); and as the question asked was not in reference to "surfaces," but to "services," Mr. Davis' reply was correct.

Paragraphs 8 and 9.—Mr. Stayton's assumption that the reclamation is to be made from material obtained in the "upper portion of the Parramatta River" is incorrect. The intention is to obtain similar material to that being used at Long Cove and White's Bay reclamations, which consists nearly wholly of sand. It is excellent filtering material, and quite equal, for the purpose required, to the natural soil of Webb's Grant, Botany.

The conditions on the Parramatta sewage farm as to reclamation, level, and general arrangement are similar to those existing on the extension of the Botany sewage farm, resumed by Mr. Stayton's recommendation for the Western Suburbs Sewerage Scheme. A very large portion of the latter is mangrove swamp, covered at high spring tide, and will have to be reclaimed in a manner exactly similar to that intended on the Parramatta farm. In Mr. Stayton's report on the Western Suburbs Sewerage Scheme he states that it will be practicable on the farm to utilise and purify the sewage and rainfall from a population at the rate of 909 persons per acre. Further on he states that he provides in his scheme for 787 persons per acre. It is therefore difficult to see the point of his objection to the allowance of 800 persons per acre fixed on for the Parramatta sewage farm.

With reference to the comparison made by Mr. Davis in his evidence between the disposal of sewage at Birmingham and at Parramatta, and on which Mr. Stayton joins issue with him, no questions were asked as to the nature of the material on the two farms, but only as to the mode of treatment. The treatment at Parramatta is intended to be exactly similar to that proposed by Mr. Stayton at Botany. By this arrangement it will be necessary, as the population gradually increases, to adopt the process of precipitation, the effluent being subjected to aeration and earth filtration (*vide* Stayton's report, page 22). This is a similar course to that adopted at Birmingham, and it was the complete scheme which Mr. Davis evidently had in view in replying to questions 315 and 316.

Paragraph 10.—As pointed out in the reply to paragraph 2, the plan submitted to the Committee shows the areas above and below high-water spring tide, and a system of levels is thus provided sufficiently near for a preliminary estimate of the filling required. In the estimate, £5,950 are provided for levelling, draining, and preparing the land. This is at the rate of £96 per acre for the whole area of 62 acres. In Mr. Stayton's estimate for the Botany farm he allowed £112 per acre for 500 acres. In this, however, was included the cost of large concrete carriers, whereas at Parramatta these are to be of cast-iron pipes of much less capacity. The cost of filling at Botany will also be much greater than at Parramatta, owing to the extent of low land at a distance from water carriage, and the larger proportion of low land requiring filling to the total area treated.

Paragraphs 11 and 12.—As previously stated, the system to be adopted at Parramatta is similar to that already in operation at Botany. This was approved by Mr. Stayton, and was recommended by him in his report on the sewerage of the Western Suburbs. I am well aware that, under certain circumstances, as, for example, when land is not obtainable, the International process may be adopted with advantage. This is the case at North Shore; but, at Parramatta, the additional expense entailed would, in my opinion, be wholly unnecessary.

Paragraph 14.—I believe that, the Committee having visited Parramatta, and bearing in mind the topography of the town, will have little hesitation in at once pronouncing the suggestion as to an "upper level zone" as impracticable.

Paragraph 15.—Mr. Stayton proposes an additional expense of £17,215 for treatment in the sewage disposal works, which, as previously stated, I think, is, under present circumstances, quite unnecessary.

Paragraph 16.—Mr. Stayton's conclusions have, I think, been fully answered in the replies to the various paragraphs of his reports. He seems to have misunderstood the proposals of the Government, and to have based his conclusions on assumptions which are not bourne out by facts.

Paragraph

Paragraph 17.—The following estimates give the probable relative cost of the International system (where the precipitating tanks and filter-beds are situated at Clay Cliff Creek) and of the proposed sewage farm scheme, as well as the estimated working expenses of both schemes.

Cost of Works if International System were adopted for present requirements

	£
Works above pumping-station	54,756
Pumps, boilers, house, &c.	3,525
Filter beds, settling tanks, &c.	9,066
Other works (balance, £16,000)	9,000
One acre of land at pumping-station	150
Total	£76,497

Cost of Works of Proposed Scheme.

	£
Works above pumping-station	54,756
Pumps, boilers, house, &c.	3,525
Farm (land)	5,592
,, (preparing land)	1,400
One acre land, pumping-station	150
Delivery mains	7,095
Other works (balance, £16,000)	3,408
Total	£75,926

Cost of Works if International System were adopted for 32,500 inhabitants.

	£
Works above pumping-station	64,756
Pumps, boilers, house, &c.	7,485
Filter beds, settling tanks, &c.	15,627
One acre of land for pumping-station	150
Other works (balance, £16,000)	9,000
Total	£97,018

Cost of Works of Proposed Scheme under similar circumstances.

	£
Works above pumping-station	64,756
Pumps, boilers, house, &c.	7,485
Farm (land)	5,592
,, (preparing land)	2,400
One acre land for pumping-station	150
Other works (balance, £16,000)	3,408
Delivery main	7,095
Total	£90,886

Cost of Works if International System were adopted for 48,000 inhabitants.

	£
Works above pumping-station	89,609
Pumps, boilers, house, &c.	11,445
Filter beds, settling tanks, &c.	23,327
One acre of land at pumping-station	150
Other work (balance, £16,000)	9,000
Total	£133,531

Cost of Works of Proposed Scheme under similar circumstances.

	£
Works above pumping-station	89,609
Pumps, boilers, house, &c.	11,445
Farm (land)	5,592
,, (preparing land)	2,400
Extra land and preparing same	3,550
One acre of land at pumping-station	150
Delivery mains	14,900
Other works (balance, £16,000)	3,408
Total	£131,054

Comparative Cost of Working Expenses.

International System :—	£	s.	d.
Approximate annual quantity of sludge—1,460 tons at 3/7 = £261 11s. 8d, Ferozone added to Sewage, £304 3s. 4d.	565	15	0
Working Sewage Farm as per estimate	500	0	0
In favor of Sewage Farm	£65	15	0

NOTE.—Basis upon which estimate of working sludge is made :—

		d.
Wages	per ton of pressed sludge...	36·0
Ferozone added to sludge	,, ,, ...	1·0
Coal	,, ,, ...	2·5
Filter-cloths	,, ,, ...	2·5
Oil and Incidentals	,, ,, ...	1·0
Total		3/7

Approximate annual quantity of sludge :—500,000 gallons sewage produce, 4 tons of pressed sludge cakes, therefore 365 × 4 = 1,460 tons per annum.

In

In the amount given by me, £4,268, as the annual working expenses of the scheme under consideration, a sum of £500 is included as the cost of the farm. In this amount no credit is taken for sale of vegetables, &c.

Mr. Smail informs me that the Botany Farm is paying now, after being four years in operation, about half the cost of working expenses, and that before very long it will not only pay the whole, but make a small profit On the other hand I question very much if any profit will be derived from the sale of sludge from the precipitating tanks. The most that could be expected would be that the material might be carted away free of cost.

With reference to this matter, Mr. Mansergh, M. Inst. C.E., a gentleman of some thirty years experience as a sanitary engineer, says :—"Sludge has a certain manurial value, but as it contains when withdrawn from the tanks, quite 90 per cent. of water, it is not worth its carriage in this country (England) in that condition. Even after it has been dried in the open air for several months, and has lost 15 or 20 per cent. of its moisture, and is in a state to be cut and loaded with a shovel, it is almost a drug, and generally accumulates about the works."

Mr. Stayton himself also says with regard to the London sewage outfall works, that the "Authorities find that it will be cheaper to take the sludge outside to sea than to press it into cakes by means of filter presses. They estimated, after making exhaustive experiments, that the total cost of pressing would amount to about 4s. 6d. per ton ; the item for filter-cloths alone amounting to no less than 1s. 1d. per ton. After allowing the sludge to drain off for sixteen hours its moisture was found to have been reduced to 41 per cent. The Council therefore decided that it is more economical to take it to sea without further treatment."

It will thus be seen that though I only credit the Sewage Farm Scheme with a balance of £65, in a few years this will at least amount to £565, and this estimate is arrived at by valuing the cost of treating the sludge at 3s. 7d. per ton, whereas, Mr. Stayton in his report above referred to, quotes the price in England at 4s. 6d.

It will also be seen that the cost of the two schemes is very similar. It is, however, an established fact that, whether rightly or wrongly, great objection is taken to sewage works near a town. In this instance the advantages of the farm are (1st) distance from populated areas ; (2nd), the utilization of sludge without cartage, in growing crops, and consequent revenue from the products thereof as a set off against expenses ; (3rd), that if the Clay Cliff Creek site was adopted, probably no market for the poudrette produced at the precipitating works could be obtained ; and (4th), the sewerage farm is situated in a suitable position for receiving the drainage of Granville and other adjacent Municipalities, and is adjoined by low-lying ground, which, although useless for residential purposes, could be made available by reclamation for an extension of the farm.

Having dealt in detail with Mr. Stayton's report, I desire to make the following general remarks on the position taken up by him in reference to this matter.

In his evidence in answer to question 781, and again in his report, he characterises the scheme as "crude and incomplete." He seeks to establish this conclusion by extracting isolated answers given by me and by Mr. Davis before the committee, with the purpose of showing that they are inconsistent or contradictory. He discards all the evidence given as to the proposed height of the reclamation; and taking the height of the fascine bank, assumes that this will be the finished level of the reclamation. He lays importance on the nature of the material found by sinking trial shafts in the swamp, which he must have known from the evidence was never intended to be used for filtration. In face of statements in the evidence to the contrary, he assumes that the material to be used for filling is to be obtained in the upper reaches of the Parramatta River, and pronounces it quite unsuitable for filter-beds. I think I have a right to protest against Mr. Stayton quoting these isolated answers and parts of answers entirely out of their connection, and basing on them conclusions which, the premises being incorrect, are unfair and misleading.

A perusal of the evidence given before the committee will, I think, show conclusively the intentions of the department to be—1st. That the farm is to be worked by the same process for the purification of the sewage as that at Botany, which has been endorsed by Mr. Stayton. 2nd. That it is intended to fill up the low-lying portion of the farm to a depth of from 4 feet to 6 feet above high spring tide-level with sand, and not with river mud and silt, as stated by him. 3rd. That subsoil drainage has been anticipated. 4th. That as population increases, putting a greater tax upon the land, the department anticipated the necessity for the treatment of the crude sewage by precipitation combined with downward filtration and irrigation. 5th. That the expense of filling, preparing, and draining the farm is included in the estimates, and that the cost will therefore not have to be added, as represented by Mr. Stayton. And 6th. That, judging from experience gained on the Botany farm and elsewhere, downward filtration and irrigation will meet all requirements at Parramatta, and that the additional expense proposed by Mr. Stayton of precipitating-tanks and polarite filter-beds is quite unnecessary.

Mr. Stayton in his evidence (question 801) states that if suitable material is used for filling in, a depth of 5 feet above high-water mark and flood-level would be sufficient for purification. The evidence shows that this is what is proposed.

In reply to questions 820, 821, and 822, he states that he could not recall a single instance of a sewage-farm established on the banks of tidal waters, and that he had had no occasion to consider the question of filling in sewage-farms with sand, dredged from below salt water. It is difficult to understand this statement, as I have already pointed out, in view of the fact that two-thirds of the area resumed as an extension of the Botany sewage farm, for the purpose of treating the sewage from the western suburbs, is below spring tide ; that it is on one side bounded by a large tidal inlet (Muddy Creek), and that the material for filling in will be largely composed of sand obtained by dredging.

Mr. Stayton in answer to question 817 states, that had he been investigating this particular scheme (Parramatta) he should "not only have examined the site, but also have had some trial shafts sunk to ascertain the nature of the soil," thus implying want of care on the part of the department in the selection of the site as a sewage farm. Such trial shafts were not sunk on the Botany sewage farm when Mr. Stayton was making his investigation. In the case of the Parramatta farm there was no necessity for sinking shafts on the low-lying ground as it was to be filled in with proper material, while on the higher parts there were ample means of ascertaining the nature of the soil without sinking such shafts.

In conclusion, I wish to direct the attention of the Committee to the following facts and opinions relating to sewage farms, which show, I think, conclusively that where suitable land can be obtained, as in the case of Parramatta, irrigation is the cheapest and most effective mode of treating sewage :—

1st. Mr. Stayton, in his report on sewage purification, says :—

(*a*) "When discussing the question with Sir Robert Rawlinson he said that 'town sewage in which there is the largest mixture of human excreta and the least mixture of solid detritus is the richest in manurial properties, and its disposal will cost the least when applied to land in broad irrigation' ; he also continued that 'crude sewage put on the land while it is fresh and without storage is the best system ; that chemicals alone will not destroy the salts, but that land will do so'."

(*b*) "The Beddington Farm has a considerable number of good residences in its vicinity, and one side of South Norwood Farm abuts upon a populous suburbs of the Metropolis."

(*c*) "I had an interview with Dr. Littlejohn, the well-known Medical Officer of Health at Edinburgh, and he informed me that he had never been able to ascertain that the operations at the farm had caused sickness to the local residents."

(*d*) Under the heading of Berlin Sewage Farm, he says :—"The health of the labourers on the farm is very good, and the death-rate was only eleven per 1,000 during the last year ; and it is rather a remarkable fact that, although there was a severe epidemic of typhoid during the first months of 1888 in the city, yet no case of disease occurred on any of the farms. The effluent from the farms goes into little streams in places not wider than 10 feet, and that from the northern farms joins the Spree above Berlin. No complaints are now made respecting the condition of the streams, and the chemical analysis during the past year has given satisfactory results."

(*e*) Under the heading of precipitation, he says :—"The only purification of sewage with which I am acquainted (says Sir Robert Rawlinson) is when it is used in broad irrigation on a light porous soil, in summer weather, when the entire volume of water disappears in absorption and evaporation, the soil and the sun having effectually purified it. This, and this alone, is sewage purification."

(*f*) Under the heading of London Sewage Outfall Works, he says :—"The authorities find that it will be cheaper to take the sewage out to sea than press it into cakes by means of filter presses." 2nd

2nd. Mr. W. Santo Crimp, assistant engineer, London County Council, in a recent work on sewage disposal, says :—"The sanitary aspects of sewage farming have been discussed over and over again; the supposed evils are the pollution of sub-soil waters, of rivers, of the atmosphere, and of the crops. Briefly, it may be said that, provided the area of land is sufficient for the purpose, and that it has been properly laid out, no nuisance need necessarily arise if the works are properly managed, and the same remarks apply equally to all sewage disposal works—whether sewage farms or precipitation works. Bad management will, in both cases, lead to an insanitary condition of affairs."

3rd. Dr. Alfred Carpenter has devoted a very considerable amount of attention to the question, and has for years had experience in watching the operations of the Beddington Sewage Farm. At a meeting of the British Medical Association, at Glasgow, in August, 1888, he submitted a series of propositions as follows :—

(*a*) "That the application of the sewage of a water-closet town to land in close proximity to dwelling-houses is not injurious to the health of the inhabitants of those houses, provided the sewage be fresh : that it be applied in an intermittent manner, and the effluent be capable of rapid removal from the irrigated fields."

(*b*) "That vegetable products grown upon fields irrigated by sewage are satisfactory and safe, as articles of food for both animals and man."

(*c*) "That sewage farms, if properly managed, do not set up either parasitic or epidemic disease among those working on the farm or among the cattle fed upon its produce."

(*d*) "That this immunity exists because the conditions necessary for the propagation and continuance of those disease germs which affect man and animals are absent, the microbic life in sewage farms being antagonistic to the life of disease germs, the latter, therefore, soon cease as such to exist."

(*e*) "That sewage farms may be carried on in perfect safety close to populations. It is not, however, argued that the effluent water is safe to use for dietectic purposes"

(*f*) "That there is an aspect in sewage farming which shows that it is a wise policy for the nation to encourage that form of utilisation from a political economy point of view."

4th. Dr. Carpenter also says on the same occasion :—"I need not follow this head any further, except to remark that in February, 1887, I submitted a report upon the subject to the Society of Arts in London, in which I conclusively proved that in no single instance, out of nearly one hundred cases in which sewage has been utilised by broad irrigation, had any fact been proved to establish the allegations of insanitariness which are sometimes raised against them."

5th. Mr. W. Santo Crimp further says in his work already referred to :—"At Wimbledon, upwards of seventy persons reside upon the sewage farm, whilst hospital for infectious diseases is situated within its boundary, in which hundreds of patients have been successfully treated since the farm and hospital were conjointly established, and so far there is no evidence to show that the farm is in any way prejudicial to health."

6th. The judges, appointed by the Royal Agricultural Society in 1879 to adjudicate the prizes in the Sewage Farm competition, state in their report that "the results of the sanitary inquiry show that sewage-farming is not detrimental to life or health."

7th. Mr. James Mansergh, M.I.C.E., M.I.M.E, a gentleman, as I have already said of some thirty years standing as a sanitary engineer, and who was appointed to report upon sewerage scheme for the City and Suburbs of Melbourne, says :—

(*a*) "I have never heard of any harm accruing to either man or beast by feeding upon sewage-grown produce, and I have been intimately associated with sewage-farming for thirty years."

(*b*) "Sewage farms, if judiciously laid out in relation to the work they have to do and managed with ordinary intelligence, do not create a nuisance."

(*c*) "Fresh sewage has hardly any perceptible odour, and when it is run upon the land in a thin film, it is soon completely deodorised."

(*d*) "During the last twenty years there have been in this country (England) some ten or twelve official inquiries on the subject of sewage disposal in addition to a number of others in regard to special cases, and I can safely say that land irrigation in some form or other has always been preferred to any other method, and recommended for adoption."

(*e*) Lord Bramwell's Royal Commission "fell back finally, upon precipitation, supplemented by land treatment, and but for the difficulty of acquiring (as they assumed) a sufficient area, their recommendation might, I think, have been for land alone."

8th. The French Senatorial Commission in 1888, on the strength of whose favourable report the authorities took action with respect to the sewage disposal of Paris, say respecting the Berlin sewage farm :—

(*a*) "The Berlin experience seems to us as conclusive as possible, and in every point comparable with that of Gennevilliers. Let us only remember the fact that with sewage five times more charged with fæcal matter than that of Paris, the health of the cultivators and of the inhabitants of the domain or farm is perfect."

(*b*) "There is no typhoid fever."

(*c*) "The city of Berlin has already established two convalescent homes in the houses of its domains; it is about to found two others in the middle of its irrigation fields."

(*d*) "Typhoid fever has diminished at Berlin till it represents only one-third of what exists in Paris."

(*e*) "The towns and villages which are close to the sewage farm make no complaint, and their sanitary state is excellent. Part of the effluent from the sewage farms of Berlin is collected in an ornamental lake in which fish breed freely. This fact alone suffices to show how thoroughly all putrescible matter is removed from the sewage in a well-arranged, well-managed sewage farm. The chemical analyses of the effluent water from the farms tell the same tale."

9th. Mr. Mansergh further says :—

"For thirty years it has been my business to acquaint myself with all that has been done with sewage in Great Britain, and I have probably advised on as many cases as any engineer now in practice, and my personal experience confirms the conclusions which have been arrived at by all the Commissions to which I have referred. On this experience, backed up by such official indorsement, I have no hesitation in recommending that the best way to deal with the Melbourne sewage is by irrigating the lands I have selected at Werribee and Mordialloc."

The conclusions, I have drawn from all the reports referred to, as well as a statement by Mr. Slayton when dealing with the International process that "where land is not easily available for irrigation or earth filtration the process is worthy of every consideration," is, that as the land in this case is easily available, and can be made suitable, the scheme submitted by the Department is the most economical and effective.

August 17th, 1892. ROBT. HICKSON.

FURTHER REPORT BY R. R. P. HICKSON, ESQ., M. INST. C.E., ENGINEER-IN-CHIEF FOR SEWERAGE.

To the Chairman of the Parliamentary Standing Committee on Public Works,—

Sir,

Since writing my report of the 17th instant Mr. Stayton has been examined in connection with his report to the Committee. There is, I think, only one subject which he has given evidence upon that has not been previously dealt with by me. I refer to the sum of £40,000 mentioned in the last paragraph of his report.

I purposely avoided mentioning this amount in my report, as I was not quite clear what it meant. I gather now from Mr. Stayton's evidence that it is the cost of the purification works, pumps, &c., which would (if his proposal was carried out) have to be added to the departmental cost of all works west of the pumping station. To apply this constant to the three estimates given by me (viz., for present requirements, for 32,500, and for 48,000 inhabitants) would make the total cost as follows :—

	£	s.	d.
A.—For present requirements—			
Works above pumping station	54,756	0	0
Other works	9,000	0	0
Purification works	40,000	0	0
	£103,756	0	0
B.—For 32,500 *inhabitants—*			
Works above pumping station	64,756	0	0
Other works	9,000	0	0
Purification works	40,000	0	0
	£113,756	0	0
C.—For 48,000 *inhabitants—*			
Works above pumping station	89,609	0	0
Other works	9,000	0	0
Purification works	40,000	0	0
	£138,609	0	0

Thus giving a credit balance to the departmental scheme as follows :—A. 27,800 ; B. £22,870 ; C. £7,637.

I have had to deal with this £40,000 as a whole, as Mr. Stayton has given no indication in his report or evidence as to the proportion of it that will have to be expended for present requirements. I cannot think that he intends to erect the complete purification works now, as such would be wholly unnecessary with the present population ; but, if not, his report and evidence seem to me, in this particular at least, to be incomplete.

However, I am quite satisfied, whichever way these contending schemes are looked at, Mr. Stayton has entirely failed to substantiate the assertions, or, perhaps, more correctly speaking, the insinuations he made in the first instance, that the departmental scheme was "costly," "crude," "incomplete," and "not in accord with the latest practice."

On the other hand I believe I have proved that the scheme submitted to the Committee by the Department is the most efficient and economical both as regards first cost, and more especially with regard to working expenses.

ROBT. HICKSON.

August 19th, 1892.

A 2.

LETTER FROM R. R. P. HICKSON, ESQ., M. INST. C.E., ENGINEER-IN-CHIEF FOR SEWERAGE, IN REPLY TO MR. G. H. STAYTON'S EVIDENCE.

Sir, Department of Public Works, Roads, Bridges, and Sewerage Branch,
Sydney, 10 September, 1892.

As this matter has now been so fully gone into I do not propose, unless the Committee so desire, to offer any further evidence. I would therefore very briefly summarise what has been said and written on the subject.

In Mr. Stayton's first examination he stated, amongst other defects in the scheme, that it struck him as costly. He now shows not only that this is not the case, but that the scheme recommended by him would be rather more expensive, and to distract attention from the discrepancy between these statements, he branches off into an assertion that the departmental scheme is under-estimated. I can only say the estimate has been very fully gone into by competent officers who are in touch with the actual current rates for similar work, and am quite satisfied that the amount stated is ample for the proposed works.

Mr. Stayton states that if he had the Western Suburbs scheme now under consideration, he would recommend a modification of the sewage farm. It seems to me this is a most extraordinary time to make such a statement. Surely the proper time for doing so was when he came back from England, fresh with all the latest particulars of the International system, and submitted his report on sewage disposal works for the information and guidance of the Minister. No important fresh developments have taken place in the International system since the date of that report, consequently what is known now was practically known then. It seems to me, therefore, he either made a grave omission in not advising the Minister on this point in the report referred to, or is now doing so for the sole object of bringing discredit on the Department's scheme. This statement, therefore, should be taken *cum grano salis*.

I gather from Mr. Stayton's remarks that for the present population the departmental scheme would answer (except, perhaps, in the alleged probable nuisance that might arise from a sewage farm) ; but that for the increased population, precipitation and filtration would be necessary. Without committing myself to entirely agree with this contention, the Committee will see in the latter portion of paragraphs 8 and 9, page 2 of my report, I foreshadow that this may be necessary ; but I maintain when the population increases, and the necessity arises, it will be time enough to consider this point. My own opinion is that it will be many years before the population increases to such an extent, and that it would be unfair to burden the present population with this additional and unnecessary cost.

With regard to the possible nuisance of a sewage farm, I can only again state that his remarks are most inexplicable. The reports which I have referred to, show that such a statement is not in accordance with facts ; and I would only refer to one additional statement made by Mr. Mansergh. In his report on the Melbourne Sewerage Scheme, he says :—

"It is worth while to emphasise the fact that after fifteen years' experience at Gennevilliers, the French authorities, so recently as 1888, determined to extend the area under sewage cultivation, with the concurrence and approval of the residents in the locality, although at the first establishment of the farm there had been great opposition."

If it is decided that it would be a mistake to establish a sewage farm at Parramatta, then all I can say is, that all sewage farms are a mistake ; and as this conclusion would be contrary to all scientific reports, it is hardly likely that such a contention would for a moment be entertained.

With regard to the non-existence of trial-shafts on proposed farm, and Mr. Stayton's comments thereon, he appears from his last evidence to have somewhat changed his ground on this matter. He states the shafts were sunk by him partly with a view of finding out the class of material that would be obtained for making up the farm. This rather looks like trying to find an excuse for a work which, I maintain, there was no necessity for his doing.

It appears to me, after carefully reviewing the whole matter, that Mr. Stayton poses as a special pleader for the International system, and to establish the claims of this scheme, he does not hesitate to ride roughshod over everything that can be said on the other side, not even excepting reports and statements previously made by himself.

I maintain the highest authorities advocate sewage farming, where such can be done economically and effectually, and only recommend the adoption of artificial disposal of sewage when circumstances will not permit of the former.

ROBT. HICKSON,
M. Inst. C.E.

To the Chairman of the Parliamentary Standing Committee on Public Works.

B.

[To Evidence of C. J. Byrnes, Esq.]

REVENUE AND LOANS, BOROUGH COUNCIL, PARRAMATTA.

Town Hall, Parramatta, 4 July, 1892.

Sir,

I have the honor to furnish herewith information required by the Committee in reference to the sewage scheme for Parramatta.

In addition to amount raised by general and special rates at 2s. in the pound (£7,260 7s. 5d.), I find that other sources of revenue produce the sum of £4,324 8s. 5d., made up as follows :—

	£	s.	d.
General account	1,498	8	3
Water supplied by meter, &c.	1,075	4	0
Removing night-soil	1,531	7	2
Baths and markets	219	9	0
Total	£4,324	8	5
Making an annual total revenue, including rates, of	£11,584	15	10

Total amount of loans £56,600, instead of £50,000, as stated by me before the Committee.

Number of houses served under pan system	1,863
Number using cesspits	80
Total	1,943
Number of houses from which night-soil is removed by the Council	1,210
Number allowed to bury night-soil on their premises, pending further arrangements	733
Total	1,943

	£	s.	d.
Amount received for emptying night-soil from private houses per annum	856	14	11
From Government establishments	674	12	3
Total	£1,531	7	2

I should feel obliged if you would kindly attach this to my evidence given before your Committee on Thursday, the 30th instant.

I have, &c.,
CHARLES J. BYRNES,
Mayor.

To the Chairman, Parliamentary Standing Committee on Public Works.

B 1.

RESOLUTIONS OF BOROUGH COUNCIL, PARRAMATTA, ADOPTING PROPOSED WORKS.

Town Hall, Parramatta, 6th July, 1892.

Sir,

I have the honor to forward herewith resolutions in connection with proposed Sewage Scheme for Parramatta, passed at a general meeting of Council on the 4th instant :—

1. "That the plan of Sewage Works as proposed by the Government to be carried out in Parramatta, now submitted, be adopted by this Council."
2. "That in the opinion of this Council it is desirable that when the Sewage Works for Parramatta, as proposed by the Government, are completed they should be placed under the control of this Council."

I have, &c.,
CHARLES J. BYRNES,
Mayor.

Jacob Garrard, Esq., M.P.,
Chairman of Parliamentary Standing Committee on Public Works.

C.

[To Evidence of George H. Stayton, Esq., M. Inst. C.E.]

PARRAMATTA SEWERAGE SCHEME.

REPORT BY GEORGE H. STAYTON, ESQ., M. INST. C.E.

IN accordance with the instructions of the Chairman of the Parliamentary Standing Committee on Public Works, I have the honor to report, for the information of the Committee, that I have examined the plans and evidence relating to the proposed scheme for the sewerage of Parramatta. I have also procured the necessary levels of the site of the intended sewage farm, and have inspected the locality on two occasions. The principal question which demanded consideration related to the efficiency or otherwise of the intended method of sewage disposal.

I may mention that at the outset the investigation was delayed and rendered more difficult, from the fact that no levels had been taken or sections prepared of the intended sewage farm—a somewhat remarkable omission; and as the Works Department did not furnish the necessary information, I had the levels taken, sections prepared, and trial shafts sunk on the site of the outfall works, in accordance with the Committee's request. When inspecting the outfall site I found that the plan of the proposed farm did not show the entire extent of land intended to be included within the fascine banks.

The total area of the farm will be about 64 acres, of which the portion above the highest spring-tide level at the western end, coloured green on the accompanying plan, is 20 acres. The remainder of the site, coloured red on the plan and containing about 44 acres, is below mean high-water mark. This statement seems scarcely in accord with the evidence in answer to questions 60 and 61, or with question 818, put to me by the Chairman. Nearly the whole of the low-lying area is swampy, but portions of it are covered with low mangroves or the kind of weeds frequently found on tidal flats.

The land at the western end averages about 9 feet above highest spring-tide level. One of the trial shafts proved that the soil consists of about 15 inches of sandy loam, with a sub-soil of yellow loam and marly clay; in another part the sub-soil appeared to be more retentive and resembled yellow plastic clay. Although the top soil could be cut out like cheese, the surface becomes very hard in dry weather. I found that soakage commenced in these shafts at about 2 feet below the surface; and in the course of a few minutes water accumulated at the bottom. Such land as this is certainly not fitted to effectively purify the crude sewage of the existing population, without expensive preparation and drainage in the first instance.

I found that some portions of the soil in the swampy area were quite sour. In other places a plastic clay was found almost on the top, and caused surface waters to be retained. In one of the trial holes in the swamp, about 15 inches of brown sandy clay was found above river mud. The latter was of a blueish tint; some of it contained shells, and but a very little distance under the surface it was thoroughly soft and greasy looking, and was surcharged with stagnant water. In another place the top layer was 6 inches thick, on clean looking but saturated sand. In a third instance the surface consisted of 2 inches to 3 inches of soft reddish clay and mud, underneath which there were 2 inches of fairly clean sand, then blue mud, and at a depth of 18 inches yellow clay; water rapidly percolated into each of these holes. I submit that the result of this examination shows clearly and distinctly that before this large area can be used with safety as a sewage filter, it should be raised with suitable material to the level shown upon the sections.

The intended level of the fascine bank and the reclaimed area is an important matter. In the absence of levels and sections giving this information, and which is certainly essential to a proper consideration, I had to rely on the evidence and the best information I could obtain. In the former several conflicting or indefinite statements appear, *e.g.*, it was stated by Mr. Hickson (Q. 61) "that the fascine banks were to be filled in above highest spring tide; (Q. 124) that the area was to be raised considerably above the level of the river; (Q. 125) that there will be sufficient fall to get the sewage into the river; (Q. 168) that the level of the farm will be practically the same as at Webb's Grant (from 4 to 6 feet above) when finished; (Q. 169) the fascine bank is the same height above high-water mark as in Cook's River, so that the finished level

at

at Parramatta will be *within* a few feet of the same level as the farm at Webb's Grant; and (Q. 174) there will practically be for the purposes of the farm only the same depth of soil or sand as will be put over the present surcharged land." Mr. Davis was asked (*vide* Q. 358) "whether the difference between the level of the pumping-station and the farm was not more than 12 to 14 inches," to which he replied "that the farm is 6 feet higher than the pumping-station." Now the sections show the level at the pumping-station to be about 9 feet above datum, whereas the summit of the farm does not appear to be more than 10 feet above datum.

The actual height of the fascine bank, as will be seen by the section, is 1·88 feet above mean high-water level, or about 1 foot only above highest spring-tide. This is confirmed by information obtained from the Harbours and Rivers Department, the departmental instructions having been to make the bank 2 feet above mean high-water mark, or 1 foot above highest springs. Considering the condition of the swampy area and the doubtful nature of the material to be dredged, I have no hesitation whatever in asserting that such filter-beds would not effectively perform the necessary purifying functions at so low a level. By raising the fascine bank to 5 feet, or 3·12 feet above the existing level, it will allow a depth of about 4 feet for filtration over a large area of the farm at highest springs. The effluent out-fall sewer should certainly be placed at such a level that it can at all times freely discharge into the river.

As to the nature of the material intended to be used for filling in, I again have to refer to the evidence. I am, of course, aware that a large portion of the area may not be required for use for some time to come. Mr. Hickson stated (Q. 63), "that a great deal will depend upon the material, which will, no doubt, contain a great deal of sand and a great deal of silt; (Q. 76) if we get a good light sandy soil it will take an immense quantity, but if we get a heavy loamy soil it will not take so much; (Q. 92) if we get a pure sand, which I have every reason to think we shall; and (Q. 132), the low portion will be filled up with sand, and nearly the whole of the area brought under cultivation will be of the same nature as the land at Webb's Grant." Mr. Davis said (Q. 329) "that the material used would not be pure sand, and better soil for sewage could not be got, but (Q. 330) he had had no experience of sewage farm reclamations. He thought the lower area (Q. 339) would give better results than the higher part, on account of it being probably of a sandy nature."

From the nature of the material which is now being dredged from the upper portion of the Parramatta River I think it is extremely probable that the contemplated reclamation will largely consist of river-mud and silt. To raise the area in question to the before-mentioned level would probably require over 400,000 cubic yards of filling, a work of some magnitude, and the nature of the material so used must obviously be very different and greatly inferior to that of the natural filter at Webb's Grant. I cannot endorse Mr. Hickson's view (Q. 92), "that the proposed farm would be quite sufficient for the prospective population of Parramatta." This would mean 1 acre of land for 800 persons when the farm works are completed—about the same as at Webb's Grant; but a manifestly excessive proportion for crude sewage irrigation under the conditions described. In reply to Q. 315, Mr. Davis said that the sewage of Birmingham is treated in the same way. I join issue with that statement, inasmuch as the conditions in that city are that the subsoil of the sewage farm consists of gravel and sand, from 6 feet to 10 feet in thickness, and crude sewage is not run upon the land. In fact it is only the clarified effluent, after precipitation, that is passed over the land.

I submit that the foregoing evidence shows that the question has not been fully considered. Mr. Hickson said (Q. 63) "that the levels of the effluent and other drains at the farm are not yet determined," and (Q. 205, 206), "that the estimates include the total cost of filling in the farm and the fascine banks already formed by the Harbours and Rivers Department." Mr. Davis said (Q. 322), "that the estimate provides for laying out the farm, including subsoil drains 6 feet deep." Under all the circumstances, but more particularly in the absence of levels and sections, I fail to see how he estimated cost of the outfall and farm works can have been properly determined.

It is obvious to my mind that the proposal to pour crude sewage upon this land is ill considered, and not in accord with the latest practice in sewage disposal. Such a farm would certainly create a nuisance, and prove detrimental to the surrounding locality, especially to the adjoining estate, which appears to have been subdivided for building purposes. If, however, the scheme be reconsidered and so enlarged as to provide for Ferozone precipitation and Polarite filtration, it could be made thoroughly effective, but at a largely increased outlay.

Although Polarite filters would thus be provided, it should be borne in mind that it would not always be necessary to use them. Irrigation from the tanks can be conducted in two ways: The supernatant water may be drawn off direct from the large tanks after precipitation, or the effluent may be used after passage through the filters. During the growing season, when rye-grass will greedily devour nearly any quantity of sewage, the water may be taken direct from the precipitation tanks; but when the land and crops have but little purifying power, the filtering tanks would be constantly employed, the effluent being afterwards run over the surface of the land for aeration. I do not think it can be denied that in this climate it is of the utmost importance that the best known means of sewage purification should be practised.

By way of illustration as to what may be said to constitute a successful sewage farm in England, I may mention Nottingham, where land to the extent of 900 acres, near the river Trent, has been acquired for broad irrigation and downward filtration. A large area of the farm is a natural filter, which cannot be surpassed. It consists of 9 to 12 inches of light soil onithe top; then about 18 to 24 inches of fine sand, with very fine gravel; then 12 inches of fine sand; and, lastly, a bed of river gravel, varying from fine to coarse. Another section of 130 acres, which was set apart as a filtration area, was deep-drained with 9 to 12 inch pipes, laid 6 feet deep, for the main drains, and 4-inch agricultural pipe-feeders. About 400 miles of pipes were thus used on 640 acres. The land takes the sewage well, the live-stock thrive well, and, according to reports in May last, not a single complaint has ever been made of any nuisance arising from the operations of utilising the sewage on the land. Owners of adjacent property have such confidence in the operations that they are now building villa residences within a stone's throw of the farm. The area of land is equal to about 1 acre for 230 persons.

The dimensions and grades of the proposed main and branch sewers do not call for comment, as they have doubtless been designed upon the recognised principles of sanitary engineering. Whether it might have been found practicable to introduce an upper-level zone for the higher areas of the borough, with a view to reducing the amount of pumping, I am unable to say.

I have looked into the estimated cost of the sewage disposal works, including the pumping-station; but, in the absence of fuller information, am not in a position to make a definite statement. I am, however, clearly of opinion that the gross estimate of £42,785, for the present and prospective works, will have to be largely exceeded, if the works of reclamation and drainage, and the precipitation and filtration tanks and appliances, which I have alluded to, be carried out. The additional works will probably increase the total outlay to £60,000.

Having given the question very careful consideration, the conclusions I have clearly formed are as follows, viz.:—

(1) That the proposed system of sewage disposal is crude and incomplete, and, if carried out, would prove objectionable, and cause serious nuisance.

(2) That the site of the intended irrigation or filtration area cannot be rendered thoroughly effective, without largely increasing the proposed outlay.

(3) That the purification of the sewage could be more efficiently ensured by adopting the International process of precipitation and filtration.

(4) That the establishment of such purification works within the municipal boundary at the intended pumping-station, or alongside the river immediately below the gas-works, would be practicable and more economical.

(5) That, if by reason of the land having already been resumed for the proposed farm at Duck River, it is considered necessary to adhere to the original proposal, I am strongly of opinion that such scheme should not be permitted unless the method of treatment is supplemented by the beforementioned process of precipitation and filtration, nor unless a satisfactory assurance be obtained that the reclaimed area will be filled in with suitable material to a height of at least 5 feet above mean high-water mark spring tides, as shown upon the accompanying sections.

With reference to the probable cost of establishing purification works within the municipal boundary, I am of opinion that it would ultimately amount to about £40,000. It is unnecessary to repeat what has already been stated in my evidence as to the absolutely unobjectionable manner in which this process can be carried out, or as to the efficiency of the purification, or the clearness of the effluent. The suggested works would be compact, and the operations could be economically carried on; and, instead of the sewage having to be lifted to a height of 35 feet, as stated in the evidence, it would only require to be raised about one-half that height—a very important factor in the cost of pumping. Of course the works would be so designed as to be capable of expansion from time to time, until the entire Borough is built upon to the extent estimated. It is also intended that the precipitation tanks should be covered in, and the usual machinery provided for pressing and drying the sewage sludge.

GEO. H. STAYTON, M. Inst. C.E.

Kensington Chambers, 108, Pitt-street, Sydney, 9th August, 1892.

[Two plans.]

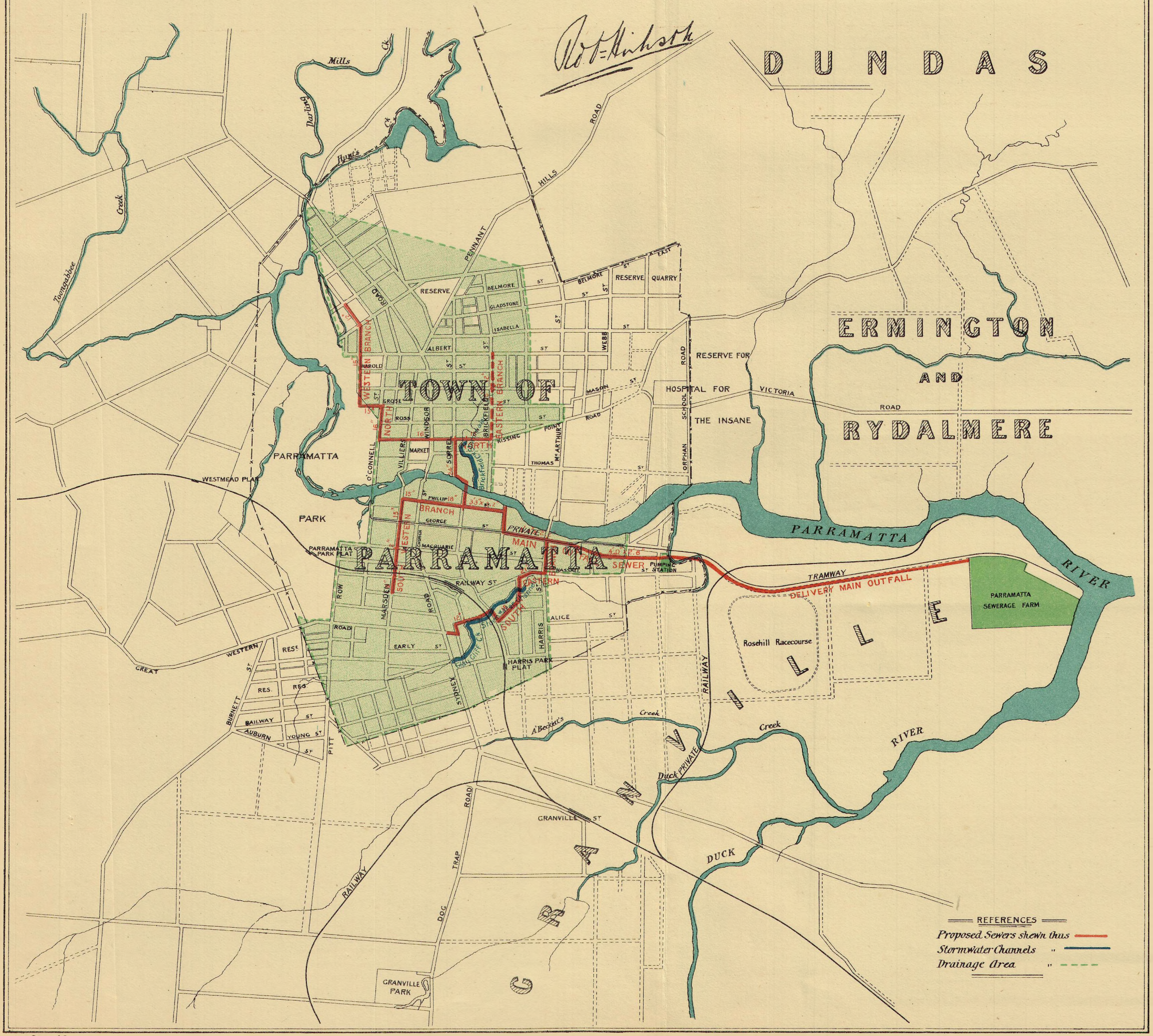
Sydney: Charles Potter, Government Printer.- 1892.

49—M

PLAN I.

PARRAMATTA SEWERAGE

SCALE 20 CHAINS TO ONE INCH



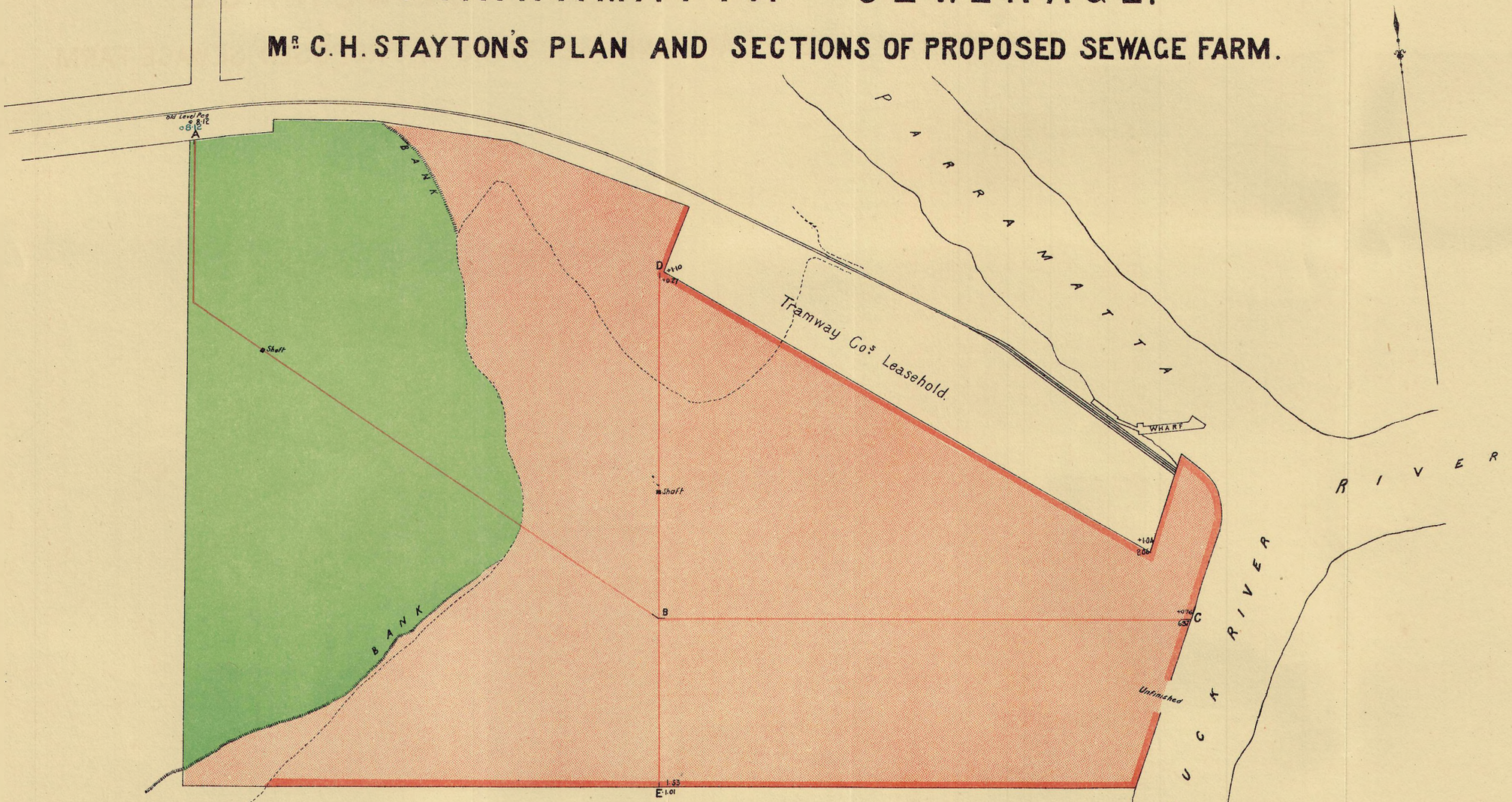
Sig 49

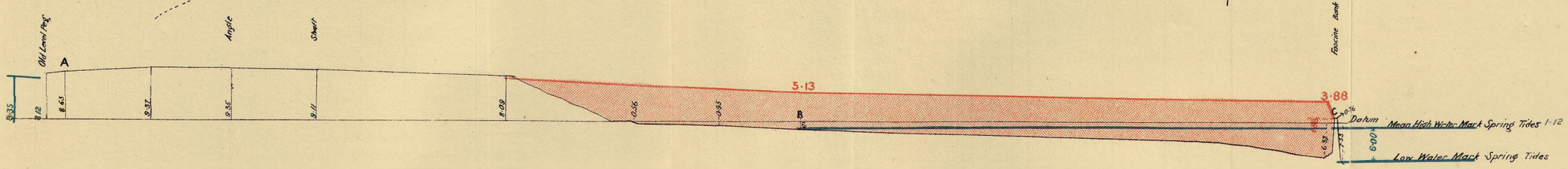
PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE

PLAN II.

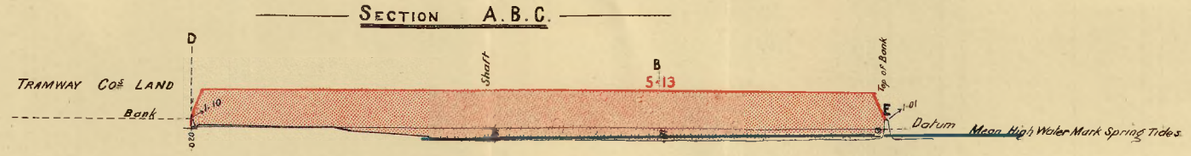
PARRAMATTA SEWERAGE.

Mr C.H. STAYTON'S PLAN AND SECTIONS OF PROPOSED SEWAGE FARM.





SECTION A.B.C.



SECTION D.E.

Scale



Scale



G.H. Stayton.
M. Inst. C.E.
August 9th 1887

(Sig 49)

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SYDNEY, NEW SOUTH WALES.

1892.

NEW SOUTH WALES.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE AND PLAN

RELATING TO THE

PROPOSED SEWERAGE WORKS

AT

COTTAGE CREEK.

Presented to Parliament in accordance with the provisions of the Public Works Act, 51 Vic. No. 37.

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER.

73—*a* 1892.

[2*s.* 0*d.*]

MEMBERS OF THE COMMITTEE.

LEGISLATIVE COUNCIL.

The Honorable William Henry Suttor, Vice-Chairman.
The Honorable James Hoskins.
The Honorable Frederick Thomas Humphery.
The Honorable Andrew Garran, LL.D.
The Honorable John Davies, C.M.G.

LEGISLATIVE ASSEMBLY.

Jacob Garrard, Esquire, Chairman.
Thomas Thomson Ewing, Esquire.
William Chandos Wall, Esquire.
William McCourt, Esquire.
John Cash Neild, Esquire.
Edward William O'Sullivan, Esquire
Charles Collins, Esquire.
Henry Dawson, Esquire.

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Minutes of Evidence taken by the Committee.
Plan.

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Plan of Newcastle and Suburbs, showing proposed Sewerage Works at Cottage Creek.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

SEWERAGE WORKS AT COTTAGE CREEK.

REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, appointed during the last Session of Parliament, under the Public Works Act of 1888, 51 Vic. No. 37, the Public Works Act Amendment Act of 1889, 52 Vic. No. 26, and the Public Works (Committees' Remuneration) Act of 1889, 53 Vic. No. 11, to whom was referred the duty of considering and reporting upon "the expediency of carrying out sewerage works at Cottage Creek, within the Municipalities of Newcastle, Hamilton, and Wickham, in the county of Northumberland," have, after due inquiry, resolved that it is expedient the sewerage works should be carried out by means of an open sewer, at an estimated cost of £13,000; and, in accordance with the provision of sub-section IV, of clause 13, of the Public Works Act, report their resolution to the Legislative Assembly:—.

Description of the proposed works.

1. The proposed Sewerage Works consist of 920 feet of a covered concrete sewer which would form the outlet of a watercourse at Newcastle, known as Cottage Creek. This watercourse drains portions of Newcastle and of several of its suburbs —Hamilton, Wickham, Merewether, and Adamstown, but chiefly Newcastle and Wickham—and debouches into Throsby's Creek, opposite Carrington, or Bullock Island. The total length of the creek is about 2 miles, and it is the natural means of discharge for the surface water of a district comprising about 1,000 acres; but for only the distance along which it is proposed to construct the covered sewer is the creek in the condition which makes it at the present time necessary to deal with it by converting it into a properly constructed surface-water sewer. For most, if not all of the distance of 920 feet, it is, and has been for many years, a public nuisance—very unsightly, and highly detrimental to health. It is within this distance the receptacle for a large quantity of foul drainage, much of which is made the more objectionable by reason of the creek being subject to the inflow of a sluggish tide which prevents the foul matter from passing away effectually into the harbour. The offensive condition of the creek has frequently been brought under the notice of the Government, and various proposals made for the abatement of the nuisance. The present is considered by the Department of Public Works the most advisable, on the grounds that it will remove the nuisance complained of; it can be made part of a general sewerage scheme for Newcastle; and by the provisions of the Hunter River District Water Supply and Sewerage Act of 1892, the cost of carrying it out will be chargeable to the Board appointed under that Act, and by them to the ratepayers of the district. In 1890 the then Minister for Works, impressed with the serious insanitary condition of the locality, caused tenders to be invited for the sewer, and £19,000 was voted on the Loan Estimates for the year to defray the cost of its construction; but as the lowest tender was £22,060 it became necessary to refer the work to this Committee.

Cost of the sewer.

2. The estimated cost of the covered sewer is £25,000, and at first it was proposed by the Government to apportion this among all the Municipalities contributing to the drainage which flows into Cottage Creek, with the exception of Adamstown. Newcastle was to be charged rather more than half the total cost, £13,513 10s. 3d., and the remainder was to be provided for as follows:—Wickham, £3,743 4s. 10d.;

Hamilton,

Hamilton, £4,054 1s. 1d.; Merewether, £3,689 3s. 10d. Against this apportionment the Municipalities of Hamilton and Merewether protested, stating as a reason that they would not be benefited to any extent by the sewer, and this protest being considered by the Department of Public Works, after inquiry, to be reasonable, it was decided to divide the cost between Newcastle and Wickham, the former to pay £19,577 2s. 8d. and the latter £5,422 17s. 4d. Wickham agreed, though at the same time of opinion that Hamilton and Merewether should be called upon to contribute a share of the cost; but Newcastle demurred. No intimation of any decision on the part of the Newcastle Municipal Council was made to the Department of Public Works; but from the evidence of the Mayor before the Committee it appears that the matter was considered by the Council and objected to on the ground of excessive expense. Uncovered the sewer would cost £13,000.

Method of repaying the cost.

3. The cost of constructing the sewer will be met by a sewerage rate charged the residents and owners of property in such localities served by the sewer as the Hunter River District Board of Water Supply and Sewerage may, under the provisions of the Act, recommend to be constituted a Sewerage District. It may, therefore, be found that though the Government have proposed to distribute the cost between only two Municipalities—Newcastle and Wickham—the whole of the Municipalities will be called upon to contribute. As explained in the evidence of the Under Secretary for Public Works, Municipalities affected by the work will be created into a Sewerage District, and they will have to pay a sewerage rate up to 5 per cent. until the whole cost of all sewerage works carried out under the Act has been met.

Evidence respecting the sewer.

4. The Committee examined the officers of the Department of Public Works in Sydney, and subsequently several members of the Committee visited Newcastle, where an inspection of Cottage Creek and its drainage area was made, and evidence taken from the President of the Hunter River Board of Water Supply and Sewerage, municipal representatives, and local residents. From this it was apparent that while everybody agreed that Cottage Creek was a public nuisance, opinion differed very much as to what should be done with it, and there was a general agreement that the Municipalities should be put to as little expense as possible. If the Government would pay for the work, and not afterwards trouble the local municipal bodies to repay the sum expended, or the interest upon it, a covered sewer as proposed would be accepted readily; but as it appeared that whatever was done to remedy the nuisance would have to be paid for by the residents of Newcastle and some of its surroundings, it was deemed advisable that the expense should be kept down as low as possible, and therefore there was no absolute necessity, it was urged, that the sewer should be covered. Some persons thought that the creek might for the present be allowed to remain as it is. The President of the Hunter River District Board of Water Supply and Sewerage informed the Committee that he would have preferred time to enable the Board to initiate a general sewerage scheme which would include the necessary work at Cottage Creek; but he recognised that the condition of the creek was a matter of urgency, and if it were shown that the proposed sewer could be made part of a general system of sewerage to be arranged in the future, it was desirable to construct it. At the same time he pointed to the necessity for economy in expenditure, as the ratable property in the district was neither large nor valuable; and for that reason he was of opinion that for the present an open sewer was sufficient. The Mayor of Newcastle was somewhat doubtful of the course his Council should take in the matter, but more in favour of an open than of a covered sewer, chiefly for the reason that the former would be less expensive. But while he favoured the construction of an open sewer, he did not approve of the direction in which it was proposed its outlet should discharge. The proposal of the Department of Public Works, in his opinion, would simply remove the nuisance from one place to another by conveying the objectionable matter which the creek now contains to the shore of Throsby's Creek at a point where there would be no tidal influence to carry it away. If the sewer outlet were made a little further eastward, a short length of the sewer towards the mouth being diverted for this purpose through an old cemetery adjoining the creek, the matter discharged from the creek would, he contended, be conveyed as far as the reclamation line of the harbour works now in progress near Bullock Island, and thence carried away by the tide. To this plan the officer at the head of the Sewerage Department is opposed. While it would have some advantages it would, he says, be much more expensive than the proposal before the Committee. It would necessitate the resumption of a

part

part of the cemetery, the filling in of a portion of the creek, and the making of a new cutting through the railway, and the erection of a new bridge over the cutting, with an unavoidable interruption to the railway traffic during the time the work was being done. By the present proposal an existing cutting and railway bridge are used for the purposes of the sewer. The Mayor of Wickham and other witnesses from that Municipality approved of the proposed scheme, but thought that the expense should be shared by Hamilton, Merewether, and Adamstown. Witnesses from Hamilton, and the Mayor of Merewether, considered it unjust to charge those Municipalities with any part of the cost of the sewer, as they were not, they said, contributors to the nuisance connected with it. Adamstown was not represented.

The Committee's decision.

5. The Committee consider that the proposed works should be carried out as far as converting the creek into an open sewer. This conclusion they arrive at from their personal inspection of the creek, and the area draining into it, as well as from the evidence given before them. The construction of an open sewer will reduce the cost of the works by £12,000; it will be in accordance with what local opinion, including that of the President of the Board of Water Supply and Sewerage, considers sufficient; and so far as the plan for improving the creek by making it a concrete sewer goes, it will be as effectual as a covered sewer in removing the existing nuisance. The cover to the sewer is recommended with the object of hiding the sewer contents from the eye, as the incoming tide will always, it is thought, carry back into the sewer a quantity of floating objectionable matter. But this is not likely to be a public nuisance, for the outgoing tide is expected to sweep the sewer clear, and from an uncovered sewer the gases arising from the drainage will escape freely and without harm to residents in the vicinity. The resolution of the Committee respecting the proposed works was passed on Tuesday, 2nd August, and is shown in the following extract from the Committee's Minutes of Proceedings :—

Mr. Wall moved,—"That, in the opinion of this Committee, it is expedient the proposed Sewerage Works at Cottage Creek, as referred to the Committee by the Legislative Assembly, be carried out."

Mr. Davies seconded the motion.

Mr. Dawson moved,—"That the motion be amended by the omission of the word 'as,' and the addition of the following words:—'by means of an open sewer at an estimated cost of £13,000.'"

The amendment was seconded by Mr. Humphery.

The omission of the word "as" was agreed to.

On the question—"that the words proposed to be added be so added"—the Committee divided, with the following result:—

Ayes, 8.	Noes, 1.
Mr. Garrard,	Mr. Davies.
Mr. Hoskins,	
Mr. Humphery,	
Dr. Garran,	
Mr. Ewing,	
Mr. Wall,	
Mr. McCourt,	
Mr. Dawson.	

The amendment was therefore passed; and the motion, as amended, was agreed to.

J. GARRARD,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Sydney, 9th August, 1892.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

MINUTES OF EVIDENCE.

SEWERAGE WORKS AT COTTAGE CREEK.

TUESDAY, 26 *JULY*, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	Thomas Thomson Ewing, Esq.
The Hon. James Hoskins.	William Chandos Wall, Esq.
The Hon. Frederick Thomas Humphery.	William McCourt, Esq.
The Hon. Andrew Garran, LL.D.	Henry Dawson, Esq.

The Committee proceeded to consider the proposed Sewerage Works at Cottage Creek.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and examined:—

J. Barling, Esq. 26 July, 1892.

1. *Chairman.*] You are Under Secretary for Public Works? Yes.
2. Have you a statement to make in reference to the project now under consideration by the Committee? Yes
3. Kindly make it? I need not detain the Committee very long in bringing this proposal before them. It embraces the construction of 920 feet of a covered sewer, which will form the outlet of a watercourse known as Cottage Creek. The creek in question, with its branches, drains portions of Newcastle, Hamilton, Wickham, Merewether, and Adamstown, and finally debouches into Throsby's Creek, under the railway bridge, a little to the west of the Honeysuckle Point Station. The total length of the creek may be roughly given as 2 miles; but the portion proposed to be treated at present, as before stated, comprises a length of 920 feet, commencing from the A.A. Company's bridge, and extending thence to Blane-street, thence to the point of discharge already mentioned. The creek may be stated to be the natural discharge of a very large district—about 1,000 acres—comprising considerable portions of the Municipalities I have mentioned. It is clear, therefore, that it becomes the receptacle of a large amount of foul drainage, and the attention of the Department has been drawn, for some years past, to its insanitary condition. Several reports have been made on the subject, and various proposals put forth as to the abatement of the nuisance. It was first proposed to construct 400 feet only of this sewer, from Blane-street to its mouth, at a cost of £6,379, but it was soon seen that this would only effect a partial cure, and that nothing short of the proposal now before the Committee would meet the case. When Mr. Bruce Smith was Minister for Works he stated that, in view of the serious insanitary condition of the locality, he approved of tenders being invited for the work, and the cost charged against the Newcastle Sewerage Scheme. Tenders were accordingly invited, the lowest received being that of Messrs. Gummow and Gillan for £22,060. Tenders were received 30th April, 1890. The sum of £19,000 has been voted on the Loan Estimates for 1890, for "Cottage Creek, Newcastle, Storm-water Sewer." In the meantime, the question was raised as to the adjustment of the liability which would be thus incurred, and a statement was prepared, showing the proportion which it was then considered should be borne by the different Municipalities concerned, viz.:—Newcastle, Merewether, Wickham, and Hamilton. Taking the estimate for the work at £25,000, as to the tender must be added engineering expenses, &c., it was proposed to apportion the cost as follows:—

	Population.	Proportion.
Newcastle	15,000	£13,513 10 3
Wickham	4,155	3,743 4 10
Hamilton	4,500	4,054 1 1
Merewether	4,095	3,689 3 10
Total		£25,000 0 0

The parties concerned were accordingly advised. The Municipalities of Hamilton and Merewether protested against their being called upon to be responsible for any portion of the cost, on the ground, as they alleged, that they would not be benefited, in the least, by the work proposed. This aspect of the case was referred to Mr. Hickson, who concurred in this view, and an amended distribution of the cost was accordingly prepared, resulting as follows:—

Newcastle	£19,577 2 8
Wickham	5,422 17 4

The Councils were accordingly informed, and Wickham replied that they agreed to have the work done,

but

J. Barling, Esq. 26 July, 1892.

but were, at the same time, of opinion that Hamilton and Merewether should be called upon to contribute their share of the cost. The Newcastle Council have apparently not come to any decision in the matter, for although Mr. Bagge, our principal Assistant Engineer for Sewerage, at their request, visited the district, and explained the matter, no conclusion, so far as I am aware, was arrived at. The Wickham Council, however, again drew attention to the state of the creek, and urged that the work should be put in hand at once, and that Hamilton and Merewether should be made to bear a portion of the cost. Since that time the whole question has materially changed, owing to the fact that a Board has been formed specially to deal with the water supply and sewerage of the whole Lower Hunter district. Having only just been constituted, the Board have, of course, had no opportunity of dealing with this question, but the Committee will, doubtless, consult that body and ascertain their opinion on the subject. I may point out that this particular sewer will form portion of the General Sewerage Scheme of the Lower Hunter district, and the question, as a whole, will no doubt shortly be dealt with by the Department and the Board. Under the "Hunter District Water Supply and Sewerage Act of 1892" the Board have not only the power to levy a sewerage rate, not exceeding 5 per cent. per annum, on the assessed annual value (see section 35, sub-section 22) but they are compelled (section 129) to levy the full rates until the revenue is sufficient to cover the working expenses and interest on the capital charge. The official description is as follows:—

Cottage Creek Storm-water Channel.—Description of proposed Channel.

THE proposed Cottage Creek Storm-water Channel will be 920 feet long, extending from the bridge at the Australian Agricultural Company's railway to the bridge under the Great Northern Railway, passing in its course under Blane-street. The channel will drain about 1,000 acres; the rainfall is estimated at 2 inches per hour, 1 inch running off, which equals 3,630 cubic feet of water per acre per hour, or a total of 60,500 cubic feet per minute. This quantity the channel is calculated to discharge. The channel will be covered throughout, and is to be built entirely with concrete. From its commencement at the east side of the Agricultural Company's railway to Blane-street the invert will be elliptical, but the arch will be flattened, so that the sides will be 20 feet wide by 8 feet 6 inches deep, the gradient being 1 in 200. From Blane-street to the outlet at the west side of the Great Northern Railway the channel will be elliptical, 20 feet wide by 10 feet high, and the gradient 1 in 600. Three ventilating shafts will be provided in the length. The bed of the creek consists of soft mud covering quick-sand, and it may, therefore, be necessary to build the channel on a strong timber platform, which accounts for the large cost of the work. The office estimate for the channel is £25,000, including engineering and other expenses, and a tender has been received from Messrs. Gummow and Gillan, amounting to £22,060, for the work.

I may, perhaps, mention that it is understood the Newcastle Council object to a covered sewer on account of the expense. The estimated cost of an uncovered sewer is £13,000, but, for reasons which Mr. Hickson will explain, this cannot be recommended. I may also observe that the Committee will see certain lines on the plan indicating the position of probable sewers. It must be understood, however, that this does not represent any definite proposal at the present time. The lines were merely put in to give the Committee an idea as to the bearings of this Cottage Creek channel to a probable sewerage system of the future. The creek will be the outlet of the effluent water in connection with a sewerage scheme for the district, and the proposal now before the Committee forms a portion of this channel. The Committee, however, will be able to gain further information on this point from Mr. Hickson. I hand in a small sketch plan as an appendix to my evidence.

4. Did you say that a tender had been accepted? No, received.
5. When were the tenders received? On the 20th April, 1890.
6. If the work is passed by the Committee and the House, you will call for fresh tenders? Very likely.
7. What was the idea of calling for tenders, at that time, for a work to cost £25,000? It was considered a very urgent work, and I think I am correct in saying that it was hoped that we should be able to get out sufficient of the work for the £19,000 voted, to enable the serious insanitary condition of the creek to be very materially remedied.
8. And then you would have taken up another section for another £19,000? No; we should certainly not have done that until the Committee had passed the sewerage scheme.

WEDNESDAY, 27 JULY, 1892.

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	THOMAS THOMSON EWING, Esq.
The Hon. JAMES HOSKINS.	WILLIAM CHANDOS WALL, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM McCOURT, Esq.
The Hon. ANDREW GARRAN, LL.D.	HENRY DAWSON, Esq.

The Committee further considered the proposed Sewerage Works at Cottage Creek.

Joseph Barling, Esq., Under Secretary for Public Works, sworn, and further examined:—

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9. *Chairman.*] In the statement that you have submitted to us, in reference to the Cottage Creek Storm-water Sewer, you state that it is to be a covered-in drain or sewer, whichever you may term it, and the Corporation of Newcastle, who will have to contribute the largest amount towards its cost, protest against it on the score of economy. If the Department have thought a storm-water sewer at Johnstone's Creek, Annandale, better uncovered, why are they proposing to cover this at a larger expense? The reason is very plain, although Mr. Hickson could give it more in detail than I can. It must be remembered that this sewer, at the mouth of it, at any rate, will be a tidal channel, and a great deal of deleterious matter, I believe, is brought down from Throsby's Creek, and there will always be a danger of that floating up at that part of the sewer. In your question you stated that the Newcastle Council would have to contribute to this, but I pointed out, in my former evidence, that the case is entirely different from the conditions which existed at the earlier stage, for the work will really be passed over to the Water and Sewerage Board of the Hunter River District, and they are the body that will deal with the whole thing.
10. You are not aware yet, whether that Water and Sewerage Board will levy a general tax over the whole of the sewerage system, or whether it will tax the Municipalities more directly interested in this particular sewer—they have power in either case? As soon as the Government incurs an expenditure, and the works are handed over to them, they are compelled to levy a rate.
11. But to see that it is equitably adjusted, I presume? Of course, they would only levy a rate on the district which would be served by the system of sewerage of which this forms an integral part. 12.

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12. Therefore, if they have to determine the district, and presuming that you have not gone very far out in your estimates, made some time since, the people of Newcastle will be the principal persons who will bear the cost? They will have to pay their sewerage rates up to 5 per cent., until the Government demands are satisfied. The 40th section of the Hunter District Water Supply and Sewerage Act of 1892 is as follows:—

It shall be lawful for the Governor, from time to time, by Proclamation, to define the boundaries of any water or sewerage district, for the purpose of supplying with water, under this Act, any one or more boroughs or municipal districts, or for the sewerage thereof respectively.

Section 34 of the same Act provides:—

Whenever the Governor, by Proclamation in the *Gazette*, shall declare that the provisions of this section shall come into force, in respect of any works in such Proclamation mentioned, or any portion thereof which shall have been completed, there shall be transferred to, and be vested in, the Board absolutely, and on behalf of Her Majesty—

1. The property in, and control and management of, all "sewers, gutters, drains," &c.

13. *Mr. Hoskins.*] Will the Board be empowered to enforce the payment of rates in different districts, when the work constructed intersects different Districts or Municipalities? I suppose it will be done in this way;—that certain places will be grouped into a sewerage district. It will be ascertained what the sewerage in that district has cost, and the Board will then levy a rate up to 5 per cent., so as to pay the charges which are imposed under this Act,

14. *Chairman.*] As a matter of fact, they have sole power to decide as to the boundaries of the district—their action being subject to the approval of the Governor? The Governor, *i.e.*, of course, the Governor, with the advice of the Executive, at the instance of the Minister charged with the administration of the Act, decides the boundaries.

15. *Mr. Hoskins.*] Does the Act distinctly state that? In section 129, after the sub-sections, occur the following words:—

And subject to the respective limitations in respect of valuation of premises and rates, charges and sums of money, to be levied, collected, and received, contained in this Act, the Board shall levy and collect such rates, charges, and sums of money as shall be sufficient to cover the annual sums so fixed as aforesaid, as well as all expenses incurred in carrying out the provisions of this Act, or of any Acts amending the same, including the reconstruction of renewable works, and including the salary and remuneration paid to the President and other members of the Board respectively.

16. *Chairman.*] That does not apply to the question put by Mr. Hoskins, as to whether the Board, subject to the approval of the Governor, are the sole judges as to what shall constitute a Sewerage District? I think I pointed out before that the Act says that the Governor has to approve.

17. The Board are the sole judges, subject to the approval of the Governor? No doubt they would have a voice in the matter.

18. On the plan submitted to us showing this Cottage Creek Sewer, there are a number of different coloured lines, showing probable main canals or sewers;—has there been a comprehensive scheme even suggested for this district yet? Yes; some years ago, I think, Mr. Stayton made a report, but that has never been adopted by the Government, and nothing has been decided.

19. But attention has been given to it? Undoubtedly, a good deal of attention has been given to it.

20. I suppose Mr. Hickson will be able to tell us whether those lines which you have laid down on the plan are in accordance with the general recommendations made by Mr. Stayton? Undoubtedly, he will. Mr. Stayton, I think I am correct in saying, made a recommendation that the discharge of the Sewerage System should be into the ocean, but very strong objections have been made against that by the people.

21. On what ground? On the ground that the shore would be polluted by the sewage matter.

22. Do you mean Port Hunter or the ocean? I mean the ocean.

23. Has not experience shown that there is nothing in that objection, so far as Bondi sewer is concerned? When you examine Mr. Hickson, I think he will admit that there is a great deal in the objection in the case of Newcastle, because the current has a set in shore, whereas in that of Bondi the current has an opposite, or off-shore set.

24. I want to know whether the Minister or the Government has considered any general project for the sewerage of these districts? No.

25. Only so far as having a report some time since by Mr. Stayton? Yes; it is quite a tentative matter.

26. And those lines of sewers, shown on that map, are merely approximate? Yes.

27. The whole system may be altered from that when you come to consider it? It may be altered, but I think you will find that the lines laid down will show, pretty correctly, where the sewers must be, with the exception that the discharge will not be into the ocean. Probably a precipitation and filtration scheme will be adopted.

28. At all events, whatever may be the outcome of the Sewerage System proper, the Government have come to the conclusion that this work, now before us, is necessary as a Storm-water Sewer? Undoubtedly.

29. In connection with that system, and also at the present time, to take off the ordinary drainage? Yes. I may, perhaps, point out that, in 1889, Dr. Ashburton Thompson was asked to report on nuisances at Wickham, Newcastle, and certain other Municipalities, and I find from his report, which I borrowed from the Colonial Secretary's Department, that he made special reference to the Cottage Creek Sewer. He says:—

Cottage Creek, which for a distance above the bridge is subject to tidal influence, arises much further towards the west than is shown in the tracing. It appears to be in its natural state, as regards the channel, being at about the bridge very wide and shallow. It has received sewage for many years, and now carries, as I was informed, much of the sewage from Macquarie Ward, Newcastle, that from the whole of Merewether, and from East Hamilton, from the gas-works, and from a brewery. The population thus represented is believed to be about 10,000. The tide was low at the time of my visit, and a sickening stench arose from the creek.

Further on, in the same report, he continues:—

In speaking of the matters described, at least three distinct points are to be distinguished. In the first place, the state of Cottage Creek would appear to involve the question of a system of sewerage for Newcastle, this being a natural water-course, which has been converted into an open sewer. I believe that this matter should be referred to the Department of Works, the Sewerage Branch having already made progress, under direction of the Commissioner for Roads and Bridges, with a scheme which would have the effect of abating the nuisance complained of. It is only necessary for me to state formally, that this sewer, running as it does through a district carrying many dwellings, is detrimental to the health of the residents.

30. Dr. Ashburton Thompson is looked upon by some people, as rather an alarmist, is he not? I should not like to say so. In our Department we consider his reports of great value.

31. He refers there to the Sewerage Department having already taken certain steps;—is that Mr. Stayton's report? No doubt he is referring to Mr. Stayton's report.

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32. Is his report obtainable? Yes. I think I am correct in saying, that a copy of that report has already been supplied to the Newcastle Council—some years ago, in fact.
33. Can you put it in with your evidence? If the Committee wish it, I will put it in with pleasure. I have a number of other papers here, which I need not trouble the Committee by reading; but if they like, I will put them in. I have a number of letters from the Council of Wickham, laying special emphasis on the insanitary state of this creek, and I have also letters from Newcastle, as well, on the subject.
34. You have concentrated them in the statement you have already made? Yes, I have done so; but perhaps it might be well to put the papers in as an appendix, if the Committee wish.
35. Are they very long? No.
36. They cover a considerable period of time? The first I have here, though I do not say it is the earliest, is dated the 18th July, 1890. Then there is one dated the 20th November, 1890, and another 2nd January, 1891. Deputations have waited on the Minister since that date on the subject.
37. In your statement yesterday, you said that the Newcastle Council have, apparently, not come to any decision on the matter. If this were a bad thing, do you not think they would have come to some conclusion? I think they came to the conclusion that the creek was in a very insanitary state, and something should be done by the Government.
38. But, now that they are likely to pay for it, they are not so anxious? I think they rather objected to the extra cost of a covered sewer. I have pointed out that an uncovered sewer would cost £13,000, whereas this would cost £25,000.
39. Can you tell us the date of the last letter from the Newcastle Council on this matter? I do not remember the date of the last letter.
40. At all events, their zeal seems to have cooled down a bit? When it comes to the pocket, the zeal of many people very often cools down.
41. *Mr. Hoskins.*] I suppose these letters from the Municipal Councils, complaining of the nuisance, did not say they would be willing to be taxed to pay the cost? I think I am correct in saying that the Wickham Council stated that they were willing to bear their portion of the expense, but that, in their opinion, Merewether and Hamilton should also bear a portion of the expense. However, Mr. Hickson was not of that opinion.
42. *Dr. Garran.*] This new Hunter District Water Supply and Sewerage Act is based very much on the Metropolitan Water Supply and Sewerage Act? It is.
43. How far up does the area affected by that Act go—does it reach Maitland? Quite.
44. How far? I do not know that it is exactly defined in the Act. It is called the Lower Hunter, and where that would end I could hardly say.
45. Surely it must define where the taxpayers live? Whenever a Sewerage District is proclaimed, I think it would come under the operation of the Act. There is a schedule to the Act showing the Municipalities, but other Municipalties, as they are formed, might be brought in.
46. I have a particular reason for asking this question, and that is this:—when the Act is brought into operation, if the payment is going to be the same as that in the metropolis, the charge will be on the whole district for every work? Yes; on the whole district.
47. As I understand it, in Sydney, for instance, if it cost a little more to make sewerage works at Balmain than at Annandale, the Balmain people will not be charged extra on that account, but the cost will come out of the general fund? Yes; it will. But I do not think the same argument will apply here, as far as the sewerage is concerned, because in Sydney there is one general scheme, whereas in the Hunter River District it can hardly be so, for the same Sewerage Scheme will not answer for Newcastle and for Maitland.
48. The Western Suburbs scheme is different from the Bondi scheme? They are treated as one.
49. They are two distinct schemes? I do not think the cases are parallel. The Sydney sewerage may be looked upon as one scheme, but it could not be so in the case of Newcastle and Maitland; the scheme for the one would have no connection with the other.
50. The point I want to get at is this:—if they are going to charge it on the district generally, this question, as to the contribution of different Municipalities, will not arise? There will probably be separate schemes, which may have to be dealt with separately; it is quite different in the case of the water scheme, which serves the whole district.
51. If they are not going to charge it on the district generally, some authority or other must decide who is to contribute? That would be done by the Proclamation of the Governor, defining the Sewerage District.
52. Who is going to move the Governor? The Minister, at the instance of the Hunter River Water and Sewerage Board.
53. It is a question whether the Board or the Minister will do so? It will be arranged between the Board and the Minister.
54. We have evidence at present, that the Municipalities are at loggerheads on the subject? True; but I do not think that there will be any difficulty whatever about it, as between the Governor and the Board. I think the Board will, probably, be looked upon in a very different light from the Municipalities.
55. It has been given in evidence already, that this little piece of work is part of the general Sewerage Scheme for the whole of the Newcastle locality? Yes.
56. But that general Sewerage Scheme has not yet been devised? It has not.
57. Therefore, it is to some extent, a matter of guesswork, except so far as any system of sewerage will require a certain number of outfalls for the rainwater, and this, from the nature of it, would have to be one? Mr. Hickson will tell you that it is the only one. The effluent water from the Sewerage Scheme will all be discharged into this sewer.
58. When you talk of effluent water, you assume that you are going to have a sewage farm of some kind? I do not think that follows.
59. Then it will be surface rainwater? No; in all probability, the sewage will be treated in accordance with what is known as the "international" system—that is, precipitation and filtration.
60. Not put into the ocean at all? Not put into the ocean at all.
61. We have been told, at other times, that the doctrine of Mr. Rawlinson and other authorities is, that if you are near the coast and can get the sewage into the ocean, thank God, and put it there? But there is this difference: that in this case, where it is proposed to put it into the ocean, the currents would bring it right on to the shores, whereas, at Bondi the currents will take it right away to sea. The case of Bondi is precisely opposite to that of Newcastle.
62. Your idea is that this sewer will not be, merely, a means of discharge for surface water, but also for effluent water? Yes.

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63. And that whatever scheme is adopted, it must be part of that scheme? Yes.
64. And that will be a scheme that will group these three or four Municipalities together? Undoubtedly.
65. And, in different proportions, they are the parties to contribute to the cost? Yes; they will be grouped in a Sewerage District, no doubt.
66. But it is an open question, so far, as to who will have the power of determining in what proportions they shall contribute? I think I can say that it will be the Water and Sewerage Board, subject to the approval of the Governor. The charge will, I have no doubt, be uniform in each Sewerage District.
67. You think they have absolute power to determine, and the Governor will act on their advice? I think so.
68. The Governor never acts, except on the advice of the Ministry? Yes.
69. Then, they will have to get Ministerial approval? Yes.
70. Does the Metropolitan Board have to get Ministerial approval before it acts? Undoubtedly, in such a case as rating.
71. *Mr. Wall.*] I understand that this creek drains the whole of Merewether, as well as Newcastle? I do not think I said the whole, but portions.
72. I suppose the whole of these Municipalities will contribute to the nuisance which Dr. Ashburton Thompson points out? I suppose that, to a certain extent, they do, but Mr. Hickson has pointed out that only Newcastle and Wickham will really be benefited by this particular portion, which we are going to carry out now. Eventually, of course, the whole of it will have to be made a Storm-water Sewer, but at present, Mr. Hickson points out, only Newcastle and Merewether will benefit in this particular part.
73. I understand that the nuisance existed in these Municipalities, but was contributed to by the other Municipalities? That is the contention in some of these letters.
74. Have you had any application from the people of Merewether in regard to this scheme, before the Sewerage Act was passed? I am not quite certain whether we have heard from Merewether, but I am inclined to think that they have objected to any charge being put upon them.
75. *Mr. Ewing.*] This Act creates, then, a sort of dual responsibility, or right of taxing. Inside municipal boundaries a Municipality has the right to tax, and this Act gives another authority the right to tax? The Municipalities have the right of taxing for borough lighting, roads, and so on, but, as soon as a Sewerage District is established, they will have no further power to levy sewerage rates, I imagine—that will be one of the functions of the Board.
76. So, within the Municipalities, there will in future be the two rights of taxing—the municipal right, and the right of the Board? Yes. This exists in Sydney at present.
77. Can you imagine a clashing between the two authorities? I do not think that it has ever occurred in Sydney.
78. That Board has not been long enough in operation? It has been some years in operation. The Sydney Board has been in operation rather more than four years, and I do not think there has been any clashing.
79. The municipal authorities would have no right to control the Board at all, with regard to expenditure? Not at all.
80. *Chairman.*] Except that they would have representatives on the Board? Yes; the reports of the Board would be made public.
81. *Mr. Ewing.*] I suppose you do not know how this Act will work? If we may take the Sydney Act is a guide, we have every reason to suppose it will work very well. There is no doubt that it will bring into the Treasury coffers a great deal more money than has yet gone into them, on account of the water-works.
82. You think a sensible Board might administer any Act? Well, I should think so.
83. *Mr. Hoskins.*] Is it not a fact that the Metropolitan Water and Sewerage Board have found that the amount received, by means of taxation, from those who benefit from the Sewerage and Water Scheme, will not suffice to pay the interest on the debt contracted, in order to carry it out, and they will have to increase it? I think it is shown, that, hitherto, they have paid the interest on the capital. Although I do not know that I have any positive official information, it is possible, I think, that they may have to increase the rates, because some large works are now being thrown on to their funds, which were not on before, for instance, there is the North Shore Water Supply. That has cost something like £150,000, I think. I am speaking from memory. Although that will bring in additional revenue, at the same time it is just possible that they may have to increase the rates, but that is a matter for the Water and Sewerage Board to see to. They are not taxing now up to the full extent of their powers under the Act. In other words, they have been able to pay interest on the debt, without using, to the full extent, the powers given them by the Act.
84. *Mr. Wall.*] I should like to know in what light your Department view the construction of these works—whether as an advance to the Municipalities, to be refunded to the State, or whether as a national work, to be carried out at the expense of the Government? Under this Act, the Water and Sewerage Board becomes a Government Department. If you look at section 30 of the Act, you will see that it provides:—

> All moneys payable to the Board under this Act, or any By-law made thereunder, shall be collected and received by the Board, or their authorised agent as aforesaid, for the use of Her Majesty, for, and on account of, the Consolidated Revenue Fund; and shall be paid into the Treasury to the credit of accounts to be there kept, under the names respectively of the "Hunter District Water Rates Account," and "The Hunter District Sewerage Rates Account." And the provisions of the Audit Act, in force for the time being, and of any Act regulating the collection of public moneys, and the audit of the public account, shall apply to the Board, and to all officers acting under their authority and control, and to any such agent as aforesaid.

Then if you refer to the 4th part of the Act, page 36, section 129, you will see how the moneys levied under this Act are to be appropriated, and I may point out that the carrying out of any works for the Hunter River District is entirely different from carrying out works for the country towns' water supplies, inasmuch as the country towns' water supplies are administered by the Municipal Councils, but everything collected under this Act goes straight into the Treasury.
85. *Chairman.*] It is a semi-Government Department? It is, in fact, a Government Department.
86. *Mr. Wall.*] But only until such time as the amount advanced by the Government is liquidated. It is not the intention of the Government to construct these works, and encumber themselves with them, but to charge the cost of them on the persons benefited by them? No doubt, when sixty years have passed away, there will be a necessity for further legislation on the subject.
87. My only object was to ascertain whether your Department deemed it advisable to construct these works in localities where the amount collected will not be sufficient to meet the interest on the capital invested—whether you thought it was the duty of the Department to construct works which will not give a return on the amount invested? That is a question of policy, on which I have no authority to speak.

Robert

Robert R. P. Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and examined :—

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88. *Chairman.*] You are Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers? Yes.
89. You were a resident at Newcastle for some time? Yes; for nine years.
90. You were there in connection with the Harbours and Rivers Department? Yes.
91. You are, therefore, familiar with the whole of the stinks of Newcastle? Yes; pretty well.
92. You are familiar with Newcastle and its suburbs? Yes.
93. And particularly with this portion where it is proposed to construct this sewer? Yes; I know it very intimately.
94. I suppose that, in connection with your present office, you have visited the site of this proposed sewer? Yes; on Saturday last I was there.
95. Is it a fact that there is a very great nuisance existing there at present? Yes.
96. Particularly in the summer time? Especially at low water and in summer, on that portion coloured red, from the Northern Railway to the A. A. Company's railway, which is all tidal.
97. Is your outfall there on the present water line, or on your proposed reclamation line? It is on the present line.
98. What is the line coloured lavender? It is the municipal boundaries.
99. If it is on the present water line or water boundary, is it not contemplated to reclaim land there? No; the reclamation runs out before you get to that.
100. The reclamation is to the eastward of that? Yes.
101. And what is now the water boundary would be the water boundary then, when the reclamation works were completed? Yes.
102. How far up will this sewer be subject to tidal influence? Nearly the whole way. The high tide goes nearly up to the A. A. Company's railway.
103. That is where your works will cease for the present? Yes.
104. Owing to this tidal influence, will there not always be a large amount of unpleasant matter deposited in the sewer? Yes; but it will be swept out by the outgoing tide. What makes it so offensive now, is that the tide brings in a lot of matter that finds its way from Wickham. It is brought up and lodged in this channel, and on account of the rough bottom, the outgoing tide, and the water behind it, are not able to flush it out clear.
105. Do you intend to impound the water, and rush it out, or to do it with the ordinary ebb tide? With the ordinary ebb tide, and the storm-water behind it, which is always running.
106. I suppose there are no cesspits actually draining into Cottage Creek, or Throsby's Creek at present? I do not think so.
107. It is only the house slops, which become very offensive? That is all.
108. And it is not intended, even if this sewer is constructed, to allow cesspits to drain into it? Certainly not.
109. Only the slop-water, such as, at present, causes a nuisance, will be allowed to go into it? Yes.
110. And in the event of a system of sewerage being adopted for the District, then the slop-water would be received by the sewer proper? Yes.
111. And this would revert to storm-water? Yes.
112. If the sewage water is dealt with by precipitation? Yes.
113. What is the reason for covering this very large sewer? On account of the nuisance that there must always be. For the whole of its length it will be under tidal influence, and there must always be a nuisance there. That is to say, the incoming tide brings up a certain amount of objectionable matter, which floats on the surface, and for that reason we propose to cover the sewer.
114. But your prevailing winds would probably enter it at the water mouth, and blow all the noxious effluvia to the other end. You would get it just the same, would you not? Of course, you would get the smell all the same; somewhere; but it does not matter, because there is no population on the south side; but immediately along this sewer there is rather a dense population.
115. Then, one reason for covering it is not to allow the effluvia to rise the whole length of the sewer, but to send it to the end where there is the least population? Yes. When the time comes for extending the sewer inwards, it will be open from that point up, because it is beyond the tidal influence then.
116. Will not the people, south of the southern end of the sewer, have a right of action against you, for concentrating the stinks on their particular property? There is no population there. There can be no population south of that line, because this is the racecourse, the reserve, and the A. A. Company's property, which they do not intend to sell.
117. They might sell at any time? There is no probability at all of that being sold.
118. Still it is in private hands and it may be sold? Yes.
119. The racecourse is rather low-lying land? Very low-lying land.
120. You think that, all things considered, it would be better to incur the extra expense? Yes.
121. I understand it would be £13,000 for the sewer uncovered, and £22,000 for it covered? The difference is between £13,000 and £25,000, which is our estimate. We had a tender for £22,000.
122. The Committee have been informed by Mr. Barling, that the Newcastle people have objected to the extra cost of covering in the sewer; do you not think that they ought to have a very fair idea of what is necessary in the way of doing away with that nuisance, and if they are satisfied with an open sewer at less cost, would it not do? I do not think it would. They are not so much interested in it as the people of Wickham, and, from conversations that I have had with members of the Wickham Council, I know that they very strongly advocated a covered sewer.
123. As they get a very large benefit at a comparatively small cost, of course, they will not object to the extra cost, whereas the Newcastle people, who have to bear the bulk of it, will probably object? Of course I do not know the view which the Newcastle people take of it now, but I am strongly of opinion that it ought to be covered in.
124. But when we were considering the proposal for a storm-water sewer at Johnstone's Creek, there the necessity for covering over did not come out so strongly as it seems to come out now? I did not think it was necessary there.

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125. But the population was as dense there as at this particular point? Oh, no, there is very little population immediately close to the Johnstone's Creek sewer, which is influenced by the tidal-water, and, again, Roselle Bay is much cleaner than this is. When you visit this spot you will see that these banks are mud banks, most offensive to the smell, and, when the tide is rising, the flood-tide brings up a lot of offensive matter from these banks.
126. Will not the construction of the proposed sewer merely carry out this offensive matter that is now deposited at the side of the channel, and carry it along the shores immediately west and east of its outlet? Yes. It will bring it into Throsby's Creek—there is no doubt about that.
127. So you are taking it away from one place, and depositing it within a couple of hundred yards of it, in another? Yes. We are preventing it from depositing in a place which is thickly inhabited, and, no doubt, some of it will find its way out to the harbour, and some will land on the beach, but there is no population there.
128. Has anything been done, or is anything being done, with a view of keeping deep water along that side of Throsby's Creek, so as to prevent the noxious stuff from being deposited on the the present mud-flats? No; nothing.
129. Then, you admit that there is considerable danger of these low mud-flats, at the outlet of this particular sewer, receiving all this noxious stuff? I do not think they will be very much worse than they are at present. They receive it now.
130. What is the use of spending £25,000, if you are only going to remove it from your back door to your front door? We are removing it, as I say, from a place that is thickly inhabited, and from a place where it collects owing to the rough bottom, and are taking it into the tidal-water, where a great deal of it must be carried away.
131. I suppose that the ebb tide flows out of Throsby's Creek into Port Hunter? Yes.
132. Does very much tide come down Throsby's Creek? A strong current comes down there. It ebbs there about eight hours out of the twelve, I should think. There is more ebb than flood.
133. How far do the proposed reclamation works on the southern side of Throsby's Creek, opposite Bullock Island, go from your outlet? From memory, I should say, about 150 feet or 200 feet.
134. Outside that reclamation line would be fairly deep water and no mud-flats? When finished, it would be deep water.
135. So, with an ebb-tide running from Throsby's Creek into Port Hunter, it would take a large quantity of this sewage and drainage matter, and there would only be about 100 yards, or so, between the outlet and the deep water formed by the reclamation, for it to be deposited on? There will not be very much opportunity for it to be deposited there, for that, no doubt, will be faced, and pitched, and improved, when this reclamation is carried out.
136. So there will be very little likely to go north-west up the creek? Hardly any at all will go there.
137. A little must go when the tide is in flood? None from the sewer could go up, for, when the tide is flowing, it is also flowing up the channel.
138. Is the mouth of the sewer, at any time, absolutely below low-water mark? No.
139. Will it when your sewer is constructed? No.
140. That is to say, that, at low water, the water out of your sewer would have to fall into salt water? The level of the bottom of the sewer is practically low water.
141. So that, when the tide has ceased to ebb, and is beginning to flow, it will commence to enter the sewer? Yes.
142. And you do not think that much sewage matter can possibly go north-west along Throsby's Creek? No; because, when it is flowing out of this creek it is ebb-tide, and it will be carried out to sea.
143. Really, the discharge of it will be on the ebb-tide? Yes.
144. And that will be carried out into water comparatively deep, with no mud flats to deposit on? Undoubtedly.
145. When the reclamations are complete? Yes.
146. What is the rise and fall of the tide in Port Hunter? The ordinary tides are about 3 feet, neaps, and about 5 feet, springs. I have seen them 6 ft. 6 in.; but that is a very exceptional tide.
147. Putting aside altogether instructions or political pressure in the matter, and looking at it from your knowledge of the district, do you think that, in the interests of the people, this sewer should be constructed, and of the dimensions and character that are proposed? I do.
148. *Mr. McCourt.*] Have the plans and details of this scheme been laid before the Newcastle Water and Sewerage Board? No; they are only just formed, and they have only had one meeting.
149. They will have to approve of the scheme, will they? I do not know that they will have to approve of it; but, no doubt, they will be consulted about it. The Department constructs all main sewers.
150. Section 35, subsection 24, says that "one duty of the Board will be to make by-laws for regulating the dimensions, material, form, construction, arrangement, and maintenance of sewers," so they will have to approve of your scheme? This is on the same lines as the Sydney Water Supply and Sewerage Board, and they are not consulted, in any way, in regard to the main sewers. They do all the reticulation.
151. This Act is somewhat different, is it not? I do not know whether it is different in that section.
152. Section 98 says:—"The Board may make any sewers or drains of such construction, and in such manner, as they think proper?" Yes.
153. So they could carry this out as an open sewer, if they liked? It will rest with the Minister to say whether they can or not. The Minister decides all the main trunk sewers and the main water supply pipes. They are laid by the Department immediately under him.
154. Will not the Newcastle Board have their own engineers? Yes; the same as the Water and Sewerage Board of Sydney have.
155. Section 98 says:—"The Board may make any sewers or drains of such construction, and in such manner, as they think proper?" Under the direction of the Minister.
156. You do not think, then, that the Newcastle Board will have a say in this matter as to whether it shall be carried out or not? I think it rests entirely with the Minister to say which Department should do it, but I think there is no objection to their having a say in the matter.

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157. Do you know if the same provisions are in the Metropolitan Act as are in the 96th, 97th, and 98th sections of this Act? I could not tell you from memory, but I rather think so.
158. Under any circumstances, do you think it would be necessary to submit the plans to the Board for approval? I do not think it is; but there is no objection, in the least, to doing it.
159. According to your opinion, then, the Board would have no say as to how the sewerage works of Newcastle should be carried out? It rests, as I say, entirely with the Minister, to say who should be the constructing authority—whether the Board or the Sewerage Branch—and I presume that it will be done the same as in Sydney. We construct all the main trunk sewers, and the Water and Sewerage Board do all the reticulation.
160. Then, the Board have no control over the nature of the works carried out in their district? If the Minister so directs, they have not.
161. What is the composition of the Newcastle Board? It is on the same lines as the Sydney Water Supply and Sewerage Board. There are three Government nominees, one from Newcastle, one from East and West Maitland, and two from the mining townships—seven members.
162. Who are the Government representatives on the Board? Mr. Alexander Brown (Chairman), Mr. H. D. Walsh (the Resident Engineer for Harbours and Rivers), and Mr. J. S. or J. R. Rogers.
163. *Dr. Garran.*] Throsby's Creek, at present, I suppose, receives the sewage from Wickham and from Carrington? Yes, the slops.
164. Those two Municipalities make that their outfall? Yes.
165. You are only going to improve the outfall, in this case, for the Borough of Wickham? That is all.
166. But the discharge from this sewer will be a little fuller than it is at present? It will be fuller, and the sides, of course, will be smoothed off, so as to prevent the stuff from depositing.
167. At present, a good deal of the filth soaks into the banks? Yes.
168. You are going to prevent that in the future? Yes.
169. You are going to save the banks, at the expense of Throsby's Creek, by making Throsby's Creek a little bit fouler, and the banks of Cottage Creek a little cleaner? I do not know that we shall make Throsby's Creek fouler.
170. You risk it, at any rate? Well, it will be made fouler to the extent of whatever material now lodges in Cottage Creek, which will not do so afterwards.
171. To some extent, you will increase the filth of Throsby's Creek? Yes, no doubt.
172. At the end of section 98 of the Hunter District Water Supply and Sewerage Act, it says:—

> Provided that nothing in this Act shall authorise the Board to make, or use, any sewer, drain, or outfall, for the purpose of conveying any sewage, or filthy water, into any natural stream, watercourse, lake, or pond, until such sewage, or filthy water, is freed from all excrementitious or other foul or noxious matter, such as would affect, or deteriorate, the purity and quality of the water in such stream, watercourse, lake, or pond.

Would that section prevent the Board from using a sewer, which clearly does already, according to your own evidence, foul Throsby's Creek banks a little? I do not think so; I do not think it was intended to apply to a case of this sort, for if you use that argument a little bit further, you prevent all sewers from running into the sea.
173. The language is very stiff, it seems to me? I think it is intended to apply to fresh water streams.
174. Your answer to Mr. Garrard shows that your hope of getting rid of this stuff into sea water, depends a great deal on the line of your reclamations being finished? Yes; getting it right away.
175. But that will not be finished at the time you will have done this little job? Oh, no.
176. Could your draughtsman mark on that plan the line of reclamation, for, at present, there is a large point jutting out to the north, which seems adapted to catch this sewage matter thrown into the harbour;—the map shows the coast line is adapted to catch this stuff? I could put a dotted line on to show what you want.
177. How long, do you think, it will take to complete this sewer? I think the contract time mentioned is fifteen months.
178. How long will it be before your reclamation line is finished? I cannot say.
179. How many years? I cannot say; that is in the Harbours and Rivers Department. I do not know what steps they have taken.
180. You cannot form any conception? Not the least.
181. Upon that would depend the length of time that will elapse before this facility, for getting the stuff out to sea, will arise? I do not think so, necessarily. No doubt, if that reclamation were made, it would improve the outfall very considerably, but I do not think there is anything to prevent this being made now. Some material may rest on the sandbank here [*pointing to the plan*]; but I think a great quantity of it will be carried out to sea with the strong rush of tide that there is from here.
182. Will you show the Committee where the creek begins? One branch commences at the corner of Adamstown, and drains a series of swamps along the northern boundary of Merewether. It eventually gets, more or less, into a defined channel at the A.A. Company's pit—the A pit, I think, it is—and follows these swamps down into the channel, and so on into Throsby's Creek. Another one, fairly well defined, goes from this swamp at the junction of the Newcastle and Merewether Municipalities, and then it branches off again, along the north-eastern portion of Merewether, along the Macquarie Road, and another one goes close to the Newcastle Company's line, along Merewether-street.
183. Well, then, if you continue this sewer down south, as you propose to do some day, you will, in the first instance, continue it right through the Hamilton Municipality? Yes.
184. Then it will be of great advantage to that Municipality? Yes, when it is finished.
185. Will it not be of some advantage to them, even now, to bring it as far as the railway? Very slight, I think. This stream is not at all foul at the corner of Hamilton and Newcastle.
186. Do not the people there pour their slops into it? I suppose that some slops go into it, but it is all well filtered. The water is drinkable there.
187. The soil is so sandy that it filters the slops before they get to the creek? Yes. It does not get very foul until it reaches the part influenced by the tide.
188. It would not be foul, then, except for the tidal influence? Not as much as it is.
189. It is really more what comes in with the tide than what goes out with it? Not more; a great deal, however, comes in from the sea.

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190. You say it is with the rise of the tide that it comes in, but at the same time is it not, principally, the filth of Carrington and Wickham? Nearly all the material comes down from Wickham and this portion of Newcastle, but very little from Carrington.
191. Then, according to your account, Wickham is the principal contributor of the nastiness that comes up this sewer? It is about equal with Newcastle.
192. You think that they contribute about equally? Fairly equally, I think.
193. What will be the full length of the sewer when it is finished? The full length of this Cottage Creek now is about 2 miles. I am not prepared to say that it will be necessary to make a concrete channel for all that distance.
194. Will you point out where the full length of it ends? The longest piece goes to the corner of Adamstown.
195. You include that in the 2 miles? Yes; but I am not clear that it will be necessary to make a concrete channel all that way up. I think it is more than likely that we shall only want a concrete channel to where we shall put our pumping-station, if the general Sewerage Scheme is adopted.
196. At the present time, is the creek most foul at high water, or at low water? Low water.
197. When it is at high water it is not so bad? No.
198. It is worse when the water has left the banks moist and filthy? When the tide is gone, and has left the stuff to settle on the rough bottom, and on the sides.
199. When you have your sewer made it will be cemented and have fairly smooth sides? Yes.
200. Then there will not be much filth adhering to the sides? Quite so.
201. Well, then, where is the need for the covering? There will be some filth at high-water, and I think there will be sufficient floating on the top of the tide to make it offensive.
202. But there will not be more stuff floating on the creek than there is now? No; but it is offensive.
203. You said, not very offensive? I think it is sufficiently offensive to warrant us in going to the expense of covering the sewer.
204. That is a matter on which the people, who will bear the taxation, might well be asked their opinion? No doubt.
205. We have been told by Mr. Barling, that no sewerage system has been absolutely decided upon, but, looking at that plan, it appears to me that you have studied the subject to some extent, and have laid out a general scheme;—would you explain what those blue and red lines mean? There are in this district two levels to be dealt with. This A.A. Company's property, Hamilton, part of Wickham, and a portion of Adamstown, is very low—not much above high-water mark. On the other hand, the main part of Newcastle, and the main part of Merewether, is high. The red line shows a possible high-level sewer, gravitating to a pumping-station, which will be somewhere in that area.
206. At the south-west corner of Hamilton? I do not wish you to understand that that is the place exactly fixed for it. In all probability, it will be at this end of the Cottage Creek—it will be somewhere in this flat. The blue lines show the low-level sewers coming from Bullock Island, Wickham, Adamstown, New Lambton, Lambton, and the lower portion of Newcastle—that is, Hunter-street and Blane-street.
207. Bringing it altogether to one pumping-station? Yes.
208. Whether it comes from high or from low level? Yes.
209. What will you do with it then? I think it very likely that we shall treat it on the international system. Wherever the pumping-station is placed, it will require a concrete channel to connect it with the proposed works.
210. It would be quite possible, I suppose, to drain the high part of Newcastle into the ocean? Yes.
211. What is the objection? The scheme, as originally laid down—I think it was by Mr. Stayton—some years ago, proposed discharging, practically, on the boundaries of Newcastle and Merewether, but that is a most unsuitable place. There is a very curious formation on the coast at this place. There is a bar outside the sandbank. The beach drops down pretty quickly into deep water, and rises again on to a bar outside, where there is only about 4 or 5 feet at low water. Then it drops into deep water. The bar is very nearly half a mile from the coast, and the trend of the current is to bring everything up on to the beach, and I am quite satisfied that, having an outlet there, the sewage would be deposited either north or south, as the tide was flowing, and be left on the beach.
212. Then this southerly current does not have a clean run between this bar and the coast? No; you have to go a long way out before you get it.
213. It makes an eddy close to the coast? Yes; I think the Newcastle people themselves very strongly objected to that, and I know that Mr. Merewether, who owns this property, also very strongly objected to have it there.
214. For that reason, you propose to combine the high level and the low level, in one system? Yes.
215. What area, relatively, would there be drained on the low-level system and on the high-level system? I could hardly tell you that, without having a larger map. We will have to carry the sewers farther than shown on this map.
216. Would one-third be under the high-level system? Yes; I think, probably, about that.
217. Is the present population more on the high level or on the low level? More on the low. There is a very thick population at Hamilton on the low level, and also a very thick population at Wickham, Bullock Island, and Merewether, on the low level, and also at New Lambton.
218. Does Lambton all drain into the low level? Yes; that is getting thickly populated.
219. Have you any idea what the cost of that outfall and channel, through to the ocean, would be—was it ever calculated? Oh, yes: but I cannot tell you.
220. Does it appear in Mr. Stayton's report? That will give it, no doubt.
221. You feel reasonably sure that this low ground at Adamstown, and so forth, is not too low to be drained into this place as proposed? No.
222. You will have a deep reservoir or well there? Yes. We know we can gravitate all the sewage into some place within this low-lying ground at Hamilton.
223. Could you pump it all up, and treat it first, and discharge it afterwards? Yes—treat it on the international system. I think we could not manage a sewage farm here—the land is too valuable to purchase for that.
224. Is the line across Throsby's Creek proposed to be a syphon? That would have to be a syphon.

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225. Carrington, having a sea-board all round it, might not be required to be connected with the system for some time? I think it ought to be—it is getting very thickly populated.
226. Supposing that you brought it all down to the south-east part of the island—could you not get it right into the water without much trouble? That would be in the harbour, and that would be very objectionable.
227. But that is what you are doing now? To some extent, but not entirely. The solids are not going into the harbour.
228. They do a great deal? They are not supposed to.
229. As far as you understand, if this sewer is sanctioned, the Government will make it and then hand it over to the Board? I presume that that is what will be done.
230. *Mr. Wall.*] Where this offensive matter is located at the present time, is within the Borough of Newcastle, is it not? No; between Wickham and Newcastle.
231. But the high-tide leaves the offensive matter within the borough of Newcastle. Which is the boundary of the borough of Newcastle? The creek itself, and then it goes along Parry-street and across the A. A. Company's property.
232. The greater portion of the sewer will be in the Borough of Newcastle? No; half in Wickham and half in Newcastle.
233. But its continuation through the A. A. Company's property is in the Borough of Newcastle? Yes.
234. You stated, just now, that there are a number of residents there? Yes; there are a good number of residents just along there.
235. Those residents would, also, be connected with the Borough of Newcastle? Some of them.
236. Is the offensive matter that lodges in Cottage Creek brought in by the tide, or is it contributed to by the residents? Some is brought in by the tide, and some is contributed to by the residents.
237. I understood that the greater portion of it was the effect of the tide? Some of it is.
238. Still, it is contributed to by the residents? Yes; undoubtedly—contributed to by all the residents that live close to it, up as far as Parry-street.
239. What is the fall, from the commencement of the sewer at the A.A. Company's railway, to the point where it discharges into Throsby's Creek? The first section from the A.A. Company's railway to Blane-street is 1 in 200, and from Blane-street to the Great Northern railway it is 1 in 600.
240. *Mr. Ewing.*] What is the lengh of the sewer? Nine hundred and twenty feet.
241. The diameter—it is circular, I suppose, pretty well? No; it is elliptical.
242. How much? Twenty feet wide by 10 feet high, and the upper portion 20 feet wide by 8 feet high.
243. You said, in reply to Dr. Garran, I think, that the tide affected it nearly the whole way? Over the whole of the portion that we intend to concrete.
244. One portion of the sewer is not much more than 3 feet lower than the other portion of the sewer. The fall is not much more than about 3 feet? Yes; about 3 feet.
245. Therefore, if a 4-foot tide enters it, it will come right up it? It will.
246. Therefore it will be slushed out twice every twenty-four hours? Yes.
247. It will be a smooth-bottomed sewer? Yes.
248. How will anything offensive be in it? Nothing.
249. Why cover it then? Because, when the high tide comes in, there is sufficient offensive matter on the top to warrant us in covering it. No doubt, the sewer is mainly offensive when it is dry, but also to some extent when it is full, or has any water at all in it.
250. Do you think that the sewer, washed out once in twenty-four hours, would be very offensive? It is not a question of the sewer, but of the surface of the water being offensive.
251. How is the stuff going to concentrate in that sewer; you have a 20 foot or 30 foot opening, and you say that from Throsby's Creek the stuff concentrates in this sewer and makes it offensive; how is the water concentrated in that sewer worse than the water in Throsby's Creek; there is no reason why it should force itself into that? The incoming tide finds its way up this creek, and brings whatever amount of offensive matter there may be in the water with it. The outgoing stream, of course, brings offensive matter, and there it remains in suspense until the tide begins to turn. During the time of the flood tide the offensive matter from outside, of necessity, is lying on the surface of the water, and it is just a question, whether the amount of offensive matter there warrants us in spending the extra amount in covering the sewer, and I think it does.
252. You really do think there is sufficient to warrant that? Yes; I have known the place for many years.
253. Supposing that it were left open, to see whether it would be very objectionable—would it be very expensive to cover it subsequently? No; it would cost about £13,500 to make it an open sewer that could be covered. Then it would not cost more to cover it than now—practically the same.
254. Then, after all, it will not cost very much more if you try the experiment of having an open sewer first? No; it will be a little troublesome going under the bridge. That portion we would have to cover, and under the road. That would run into about £500, and would make the total cost about £14,000.
255. What is the use of covering that, if you have already got a bridge over it there;—you have a bridge there all over it? Yes.
256. And it is worse in its present state than it will be after it is concreted? Yes.
257. At present, there is a bridge over it, is there not? There is a bridge that will have to come down; a new bridge will have to go up.
258. *Chairman.*] Then the covering will be a new bridge? Yes.
259. Whether you make that by throwing girders across, or by putting a roof on your sewer there, is immaterial? It does not make much difference in cost; it is, practically, the same.
260. *Mr. Ewing.*] At what rate does the tide run in Throsby's Creek? I suppose at about 2½ miles an hour.
261. Well, 2½ miles an hour will carry away anything comfortably—it will carry heavy sand? No; it does not carry these sandbanks away.
262. But those are mud, and not sandbanks? The tide, that runs there, will not touch these sandbanks.
263. But there is no doubt that the tide is fast enough for anything coming down the sewer to be taken away? I think so. I think there will be very little deposit on the beach there.

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264. *Mr. Humphery.*] What is the distance from the end of the breakwater to Cottage Creek? It is about a mile and three-quarters.
265-6. Is the tide sufficient to carry the sewerage or the drainage from the proposed sewer past the breakwater during ebb? I think it is. The tide gets very much stronger farther out.
267. The tendency of the tide is to carry it past the breakwater? Yes.
268. As a flood-tide only would cause anything objectionable to come into the sewer, do you say that it is absolutely necessary to cover it? But the flood-tide only does not do that; it is done partly by the flood-tide, and partly by the liquids that come from these houses along the creek.
269. That is the drainage down the creek, but we are speaking of the offensive matter that comes up the sewer with the flood-tide? Yes.
270. Do you think that the offensive matter is sufficient to render it very desirable to spend the £12,000? Not if it were only offensive matter coming up the creek, but there is offensive matter going down the creek at the same time, and it is held by the water coming up the creek. It cannot get away until the tide begins to recede.
271. Do you see any objection to first constructing an open sewer, and subsequently covering it, if that should be found necessary? No very great objection to it.
272. And no great additional cost? And no great additional cost. It would not cost very much more. Of course, it always costs a little more in carrying out a work at different times, instead of all at once.
273. With regard to covering the portion under the proposed bridge, I suppose that if you did not cover that portion, as proposed, you would have to cover it in some other way? The covering makes the bridge.
274. Then covering that portion does not add, in any way, to the cost of this scheme? No; that must be done in any case.
275. *Mr. Wall.*] There is no doubt whatever that the offensive matter would be held in suspension in an open sewer? Yes.
276. Do you anticipate that it would be objectionable to have it in suspension? Yes; I know it is offensive, and I think it is offensive enough to warrant us in going to the cost of covering the sewer.
277. It is only when it is held in suspension that it is offensive;—when the tide flows out it takes away all the objectionable matter? No; not now. It is very offensive when the tide is out, on account of the rough sides and bottom.
278. The offensiveness would be minimised by the construction of an open sewer with the block sides? Yes; it would be minimised.
279. *Mr. Ewing.*] You say that the tide runs at about 2½ miles an hour? Yes.
280. Therefore, the least rate at which it would run towards the ocean, would be 2½ miles, and at an increased rate lower down? Yes; it is stronger there.
281. How far is it from the Nobbys, or the Heads, to the creek? About two miles and three-quarters.
282. Therefore, anything put in there—any storm-water—would be at the Nobbys in an hour? Yes.
283. *Chairman.*] Sewerage matter would not flow at the same rate as the tide? This is not sewerage matter—it is only liquid. We are not speaking of solids. They are not supposed to go into it; but the liquids would go at the same rate as the tide.
284. The scum—the outcome of the solid matter—would rise to the surface, and, owing to the force of the prevailing winds, would not travel at the rate of the tide by at least half? That would depend on the wind. It might not go at all.
285. It would depend very much on the wind? In a very strong easterly wind I have known no ebb tide, at all, at Newcastle.
286. As a matter of fact, the position of Cottage Creek being at the south-west end of that water, and the prevailing winds, in the summer, being from the north-east, it would be made a regular catch-pit for all the *debris* going about the harbour? Yes; there is a great deal of *debris* there.
287. If there were a large amount of *debris* floating on the top of the harbour, and if the prevailing wind were north-east, the matter discharged from the sewer would probably not reach half-way to the Nobbys? With a very high north-east wind it might not reach there at all.
288. Unless it were mixed up with the waters of the harbour it would not reach the Nobbys at all during the ebb tide? No. Sometimes I have known no ebb tide at all with the north-east wind.
289. *Mr. Wall.*] If these noxious smells were generated in a covered sewer, would they not be still more offensive at the end of the sewer, near the A.A. Company's railway? I do not think they would. Besides that, there is no population to be affected by them at the southern end.
290. *Chairman.*] On the principle of a boy's pea-shooter, and with the north-east wind blowing up that, would the smell not go with increased force over Adamstown? I do not think it would from a covered sewer.

Charles H. Ohlfsen-Bagge, Esq., Principal Assistant Engineer, Sewerage Branch, Department of Roads and Bridges, sworn, and examined:—

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291. *Chairman.*] You are Principal Assistant Engineer in the Sewerage Branch of the Department of Roads and Bridges? Yes.
292. Have you visited the site of the work we have under consideration? Yes.
293. On more than one occasion? Yes.
294. Were your visits, in connection with this storm-water sewer, alone, or in connection with the general system of sewerage? For both purposes.
295. How long is it since your visit in connection with the general sewerage matter? I was there only last Saturday.
296. In connection with that? Chiefly in connection with the storm-water sewer; but I had a general look round, at the same time.
297. Your experience of Newcastle does not date back very far, then? It goes back more than a year. I have been there several times, reporting on matters.
298. In reference to this proposed sewer, are you of opinion that, in the event of a general system of sewerage being carried out for Newcastle and its suburbs, this Cottage Creek Sewer will be the main Storm-water Sewer of the system? Yes; it is bound to be.
299. Have you been in Newcastle during the summer time? Yes; in very hot weather.
300. Has there been very great offence from this place in the summer? It is a bad smelling hole.

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301. We are told, in the statement put before us by Mr. Barling, that this sewer will drain an area of about 1,000 acres? Yes.
302. Have you made sufficient provision for the outfall of 1,000 acres? Yes; we have made provision for another 500 acres as well, because the A. A. Company have been draining other areas into it, and we know that other areas would fall in, and so we have made an allowance for 1,500 acres.
303. Is that based on the rainfall only, or on the rainfall plus ordinary house drainage? That will answer for an inch and a half of rainfall to flow off during an hour.
304. We are told that your sewer will be some 20 feet wide? Yes.
305. What is the average width of that creek, where you propose your operations now? It is very irregular, but it is wider than that.
306. Twice the width? In some instances twice the width, but in other instances not.
307. You propose to bank it in? We give it a straight channel on proper gradients.
308. Your proposed sewer is not quite straight? Well, very near it.
309. The sewer will be straighter, and with a regular fall? Yes.
310. While the present creek is very irregular, and has holes and mounds, I suppose, in the bed of it? Yes.
311. You feel perfectly certain that you will have ample accommodation for all the water that will come down it? Yes.
312. Even when it may be used as a sewer for carrying off the effluent water from the general drainage system? Yes.
313. Do you agree with the opinion expressed by Mr. Hickson, that it should be a covered drain? Yes; I am sure it ought to be, and if you gentlemen were to see it, especially in the summer, you would come to the same conclusion. It is a very short distance from the main thoroughfare of Newcastle, and there is very nasty sewage coming in from the gas-works, which discharge all their sewage into Cottage Creek.
314. Are the gas-works below or above your proposed works? A little above them.
315. In view of the fact that the gas-works drain into Cottage Creek very objectionable matter, would it not be better for you to have your works above the spot, where the objectionable matter comes in? We were only asked to construct a channel between these two points.
316. How much more would it cost to take the channel, without any covering, from your proposed eastern end up to intercept the gas-works refuse? I think, perhaps, another £13,000.
317. So if we took the cost of the covering off the remainder, we should be able to take the sewer higher up, and intercept the gas-works' offensive matter? Very likely. It is very difficult to say exactly.
318. I suppose that the sewer could be built, and, if necessary, a covering added afterwards? It could, but by doing so, you do not get the same sort of structure we wish to put there. We understood, at the time, that they wished to build over it—they wished the channel thoroughly covered over.
319. Who want to build? Well, the lower ground belongs to the Government, and they might build over it and sell the ground, and thereby reduce the cost of the work. It was spoken of at the time.
320. Down by the railway? Yes.
321. That is one reason why it is to be covered over, is it? Yes.
322. But you could make a very good job of a roof put upon that, after the sides were completed, could you not? We could cover it with buckle-plates and iron girders.
323. I asked whether you could not make a good job of a roof, if you put it on after the sides were altogether completed—supposing you decided to have it an open sewer, and subsequently it was found desirable to cover it, you could still make your covering, and make a good job of the whole, could you not? We could not have a concrete sewer, because, in the first instance, we should have to build the sides very thick, and all the money would be wasted. If we had to build the sides that thickness, high enough to carry stormwater, we should have to alter them, and take them down to the springing level, hereafter.
324. If you are going to cover the sewer and propose to build upon it, will not your sides, and the work generally, have to be of a very much more substantial character than they otherwise would be? Not in this instance, because this ground is very bad—shocking bad ground. We have to build a solid structure, and in order to build that structure strong enough to hold all that it will have to hold, it will have to be strong enough to build on it. We have to build it strong in any case.
325. Yes; but, I suppose, much stronger, because of the probability of building on it? No. This structure will form a kind of girder.
326. The covering would act as a sort of tie-rod? Yes.
327. If you were going to leave it without a covering, would you make your sides less strong than you propose at the present time? Certainly.
328. If you constructed it without a covering now, and if it were found necessary to cover it in the future, how would you do it—by girders and buckle-plates? Yes. Then I would construct the sides with counter-forts for the girders to rest upon.
329. But you would want to know that before you began to build your sides, so as to construct your counter-forts? Quite so.
330. How wide apart would these counter-forts be? About 4 feet from centre to centre.
331. As close as that? Yes.
332. That is the width of your buckle-plates? Yes.
333. But supposing you were to build without a covering, and did not put in these counter-forts, and if, subsequently, it were found necessary to have girders and buckle-plates, you could put supports on the sides? The ground is so defective that it is very difficult to do it.
334. Then, if we suggested the doing away with the covering, you would still carry up the sides of your sewer of the same strength as you propose to carry them up? No. If you told me to build an open channel, I would build the sides much slighter, but if you told me to build an open channel in such a manner that it could be covered hereafter with iron girders, I should build it with counter-forts at once.
335. What would be the reduction in cost by doing away with the covering and building the sides with counter-forts for a probable roof in the future? It would cost about, between £13,000 and £14,000.
336. What would be the reduced cost if you built the sewer now, without any provision for a covering in the future? It would be £12,948 10s., simply for an open channel.
337. What is the difference between that and the provision for a covering in the future? Very little difference—perhaps a difference of £500.
338. *Mr. Ewing.*] The base of your drain is 32 feet of the whole structure? Yes.
339. The horizontal diameter of the opening is 20 feet? Yes.

340.

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340. Therefore, there are 6 feet of bricks and mortar on either side of it? Yes.
341. Is that not tremendously strong? This work has been calculated in the very best form that exists. You cannot construct that sewer, built of concrete, for anything less.
342. That is because of the nature of the ground? Yes.
343. You know it is just as bad engineering to have too much material, as to have too little? Yes. But I assure you that if anybody attempts to build that concrete channel less than that, it will not do.
344. Would it be possible to make this channel with any other material, so that it would not be such a heavy structure? Yes.
345. What could you make it of? The lower portion of concrete, covered in with iron girders and buckle-plates.
346. I am not talking of the covering;—is it possible to do this, to have the lower part concrete, as you at present propose, and above the bottom of the drain giving it a greater slope, and using bricks and mortar and tar? No. Bricks and mortar will require far thicker walls than concrete, which is a cohesive mass. You could do it with half the quantity of concrete, as compared with bricks. The construction of the sewer has been calculated on the most modern principles.
347. And you can suggest no better way of getting that sewage away? Not if you want to build a concrete channel, which, being the main storm-water channel in connection with the future sewerage scheme, will become of great importance; and hence it was deemed at the time urgent to construct its outlet end, where it intersects the main street leading into Newcastle, in the best and most permanent manner.
348. Is it necessary to build a great, massive, concrete channel of this kind to deal with the matter? It was in accordance with the wishes of the people at that time.
349. Supposing it were your own money that was to be spent, to drain your own land, how would you deal with that? It is a very different thing.
350. Will you tell us a cheaper way of dealing with this matter? If you want a cheaper way you can build an open channel.
351. What will that cost? About £13,000.
352. Do you know any cheaper way than that of dealing with it? No.
353. There is no cheaper way? No. We have put a very low price on these works.
354. *Chairman.*] All this concrete work will rest on timber-beds? Yes.
355. What timber will you use for that purpose? Colonial hardwood.
356. What is the estimated life of that timber? That will live for hundreds of years under water.
357. There is no fear of its rotting away and letting the whole body of concrete down bodily? No.
358. Have you had any experience, as to the lasting character or strength, of that timber, in a position like that? Yes.
359. Where? It has been removed in Europe after 1,000 years, and found perfectly intact, when it has been all under water.
360. But this country has not been discovered 1,000 years, and you have not had our hardwood there? Any hardwood timber you can leave under water till eternity, and get it out perfectly sound.
361. And our hardwood is as good as any hardwood in the world? Yes.
362. You have no doubt it will be sufficient in strength and lasting qualities to carry that sewer? Yes.
363. Will it be necessary to carry that timber the whole length of the sewer, or have you better ground above? If we find we get better ground we always leave it out, but we cannot do so here. From our borings we consider we must put it in.
364. Is the white ant troublesome at all in that district? We do not care about the white ant; if once the timber is under water it will remain for ever.
365. And if they got into the timber before you put it down, they would be drowned? Yes. We shall use sound timber.
366. Have you made provision for the houses, that at present drain into the Cottage Creek, to drain into your sewer? Yes.
367. You will leave connections for that purpose? Yes.
368. *Mr. Hoskins.*] In the event of that timber which Mr. Garrard has described, and which you intend to put underneath the concrete, becoming, in course of time, rotten and worn out; and if the work becomes consolidated in that timber, even supposing the timber to rot away afterwards, the work would not be disturbed in any way whatever? The work could not be disturbed by that time.

FRIDAY, 29 JULY, 1892.

[*The Committee met at the Court-house, Newcastle.*]

Present:—

JACOB GARRARD, Esq. (CHAIRMAN).

The Hon. WILLIAM HENRY SUTTOR.	THOMAS THOMSON EWING, Esq.
The Hon. FREDERICK THOMAS HUMPHERY.	WILLIAM CHANDOS WALL, Esq.
The Hon. JOHN DAVIES, C.M.G.	WILLIAM McCOURT, Esq.

HENRY DAWSON, Esq.

The Committee further considered the proposed Sewerage Works at Cottage Creek.

Hon. Alexander Brown, M.L.C., President of the Hunter River District Board of Water Supply and Sewerage, sworn, and examined:—

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369. *Chairman.*] You are President of the Water and Sewerage Board for the Hunter River District? Yes.
370. The Board has only recently been brought into existence? That is all.
371. It has not had under consideration, definitely, the proposal before the Committee? No; that was initiated before the Board was established.
372. Can you tell us from your own knowledge, as a resident of Newcastle for a number of years, whether this work is necessary? That is a very comprehensive question. As an engineer, I cannot offer you any opinion. I can only offer you an opinion, as a resident of the place. It appears to me desirable that some

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some means should be adopted to carry off the storm-water. It seems to me that if the work can be utilised, in connection with a comprehensive system of sewerage it might, if the expenditure were reasonable, be desirable. The Board, however, have not had before them any scheme; and unless it can be clearly shown that the proposed work will be one of utility, and one which can be carried out in connection with a general sewerage system, I should be disposed to give my opposition to it.

373. We have been informed by the Under Secretary for Public Works, as well as by the Engineer for Roads, Bridges, and Sewers, that this work was initiated some considerable time ago. The demand for it arose from the deposit of a large amount of sewage matter at this particular place, and, also, from the fact that the prevailing winds in the summer time kept it within the bounds of Cottage Creek, creating a considerable nuisance. The proposal is to construct a concrete sewer for that 920 feet, at an estimated cost of £25,000; to be covered in; and, until a proper system of sewerage is provided for Newcastle, this will convey what is now going into Cottage Creek—the ordinary slops, but not the solid excreta. When a proper system is brought into existence, it will be used for the purpose of a storm-water channel, pure and simple, and the slops will be diverted into the sewers proper. We are informed, by the Department that this is the only place where a storm-water sewer can be constructed with economy, and which will serve a large area, and that, even supposing the whole area were properly sewered, there would be a necessity for this outlet, as a storm-water sewer. The difference between the cost of this portion of the sewer, covered and uncovered, is £13,000, and the recommendation of the Department is, that it should be covered, so as to prevent any noxious effluvia arising even from the sewer. I understand from you that the Board, having been established so recently, have not had time or opportunity to consider whether this is desirable, or whether it is the best means of getting rid of a nuisance, if one exists? The Board have not had before them any comprehensive scheme in connection with the sewerage of the district. They realise that the expenditure incidental to a work of this kind will be charged to themselves, and if it can be utilised in connection with a subsequent scheme of sewerage, there is no doubt it is a desirable work to carry out; but if it is not possible to utilise it in that way, and we shall be charged with an expenditure of £2,000 or £3,000 a year for interest, it is a very formidable matter. I only look at the matter as a commercial undertaking, as far as the Board is concerned. If the two works can be connected, I shall be prepared to give the proposal my co-operation and support; but if the expenditure is an unnecessary one, because the work cannot be made use of in any comprehensive system, I shall, as far as the Board is concerned, give it my opposition.

374. What information do you require for the purpose of enabling you to arrive at a decision? I can only look upon the engineers as competent to form and give qualified opinions. If these gentlemen say it can be used, I am prepared to accept their opinion.

375. I may state, for your information, that Mr. Hickson, the present head of the Department, strongly recommends it, and says it can, and will, of necessity, have to be used as a storm-water system, pure and simple, when the proper sewerage works are carried out? I shall not attempt to dispute that opinion.

376. The only question is, whether you would rather have this inquiry arrested for a time, so that you can go thoroughly into it, and decide whether, in your opinion, it is a work which should be carried out or not? As far as the Board are concerned, they would, I think, prefer that when the question of drainage and sewerage comes up, they should be given an opportunity of initiating a scheme, which they could successfully place before the Committee—not in detail, but as a whole. That is my feeling as President of the Board; but this matter stands in a peculiar position, because it was initiated before the Board had existence; and its desirability, from what you have seen to-day, as far as the offensive character of the place is concerned, is almost manifest.

377. Then you agree that it is one of those nuisances which cry for redress as speedily as possible? I think so.

378. And the question arises as to whether the proposal before the Committee will deal with the nuisance which exists, or whether a better plan can be suggested? I think so.

379. If the Departmental Engineer, Mr. Hickson, has said that this is the best way of dealing with the nuisance, and that, when a more comprehensive system is initiated, it can, and will be used as a storm-water sewer, we might consider the proposal, although the Board has not had an opportunity of dealing with it? I think so.

380. You are aware that the drainage flowing into Cottage Creek comes from several Municipalities, viz., Newcastle, Wickham, Hamilton, Merewether, and, to some extent, Adamstown? Yes.

381. Under the Act, the Board, of which you are President, have power to define certain sewerage districts? Yes.

382. And it would be for you, after the work is constructed and handed to the Board, to say what districts should be rated for the purpose of bearing the cost of it? No doubt. It is within the province of the Board, as soon as they feel themselves able to ask the Government, to proclaim, under the terms of the Act, the Sewerage Districts.

383. The Department of Works would carry out the work, supposing the Committee and Parliament agreed to it, and when completed it would be passed on to your jurisdiction. At the same time, your recommendation as to the sewerage area would be adopted and Gazetted, and you would be empowered to collect the rates? No doubt of it.

384. You recognise that the sewerage system of these districts will be an extensive work in the future, and, therefore, you are naturally cautious about adopting even a small portion of the scheme, unless it can be shown to be the best one? I do; that is really my feeling. It is necessary, as far as we are concerned, to go to work very cautiously. The ratable property we have is not large and valuable.

385. Then you would not recommend the Committee to arrest its inquiry, but, in view of the fact of a nuisance existing, to go on, and to see whether the proposed work is the best way of getting rid of the nuisance? I should not recommend that. All I would ask you to do would be to study the question of economy, to ascertain whether the work can be carried out satisfactorily and with economy. Government works are often carried out more expensively than those of private individuals

386. You know this place very well—do you think there is a necessity to have it covered? I should not think the expenditure sufficient to warrant it. I think, at present, it would serve all purposes as an open sewer.

387. If a clean get-away is given to the water by a concrete bottom and sides, you think the cover might be left off? I cannot see the advantage to be gained by covering in, inasmuch as both ends are open. How are you going to close in the gases; they will come out at one end or the other, and the expense of covering must be considerable.

388.

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388. And as the prevailing winds here are from the north-east the gases will go south? Yes.
389. You think, then, it will be better to carry out the work without a cover, the cover to be put on in the future, if it is found necessary? I think so.
390. Especially if doing without a cover, at present, will decrease the cost by £13,000? I think it will do away with a great eyesore, and more than that, it will not, probably, in the future, saddle the new Board with a heavy expenditure which, after all, is perhaps experimental.
391. *Mr. Suttor.*] You have no alternative scheme to suggest? No.
392. *Mr. Ewing.*] You spoke of dealing with the drainage of Newcastle, as a whole, under a comprehensive scheme? It is quite possible, in connection with any comprehensive scheme, that there may be some parts of the work more urgent than others, and the conditions surrounding the work under consideration render it one of the most necessary things to be carried out? I think so. From its position, the area appears to me to be one which can be fairly well dealt with.
393. Therefore, coming to the conclusion that there is a special urgency, it may be well to deal with it as soon as possible, without waiting for a larger scheme, provided always, that it forms part of it? I think so. The sewerage question must necessarily take a considerable time to deal with, and it will require a great deal of judgment and consideration before we can embark upon it.
394. And you are quite sure that the local conditions render this work imperatively necessary at once, as long as it is carried out cheaply, and forms part of a greater scheme? I think so.
395. You will see, from the end of the Storm-water Sewer on the plan, the point where the red line joins the railway, running towards the east—that there is a probable future frontage of proposed reclamation? Yes.
396. If that be the future reclamation, the end of the sewer empties exactly into the waters of your port? Yes.
397. It empties some distance from where the reclamation is? Yes.
398. Do you not think it would be as well, since the reclamation and drainage of the place must go together, to have the reclamation line decided as soon as possible? I think so, and to carry it right on to the deep water, whilst the works are in hand.
399. So you would simply move the nuisance from the A. A. Company's railway to where the red line terminates at the storm-water channel? That is where the tide is sluggish, and it could be carried on by means of additional expenditure, into deep water. Of course, I have a strong objection to utilising the harbour for the deposit of filth, and I am presuming now that this is to be a storm-water channel, which must carry a certain amount of débris with it; but I think it would be well to carry it to the point where the reclamation begins.
400. You do not really know whether this channel is to be 900 feet, or 1,500 feet, long, because 1,500 feet would be required if the reclamation were placed at the point where the dotted brown line is marked on the plan? The answer to that is, "Make the sewer up to the point under the railway line."
401. You spoke about water discharging into the harbour; have you any experience of the ordinary discharge of drains; take the A.A. Company's drains to the harbour; do they carry much stuff in them? Some of our sewers are connected with the harbour. Fœcal matter finds its way to the harbour, which must be objectionable. Our harbour space is limited, and we cannot afford to trifle with it.
402. Any storm-water channel going into the harbour must carry something with it? I think so.
403. What dredges have you here? Three or four are at work.
404. Have they been taking out stuff which has come into the harbour in the ordinary way? A lot of it comes along the river from Singleton.
405. It is not all attributable to the drainage of Newcastle? No. It is a difficult thing to deal with, and we cannot afford to deal with it here in the same way as it is dealt with in Sydney, and even there it is objectionable.
406. Although it is objectionable to have any water going into the harbour if you can help it, you can offer no suggestion with the object of avoiding it? No. Supposing there was no channel there, the matter would run in, and in a channel, such as is proposed to be constructed, the objection might be minimised.
407. *Mr. Humphery.*] Do you know if the ebb-tide would carry the slop water beyond the breakwater? I think so.
408. It is sufficiently strong? Yes; it runs up there pretty freely.
409. About three years ago, the Newcastle Sewerage Scheme was brought under the notice of the Minister for Public Works; did you make any representations, at that time, to the Minister on the subject? No. The question was one between the Minister and the Council, as to whether the Council had the right to make use of the sewers. The Minister was determined to prevent it, as far as he was concerned, but the thing goes on nevertheless.
410. Were you aware that, at that time, it was considered urgent to deal with this particular locality, and the Minister for Works invited tenders for the construction of the sewer under consideration? Yes.
411. Then you do not know why the matter has been suspended? No.
412. *Mr. McCourt.*] Under the law, your Board will have supreme authority, as to the nature of the drainage to be carried out? Absolute.
413. Therefore, if the Committee recommend one thing, and your Board object to it, the work cannot be carried out? I do not think that, because, whatever we have to do in connection with a sewerage scheme, or anything else, has to be done through the Minister, and the Minister has, under the law, to put it before the Public Works Committee.
414. But if your Board objects to it, the work cannot be carried out. Clause 98 says:—

> The Board may make any sewers or drains of such construction, and in such manner, as they think proper.

Therefore, if you object to any scheme, which the Committee or Minister may decide upon, I presume it cannot be carried out? Then the Minister has further powers under the Act. He has very full powers, as far as the Board are concerned. He may disallow any act, matter, or thing, done by the Board. Therefore, he has, after all, supreme power.
415. He can carry out any work in opposition to the Board? He can disallow anything the Board does.
416. Can he carry out any works in opposition to the Board? I should think the Board would subordinate themselves to the Minister in that way. They are not likely to come in conflict. I think it is a superfluous power, and probably not an unwise one. The Minister entrusts us with the expenditure of £500,000 or £600,000 of public money, and before doing so, he says, "I am not prepared to hand over all this to you, gentlemen. I want to reserve to myself the Ministerial power to control it." I do not think the Minister will ever exercise his power unnecessarily.

417.

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417. But contracts cannot be carried out under the Board? Yes; there is power under the Act. I have not the slightest doubt that any recommendations of the Board would be adopted.
418. Do you think the Board would adopt any recommendations of the Minister? I cannot say that.
419. There might be a collision between the Board and the Minister? It is possible; but I do not think in the general government of the concern, it is at all probable.
420. You, as a Board, would not like any work to be constructed by the Minister, to which you objected? No; I think the Minister's good sense would prevail, and he would say that he would not put on the Board something to which they objected.
421. Your Board would have an engineer of their own? Yes.
422. Would it not be well for them to have the opinion of an engineer upon the work, before it is undertaken? I do not think it is really necessary. After all, we have the evidence of the best men in the public service upon it.
423. *Mr. Dawson.*] Do you think this work is one of necessity, in view of the fact that a sewer runs through the place? It is an open festering sore, and anything that will check that must be in the interests of the people.
424. And you think the proposal, as shown in the evidence given by Mr. Barling, is such as you would carry out? Certainly; I have no other means of guiding me. We are obliged to be governed by the opinions of experts.
425. You think, as a resident of the city, and as a member of the Board, that something must be done, whether you follow the advice of the engineers of the Department or not? I think so; the only stipulation I make is that I hope the work will be of such a character, that we, as a Board, under our system of sewerage, may be able to utilise it.
426. *Mr. Davies.*] The proposed open sewer, which is the matter of reference to the Committee, will, I understand, be part of the general system? So I am given to understand.
427. That work will be constructed, not by your Board, but by the Public Works Department? Yes.
428. It will not be handed over, and invested in your Board, until it is completed? No.
429. Have you struck a sewerage rate in the Municipalities affected by the system of drainage? Not yet. We could not strike any rate until we were prepared to ask the Government to proclaim this a Sewerage District under the Act, and we are not prepared to do that at present.
430. What rate do you contemplate? That has not, even, been considered. Unfortunately for us, I am afraid the charges, incidental to a sewerage and water rate, will be heavier here than they are in thickly populated places with valuable buildings upon them.
431. What is the assessed value of the properties in the Municipality of Newcastle, which will be affected by the system of drainage? I could not tell you. For the purpose of water, I think, the value is £600,000.
432. That would be in excess of what you would get from the sewerage? Yes.
433. On the ground of public health, you consider this an important work, and one which should be carried out without delay? I think so. It appears to be a work which is not unwarranted.
434. And there has been an agitation for several years for the abolition of the nuisance? In the locality—yes.
435. And your Board would do anything which would tend to lessen the nuisance which exists? I cannot pledge the Board, because the matter has not been considered by them.
436. Has it not been referred to them? It has never been before them. I am only giving my own individual opinion.
437. But as an old resident, and having a large interest in the district, you conceive it to be an important matter that this great nuisance should be abolished? I think so. I do not regard it as an undesirable work at all, providing the expenses incidental to it are not too great.
438. *Mr. Wall.*] I see from the 27th section of the Act that, although the Board has power to appoint engineers, the Governor reserves the right of appointing the first engineer for the Board. Has an engineer been appointed yet? Not yet—the matter is under the consideration of the Government now.
439. With regard to the letting of contracts. By the 39th section of the Act, the Board is empowered to control contracts. Would it be desirable for the Board to have the letting of the contract for this work, or would the Board prefer the work to be carried out by the Government, under the supervision of the Government officers? I think, if the work is to be carried out, and such power can be given to the Board, it would not be an undesirable thing. This would hardly be a contract under the terms of the Act.
440. There is no limitation, under the Act, as to what the Government shall hand over to the Board. They may hand over the sewerage of the whole district, in its present shape, without any sewerage system existing at all, or they may complete the works which may entail a heavy charge on the Board. If the Board request that they shall have full control of the system and shall construct their own works, it will place them in the position of being contractors. What I want to know is whether they desire the letting of the work, and that the supervision and control of it shall be vested in the trustees? I should not think there would be any objection to that. On the other hand, I feel sure the Board will be only too glad to give any local assistance they can. I, myself, have a holy horror of expenses incidental to Government works, as compared with the expenses incidental to the works of private individuals.

John Rodgers, Esq., Mayor of Newcastle, sworn, and examined:—

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441. *Chairman.*] You are Mayor of Newcastle? Yes.
442. How long have you occupied that position? Six or seven months.
443. How long have you been an Alderman? Twenty-five years.
444. How long have you resided in Newcastle? About thirty years.
445. You are a member of the Hunter River Water and Sewerage Board? Yes.
446. Do you represent the Government, or are you an elected member? Elected, representing Newcastle.
447. You understand the proposal under consideration? Yes.
448. You know the estimated cost of the work? Yes.
449. Do you think the work is necessary? I think a work, for the purpose of altering the sanitary state of that particular part, is necessary.
450. Has the Council had the matter under consideration and made representations to the Government? Yes; for the last nine or ten years.
451. It is probable, then, that it is owing to the suggestions of the Council that the work is now before the Committee? Exactly.

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452. Those suggestions were made before there was any Water or Sewerage Board appointed? Yes.
453. And when making suggestions for remedying the nuisance, did the Council say how the remedy might be paid for? Yes. It was thought that the various Municipalities interested might pay for it in accordance with the population, or in accordance with the rates.
454. A plan as to the cost, based on population, was submitted to your Council some time ago, by which £13,513 was allotted for Newcastle? Yes.
455. Then Hamilton and Merewether objected to their being included, and a fresh plan was brought down, and Newcastle and Wickham were charged with the whole cost? Yes.
456. Your Council, we understand, has never yet sent in a reply to the Government upon that, excepting to say that you did not think it necessary to cover the sewer? Our Council, I may state, is totally averse to the plan as proposed by Mr. Bagge. Further, they cannot see the necessity of having a covered sewer, which is intended for the purpose of retaining gases, when both ends of the sewer are open.
457. Did the Council arrive at that decision by a definite vote? In conference.
458. Was a definite resolution tabled? Yes.
459. How long ago? Twelve months.
460. Was the decision sent on to the Government? I believe so.
461. Mr. Barling, referring to the question of Newcastle contributing £19,570 and Wickham £5,000 odd, says:—

> The Councils were accordingly informed, and Wickham replied that they agreed to have the work done, but were, at the same time, of opinion that Hamilton and Merewether should be called upon to contribute their share of cost. The Newcastle Council have apparently not come to any decision in the matter, for although Mr. Bagge, our principal Engineer for Sewerage, at their request, visited the district and explained the matter, no conclusion, so far as I am aware, was arrived at.

? That is possibly correct. When a conference is held, it is frequently adjourned. Fresh proposals, or something else may arise, and the conference does not meet again. Therefore, a resolution, which was carried, would possibly not be forwarded until it was confirmed by the next meeting, and it is possible it has not yet been held.
462. Do you not see that, by this laxity on the part of Newcastle, the Department, Parliament, and the Public Works Committee have been put to all this trouble. Had the Department known your conclusions they might have withdrawn the work altogether? What trouble do you refer to?
463. The preparation of plans, the matter coming before Parliament, it being referred to the Public Works Committee, and the Public Works Committee coming here? As a matter of fact, immediately the plans were submitted, and tenders were called for, at my instigation a conference of the various Municipalities interested, namely, Wickham, Hamilton, Merewether, and Newcastle, was held for the purpose of taking into consideration the proposal, and resolutions were then carried condemning the costliness of the work. A resolution was also carried affirming that an open sewer would be sufficiently adequate for all the circumstances of the case.
464. But that does not seem to have been forwarded on to the Government? I do not know anything about that. I can get the minutes if you like.
465. The principal objection on the part of that conference, and more particularly of the Newcastle portion of it, was on the score of expense? That was one objection.
466. If the cover were done away with, reducing the cost to one-half, would Newcastle be agreeable to the work then being carried out? I do not think they would, for this reason—that it would be £13,000 wasted, inasmuch as the present proposal merely provides for carrying the nuisance from one point, and landing it at another point a few hundred yards away.
467. So that, not only do they object to the cost of it, but to the plan itself? Exactly.
468. What do they propose in lieu thereof? I do not wish to offer any opinion in regard to what should be suggested, but I think the matter should be dealt with in conjunction with a comprehensive scheme.
469. Then you would allow the people of this particular neighbourhood to be poisoned, whilst you are waiting for a more general scheme? That is an important view to take of the matter, certainly, but a less costly work might be carried out. I admit it is a very bad case. The locality is in an unsatisfactory state, and has been for many years; but I do not think it advisable that a large amount of money should be absolutely wasted and no benefit gained.
470. But do you not think there would be some benefit gained by the construction of the proposed sewer, from the A. A. Company's line to the outlet? No. I do not think that, either as a covered sewer, at an expense of £25,000, or at the lesser cost, which I think would be quite ample for the purpose of putting in a good concrete bottom with strong sides, you would benefit the inhabitants a bit by removing the nuisance 200 or 300 yards.
471. We are told that the work would deal with about 920 feet of this nuisance? Yes.
472. We will presume that there are 920 feet subject to tidal influence outside the outlet—in other words, you have 1,800 feet which is now a pestiferous channel and flat. If you can take away half of that, surely you diminish the nuisance to that extent? But you do not take it away—you merely concentrate it. You take it from 920 feet, and concentrate it in a space of 200 feet.
473. But do you not bring it nearer to the tidal influence, which would, probably, carry it away? No; there is no tidal influence there—it is dead, still water.
474. But the water must come in and go out twice in twenty-four hours, under tidal influence. It cannot, therefore, be dead, still water? It is not exactly dead, but it is not subject to influence. It is cut off by the stronger tide running down the channel, in the same way as a large sewer would cut off the water from a smaller sewer by its compact.
475. Therefore, you say that the bringing of it to the mouth of the proposed outlet, will not bring it sufficiently under tidal influence to take it away? No. I think the proposal should be carried out as far as the reclamation line, so as to bring it under tidal influence.
476. To make it effective, it should be taken out to wherever the proposed reclamation line is to be? Exactly. The present proposal, if carried out, would be so much money wasted until the other work was performed.
477. But if the present proposal is only a portion of the work, could it not be carried out without there being any waste? Yes; I admit that. It would be a portion of the whole; but I believe that for the time being it would do very little good.

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478. You are aware that the Department are not quite decided as to where the future reclamation line shall be? I believe so.
479. Therefore, if your suggestions were carried out, and we took it to any imaginary line, and it is afterwards found that, in the interests of the harbour, the reclamation line should be put further back, we shall have to pull up the sewer; there would be waste then? Yes.
480. Are we to understand that you are of opinion, that we had far better suspend the inquiry altogether, and allow the people in the locality to put up with the nuisance, until you get a comprehensive scheme of sewerage, or the reclamation line is completed? I would not like to go as far as that, in connection with a question affecting the health and lives of the people. At the same time, I would not like to see a large amount of money wasted and no good done. You must recollect that this is a large amount of money to be spent in a limited locality. It is proposed to spend £25,000, and another £18,000, to carry the work on to the proposed reclamation, would mean an enormous tax. Another matter is this—that as soon as you put a sewer at the A.A. Company's bridge, at the gas-works, you will form another deposit higher up, and you will have a nuisance there.
481. But does not the principal portion of the drainage come from the gas-works and from below it? So it is said; but my opinion is that there is no deleterious matter, of any kind whatever, coming from the gas-works. What comes from there is tar and ammonia, and neither is objectionable.
482. But if tar goes into a stream of that kind, and mixes with liquid sewage, does it not form a scum, not only on the top, but on the walls and stones which form the channel? Yes; but it is the other deleterious matter which does that.
483. Does not the tar arrest it and keep it there? I think it would have that tendency.
484. So that, although not deleterious in itself, it may keep deleterious matter there if it mixes with it? I admit that. Still the sewer is not continued far enough, because it is only continued to the bridge, and the outlet for the tar is 50 yards further up, thus you would have to come another 50 yards.
485. Are the gas-works in your municipality? Yes.
486. Have you not any power to prevent them contaminating streams or creeks? We have never taken that view of the matter.
487. Do you suggest that this work should not go on, and that we should wait until some future time? No. My proposal, in connection with the matter, would be, that if this is to be used as a Storm-water Sewer, and is to be part of a comprehensive scheme, it should be put in with a good concrete bottom, as provided for in Mr. Bagge's plan, without a cover. The expenditure on a covered sewer would be utterly useless, as it is not required.
488. I suppose you recognise that Newcastle will receive a special benefit if the work is carried out, especially if it be covered, as you would have a new bridge along the road, instead of a wooden one? The part could be covered across the road.
489. *Mr. Suttor.*] Can you give any statement as to the Municipal debts of Newcastle? I believe Newcastle is indebted to the extent of £60,000.
490. What are the rates levied here? Our revenue from all sources, after handing over the revenue for water to the Board, will be £24,000 a year.
491. *Mr. Humphery.*] Were you a member of the Council three years ago? Yes.
492. Did you urge upon the Government of the day the desirability of taking into consideration this scheme for the abatement of the nuisance? I think so. There were frequent letters between the Council and the Government, with regard to the nuisance rising from the creek.
493. Did you represent it to be a very urgent work? Yes.
494. And at your instigation tenders were called for by the Minister for Works? Yes; but, unfortunately, the plans were not submitted to us before the tenders were invited.
495. If the work were urgent three years ago, is it not equally urgent now? Certainly.
496. Do you, as Mayor, object to this work on the ground of expense solely? On account of its expensive character, and on account of it being to some extent inoperative—not carrying out that which it is intended to perform.
497. Did you give any consideration to the scheme three years ago? Yes.
498. Did you make any objection then? We never had the scheme submitted to us before the tenders were called.
499. Was it not explained to you by the engineer? Perhaps I am wrong; can you tell me the date when tenders were called for the work?
500. One thousand eight hundred and ninety? Three years ago we had not Mr. Bagge's plans before us.
501. Did you not know, at that time, that it was contemplated to provide a sewer 920 feet long? We did not know what length of work was intended.
502. That was not explained? No; I do not think so.
503. Is the only objection you have to the scheme the fact, that your contribution towards the interest upon its cost will be very considerable? That is not the only objection.
504. What other objection have you? The objection that the work is altogether of a too costly character.
505. Assuming that the sewer were left uncovered for the present, would your objection be removed? To some extent, inasmuch as it reduces the cost about one-half.
506. You are not prepared to suggest any better scheme than the one under consideration? I would not like to make any suggestion in face of the fact that Mr. Bagge, a gentleman of great experience, and Mr. Hickson, another gentleman of considerable experience, have said that this is the best scheme.
507. Does it come to this—that it is a work of absolute necessity, and that it is better to leave it uncovered than covered, because of the additional charge the covered sewer would involve upon the Council? I think I can admit that.
508. *Mr. Wall.*] Supposing the sewer were carried to the dotted line on the plan, or, approximately, to low tide, that would totally remove the nuisance of which you complain;—you say that the sewage matter would be deposited below the bridge, at the railway, where the open sewer terminates, but what if it were carried in a straight line, in the direction of the proposed reclamation to low tide? I believe that would be a fairly complete remedy.
509. And if the reclamation follows it will be necessary to do that in the future? Yes; provided always, that the sewer is to be used for stormwater purposes only, and not for general sewerage purposes.
510. It is understood, I think, that it is not to be used for general sewerage purposes;—at the present time the Council raise no objection to the deposit of garbage, night-soil, and other deleterious matter in that water channel? I was not aware that anything of the kind was done.

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511. I saw a considerable amount of it to-day—I saw a lot of garbage thrown into the creek? I do not know anything about it. I am not prepared to admit that there is anything of the kind done.
512. The Council have not taken any steps to prevent the fouling of the creek? Certainly they have, to the extent of their ability.
513. You say that the construction of the sewer to its present terminal point will remove the nuisance, and deposit it at the bridge below the railway? Yes.
514. By carrying the channel 600 feet further it would probably cost two-thirds of the amount spent on the present open sewer? Fully that.
515. That would take £22,000 to cover the cost of an open sewer to low tide;—would the Newcastle Council prefer an open sewer, carried to the point of reclamation, to the work which is contemplated? As a matter of fact, you could not do that with an open sewer when you pass the termination of the present proposed one. It must be covered after that, of necessity.
516. Why? Because the water overflows it entirely, and the sand, and so forth, would almost immediately fill it up.
517. In cutting through that point of sand, which juts out from the termination of the sewer to the dotted line, does the high tide come over the heap? Yes, over the whole of it. You could not do with an open sewer, after leaving the point of termination.
518. But if the reclamation followed, would not the whole of that land be above high-water mark? Yes. Consequently the reclamation would be so far above the sewer that it would require covering for the purpose of supporting it.
519. But could not an open sewer be built up to the height of reclamation? I think not.
520. What would be the use of it if it were not sufficient to prevent the tide flowing into it? The finishing point of reclamation would be far above the tide.
521. But if the land is reclaimed to the dotted line, the whole of the reclamation will be above high tide? Yes.
522. And if an open sewer were constructed, and the walls of it were built up to the height which it is proposed to reclaim, and carried on above high-water, the tide would not enter the cover from the side? No; but that would not be a wise thing to do. The most effective way would be to cover it over.
523. How much would it be above high water? Four or 5 feet, I think.
524. However, you are under the impression that this would not remove the nuisance, unless the sewage matter were taken on further than it is proposed to be taken at present? I am, emphatically, of that opinion.
525. And if it is intended, at some future time, to carry out a reclamation, and discharge the channel into the deep water of Throsby's Creek, do you think it would be a better plan to carry that sewer out now, and have it discharged there, or to change the location of this sewage matter? I should think that, to be at all effective, it is desirable that it should go right out to the tidal water.
526. *Mr. McCourt.*] Were your Council awaret hat £19,000 was voted in 1890 by Parliament for this work? I think so.
527. Did you object then, that the amount was too much? No; the proposal was not before us.
528. Are you aware that the tender for £22,000 was accepted? Yes.
529. Did you protest then? Yes; we protested in conference. I refer to the conference of Wickham, Hamilton, and Merewether. The question arose in regard to the distribution amongst the various Municipalities and the repayment of the money.
530. But no objection was raised until the question of repayment was raised? I hardly think that is a fair way to put it, for the simple reason that the Municipalities had never been called together to consider the question in conference, prior to the tenders being called for.
531. But if no question of repayment had been raised, you would not have objected to the work? I do not know that Newcastle has ever repudiated any just claim.
532. It was not in consequence then, of the repayment? Certainly not. Probably, it was more the repudiation of the other Municipalities to pay their just share. We were saddled with £19,000 of repayment instead of our proper share of £13,000.
533. Does Newcastle owe the Government anything on account of water? No; I do not see how they can owe an account, until they get their bill, and know the position in which they stand. The position in connection with that matter is that, under the provisions of the Hunter River District Water Supply and Sewerage Act, Government have taken over our position in connection with our loans, which has required an adjustment of accounts, and, as soon as a proper adjustment is made, Newcastle is prepared to pay all her accounts, and to repudiate nothing.
534. *Mr. Davies.*] I understand your primary objection to carrying out the proposed works is principally on account of their piecemeal character? Yes.
535. But you are aware that the works would be continued along to the gasworks, or extended to the reclamation line? To be at all effective.
536. Would not a nuisance, which at present exists, be abolished, if the work were carried out as proposed, according to the plan? It would be abolished as soon as it was continued. My contention is, that it would not abolish any existing nuisance, but would simply shift it from one side to the other.
537. Are there not on the banks of the creek, where the greater part of the nuisance exists, people living in homesteads? Yes.
538. At the point where the discharge would take place there are no people living? No.
539. So that the nuisance would be taken from where the people reside, and carried further on towards the water? I admit it would not come so directly into conflict with the people if it were removed to the end of the proposed sewer.
540. If this work will be the means of mitigating an evil, surely the Council can have no objection to carrying it out? Always provided that it is of a character suitable for the purpose, and can be carried out economically.
541. Do you think the Council could carry out the work more economically than the Department? I would not like to say that they could.
542. Where do you see extravagance in the scheme which is before us? I look upon it that all the objectionable matter which comes down the sewer is, comparatively speaking, very small. If there were a clean cement or concrete bottom the whole of it would be carried out in suspension, and would not be deposited

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deposited in any portion of the sewer. I may say there is a continual run of clean water, for flushing purposes, coming down the sewer. There is not only the water from the sand drift, but there is the pumping from two pits; the objectionable matter is deposited through irregularities in the bottom. If there were a clean bottom there would be no nuisance at all.

543. How could you carry out the work for a less sum than that mentioned by the Department? In my opinion, the covered portion of the work does not constitute a necessary part of that which is required, to abate the nuisance. The expenditure of £25,000 is unnecessary when £13,000 will do.

544. You are in favour, then, of the Storm-water Sewer with an open face? Yes.

545. And you would favour the work being carried out on those lines? Yes; provided that there is a fair distribution amongst the Municipalities interested, in regard to repayment.

546. If the works are handed to the Board, I presume the Board will have power to levy a rate affecting the Municipalities, and you would have no difficulty on that score? No.

547. *Mr. Ewing.*] A covered sewer would cost about £28 a running foot? Yes.

548. The sewer, upon which you give a contingent approval, would cost about £14 10s. per running foot? Yes.

549. Do you think your Board, or a private individual, would spend £14 10s. per running foot, to carry that volume of water away? No; provided that he did not take into consideration, possibly under altered circumstances, the necessity of building something very weighty on the top of it.

550. You cannot say, just now, whether the Government scheme, supposing the cover is not put on, is too much? I would not like to say it is too much. In view of the contingency of requiring a top at some future time, I do not think it would be too much. It would be very much better to build the sewer at some point apart from this, and fill this up, because it has a most treacherous bottom. I think it is the worst piece of line which can be found on this side of Mullet Creek.

551. Do you think there will be any improvement in the ground 100 feet away? Yes; I have built on the side, and adjacent to the creek.

552. Therefore, seeing that your Council have, eventually, to find the money for this work, you think you should know a little more about the scheme before it is approved of? Yes.

553. Can you tell us, for a certainty, that the adjacent country is better for placing a drain or open channel, than the bed of the creek itself? I pledge my character, as a practical man, upon that statement.

554. You believe that if we move 100 feet or 150 feet away on the bed of the creek, a cheaper work will be carried out? Yes, and a more satisfactory work, as there will be no danger of subsidence.

555. Upon what do you base your opinion? Upon the fact that the creek, owing to the slime and matter which has been deposited there for years past, and owing to its having a quick-sand bed, is very treacherous.

556. Did you ever see any work carried out in the creek adjacent to it? I have a lively experience in connection with Melville-street, where the Government commenced work and left it, because they could not raise it up.

557. You cannot associate that with Cottage Creek? It is all the same line; it is not so bad as that further down, but it is very largely of the same character. I was the contractor for the offices in connection with the gas-works, and I found pot-holes of a soft character, down which I could shove an ordinary scaffolding pole 16 or 17 feet, after I had got to the bottom of my foundations.

558. But that was not in the bed of the creek? No; it was on one side of the creek—it was not so bad as the bed of the creek.

559. *Chairman.*] If you were to divert the natural drainage area of a district like that, would you not be put to some considerable expense in bringing in the drainage of the district which you have left out;—for instance, if you go 200 feet further east than the present channel of Cottage Creek, would you not have some difficulty in draining the area you have diverted? You could not divert it on the south side of the gas-works very well. But upon the north side I do not think it would have any effect.

560. Is it not a fact that, all through this flat, there is a sort of quicksand? Not outside the bed of the creek, unless you go down very deep.

561. If the channel were taken 200 or 300 feet further east, through the cemetery, it would, of course, mean a considerable amount of excavation, but I suppose it is all soft stuff? It is all clean, white sand, very easily removed.

562. And there would be no extra cost in regard to a bridge there, because you would have to provide a new bridge at Cottage Creek? I suggest that that portion crossing the street should be covered as the most effective way of dealing with it.

563. But your plan would not entail more cost, so far as the bridge is concerned, because it is necessary whether you have it 200 yards east, or on the same site? Just the same.

564. *Mr. Humphery.*] During periods of heavy and continuous rains, does not a considerable volume of water flow along Cottage Creek? Yes.

565. Would not there be a similar flow of water through a sewer 200 feet away from Cottage Creek? Certainly. I do not think that would make any difference to us.

566. Would you not require an equally strong sewer to carry that water? Certainly not. If I recollect rightly—and I went into figures with regard to this matter—there were some very heavy longitudinals, in the first place, put along the bottom. There were 12 in. x 12 in. baulks of timber longitudinals put along in the first place. In my opinion, there would be none of this timber work required, if the sewer were diverted through solid ground, instead of being taken down the creek.

567. Would the cost of excavating on your proposed site, and of filling in at Cottage Creek, neutralise any advantage which would be gained by saving the timber work? Certainly not, inasmuch as the excavating could be carried out for so much less cost, owing to there being no difficulties in regard to water to contend with.

568. To whom does that land belong? The trustees of the burial ground—the Presbyterians, Wesleyans, and Roman Catholics. Newcastle has a portion of it, and Mr. Gilbert's coach factory would be a portion of it, on which there are no heavy structures.

569. The length of the sewer would be about 920 feet? Yes.

570. About how many feet would be private land? Nearly all. There would be Mr. Gilbert's property, then the burial ground, and on coming out of the burial ground, you would come into a chain and a half of Government land.

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571. Then there would be a pretty good claim for compensation? I do not think it would be very large.
572. Taking into consideration the cost of compensation, and the cost of filling in of Cottage Creek, do you think anything would be gained by shifting the site of the sewer? That is a matter for a practical man to work out by means of figures. I am inclined to think it would be the cheaper thing to do.
573. You can state, approximately, as well as any man, whether there would be any gain? I do not think the question of resumption is worth taking into consideration, inasmuch as the Government have the power to go on the land, and they are only liable to damages in the case of drains.

Alexander Shedden, jun., Esq., Mayor of Wickham, sworn, and examined:—

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574. *Chairman.*] You are Mayor of the Borough of Wickham? Yes.
575. How long have you occupied that position? Five months.
576. How long have you been an alderman of the Municipality? Four and a half years.
577. You understand the proposal before the Committee? Yes.
578. Your Council, in conjunction with the Newcastle Council, have urged on the Government the necessity of doing something to deal with the nuisance existing at Cottage Creek? Yes.
579. The Government, in 1890, submitted to your Council a proposal to distribute the cost of £25,000 between the Municipalities of Newcastle, Wickham, Hamilton, and Merewether? Yes.
580. Subsequently, the Councils of Merewether and Hamilton objected to being included amongst those who would be taxed? Yes, with the understanding that the other four Councils paid their share.
581. And then it was suggested that the cost should be borne by Wickham and Newcastle. Your Council gave its adherence to that, but expressed the opinion that the other two Councils should bear a proportionate cost? Yes.
582. Have your Council, since that time, passed any resolution or taken any further action in the matter? No further than, that last Wednesday night, they thought the expense would be a burden upon two Municipalities, and that it was not right.
583. There are only three or four chains of the creek passing through the Borough, and you do not use it much for drainage? They contribute very little towards the drainage running into the creek, but they have to put up with the nuisance.
584. In view of that, you think that others, who send the nuisance to you, should also be taxed? Yes; Adamstown, Merewether, and Newcastle.
585. Under the original scheme your proportion of the cost would have been £3,743 4s. 10d.? Yes.
586. And if you stood alone with Newcastle, £5,422 17s. 4d.? Yes; I think that is too much altogether for Wickham to bear, considering there are only 4 chains of it passing through the Municipality.
587. Would your Council rather put up with the existing nuisance, if any, than pay that sum? I am not prepared to say that, I am prepared to say they will pay their fair proportion, as they have already stated to the Government.
588. But you know that the position is altered, from the fact of the Water and Sewerage Board appointed to the Hunter River district, and that that Board will have the allocation of the expense for each particular portion of that district? Yes.
589. Are you content, therefore, to leave the matter to the Water and Sewerage Board? I suppose we shall have to submit. I have not tested the feeling of the Council definitely, but I believe they will be quite prepared to be assessed by the Board.
590. Was any specific resolution passed at the last Council meeting in regard to the matter? No. There was only an informal conversation, and the opinion was expressed that Wickham was not entitled to pay such a large sum as that which has been debited to them. It is Merewether, and other places, from which the stormwater will come, which ought to pay.
591. But is it not a fact, that it is not the stormwater from which the objection arises, but the house drainage which flows into Cottage Creek, which flows into the lower portion? Yes.
592. Is it not a fact, that Merewether and Hamilton contribute little to the fouling of the water, and that it is fouled by Newcastle and Wickham? Wickham has not made any nuisance there whatever. Hamilton, Merewether, and Adamstown, run all their soap-suds into the drain, and it must be admitted that that is what has brought about the nuisance.
593. How does Adamstown run its soap-suds and slops into Cottage Creek? They run them into the watercourses, which run into the creek.
594. As a matter of fact, can you trace any distinct flow of slops or sewage matter from Adamstown; is it not a fact that it all percolates through the sand, and becomes a pure effluent, before it reaches your borders? I am not prepared to prove it; but I know that their main drains pass through the different Municipalities, and that the smaller drains run into them.
595. The same way with Merewether, you think? Yes.
596. There is a nuisance, I suppose, arising from the creek? Yes, a great nuisance, and I believe that had it not been for the Newcastle Council, the Government would have carried out the work long ago.
597. We have been informed that your Council gave its adherence to this plan, even supposing the cost was to be borne only by yourselves and Newcastle, but that Newcastle never replied to the letter. Is it true that you were a member of a conference which sat in Newcastle on the 18th August, 1890, to deal with this question? I was not one who was there, but I was at the Council at the time three were appointed. Three were appointed from Wickham, and I am not sure how many from the other places.
598. Do you know if Newcastle ever took any steps to acquaint the Department, as to whether it was willing to have this work carried out on the basis of the last proposal? No.
599. Then the smaller Municipality of Wickham set a better example than Newcastle did in that respect? Yes; I may say that there is not a thing, which ever comes up from the Works Department, or the Government, to which Newcastle does not object. The place has been kept back every time there has been any Government work to be done, by the Newcastle Council challenging everything which comes up.
600. That means that they are willing to receive everything, and to pay nothing for it? I would not like to say that; but they always think they have some better scheme, and the Government is floored in everything they try to do for Newcastle.
601. Newcastle, being the larger Municipality, outvotes you? Yes, because, when there is a conference, as there was on this occasion, there are generally twelve Newcastle aldermen present, and seven or eight from the other places. They boss the whole affair.

602.

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602. Who was the mayor of Newcastle in October, 1890? Alderman Buchanan.
603. Coming to the work under consideration, do you think it ought to be carried out in the way proposed by the Department? Yes, as a covered sewer.
604. But if you object to the large cost of it, would it not be better to have it uncovered, thus reducing the price one-half? If you do not cover it the nuisance will not be abated, because, from the gasworks the tar and stuff comes up the creek.
605. But if it is covered the gases will come out at each end? If they do they will get away into the harbour. There are several smaller drains, which are a lot fouler than this will ever be, running into the harbour at present.
606. And have not the people at the outlet, or intakes, often complained very seriously? I have not heard of any complaint.
607. Is it not a fact that nuisance is caused by the rough and irregular bed of the creek allowing the filth to remain there? That has arisen, but if you leave it open the same thing will apply.
608. Not if it has smooth concrete cement sides? Yes, it will.
609. Certainly not to the same extent? No.
610. Do you not think it would be rather unpleasant for the people of Hamilton, if this is covered over, to have your prevailing north-east winds blowing at one end of it? The Hamilton people would not experience the slightest stench from it. There are very few buildings near it, although the Hamilton boundary runs to the creek. The nuisance, of course, is to the west end of Newcastle.
611. The only people, then, close to the outlet, would be the gas company, and one stench would neutralise the other? I think, if the sewer is covered, no stench will come back.
612. Do you agree with the evidence of the Mayor of Newcastle, that the sewer will be of no good, as it will convey the sewage matter a little further down, and leave it festering on the foreshores on the Government side of the Government railway line? No. You will have seen for yourselves that his evidence in that respect is altogether wrong.
613. You know that the bed of the creek is very unsuitable, and will require extensive foundations for a sewer? I do not see that it will be any more expense than is required for the sewer of the description which is there. The bed of the creek is nice, clean, sharp sand. When you take off the top muddy stuff you will find clean, sharp sand.
614. Not a quicksand? No.
615. The Department say there is a quicksand there, and, therefore, they have had to provide for a timber support for the concrete structure? I am not aware that there is any quicksand in that particular spot. I always understood that it was a clean, sharp sand, but, of course, being in the bed of the creek, you may have to go down a little to come to it.
616. I presume you are of opinion that, for concrete work, it is absolutely necessary to have a stable foundation? Yes.
617. Do you think, if this work is carried out, and the reclamation afterwards be carried out beyond the outer edge, it could be continued to it. It is proposed to reclaim some land, and to dredge other channels on the outside? Of course I would suggest that the sewer be carried to the reclamation.
618. Wherever it may be? Yes.
619. But, would you do that now, or wait until the reclamation line is absolutely fixed? I would not wait, I would go on with what the Government are prepared to go on with, and add on the other part afterwards.
620. You think the sewer should be covered? Yes, I think, if you make an open sewer, the matter will still hang on to the side.
621. Do you not think it would be better to try an uncovered sewer first and save £13,000, and then, if there were anything detrimental, to cover it over? I do not see where you would save that, when you take into consideration the fact that you would have to alter the walls, or put it well down, so that you could build an arch upon it.
622. We have been informed that a saving of about £13,000 could be effected by having no cover, and yet leaving sufficient support for a cove afterwards if necessary, the cover, in that case, being girders and buckle-plates instead of concrete. Do you not think it would be better, under those circumstances, to go into the less expensive mode of construction first? I should strongly suggest the cover.
623. Remember that you and the ratepayers have to pay for it? They have to pay their part, and no doubt they will be agreeable, rather than suffer the stench which comes to them now.
624. *Mr. Wall.*] You say you think that the discharge of the offensive gases will be towards Throsby's Creek? I think there will be but very little stench accumulating there when the water flows through.
625. But is it not a fact, that if the sewer were constructed with a fall towards Throsby's Creek, the whole of the gases would escape if it were covered over on the upper side—gases have a tendency to discharge on the opposite upper side of any enclosure of that character? I do not see that there is any great amount of gas to accumulate there to hurt anything. Of course, you will have ventilators in different parts of it.
626. There is no doubt that, in an enclosed sewer, there will be a great concentration of water, and there will be more probability of the offensive matter being carried away than there is at present? Yes; and no stench could arise.
627. If the officers of the Department say that your sewer can be constructed as an open sewer, and can be covered if found to be offensive, would it not be better to leave it open? Then, instead of killing the people, you will have the children drowned in it.
628. Is there not a possibility of their being drowned in Throsby's Creek, and in the ocean? If a child were to fall into the sewer when there were 2 or 3 feet of water in it, it would be swept away and could not be saved.
629. It seems to be a question of opinion, as to whether an open sewer would be offensive or not. Some witnesses are inclined to believe it would not be offensive? My opinion is that it will be.
630. If it could be proved that it would not be offensive, would you advocate an open sewer? I think we have proved pretty well that it is offensive, seeing that we have had to contend with it for the last twenty years.
631. It has been stated that, if the sewer is constructed to its present terminal point, it will simply remove the nuisance from one point to another. Is that your opinion? No. If the thing is carried through and covered, any smell will get into the salt water, which will kill it.

A. Shedden, jun., Esq. 29 July, 1892.

632. You think it will be carried out from its terminal point by the action of the tide? Yes.
633. It will not change the nuisance from one point to another? No. It is quite absurd to think of that.
634. *Mr. Davies.*] I gather, from the evidence you have given, that you are wholly in favour of the proposal? Yes.
635. And that, in order to make it effective, it will be better to have a covered sewer? Yes.
636. Are you aware of the size of the proposed sewer? I have seen a rough drawing of it, 20 feet by 10 feet deep. So that, if it were a covered sewer, there would be ample opportunity afforded for scavengers to clean it.
637. Have numerous complaints been made, by residents in the locality, for a number of years, against the nuisance? We have had petition after petition sent into Wickham Council, and the same to Newcastle Council. It was upon those petitions that the Wickham Council urged the work to be carried out at once. There have been several cases of typhoid fever. There is a bank at the corner, and several young men employed there have had to go home.
638. You are aware that, as soon as the work is constructed by the Department, it will be handed over to the Water and Sewerage Board of the district, and they will have power to levy a sewerage rate on the various Municipalities affected? Yes; I expect we shall have to submit to whatever is done. What I state now is not stated officially from the Council. I would not bind my Council.
639. But the law will bind the Council, and all the Councils? Yes.
640. The Water and Sewerage Board are simply elected and appointed by the Government, to administer the law, which gives them power to strike a rate? Yes. I may state that the whole of the members of the Council are favourable to the covered sewer. Their opinion is that, if the sewer is not covered, the nuisance will not be abated.
641. *Mr. Ewing.*] I suppose you do not see any advantage in spending £13,000 more than is required to attain the necessary result? I think the money will be well spent if the drain is covered.
642. You have had no experience of an open concrete channel? Yes; I have had experience of concrete.
643. How long would it take to foul a concrete channel of that kind? I have not the slightest doubt that the engineer will ventilate it.
644. But supposing the top is not put on it, how long will it take polluted water to foul a concrete sewer which is smooth at the bottom and sides—it would not be foul in a week? No. As an open sewer, I daresay that in three months, or a month, it will have to be washed down.
645. If it were not touched for a month it would become foul? Yes.
646. Would it not be better to employ a couple of men, with hard brooms, once a month, than to spend £13,000 extra? I think, if you sent men to do that, it would cost more in the long run than it would cost to make a thoroughly good job of it at once.
647. *Mr. Humphery.*] What is the revenue of your Council? About £2,500.
648. How much of that is derived from the one-shilling rate? £2,000.
649. So that the charge for interest on the cost of construction would be inappreciable to your Council? Yes.

Henry Collier, Esq., Hamilton, sworn, and examined:—

H. Collier, Esq. 29 July, 1892.

650. *Chairman.*] You are a resident of Hamilton? Yes.
651. You have, also, had a seat on the local Council? I have had. I have not now.
652. How long were you an alderman? Three years.
653. When did you terminate your connection with the Council? Last February.
654. Whilst you were connected with the Council, had it under consideration the question of this sewer? Yes.
655. Do you remember what decision was arrived at? The decision which was then arrived at was that, as it was altogether outside the boundaries of the Hamilton Municipality, it was not fair for them to contribute to the cost.
656. Not even if you contribute to the nuisance? They do not consider that they do.
657. As a matter of fact, the Cottage Creek is the boundary of your Municipality, is it not? In no part to which this scheme applies.
658. But, as a matter of fact, all your drainage does go into the Cottage Creek, and does find its way to the ocean through this particular portion? Yes; further up the creek.
659. Then your objection was because none of the money was to be laid out immediately in your Borough? That we have no right to take the money collected in the Borough and spend it outside the boundaries of the Borough.
660. Even though it is to remedy something to which you have contributed? Even though the flood water, and so on, passes from other Municipalities through our Municipality into the Cottage Creek. We have to take the drainage of the other Municiptlities and to pass it through.
661. You are aware that, recently, a Water Supply and Sewerage Board for the Hunter River District has been brought into existence? Yes.
662. You are probably aware that they have very large powers? Yes.
663. And the probability is that any expenditure, for the purpose of draining, or dealing with, the sewerage of any watersheds, would have to be contributed by all the parties upon that watershed? I am aware of that, although that was not under consideration at the time I was in the Council, because this Board was not formed, nor had the Bill been framed.
664. Are you of opinion that a nuisance does exist at the part on which we have been speaking? Yes, certainly.
665. And that it should be remedied as soon as possible? Yes.
666. Would you, as one of the ratepayers of Hamilton, be prepared to leave the adjustment of the cost to the Water Supply and Sewerage Board? I am prepared, as far as I am individually concerned, to allow it to remain for the adjustment of the Board as a portion of the drainage scheme of the district.
667. Do you know if the Hamilton Council have had the matter under consideration? I do not know whether they have since the Board was formed. Of course, there was no Board when I was there.
668. Have you heard, within the last few weeks, that they have taken any steps to put their views before the Committee? No.
669. Do many Council meetings lapse for want of a quorum? Not one has lapsed for that reason for the last two years.
670. They are alive then? Certainly; very much so.

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671. But in this instance, they think they had better not come before the Committee? I cannot say what they think about it.
672. Have you given any thought to the question as to whether this proposed work should be covered or not? I certainly think it ought to be covered.
673. Would you say that if you were sure you had to contribute to the cost? I say that because I will have to contribute, being a ratepayer in the city as well as in Hamilton.
674. Do you not think it would have a tendency to throw the concentrated stinks on to Hamilton, instead of their being distributed generally? No.
675. Is there anything else you would like to say? It has been stated that the foundations there will not carry the sewerage work, but I think, from the fact that it carries a bridge, which has conveyed all the traffic of the main street and district, and carries the tramway as well, disproves it. It also carries the two railway bridges, one at each end of the proposed sewer. There ought not to be any difficulty in finding sufficient foundation.
676. You are aware that it does not matter if the railway sinks an inch or two, because of the soft strata below, but that it would be very awkward for a concrete sewer to sink? Of course it would, but I suppose it would be just as easy to prevent its sinking an inch, on ground like that, as it would be to prevent its sinking 6 or 12 inches.
677–8. But, so that there shall be no fear of sinking, they provide very strong, substantial under-structure? I do not think that the ground in that locality is at all similar to what it is further up the creek, or at Mullet Creek, or the bridges carrying the tramway and railway would not have stood as they have done.
679. You mean that the railway bridge and the road bridge spanning the Cottage Creek, near the proposed work, give fair evidence that the sub-strata is not so treacherous as some people think? Yes.
680. *Mr. Wall.*] Have you any knowledge of the place to which Mr. Rodgers suggests the sewers should be carried? Yes.
681. And of the line he proposes to follow? Yes.
682. Would not that line involve the necessity of the construction of a railway bridge? Yes.
683. Apart from the excavation? Yes. I think, with regard to continuing the channel past the railway line over the ground to be reclaimed, that that ought to be a part of the reclamation works which are proposed to be carried out by the Government at some future time, and it could be done very easily, and much better than it is at present. Whilst the reclamation is being carried out they could as well construct the portion of the sewer without much difficulty.
684. And you do not anticipate that a large amount of this offensive matter, at the termination of the proposed sewer, would be any nuisance? No; because it does not settle there at present. The sand is all clean in the vicinity. It all collects and settles in the creek.

Joseph Bowtell, Esq., Mayor of Merewether, sworn, and examined:—

J. Bowtell, Esq. 29 July, 1892.

685. *Chairman.*] You are Mayor of Merewether? Yes.
686. How long have you occupied that position? Twelve months.
687. How long have you been in the Council? Five years altogether.
688. You are very familiar with the growth of the Municipality? Yes.
689. You understand the scheme before the Committee? I have a vague notion of it.
690. Do you know if there exists, at present, any nuisance at the place where it is proposed to construct this work? There is a terrible stink there. I always make a point not to pass Cottage Creek after sundown, unless I am compelled.
691. Is it worse after sundown than before? Yes; the stinks generally rise then.
692. Would it not be worse at low, than at high water? Yes.
693. And as high and low water do not always come at sundown, the worst smell might be experienced at all parts of the day? But you do not smell it so sensitively as at sundown.
694. Do you think the district generally should be prepared to get rid of the nuisance? Not the district generally. We live on an elevated position. It is a rural district, and, although the watershed of the district in which I live empties itself into Cottage Creek, we send nothing into it but pure water. In fact, if it were not for our watershed, they would die from cholera at once. There are two coal-pits, which are continually pumping water which is not impure. The water running down the creek, which passes Merewether to-day, is as clear as crystal. If it were not for our watershed the people at Cottage Creek could not exist. Therefore, we are not factors to this nuisance, and the Merewether Council emphatically object to being saddled with a contribution of about £4,000, as mentioned in the newspaper yesterday morning, towards this work. Merewether was in existence before people settled at Cottage Creek, and, because they have gone to settle there, it is no reason why people living in the mountains should pay for their folly.
695. But if you monopolise the mountains, how are the other people to live? They have no right to build there;—it is the fault of our legislation. Such spots should not be allowed to be built upon.
696. Then you think the people on the higher levels have a right to contaminate any watercourse, irrespective of those who live below them? But we do not do that.
697. You say the only drainage going into the creek is water, which is not a nuisance? Not objectionable.
698. How are your people served in connection with night-soil? They bury it in their gardens, in the proper, simple, primitive form, as the Jews did.
699. And is not Merewether, in some portions, rather closely built upon? No; nearly every tenement is not less than a half or quarter of an acre.
700. You know Melville-street? Yes.
701. You know where the Municipal Council of Newcastle are depositing sand? Yes.
702. That is not very far from the boundaries of Merewether? It is a mile from the Cottage Creek Scheme.
703. How far is the place, where the Newcastle Council is putting the sand for making the tramway, from the boundaries of Merewether? Half-a-mile.
704. It is not a very nice smell which comes from the low ground about that spot? Not when the refuse of the city has been tipped there for two years.

705.

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705. It is not because the cesspits of Merewether have filtered through to it? No; they have not done so.
706. Then the smell from that is the fault of the Newcastle people? To a large degree.
707. All your sewage solids, as well as the liquid, are so purified, through going into the ground, that there is no objection below? It does not go through the ground. What amount of sewage can there be from a cottage with a quarter of an acre of ground?
708. Where does all the water go? To Cottage Creek; but not in an impure state.
709. Then storm-waters, as well as any effluent water from your ordinary house drainage, or the water from the mines, must go down to Cottage Creek to reach Port Hunter? I admit that.
710. And if your storm-waters become a nuisance to the people down there, should you not, in some way or other, bear a portion of the cost of removing it? We did not ask them to go there. Merewether was inhabited before there was a human being on Cottage Creek. If people like to build on stinking swamps, let them do so.
711. But what if you are intensifying the stinks every day? We are not doing so.
712. I suppose you believe that the gentlemen, forming the Water and Sewerage Board of the Hunter River district, are square-headed men? Some of them.
713. Would your Council be prepared to leave it to the Board to adjust, or allot, the proportions in regard to what the Municipality should pay for the scheme? Whether they are willing or not, I can see it coming, and that we shall have to knuckle down. We have to do many things in this world which we are not willing to do.
714. Do you think it necessary that the work should be covered? I think an uncovered drain would be ample for the time being, as it is not a portion of the general system of sewerage.
715. Has your Council of late had this matter under consideration, definitely and specifically? No.
716. No resolution has been tabled and passed? No.
717. Then you are only giving us your impression of the views of the aldermen? I am expressing the views of the Council that we should not bear any taxation.
718. But has this matter been specifically before the Council for consideration, and has any resolution been tabled, discussed, and passed? Not in a definite form. There was some allusion to it twelve months ago.
719. Then the views you have expressed are your own; but you think you also expressed the views of the rest of the aldermen? Yes; because I was stirred up to come here to day.

Thomas Smith, Esq., Alderman of Newcastle, sworn, and examined:—

T. Smith, Esq. 29 July, 1892.

720. *Chairman.*] You are a resident of Newcastle? Yes.
721. Connected with the Municipal Council as alderman? Yes.
722. How long have you been an alderman? Only during the current year.
723. How long have you resided at Newcastle? Twenty-five years.
724. You know the project before the Committee? Yes.
725. Do you think the place referred to is such a nuisance that an expenditure of £25,000 upon it would be justifiable? No.
726. Do you think the nuisance is of such a character that an expenditure of £13,000 would be justifiable? I think something should be done. No doubt there is a nuisance, but I certainly should not be in favour of dealing with it as it stands now. I think the emptying out of the dirty water, and the drainage from the houses, will only carry the nuisance a little further on.
727. Then you think, that whilst something should be done, what is now proposed to be done would not be an effectual cure, and would not, to any great extent, minimise the nuisance? I do not think it will.
728. Can you suggest any alternative plan? Merely carrying it out to deepwater.
729. But if we do not at present know where deepwater will be, will it not be well to wait, and carry out the portion of the scheme before us? I think so.
730. Then your only objection is that, at the proposed outlet, there are certain flats, upon which matter, taken from the upper portion of the creek, may be deposited? Yes.
731. Would you advise putting the project back to some further day? I should advise that a sewer be constructed, but not of such a costly character.
732. Are you in favour of doing away with the cover? Yes. The scheme, I understand, will eventually form a portion of the permanent Storm-water Sewer.
733. You are in favour of the proposal, only you would not have the work covered, and you believe that as soon as the reclamation line is decided upon, it should be continued to it? Yes.
734. Do you think that is the opinion of the majority of the aldermen of Newcastle? I could not say.
735. Has the matter recently been under consideration? Not since I have been in the Council.
736. *Mr. McCourt.*] Do you live near this sewer? No.
737. You are not in favour of a covered sewer? No; on account of the cost.
738. Do you not think if you lived near it, you would be in favour of a covered sewer? I do not think so. I do not think it will minimise the smell, but will concentrate it.
739. *Mr. Davies.*] You admit it is necessary something should be done? I think so.
740. You regard the proposal before the Committee as a practical way of dealing with a portion of the sewerage? Yes.
741. Your only objection is that it does not go far enough? No, not as it is. It merely carries the offensive matter a little further on, and distributes it upon a beach, and during the day it will be as offensive, if not more so, than it is at present.
742. You are of opinion that it ought to go to the reclamation? Yes.
743. But the line of reclamation has not yet been decided upon, and it is not possible to construct the sewer to deepwater until that has been arranged? Of course you could not.
744. You understand that this sewer, although it only goes a certain distance, can be continued afterwards to the reclamation? Certainly.
745. Would it not in the meantime, if carried out, be a means of abating the nuisance which exists? Yes; to the extent of what are now open drains.
746. To the extent of the population of the boundary, as it were. The people who are living on the banks of the creek may be relieved of the great nuisance which exists if the work is carried out? Yes.

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747. Would not that be a great benefit to the people? Certainly. I have no objection to it at all.
748. And you think it should be carried out without delay? I think so.
749. You prefer an open sewer, because of the expense of a covered one? I think it would be as effective open as covered.
750. But are not open drains more unsightly and a great nuisance? I do not think that would be. A drain, constructed in that manner, would be almost clean at all times. The water coming from the pits would keep it clean.
751. You are aware of the size of the drain? Yes; I tendered for it.
752. And generally speaking, you favour its construction? Yes; in a cheaper manner than is proposed. I thing a cheaper work could be carried out.
753. In what respect? I do not think the walls require to be so heavy on the sides as the plan shows. I think they could be lighter and yet be of sufficient strength.
754. Are you an engineer? No; I am a builder and contractor.
755. But you would not set up your opinion against that of the engineers of the Government Department? No.
756. If they have made provision for strong walls there must be some reason for it? Yes; the strength of the walls is on account of the arch. If you take away the arch I do not suppose you will require such strong side walls.
757. Suppose it becomes, in the future, a nuisance, and it is necessary to cover it, would they not have to take down and rebuild, in order to get sufficient strength to cast their arches over? They would require to add to the strength which would be necessary at present. If you do without the arch you will not require such strong walls.
758. You understand that this is part of a general scheme, which will carry the storm-waters from the 1,000 acres of land along the boundaries of the creek? Yes.
759. And would be continued, probably in the near future, to drain the whole area? Yes.
760. Looking to the future and to the importance of the present necessities for drainage, would you not favour immediate action being taken to carry it out? Yes.

Archibald Gardiner, Esq., Civil and Mining Engineer, Hamilton, sworn, and examined:—

A. Gardiner, Esq. 29 July, 1892.

761. *Chairman.*] What are you? A civil and mining engineer, in private practice.
762. Where do you reside? In Hamilton.
763. You are a member of the Water Supply and Sewerage Board for the Hunter River district? Yes.
764. Did you receive your training in the old country? Yes.
765. Do you hold any certificates? Yes; I hold certificates as a civil and mining engineer, and surveyor.
766. Have you ever carried out any drainage works? Yes; in connection with sewerage, near Glasgow.
767. How long were you engaged in sewerage works there? Ten years, in the office.
768. Were you in the office or in the field, carrying out the works? Both.
769. You know the project before the Committee? Yes.
770. You know also the locality. Can you give us any idea as to whether such a nuisance exists as to warrant the expenditure of £25,000 to remedy it? I think there is no necessity to spend that amount, but I think that something requires to be done.
771. You understand how it is proposed to cope with it temporarily. Do you think that would be sufficient? Yes.
772. From what you say, you think the cost might be reduced by dispensing with the cover? I would have no cover.
773. Do you think, even by doing away with the cover, that the cost of the structure could be decreased by having lighter work? If you were going to have a cover you would require to build sides sufficient to carry the girders, consequently these sides can be reduced when not required to carry the girders.
774. But in reference to the timber structure underneath—do you think it necessary in view of the treacherous nature of the ground? I was not aware until the other day, that the ground near the railway was so treacherous, and probably some extra expenditure will be required there; but I think the ground between Blaine-street and the A.A. Company's property will not be so treacherous, and a sheet of concrete there will be sufficient without timbers. I was in India in the Civil Service for six years, and I carried out a lot of experiments for the chief engineer in testing the strength of concrete. Those experiments showed that, by inserting old rails or timber in concrete, we could get as much strength from 1 foot as from 3 feet without them. I superintended a good number of experiments, and I believe that a sheet of concrete 1 foot thick would carry a great weight.
775. I suppose that in matters of sewerage work, it is absolutely necessary to be on the safe side, in view of the fact that, if any sinkage takes place, it will interfere with the whole system? Yes. If you use the word sewerage, and are going to use the work as a sewer, it is a different thing from carrying storm-water. If you make a sewer it will have to be very substantial, because it will be a very disagreeable thing to have to alter it.
776. But as a matter of fact, the creek is now used for liquid sewage? The line shown on the plan "Storm-water for Municipalities to Adamstown," is the line I proposed to the Councils of Hamilton, Adamstown, and New Lambton.
777. Have the Department been stealing your thunder, or have you been stealing theirs? I believe they have been stealing mine. Reference has been made to the amount of sewage in Hamilton, but nothing from Hamilton proper passes through the creek at present.
778. You mean from the inhabited portion? Yes; not a single drop of water passes through the Cottage Creek from there.
779. How does it get to Throsby's Creek? By the Styx Creek, which falls into Throsby's Creek. It passes through Hamilton Park, and below the Northern Railway, half a mile west of Hamilton Railway Station.
780. Not far from Hamilton station? About half a mile from there, and it finds its way into Throsby's Creek, near Tighe's Hill bridge.
781. Do we understand that all the water, on the north side of the Wallsend Road, falls into Styx Creek? The Hamilton Commonage has no outlet. At the only portion of Hamilton which lies very low, the water has to rise 2 feet to 2 feet 6 inches, before it runs off into the Styx Creek. Before it can all run off some must

A. Gardiner, Esq. 29 July, 1892.

must percolate through soil to Styx Creek, and very little to Cottage Creek, if any. My reason for stating that very little of it goes to Cottage Creek is this: Half-way between No. 2 pit and the Hamilton pit of the A. A. Company, there is a little bit of a drain running into Cottage Creek, which takes its rise from a point a little east from the public road leading from Merewether to Hamilton, and falls into Cottage Creek.

782. Have you taken levels over this area of land? I have sectioned the whole of it with a level.

783. And your investigation leads you to believe that a large portion of that area does not drain into Cottage Creek? Not at present.

784. Where is the most densely-populated portion of Hamilton? Near the station, and north of the road leading to Wallsend.

785. Therefore, if your conclusion is correct, you think the Hamilton people should not be called upon to contribute very largely to this scheme, because they do not send their drainage into the creek? No nuisance goes from Hamilton to Cottage Creek.

786. I understand that, if this work is to be merely a storm-water sewer or drain, you think a work of a less expensive character should be adopted? Yes.

787. If, on the other hand, it is to be a sewer, it will be necessary to have a very substantial work? Yes.

788. You are aware that liquid sewage, at present, flows down a portion of the Cottage Creek? Yes; but all that goes down it at present would not damage it much.

789. But does not every day increase the number of people who are draining their slops into this particular creek? I do not think it can be said that there is a daily increase.

790. You are aware that the proposal for the general sewerage system for these districts has taken very little shape yet, and it may take years before anything is done In the meantime, the population is increasing, and the nuisance will increase? Yes; but I think that if the extension I would propose—to drain Adamstown—were agreed to, the amount of flushing coming down would prevent the nuisance. I consider that the nuisance would be, to a great extent, removed by having a smooth bed. The Cottage Creek, to the west of the A. A. Company's railway—that portion where it passes through the A. A. Company's property—is regularly cleaned, and there is no obstruction to the flow of water.

791. Who cleans that? The A. A. Company.

792. For what reason do they do it? For the benefit of their tenants.

793. Is there very objectionable matter in it? If any obstructions are left in, whenever there is a heavy rainfall it floods out a lot of tenants and their gardens—the channel is too small for the area drained by it.

794. Then it is more to give free access to the flood-water rather than because of any nuisance arising? Yes.

795. Do you think the Committee would be justified in recommending the expenditure of £13,000 to deal with the portion of the creek under consideration? I think it might be done for less.

796. Would you undertake to do it yourself, and make a good job of it for £5,000? I would require to go into the matter, which I have not done.

797. No engineer has yet been appointed for the Water and Sewerage Board? No.

798. Has the Board had the appointment under consideration? Not yet.

799. *Mr. Ewing.*] You have taken sections all through the area you have particularised? Yes.

800. When there is a comprehensive scheme of sewerage in existence, do you believe it will pass out by the channel we have under consideration? No.

801. Where do you think it will pass out? I believe it will come down the coast line.

802. You believe in it going out to sea? Yes.

803. Why? I am thoroughly opposed to it going into the harbour.

804. You believe, then, this will be a storm-water channel, and will not be utilised for sewage? Storm-water only.

805. If it did form part of a comprehensive scheme, and were to take the sewage, you think it might be carried out in a more inexpensive way than if it were purely a storm-water channel? Yes.

806. You think that that is still an undecided point? It is.

807. You think, then, before we decide as to the outlet, we ought to consider the whole question of sewerage? If you leave it until you take that into consideration you will be throwing it back for an indefinite period. My own private opinion about sewage is that it ought to be put on the land.

808. The great cost will arise, partly, from the unsuitable country through which the sewer will be made? Yes.

809. The more heavy your concrete is, the more difficult it is to deal with? Yes.

810. Therefore, you ought to make it as light as you can, consistent with proper strength? Yes.

811. You mentioned to the Chairman that, by using rails set in concrete, practically making a sort of cage or frame, you obtain the same strength without additional weight? Yes.

812. Can you tell us the results of the experiments you made? The experiments were made in 1877 or 1878. I have not the notes with me.

813. Has the system been adopted in India? Yes; in several places.

814. Instead, therefore, of making these great massive concrete channels, they make light concrete, with iron bound in it, as it were? Yes. I believe several men in the Department have seen it tried, and an engineer in the Railway Department told me he had tried it.

815. Where has it been tried here? I believe about four years ago, on one of the foundations of an abutment on the southern railway.

816. If you can get a solid structure of that kind without great weight, of course, it will be a great deal cheaper? Yes.

817. But you can say nothing more definite at present? No; I have not gone into it.

818. *Mr. Wall.*] When you took the surveys did you do so for a general system of sewerage? For a storm-water drainage.

819. For Hamilton? Yes; Hamilton, Adamstown, and New Lambton.

820. In speaking of the plan for the distribution of the sewage of the Municipalities, you said something to the effect that you thought your design had been adopted? My scheme is before the Government officers to be reported on.

821. Is that a scheme which can be applied to the sewerage of the whole of the Municipalities, or is it confined to any particular Municipality? It embraces 6,000 acres—Lambton, New Lambton, Adamstown, and Hamilton.

822.

A. Gardiner, Esq. 29 July, 1892.

822. Is your scheme applicable to the whole of the Municipalities? It could be made applicable to those I name, with a fall into Styx Creek, excepting the small area that comes by Cottage Creek—part of Adamstown, and a small part of Adamstown Commonage. That is the reason I am in favour of a storm-water channel.
823. I take it that under that scheme you would require a pumping-station? No.
824. Where do you propose to discharge? Along the green line on the plan, into Throsby's Creek.
825. *Mr. Davies.*] Are you, or have you been, in the employment of the Municipal Council of Newcastle? No.
826. But you were specially employed by the Municipalities you mentioned, to take levels and to prepare a plan for a Storm-water System? Yes.
827. How long ago? I handed it to the Council last February or March.
828. Do you know what action was taken upon the plans? I believe they were forwarded to the Sewerage Department for an engineer's report.
829. They are still there? Yes.
830. Do I understand you to say that a portion of the plan includes a portion of the scheme proposed by you? Yes.
831. Are you an applicant for the position of engineer to the Water and Sewerage Board? No.
832. Are you following your practice in Newcastle? I am in private practice in Hamilton and Newcastle.
833. You approve of the system proposed by the Department, for carrying away the storm-waters only? Yes.
834. Only you think the proposal rather an expensive one, and that the work could be done as effectively for less money? I think so.
835. In what direction? By introducing ties into the concrete, and a less thickness of concrete for the channel.
836. But the cost of material for making concrete for a certain gauge is not very expensive? To do it as the Government does it, it costs 15s. per cubic yard more than it costs other people.
837. Do you know where sewerage works have been done for less money? No.
838. Is it not better to have the work done permanently and strongly? Yes; but you might make it overstrong, which is in this particular case a serious matter.
839. Do you think it is possible to do that? Yes, this serves as an example.
840. Do you think some engineers go to extremes in carrying out their works? Yes.
841. That is a good fault? It is a very good fault.

John Gilbert, Esq., Alderman of Wickham, sworn, and examined:—

J. Gilbert, Esq. 29 July, 1892.

842. *Chairman.*] You are an Alderman of the Municipality of Wickham? Yes.
843. The Mayor of Wickham has informed the Committee that his Council is anxious that the work should be carried out, and that they are unanimously of opinion that the drain should be covered; they also think that the cost should not be confined to Newcastle and Wickham, the latter district only having a few hundred feet of their border on this particular creek;—do you agree with the views of the Mayor? I do.
844. Have you anything further to add? Wickham does not contribute anything at all to the nuisance. The stench arising from the creek is not only very annoying, but very injurious. I have the misfortune to have property on the creek. I have also a coach factory, and employ from twenty to thirty hands. Very often the men are laid up, and their sickness is attributed to the smell from the creek. There has been a lot of sickness about Wickham, and it has been attributed, by medical men, to the creek.
845. All this proves that something should be done to minimise the evil? Yes.
846. Do you think the proposed scheme will minimise it? Certainly.
847. And you think the people ought to be prepared to bear the cost? I suppose the cost will be rather heavy, but I think it will be a difficult thing for any one, not an expert, to say that, under the proposed plan, it will be too costly.
848. If the work is carried out with a cover the cost will be £25,000; the removal of the cover will reduce the cost one half. Would it not be well to try what could be done with the lesser amount? I would rather have half a loaf than no bread, and I would rather have a drain without a cover than none at all. The nuisance, no doubt, would still exist to a great extent, and there would be a danger in having an open sewer. It crosses Langford-street and Hunter-street West, and goes through a great deal of property, and if it remains open there will be a lot of filth and rubbish emptied into it, which will cause a nuisance, and children may fall into it.
849. Does not the danger of children falling in exist now? No; not so much.
850–1. Could it not be protected at a little cost by a fence? It might.
852. Is not the argument, in regard to the possible danger to human life, rather a sentimental one? It may not be one of the strongest arguments in favour of a covered drain, but, from the experience I have had for a number of years of the stench arising, and the nuisance which exists, I think it should be covered.
853. Your establishment is on the borders of the creek? Yes.
854. We have been informed that the bed of the creek is rather treacherous, and that it will necessitate extra strength for the foundations of the sewer—do you agree with that? To a certain extent; but it is not so treacherous as some people would make us believe. I remember the occasion, when the surveyors were surveying the creek in connection with the proposed work, and I do not think they had to go far down before coming to a solid foundation.
855. It is upon the information obtained by the surveyors that the Department has come to the conclusion that the sewer will have to be constructed in a substantial manner;—do you not think they ought to be the best judges? Yes.

Alfred Sharp, Esq., sworn, and examined:—

A. Sharp, Esq. 29 July, 1892.

856. *Chairman.*] You desire, I understand, to make a statement to the Committee, respecting the proposed sewerage works now being inquired into? For the last five years, from the very inception of all things bearing on the Cottage Creek water-course, I have been an interested party—not in the sense of having

A. Sharp, Esq. 29 July, 1892.

having property to be benefited, or axes to grind; but in the sense of finding some solution to an engineering problem, that must be tackled sooner or later. And judging by the rapid increase in the value of property in Newcastle West, and taking into account the tendency of population to trend westward, the sooner it is done the better. To understand the business properly, we must first trace back that creek to its sources. It would quite astonish many people to know that its main sources are those clear, bright, and sparkling springs that arise from and around the sand-drift, and which form the pools and swamps to the southward and south-eastward of the Junction. The street surface drainage of Merewether, two or three small hill streams, and the swamp waters of the low-lying parts of that Municipality, also find their way to it. I have only been able to find two branches—one which receives the overflow of the A.A. Company's dam, and another fresh-water stream that runs towards Hamilton. In its progress it also receives the percolations of the swamp grounds near the cricket-field and racecourse, cultivated as Chinese gardens, and I have no hesitation in saying that up to that point, unless in flood-time, a glass of water taken from the creek is as clean-looking as one from our city water supply. Whence, then, comes the undoubted nuisance, and dreadful stench, which in summer salutes our olfactory organs as we cross the bridge in Hunter-street West? I say, unhesitatingly, that it wholly arises from two things, both easily preventible. The first is the discharge of evil-smelling chemicals from the gas-works, which the inflowing tide leaves stranded on the bed and banks of the creek at low water, forming thick deposits of filthy mud; and the other is the sewage from the Wickham drain, discharging at the mouth of the creek, which the tide carries up and leaves behind it. If any other sewage matter finds its way into the creek, there is no reason whatever why it should, for along its entire course there are but few buildings, and any sewage matter could easily be kept out—except perhaps the percolations from the manure-laden soil of the Chinese gardens, and the town-refuse deposits in Melville-street. It is proposed that 900 odd feet should be covered in. Have those who proposed it thought of the enormous cost of such a small instalment of the necessary work, if it is to be a sewer? The foundations are deep mud, or peaty swamp soil, on a sandy bed of varying depth, sometimes very deep, and sometimes partaking of the nature of a quicksand. A huge sewer-tunnel could not be built with safety on such a foundation, even on costly timber beds; for in some places you can drive piles 80 feet without touching bed-rock. On the other hand, those who propose an open water-course can point out the fact that concrete beds, laid in continuous lengths, without breaks, will bear up weights that other foundation beds would never do, owing to concrete beds being practically just like one long, unbroken, stone sleeper, on which the walls would rest. Hence, such walls would be far better and cheaper than a costly tunnel, to say nothing of the attentions of the white ants to the timber-work on which that tunnel would rest, and which would collapse it sooner or later. I say, without hesitation, that if those very few houses, that drop their night-soil and house refuse into the creek, were stopped, and a line of 18-inch pipes laid from the gas-works to the bed channel of Throsby's Creek, where there is always a salt-water current to deodorise the chemicals, the water of the creek, fed as it is by so many perennial, pure, and abundant springs, and augmented by fairly clean swamp drainage, ought to be all but drinkable; and that instead of a filthy-looking creek, it should be a clear and inodorous stream, except when in flood. Why, then, go to the cost of making a huge sewer, which would be merely a receptacle for sewer gas, and whose ventilators would belch forth that gas day and night? At a quarter of the cost the creek could be rendered not only innocuous but pleasant, by simply erecting retaining walls, and diverting the sewage and chemical matter that cause all the nuisance. Of course, the filthy mud at the mouth of the creek will have to be dredged or excavated away. That once done, there is no reason why the creek, confined in narrow limits (and therefore under control), should not keep its water-course sweet and pleasant ever after. Of course, also, the filthy railway drain from Wickham would have to be connected with the drain from the gas-works referred to above, and the sewage carried to the tidal scour in the central bed of Throsby's Creek, along with the gas-works chemicals. If any deposits form there, the dredges would soon clear them away; and the salt water would deodorise the discharge. Would not this be simpler and better than constructing a huge and costly sewer, which at any time might break down or collapse, owing to the treacherous nature of the foundations on which it must of necessity be built? Would not a running fresh-water stream, fairly clear, and quite inodorous, be better than a sewer full of sewer gas and sewer rats? I think it would. An open watercourse could also be dammed or locked at its mouth, so as to keep the fresh water up to a certain depth before flowing into Throsby's Creek, which lock would be opened in flood times, and create a scour that would not only keep its own channel sweet, but also deepen Throsby's Creek in doing so. This would prevent any mud being exposed to a hot sun.*

David A. Rogers, Esq., Wickham, sworn, and examined:—

D. A. Rogers, Esq. 29 July, 1892.

857. *Chairman.*] Where do you reside? At Wickham.
858. How long have you resided there? Ten years.
859. You frequently visit Newcastle, I suppose? Yes.
860. You know the Cottage Creek? Yes.
861. Do you think a nuisance exists there? Decidedly.
862. Do you think it bad enough to incur an expenditure of £25,000 upon its removal? If it cannot be removed at a less cost.
863. Even if the people have to pay for it? Yes.
864. Do you know what is proposed to be done? Yes.
865. Do you think that that would be the means of minimising the nuisance which exists? I would not say it would, I consider it would remove it from one part to another.
866. What would you propose to do to remedy it? I think the powers of the Nuisance Prevention Act could be brought to bear without this expense being incurred. I think the Municipalities are at fault altogether in connection with it.

867.

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* Note (*on revision*): If 12 feet were reserved on each side of an open stream flowing on a 12-inch concrete bed, and between walls 25 feet apart; and if that reserved 12 feet on both sides were planted with trees, it would form a splendid promenade from Hunter-street to the small park, close to the gas-works, which is now being laid out by the Municipal Council of Newcastle.

D. A. Rogers, Esq. 9 July, 1892.

867. Have you represented your views to the aldermen of the various boroughs as to their powers under the Nuisance Prevention Act? They can prevent any matter, which will pollute the storm-water sewer, being discharged into it. I know they come upon me very quickly if I create a nuisance.
868. Would you suggest that the Committee suspend their inquiry and leave you and the ratepayers to move the Municipal Councils to do their duty? Neither Wickham nor Newcastle—Wickham particularly—are in a position to bear any portion of the cost of the scheme just now. We are on the verge of bankruptcy, and cannot do it, and Newcastle is but a little better.
869. Then, if the people who have been already examined, say that the nuisance is so intolerable that they are prepared to pay the piper for removing it, they do not know what they are talking about? Not at all. I am as much against the nuisance as anyone.
870. But they say they are prepared to pay the cost, and you say they are not able to do so? They cannot, unless it is spread over a period of 120 years or more. The rates are more than absorbed already.
871. Can you tell us the indebtedness of the Wickham Borough? £16,000.
872. What assets have they? They have the permanent works and improvements which they have made—the streets.
873. Have they any Town Hall property or real estate? A small Town Hall worth about £800.
874. Do you desire to offer any opinion as to the carrying out of the scheme itself? The scheme is a very good one, if it is carried out at the proper time. I am in favour of the reclamation before the sewer is carried out, for this reason—that being employed for a number of years on the banks of Throsby's Creek, I find that the deposits, which are brought down by the creek, are distributed along there, and in place of improving that part it will make it much worse.
875. Do we understand you to say that the sewage and other matter, which comes down Cottage Creek, goes westerly and northerly along Throsby's Creek, and is deposited upon the foreshores? Yes.
876. How can that be when the water can only get out of this creek on the ebb tide, and the ebb tide does not flow north-west, but north-east, towards the entrance to the harbour? It is washed up by the tides in their action, and all this matter is thrown chiefly towards the Wickham side of the creek.
877. Are there not some creeks higher up than Throsby's Creek, such as Styx Creek, and others, which pour their filth into this? Yes.
878. Which, perhaps, drain as much objectionable matter into Throsby's Creek as does Cottage Creek? Not so much; for this reason—that I find the deposits are more concentrated towards the Cottage Creek end.
879. Supposing the foreshores were reclaimed up to the mouth of Cottage Creek, the stuff, coming out there, would pollute the shores of Throsby's Creek above the outlet? With a channel deep enough there would not be the same likelihood of that. The sediment always finds the bottom.
880. But does your idea of reclamation include the whole of the shores of Throsby's Creek? No; only the Government reclamation lines.
881. *Mr. Humphery.*] What general rate do you pay in Wickham? One shilling and threepence, outside the water rate.
882. Is that a general rate? Yes; and a gas rate.
883. Then, at present, you are not paying a sewerage or water rate? We expect to immediately.
884. The water and sewerage rate will cover the interest on the cost of constructing the sewer, so that the Municipal Council will not have to provide, out of its present revenue, the interest upon this cost? Not straight away.
885. There will be an additional rate to provide for the sewerage? Quite so.
885½. It has been stated that there is nothing coming down from Hamilton which would bring the people within the right of paying for a portion of the scheme? I may say that all the liquid matter from the Castlemaine Brewery is put into this creek, and it is of a most filthy nature.
886. *Mr. Davies.*] I understand you to admit that there is a very great nuisance existing at Cottage Creek? Unquestionably.
887. But you object to the large expenditure which would be necessary to remove it? If it cannot be accomplished at a lesser cost.
888. In consequence of the poverty of the Municipalities of the district? Quite so.
889. Do you mean to tell the Committee that the population of these four municipalities—28,000 people—would not be able to bear the interest upon an expenditure of £25,000? Not if you take it in that way. The idea was that it should be saddled on Newcastle and Wickham.
890. Do you not think that the work is a very important one, and should be carried out? I do, if the cost is distributed in the manner indicated.

TUESDAY, 2 AUGUST, 1892.

Present:—

JACOB GARRARD, Esq. (Chairman).

The Hon. William Henry Suttor.	The Hon. John Davies, C.M.G.
The Hon. James Hoskins.	Thomas Thomson Ewing, Esq.
The Hon. Frederick Thomas Humphery.	William Chandos Wall, Esq.
The Hon. Andrew Garran, LL.D.	William McCourt, Esq.

Henry Dawson, Esq.

The Committee further considered the proposed Sewerage Works at Cottage Creek.

Robert R. P. Hickson, Esq., Commissioner and Engineer-in-Chief for Roads and Bridges and Sewers, sworn, and further examined:—

R. R. P. Hickson, Esq. 2 Aug., 1892.

891. *Chairman.*] Since you were last examined by the Committee, you have visited Newcastle and the site of these proposed works, in company with the Committee? Yes.
892. You also heard the evidence of the various witnesses given at Newcastle on Friday last? Yes.
893. You are aware that the Mayor of Newcastle, Mr. Rodgers, opposed the construction of this work because of its expensive character? Yes.
894. And he was of opinion, that even if it were to be constructed at that particular site, it should not be a covered sewer? Yes.

R. R. P. Hickson, Esq. 2 Aug., 1892.

895. Have you, in any way, modified your opinion as to the desirability of its being a covered sewer, or as to whether, from the local evidence which was adduced, the foundations are likely to be as treacherous as you anticipated? I do not think that the foundations will be as treacherous as we anticipated in the first instance—in fact, I always thought there would be a probability of our making a saving in that item; but to meet all possible contingency I put in the full estimate. As regards the covering of the sewer I am still of opinion that it ought to be covered.

896. *Mr. Humphery.*] You heard Mr. Rodgers state, did you not, that if the site of the sewer were shifted, a very great saving might be effected and a better foundation obtained? Yes.

897. Do you share in his opinion? No; I do not. I think the foundation will be practically the same—in fact, I may almost say I am quite certain of it from different shafts and wells that I have seen in that neighbourhood. As to altering the site, I think it would be a great deal more expensive.

898. In what way would it be more expensive? We would have, by an excavation, to do that which is practically done for us now—at least, to a very great extent. Beside that, to go under Blane-street, we would have to make an entirely new bridge there. At the crossing of the Great Northern Railway we are utilising a bridge which is in existence. If we removed the sewer, as Mr. Rodgers suggested, 100 feet or 200 feet east, that would necessitate the making of a new cutting through the railway, and a new bridge, which would be a very costly work; and it would be very troublesome keeping the traffic going at the same time.

899. Would there not also be compensation to the owners of the land? Yes; there would be compensation too.

900. And it would be necessary, would it not, to fill up Cottage Creek, or would you leave it, in the event of shifting the site for the sewer? You would have to fill it up, for the same nuisance would remain there still. The tide would deposit offensive matter therein.

901. So, not only would it be less effective than the sewer which you propose, but, in your opinion, the cost would be considerably greater? I am quite sure that it would be greater.

902. *Dr. Garran.*] Mr. Bagge told us that the necessity for covering this sewer was mainly to prevent the sides from falling away on account of the treacherous nature of the soil—that it was not so much for sanitary, as for engineering reasons;—is that your opinion also? I do not know that he said that.

903. I understood him to say that—that the covering is absolutely necessary to hold the whole work together? Oh, no; I think you must have mistaken him. He could hardly have said that, as that is not the case. We can make it quite strong enough to stand without any top to it.

904. But, if you did so, would you have to make the sides thicker? No—practically the same sides in either case.

905. After you have driven your piles and made the platform on the top of your piles, would it be possible to lay a larger size of earthenware pipes and to take the sewage through them? Yes; it would be quite possible.

906. Would that be a less expensive mode? I do not think that it would. You would have to put in such a great number of them to give the same sectional area; in fact, I am quite sure it would not be, because you would have to fill up the interstices between the pipes with concrete as well. It is an impracticable scheme, I think.

907. I was thinking about the weight, and the difficulty in connection with the foundations and the sides, and whether that would get over the difficulty? I do not think so. I think the weight would be rather more.

908. There is nothing to be gained by using earthen pipes? No. I do not anticipate any trouble with the foundations.

909. Then what is your principal reason for wishing to cover—a sanitary reason? Because from a good many years' experience of that place, passing it two or three times a day, I know that, although it is no doubt, much more offensive at low water, still it is very offensive when the tide is coming in. The sewage matter, whatever offensive matter is in the creek, is met by the incoming tide, and it does not get away, but floats on the top of that sewer, and the smell there at high-water is very great indeed, and very offensive. By covering it, of course you do away with that, and, as you may remember, we propose to put ventilators on the top of the sewer, so as to prevent any danger of concentrating this smell at end of the sewer, and blowing it out as through a funnel. The smell would go up the ventilators above the top of the houses.

910. How many of these ventilators do you propose to have? We had three mentioned, but I think we can only put in two—one at each side of the bridge.

911. *Mr. Wall.*] Could this sewer be built over if it were covered? As we design it now, it could.

912. Land is pretty valuable there, is it not? Yes; but I could not tell you the value of the land there.

913. You would derive a very large sum from selling the land? You would get something for it, no doubt.

914. You stated previously that the inflowing tide contributed very much to the pollution of this creek? I think so.

915. If the design suggested by Mr. Rodgers was carried out, it would not prevent that pollution unless the creek was filled up—that is to say, if Mr. Rodgers' design to cut the channel through another place, was carried out, the creek would still be polluted by the incoming tide? Just the same. The only alteration he proposes is to remove the creek 100 feet or so down. The same creek would be there to all intents and purposes.

916. During the course of our inspection we noticed a number of drain-pipes coming into the creek? Yes; there are a good many.

917. Therefore, the creek could not be filled up without interfering with the drainage of the town? We would have to bring those to the new sewer.

918. Or else leave the creek open as it is at the present time? It could not possibly be left open—it must be closed in, and the pipes carried on.

919. What extent of land would you resume in carrying the sewage along Cottage Creek, as at present—what frontage to the street? From Blane-street to the railway we would not have to resume anything. I cannot ascertain from the A.A. Company, definitely, whether we should have to resume there or not.

920. You know the land on the lower part of the creek? Yes. On the northern side of Blane-street there will be no resumption; but between that street and the A.A. Company's railway I heard, in Newcastle, only the other day, that it is private property, and we may have to purchase the land.

R. R. P. Hickson, Esq. 2 Aug., 1892.

921. Is the creek actually private property? So I heard; but I have not been able to ascertain, for a fact, whether it is or not.
922. Do you know the frontage which the Crown lands on the other side of the creek will have to the sewer? The frontage that we shall have will be the width we make the sewer there, plus the walls on either side—it will be from about 25 feet to 30 feet.
923. That land would be available for building purposes if you had a covered sewer? Yes.
924. If you resumed the lower portion you would have 30 feet the other side also available for building purposes? Yes.
925. And with an open sewer you would still have to resume the other portion, and not be able to dispose of it? If it is private property we would have to resume it.
926. *Mr. Ewing.*] If the people in the vicinity are satisfied with an open sewer what objection have you to it? I think the Committee will remember that no person in the vicinity was in favour of an open sewer. All the evidence that came from people in the vicinity was in favour of a closed sewer. Those who did not live there, or had not to go past the sewer—for instance, Mr. Alderman Smith and Mr. Mayor Rodgers—advocated an open sewer; but all those about Wickham, who have to go there two or three times a day in the course of business, advocated a closed sewer.
927. Mr. Rodgers, Mayor of Newcastle, and the Chairman of the Hunter District Water Supply and Sewerage Board, who have to impose rates to pay for the expenditure, were satisfied with an open sewer? Mr. Rodgers lives in Newcastle, and does not pass that sewer, and Mr. Alexander Brown hardly ever passes it.
928. Did you hear the evidence given by an engineer, who said that, by binding railway iron in the concrete, you could get it quite as strong and very much lighter? Yes.
929. Is there anything in that? Putting iron into concrete is a very old practice; but it would not be suitable in a case like this.
930. You have considered the practice, and say it is not suitable there? It is not suitable there.
931. *Chairman.*] You heard the Chairman of the Hunter District Water and Sewerage Board, who will have to impose a rate for this purpose, say that, in his opinion, a covered sewer was not necessary? Yes; I think he said that.
932. And that, unless the expenditure upon this particular piece of sewerage was kept down, he, for one, would be against it? Practically, I think he said that.
933. I suppose it would be quite possible to build a sewer of less massive construction if there were no covering? There is very little difference. The sides and bottom would practically be the same.
934. If the covering were left off for the present, and afterwards it were found desirable to put a covering over it, I suppose that, instead of a massive concrete covering, girders and buckle-plates could be thrown across? A light roof could be put upon it; but we could not build on the top of that.
935. You have had in view the possibilities of building upon it? It is more than likely that it will be built upon.
936. What is the value of the land that will be taken there;—will that compensate for the extra cost of covering in the sewer in a massive way? No; it would not.
937. Do you not think, in view of the fact that the Newcastle people will have to pay for this work as the people living in that particular area, that it would be better to construct a sewer at half the estimated cost, rather than carry out this rather expensive scheme? No; I do not. I am still of opinion that it should be covered. I am satisfied that, if we made an open sewer, we should, in a short time, be called upon to cover it. The nuisance would still be great.
938. Do you not think that the Committee should pay some consideration to the emphatic opinion of the Chairman of the Water and Sewerage Board, that, unless the expense were cut down half, he would be against it? Every person's opinion should be considered, no doubt. Mr. Brown, of course, is a gentleman whose opinion I value very much; but, as Chairman of the Water and Sewerage Board, he has been in existence only a few weeks, and I do not think that he can really have studied the question very fully.
939. *Mr. Hoskins.*] Supposing that through pressure, whether from the Minister or from the Water and Sewerage Board of the Hunter River District, you were constrained to construct this Storm-water Sewer without a covering, would you not be compelled, from the nature of the soil and from the soakage which there would be through the soil, in consequence of the water that comes up this water-course when the tide is in, to erect strong walls at the side, as you propose to do now with a covering over the sewer? Practically, the walls would be the same. The sides and bottom would, practically, be the same; for if we had an open sewer we should certainly make the sides strong enough to carry a covering afterwards.
940. And if you did not make strong walls, would there not be a danger of the water oozing out through the treacherous soil, such as is there, and generally undermining the walls, and would there also not be a danger of the whole thing tumbling down? Even if it had to be made on open sewer, we should make it so that that contingency would not arise—that is to say, we would meet any contingency of that sort.
941. *Mr. Davies.*] Is the land which forms the bed of the creek the property of the Crown? I always thought that it was until Saturday, when I was told that the upper portion, from Blane-street to the A.A. Company's property, was not. I have been trying to see Mr. Gregson since, but I cannot get hold of him to ascertain whether that is so or not. From Blane-street down to the Great Northern Railway is the property of the Crown.
942. That is near the gas-works? From the main street down to the Great Northern Railway is Crown land.
943. You are not aware whether the bed of the creek, from near the gas-works, is the property of the Crown? We were always under the impression, and were told so until Saturday, and there was a doubt expressed by the Mayor of Newcastle himself.
944. Does not the tide, at the present time, find its way up there? Yes.
945. It is an old creek that has been gradually filling up? Yes; it is an old waterway. I, myself, think that it is the property of the Crown, but that question will have to be settled.
946. But you have no doubt about the land below the street? No; because that never belonged to the A.A. Company. The main street is the boundary to the A.A. Company's ground.
947. If your proposal to build a covered sewer is carried out, the land on each side of the street will become very valuable? I think it will very much increase the value of it.
948. I suppose it will be worth £150 a foot? I could not tell, at all, what its value is now. I should say not as much as that.

R. R. P. Hickson, Esq. 2 Aug., 1892.

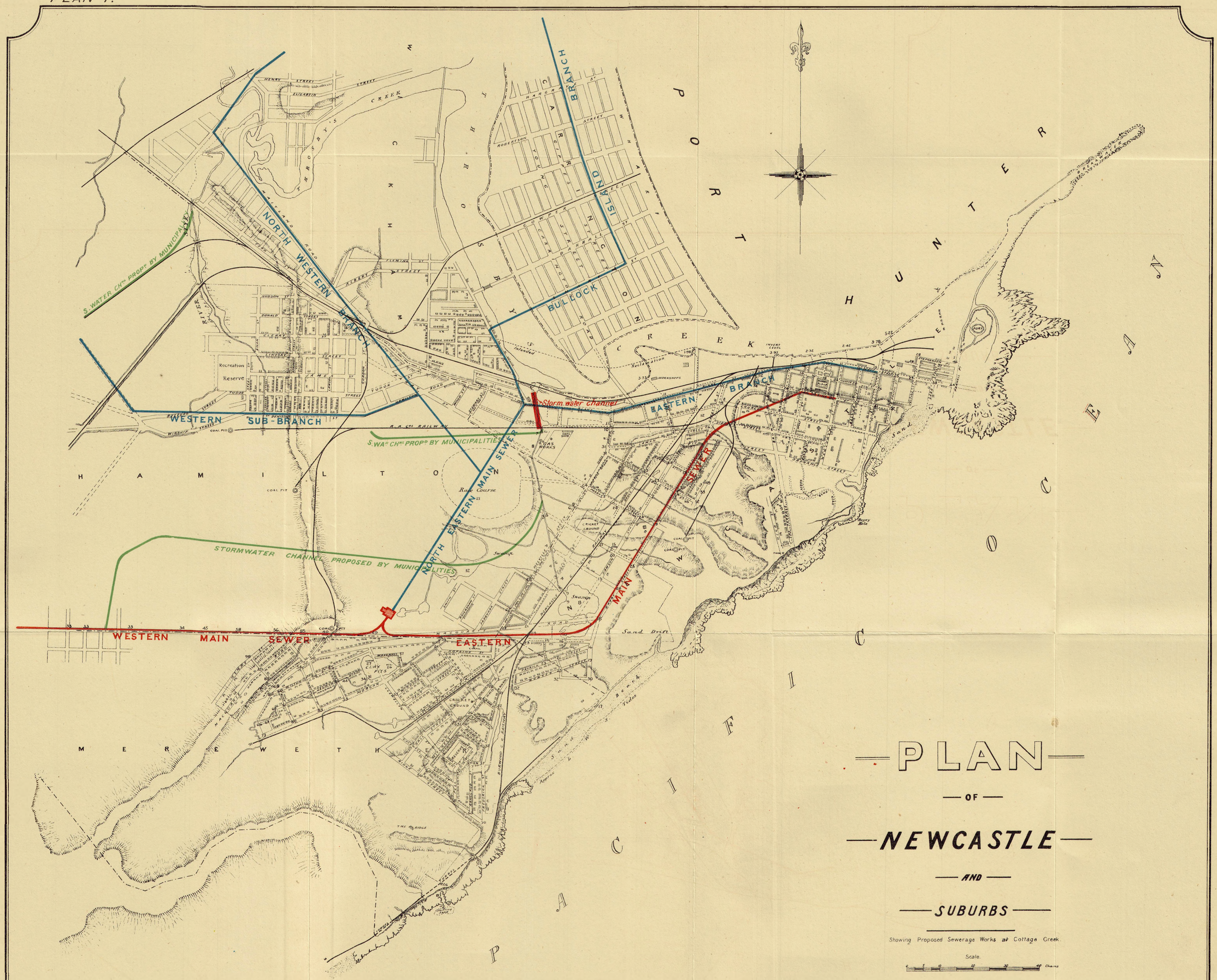
949. There will be 100 feet frontage to Blane-street, or pretty nearly, on each side of the creek? We would have about 30 feet, on each side, as a frontage to Blane-street—that is, 60 feet altogether.
950. But near the railway the frontage is very nearly 100 feet—the creek is about 100 feet wide, or nearly so? But that is not the frontage to Blane-street. You mean that along the railway it is about 100 feet?
951. Yes? No; I think not. It is that little bay you are speaking of—that is a private allotment. Practically, we should have a width of about 30 feet on each side right through.
952. The opening of your sewer alone is 20 feet without the side walls? Yes.
953. There would be 30 feet or 40 feet on each side? Well, about 30 feet.
954. That could be utilised, without any possible injury to health, if the sewer were covered over? Yes. When we were designing this, we thought that it would have to be built over.
955. The nature of the covering of the sewer will be such, that health will in no way be jeopardised in any building that will be put upon it? Oh, yes.
956. You are strongly of opinion that it should be a covered sewer? I am. I think it ought to be a covered sewer.
957. You remember the objections raised by some of the witnesses at Newcastle, namely, that by having a covered sewer you would concentrate the gases, and they would have to find an outlet at the upper end, and would be a nuisance? Yes.
958. Is there any danger of that arising? I do not think there would be. In any case we propose to meet it by having ventilators.
959. You propose that the gases that may be generated in the sewer shall be carried off through the shafts? I should put up two ventilators—one on each side of Blane-street.
960. What would be their height? Above the top of the adjoining houses.
961. And any gases that may be generated in the sewer would find their way through these ventilators? Yes.
962. There could be no possible danger of their escaping at one end? Not the least.

[One plan.]

Sydney: Charles Potter, Government Printer.—1892.

73—E

PLAN 1.



PLAN
— OF —
NEWCASTLE
— AND —
SUBURBS

Showing Proposed Sewerage Works at Cottage Creek.

Scale.

0 5 10 20 30 40 Chains

(Sig 73).

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE, SYDNEY, NEW SOUTH WALES.

1892.

NEW SOUTH WALES.

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE.

(PROCLAMATION AND NOTIFICATION OF TRANSFER OF THE GLEBE SECTION OF THE NORTHERN MAIN SEWER TO.)

Presented to Parliament in accordance with the provisions of the Metropolitan Water and Sewerage Acts.

NEW SOUTH WALES, to wit. (L.S.) JERSEY, *Governor.*

Proclamation by His Excellency The Right Honorable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, VICTOR ALBERT GEORGE, EARL OF JERSEY, Governor aforesaid, do hereby proclaim and declare that the provisions of the 13th section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid shall, from the date hereof, come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works:—

The Glebe section of the Northern Main Sewer: Commencing at the intersection of Bay-street and George-street West, and extending along Parramatta Road, Derwent-street, to St. John's Road; thence to Pyrmont Bridge Road, Hagerty-street, Ross-street, Hereford-street, Alfred-street, Wigram-street, Albert-street, and terminating about 3·05 chains west of the lastmentioned street, being a total distance of 1 mile 9·38 chains, and branches at Hereford-street, Clare-street, and Mitchell-street, together with all junctions, &c.

Given under my Hand and Seal, at Government House, Sydney, this seventh day of September, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,
WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

Department of Public Works, Sydney, 7 September, 1892.

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT ACT OF 1889.

IT is hereby notified, for public information, that pursuant to the provisions of the abovementioned Act, the portions of the work constructed under the authority of the Minister for Public Works hereinafter described, are hereby transferred to the Board of Water Supply and Sewerage.

WILLIAM JOHN LYNE.

DESCRIPTION OF WORK TRANSFERRED.

The Glebe section of the Northern Main Sewer; Commencing at the intersection of Bay-street and George-street West, and extending along Parramatta Road, Derwent-street, to St. John's Road; thence to Pyrmont Bridge Road, Hagerty-street, Ross-street, Hereford-street, Alfred-street, Wigram-street, Albert-street, and terminating about 3·05 chains west of the lastmentioned street, being a total distance of 1 mile 9·38 chains, and branches at Hereford-street, Clare-street, and Mitchell-street, together with all junctions, &c.

1892.

NEW SOUTH WALES.

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE.

(PROCLAMATION AND NOTIFICATION IN CONNECTION WITH THE TRANSFER OF WORKS COMPRISED IN CONTRACT No. 76, SYDNEY SEWERAGE, IRON COVE CREEK STORM-WATER CHANNEL.)

Presented to Parliament, pursuant to the Act 43 Vic. No. 32.

NEW SOUTH WALES, to wit. (L.S.) JERSEY, *Governor.*

Proclamation by His Excellency the Right Honorable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honorable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, VICTOR ALBERT GEORGE, EARL OF JERSEY, Governor aforesaid, do hereby proclaim and declare that the provisions of the thirteenth section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid, shall from the date hereof, come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works :—

A storm-water channel commencing at the upper end of existing Municipal open brick storm-water channel on the south building line of Thomas-street, and extending more or less along the line of existing creek to Liverpool Road; thence along existing course of creek to Norton and Carshalton Streets; thence along the last-named street to its junction with Arthur-street; thence more or less along the course of the creek across Holborow and Green Hills Streets to the western building line of Croydon Avenue, being a total distance of 61·75 chains, together with all manholes, inlets, the Elizabeth, Thomas, and Carshalton Streets junctions, as well as other junctions, and a branch sewer from junction of Carshalton and Norton Streets to Holborow-street.

Given under my hand and seal, at Government House, Sydney, this seventh day of November, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,
WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT ACT OF 1889.

Department of Public Works, Sydney, 8 November, 1892.

IT is hereby notified, that pursuant to the provisions of the above-mentioned Act, the portions of the work constructed under the authority of the Minister for Public Works hereinafter described, are hereby transferred to the Board of Water Supply and Sewerage.

WILLIAM JOHN LYNE.

A storm-water channel commencing at the upper end of existing Municipal open brick storm-water channel on the south building line of Thomas-street, and extending more or less along the line of existing creek to Liverpool Road; thence along existing course of creek to Norton and Carshalton Streets; thence along the last-named street to its junction with Arthur-street; thence more or less along the course of the creek across Holborow and Green Hills Streets to the western building line of Croydon Avenue, being a total distance of 61·75 chains, together with all manholes, inlets, the Elizabeth, Thomas, and Carshalton Streets junctions, as well as other junctions, and a branch sewer from junction of Carshalton and Norton Streets to Holborow-street.

1892-3.

NEW SOUTH WALES.

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE.

(NOTIFICATION OF TRANSFER OF THE ELIZABETH BAY AND POTTS' POINT, EAST SIDE, BRANCH INTERCEPTING SEWER TO THE CARE OF.)

Presented to Parliament, in pursuance of the Metropolitan Water Supply and Sewerage Acts 1880-89.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, VICTOR ALBERT GEORGE, EARL OF JERSEY, Governor aforesaid, do hereby proclaim and declare that the provisions of the thirteenth section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid shall, from the date hereof, come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works:—

The Elizabeth Bay and Potts' Point (east side) Branch Intercepting Sewer: Commencing at the Main Bondi Sewer and extending along Barcom Avenue to Womerah Avenue; thence to Bayswater Road, Rushcutter's Bay Road, Amos-lane, Elizabeth Bay Road, along Elizabeth Bay Road and under private land to Onslow Avenue, along Onslow Avenue to end of avenue; thence to Billyard Avenue, along Billyard Avenue and terminating at end of same, being a total distance of 67·4 chains; and the Elizabeth Bay Road Branch Sewer, together with all junctions, intercepting pipes, interceptions, &c, connected therewith.

Given under my Hand and Seal, at Government House, Sydney, this fourteenth day of January, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

Department of Public Works,

Sydney, 16th January, 1893.

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT ACT OF 1889.

IT is hereby notified, that pursuant to the provisions of the abovementioned Act, the portions of the work constructed under the authority of the Minister for Public Works hereinafter described, are hereby transferred to the Board of Water Supply and Sewerage.

WILLIAM JOHN LYNE.

DESCRIPTION OF WORK TRANSFERRED.

The Elizabeth Bay and Potts' Point (east side) Branch Intercepting Sewer: Commencing at the Main Bondi Sewer and extending along Barcom Avenue to Womerah Avenue; thence to Bayswater Road, Rushcutter's Bay Road, Amos-lane, Elizabeth Bay Road, along Elizabeth Bay Road and under private land to Onslow Avenue, along Onslow Avenue to end of avenue; thence to Billyard Avenue, along Billyard Avenue and terminating at end of same, being a total distance of 67·4 chains; and the Elizabeth Bay Road Branch Sewer, together with all junctions, intercepting pipes, interceptions, &c., connected therewith.

1892–3.

NEW SOUTH WALES.

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE.

(PROCLAMATION AND NOTIFICATION IN CONNECTION WITH THE TRANSFER OF THE CAMPERDOWN BRANCH INTERCEPTING SEWER.)

Presented to Parliament, in pursuance of the Metropolitan Water Supply and Sewerage Acts, 1880-89.

NEW SOUTH WALES } Proclamation by His Excellency The
to wit. } Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, VICTOR ALBERT GEORGE, EARL OF JERSEY, Governor aforesaid, do hereby proclaim and declare that the provisions of the thirteenth section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid shall, from the date hereof, come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works:—

The Camperdown Branch Intercepting Sewer: Commencing at a point over centre line of existing Prince Alfred Hospital Sewer, within the St. Paul's College Reserve, distant 2·20 chains to the east from the western boundary fence of said reserve, and extending in a westerly direction through the Prince Alfred Hospital Reserve to the junction of Missenden Road and Grose-street; thence along Grose street to Kingston Road and Liberty-street to its junction with Trafalgar-terrace, being a total distance of 1 mile 14·59 chains, together with all junctions, &c., connected therewith.

Given under my Hand and Seal, at Government House, Sydney, this twenty-fifth day of January, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN

Department of Public Works,

Sydney, 1st February, 1893.

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT ACT OF 1889.

IT is hereby notified that pursuant to the provisions of the abovementioned Act, the portions of the work constructed under the authority of the Minister for Public Works hereinafter described, are hereby transferred to the Board of Water Supply and Sewerage.

WILLIAM JOHN LYNE.

DESCRIPTION OF WORK TRANSFERRED.

The Camperdown Branch Intercepting Sewer: Commencing at a point over centre line of existing Prince Alfred Hospital Sewer, within the St. Paul's College Reserve, distant 2·20 chains to the east from the western boundary fence of said reserve, and extending in a westerly direction through the Prince Alfred Hospital Reserve to the junction of Missenden Road and Grose-street; thence along Grose-street to Kingston Road and Liberty-street to its junction with Trafalgar-terrace, being a total distance of 1 mile 14·59 chains, together with all junctions, &c., connected therewith.

1892–3.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND FOR AND IN CONNECTION WITH THE CAMPERDOWN BRANCH SEWER.)

Presented to Parliament, pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1888," 51 VICTORIA No. 37.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

WHEREAS by an Act of the Parliament of the said Colony, 53 Victoria No. 15, intituled the "Western Suburbs of Sydney Drainage Act of 1889," it is enacted that the public work more particularly described in the Schedule thereto should be carried out by the Secretary for Public Works or the Member of the Executive Council for the time being charged with the duties of the said Minister, and such Minister or Member should, for the purposes of that Act and the "Public Works Act of 1888," be deemed and taken to be the Constructing Authority authorised to enter into contracts, and to exercise all powers, do all acts and things, and be responsible in respect of all obligations and liabilities which could be done or incurred by a Constructing Authority under or pursuant to that Act or the said Public Works Act, so far as might be necessary for the carrying out of the work thereby sanctioned: And whereas the land described in the Schedule hereto is required for the purpose of carrying out and constructing the public work authorised to be carried out under the said Act 53 Victoria No. 15, that is to say, the Camperdown Branch Sewer, Contract No. 63, Western Suburbs Sewerage: Now, therefore, I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, with the advice of the Executive Council, in pursuance of the provisions of the "Public Works Act of 1888," do hereby direct that the land described in the Schedule hereto, which is in my opinion required for the said authorised work, shall be acquired and taken under the "Lands for Public Purposes Acquisition Act," as adopted by the "Public Works Act of 1888": And I do declare by this notification to be published in the Government Gazette, and in one or more newspapers published or circulated in the Police District wherein the said land is situated, that the Crown Land comprised within the description set forth in the Schedule hereto has been appropriated, and the private property within such description has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette, the said land described in the said Schedule hereto shall forthwith be vested in the said Constructing Authority as a corporation sole on behalf of Her Majesty, for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the further intent that the legal estate therein, together with all powers incident thereto or conferred by the said last-mentioned Act, shall be vested in such Constructing Authority as a Trustee; and I declare that the following is the Schedule of land hereinbefore referred to:—

SCHEDULE.

All that piece or parcel of land situate in the parish of Petersham, county of Cumberland, and Colony of New South Wales, being allotment 26 of section E of the West Kingston Estate: Commencing at the junction of the northern boundary of Salisbury-street with the eastern boundary of the prolongation of Kingston Road; and bounded thence by the aforesaid northern boundary of Salisbury-street bearing easterly 21 feet 6 inches; on the east by the western boundary of allotment 25 of the said section bearing northerly 118 feet 3 inches; on the north by the southern boundary of a lane bearing westerly 21 feet 6 inches; and on the west by the aforesaid eastern boundary of the prolongation of Kingston Road bearing southerly 118 feet 3 inches, to the point of commencement,—be the said several dimensions all a little more or less, containing $9\frac{3}{10}$ perches or thereabouts, and said to be in the possession and occupation of Messrs. Greig and Richardson.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this twelfth day of December, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892-3.

NEW SOUTH WALES.

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE.

(PROCLAMATIONS AND NOTIFICATIONS IN CONNECTION WITH TRANSFER TO METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE OF COMPLETED SEWERAGE WORKS.)

Presented to Parliament, in pursuance of the Metropolitan Water and Sewerage Acts, 1880-89.

Badmington-street Branch Extension Stormwater Channel—Munni-street, Macdonald-street, Mitchell Road to Shea's Creek, Stormwater Channel—Carshalton-street Branch Stormwater Channel.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, VICTOR ALBERT GEORGE, EARL OF JERSEY, Governor aforesaid, do hereby proclaim and declare that the provisions of the thirteenth section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid shall, from the date hereof, come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works:—

The Badmington-street Branch Extension Storm-water Channel: Commencing at the upper end of existing storm-water channel on the west side of Greenhills-street, and extending along line of creek to west side of Brighton-street, being a total distance of 12·00 chains, together with all man-ho es, inlets, and all other junctions, &c., connected therewith.

Given under my Hand and Seal, at Government House, Sydney, this twenty-fourth day of February, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

Department of Public Works,
Sydney, 27th February, 1893.

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT ACT OF 1889.

IT is hereby notified, that pursuant to the provisions of the abovementioned Act, the portions of the work constructed under the authority of the Minister for Public Works hereinafter described, are hereby transferred to the Board of Water Supply and Sewerage.

WILLIAM JOHN LYNE.

The Badmington-street Branch Extension Storm-water Channel: Commencing at the upper end of existing storm-water channel on the west side of Greenhills-street, and extending along line of creek to west side of Brighton-street, being a total distance of 12·00 chains, together with all man-holes, inlets, and all other junctions, &c., connected therewith.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, VICTOR ALBERT GEORGE, EARL OF JERSEY, Governor aforesaid, do hereby proclaim and declare that the provisions of the thirteenth section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid shall, from the date hereof, come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works:—

Munni-street, Macdonald-street, Mitchell Road to Shea's Creek Stormwater Channel; Commencing at junction of Union and Munni Streets and extending more or less along the line of creek to Macdonald-street and along this street; thence south along the course of the creek to its intersection with Mitchell Road; thence again in a southerly direction along the course of the creek to the northern angle of a Chinese garden; and thence in an easterly direction across a slight ridge to Shea's Creek, being a total distance of 77·38 chains, and from last-mentioned point to excavation for Shea's Creek Canal, near Ricketty-street, a distance of 37 chains 9 feet, an earth canal, together with all manholes, junctions, &c., connected therewith.

Given under my Hand and Seal, at Government House, Sydney, this twenty-fourth day of February, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

Department of Public Works,
Sydney, 27th February, 1893.

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDED ACT OF 1889.

IT is hereby notified, that pursuant to the provisions of the abovementioned Act, the portions of the work constructed under the authority of the Minister for Public Works hereinafter described, are hereby transferred to the Board of Water Supply and Sewerage.

WILLIAM JOHN LYNE.

Munni-street, Macdonald-street, Mitchell Road to Shea's Creek Stormwater Channel: Commencing at junction of Union and Munni Streets and extending more or less along the line of creek to Macdonald-street and along this street; thence south along the course of the creek to its intersection

with Mitchell Road; thence again in a southerly direction along the course of the creek to the northern angle of a Chinese garden; and thence in an easterly direction across a slight ridge to Shea's Creek, being a total distance of 77·38 chains, and from last-mentioned point to excavation for Shea's Creek Canal, near Ricketty-street, a distance of 37 chains 9 feet, an earth canal, together with all the manholes, junctions, &c., connected therewith.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, VICTOR ALBERT GEORGE, EARL OF JERSEY, Governor aforesaid, do hereby proclaim and declare that the provisions of the thirteenth section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid shall, from the date hereof, come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works:—

The Carshalton-street Branch Stormwater Channel: Commencing at existing stormwater channel at Arthur and Carshalton Streets, extending along Carshalton-street and across private property to culvert at George's River Road, near intersection with Cromwell-street, being a total distance of 14·35 chains, together with all manholes, inlets, junctions, &c., connected therewith.

Given under my Hand and Seal, at Government House, Sydney, this twenty-fourth day of February, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

Department of Public Works,
Sydney, 27th February, 1893.

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT ACT OF 1889.

IT is hereby notified that, pursuant to the provisions of the abovementioned Act, the portions of the work constructed under the authority of the Minister for Public Works, hereinafter described, are hereby transferred to the Board of Water Supply and Sewerage.

WILLIAM JOHN LYNE,

The Carshalton-street Branch Stormwater Channel: Commencing at existing stormwater channel at Arthur and Carshalton Streets, extending along Carshalton-street and across private property to culvert at George's River Road, near intersection with Cromwell-street, being a total distance of 14·35 chains, together with all manholes, inlets, junctions, &c., connected therewith.

[8d.]

Sydney: Charles Potter, Government Printer.—1893.

1892-3.

NEW SOUTH WALES.

METROPOLITAN BOARD OF WATER SUPPLY AND SEWERAGE.

PROCLAMATIONS AND NOTIFICATIONS OF TRANSFER OF CERTAIN COMPLETED SEWERAGE WORKS TO THE CARE OF.)

Presented to Parliament, in pursuance of the Metropolitan Water and Sewerage Acts 1880-89.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Honorable Sir FREDERICK MATTHEW DARLEY, Knight, Lieutenant-Governor of the Colony of New South Wales and its Dependencies.

(L.S.)

FREDK. M. DARLEY, *Lieutenant-Governor, Administering the Government.*

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, Sir FREDERICK MATTHEW DARLEY, the Lieutenant-Governor aforesaid, do hereby proclaim and declare that the provisions of the thirteenth section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid shall, from the date hereof, come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works:—

Waverley and Woollahra Branch Intercepting Sewer: Commencing at the Bondi Main Sewer at Double Bay Valley and extending along the valley in a southerly direction, crossing the Edgecliff Road and Oxford-street and along Denison-street to reduced distance 3 miles 7 chains 56 links, being a total distance of 71·41 chains, together with overflow, &c., connected therewith.

Given under my Hand and Seal, at Government House, Sydney, this twenty-seventh day of May, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,
WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

Department of Public Works,
Sydney, 30th May, 1893.

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT ACT OF 1889.

IT is hereby notified that, pursuant to the provisions of the abovementioned Act, the portion of the work constructed under the authority of the Minister for Public Works, hereinafter described, are hereby transferred to the board of Water Supply and Sewerage.

WILLIAM JOHN LYNE.

DESCRIPTION OF WORK.

Waverley and Woollahra Branch Intercepting Sewer: Commencing at the Bondi Main Sewer at Double Bay Valley and extending along the valley in a southerly direction, crossing the Edgecliff Road and Oxford-street and along Denison-street to reduced distance 3 miles 7 chains 56 links, being a total distance of 71·41 chains, together with overflow, &c., connected therewith.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Honorable Sir FREDERICK MATTHEW DARLEY, Knight, Lieutenant-Governor of the Colony of New South Wales and its Dependencies.

(L.S.)

FREDK. M. DARLEY, *Lieutenant-Governor, Administering the Government.*

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, Sir FREDERICK MATTHEW DARLEY, the Lieutenant-Governor aforesaid, do hereby proclaim and declare that the provisions of the thirteenth section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid shall, from the date hereof come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works:—

Glebe Sub-main Sewers: Commencing at 6 miles 18·43 chains near northern main sewer in Pyrmont Bridge Road, extending under private land to Wigram Road; thence along Bell-street, Toxteth Road, and Glebe Point Road, and terminating at Mary-street, being a total distance of 59·40 chains, with branches at Wigram Road, Forsyth-street, and Cook-street. The Lyndhurst Sub-main: Commencing at tangent point near northern main sewer at Mitchell-street, extending along Mitchell-street, Campbell-street, Norton-street, Phillip-street, Denham-street, and terminating at Darghan-street, being a total distance of 28·9 chains, and branch along Talford-street, from Norton to Marlborough Streets, and the continuation of Hereford-street branch on south side to Wood-street, and on north side to private lane beyond Ross-street, together with all junctions, &c., connected therewith.

Given under my Hand and Seal, at Government House, Sydney, this twenty-seventh day of May, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,
WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

Department of Public Works,
Sydney, 30th May, 1893.

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT ACT OF 1889.

IT is hereby notified that, pursuant to the provisions of the abovementioned Act, the portions of the work constructed under the authority of the Minister for Public Works hereinafter described are hereby transferred to the Board of Water Supply and Sewerage.

WILLIAM JOHN LYNE.

DESCRIPTION OF WORK.

Glebe Sub-main Sewers: Commencing at 6 miles 18·43 chains near northern main sewer in Pyrmont Bridge Road, extending under private land to Wigram Road; thence along Bell-street, Toxteth Road, and Glebe Point Road, and terminating at Mary-street, being a total distance of 59·40 chains, with branches at Wigram Road, Forsyth-street, and Cook-street. The Lyndhurst Sub-main: Commencing at tangent point near northern main sewer at Mitchell-street, extending along Mitchell-street, Campbell-street, Norton-street, Phillip-street, Denham-street, and terminating at Darghan-street, being a total distance of 28·9 chains, and branch along Talford-street, from Norton to Marlborough Streets, and the continuation of Hereford-street branch on south side to Wood-street, and on north side to private lane beyond Ross-street, together with all junctions, &c., connected therewith.

NEW SOUTH WALES, to wit. (L.S.) FREDK. M. DARLEY, *Lieutenant-Governor, Administering the Government.*

Proclamation by His Excellency The Honorable Sir FREDERICK MATTHEW DARLEY, Knight, Lieutenant-Governor of the Colony of New South Wales and its Dependencies.

IN pursuance of the provisions of the "Metropolitan Water and Sewerage Act Amendment Act of 1889," I, Sir FREDERICK MATTHEW DARLEY, the Lieutenant-Governor aforesaid, do hereby proclaim and declare that the provisions of the thirteenth section of the "Metropolitan Water and Sewerage Act Amendment Act of 1889" aforesaid shall, from the date hereof, come into force in respect of the work hereinafter mentioned, which has been reported complete to me by the Minister for Public Works:—

Long Cove Creek Stormwater Channel: Commencing at the south side of bridge over Long Cove Creek in line with Marion-street and extending more or less along line of existing creek to the Parramatta Road; thence along existing course of creek, passing underneath suburban railway and large water main, to the junction of the Petersham tributary with the Long Cove Creek; thence along course of the Long Cove Creek to its junction with existing Smith-street tributary; thence more or less along the course of the Long Cove Creek to the south side of bridge over said creek in line with the Old Canterbury Road—being a total distance of 67·20 chains, together with all pipe inlets and junctions and branch sewers from junction of Long Cove Creek and Petersham tributary, along the course of the latter, to the end of existing Petersham tributary sewer, a length of 6·90 chains, and from junction of Long Cove Creek and Smith-street tributary, along the course of the latter, to the end of exisiting Smith-street sewer, a length of 1·93 chains.

Given under my Hand and Seal, at Government House, Sydney, this twenty-seventh day of May, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

Department of Public Works,
Sydney, 30th May, 1893.

NOTIFICATION OF TRANSFER OF WORKS UNDER METROPOLITAN WATER AND SEWERAGE ACT AMENDMENT ACT OF 1889.

IT is hereby notified that, pursuant to the provisions of the abovementioned Act, the portion of the work constructed under the authority of the Minister for Public Works hereinafter described, are hereby transferred to the Board of Water Supply and Sewerage.

WILLIAM JOHN LYNE.

DESCRIPTION OF WORK.

Long Cove Creek Stormwater Channel: Commencing at the south side of bridge over Long Cove Creek in line with Marion-street and extending more or less along line of existing creek to the Parramatta Road; thence along existing course of creek, passing underneath suburban railway and large water main, to the junction of the Petersham tributary with the Long Cove Creek; thence along course of the Long Cove Creek to its junction with existing Smith-street tributary; thence more or less along the course of the Long Cove Creek to the south side of bridge over said creek in line with the Old Canterbury Road—being a total distance of 67·20 chains, together with all pipe inlets and junctions and branch sewers from junction of Long Cove Creek and Petersham tributary, along the course of the latter, to the end of existing Petersham tributary sewer, a length of 6·90 chains, and from junction of Long Cove Creek and Smith-street tributary, along the course of the latter, to the end of existing Smith-street sewer, a length of 1·93 chains.

[3*d*.]

Sydney: Charles Potter, Government Printer.—1893.

1892.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND FOR AND IN CONNECTION WITH THE DRAINAGE WORKS AT NORTH SHORE, PARISH OF WILLOUGHBY, COUNTY OF CUMBERLAND.)

Presented to Parliament, pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER THE "PUBLIC WORKS ACT OF 1888."

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

WHEREAS by an Act of the Parliament of the said Colony 52 Victoria No. 22, intituled the "North Shore Drainage Works Act of 1889," it is enacted that the public work more particularly described in the Schedule thereto should be carried out by the Secretary for Public Works or the Member of the Executive Council for the time being charged with the duties of the said Minister, and such Minister or Member should, for the purposes of that Act and the "Public Works Act of 1888," be deemed and taken to be the Constructing Authority authorised to enter into contracts, and to exercise all powers, do all acts and things, and be responsible in respect of all obligations and liabilities which could be done or incurred by a Constructing Authority under or pursuant to that Act or the said Public Works Act, so far as might be necessary for the carrying out of the work thereby sanctioned: And whereas the land described in the Schedule hereto is required for the purpose of constructing thereon the public work authorised to be carried out under the said Act 52 Victoria No. 22, that is to say, certain Drainage Works on the North Shore of Port Jackson: Now, therefore, I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, with the advice of the Executive Council, in pursuance of the provisions of the "Public Works Act of 1888," do hereby direct that the land described in the Schedule hereto, which in my opinion is required for the said authorised work, shall be acquired by taking the same under the "Lands for Public Purposes Acquisition Act," as adopted by the "Public Works Act of 1888": And I do declare by this notification to be published in the Government Gazette, and in one or more newspapers published or circulated in the Police District wherein the said land is situated, that the said land described in the said Schedule hereto, so far as the same is Crown Land, has been appropriated, and so far as the same is private property has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette, the land described in the said Schedule hereto shall forthwith be vested in the said Minister as the Constructing Authority on behalf of Her Majesty, for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the intent that the legal estate therein, together with all powers incident thereto or conferred by the said last-mentioned Act, shall be vested in such Authority as a Trustee; and I declare that the following is the Schedule of land hereinbefore referred to:—

All that piece or parcel of land situate in the parish of Willoughby, county of Cumberland, and Colony of New South Wales, being part of a grant of 700 acres to Alfred Thrupp: Commencing at a point bearing south 31 degrees 16 minutes 55 seconds west, and distant 1 chain $37\frac{5}{10}$ links from trigonometrical station 760; and bounded thence by Tramway Road, being lines bearing south 36 degrees 30 minutes 51 seconds east $3\frac{1}{10}$ links, south 27 degrees 55 minutes 42 seconds west $6\frac{3}{10}$ links, south 48 degrees 6 minutes 21 seconds west 2 chains $95\frac{3}{10}$ links, and south 33 degrees 42 minutes 27 seconds west 1 chain 87 links; thence by lines bearing north 87 degrees 8 minutes 47 seconds west 4 chains $98\frac{7}{10}$ links, south 47 degrees 43 minutes 14 seconds west 13 chains $23\frac{6}{10}$ links, north 28 degrees 43 minutes 15 seconds west 5 chains 39 links, north 77 degrees 38 minutes 49 seconds west 2 chains $34\frac{6}{10}$ links, north 17 degrees 8 minutes 29 seconds east 1 chain $9\frac{6}{10}$ links, south 77 degrees 41 minutes 53 seconds east 1 chain $30\frac{2}{10}$ links, north 81 degrees 53 seconds east 4 chains $11\frac{5}{10}$ links, north 41 degrees 27 minutes 15 seconds east 9 chains $45\frac{3}{10}$ links, north 56 degrees 58 minutes 1 second east 7 chains $91\frac{7}{10}$ links, and south 36 degrees 55 minutes 15 seconds east $6\frac{8}{10}$ links to high-water mark of Willoughby Bay; thence by that high-water mark bearing generally south-westerly, south-easterly, and north-easterly to the north-eastern boundary of 7 acres 3 roods and 22 perches to be reclaimed; thence by that boundary bearing south 36 degrees 55 minutes 15 seconds east about 23 links, to the point of commencement,—be the said several dimensions a little more or less, containing 5 acres $34\frac{4}{10}$ perches or thereabouts, and said to be in the possession of John Cooper and occupation of J. H. Paling and the Assets Realisation and Finance Company.

NOTE.—All bearings are taken from the trigonometrical meridian.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this twenty-second day of April, in the year of our Lord one thousand eight hundred and ninety-two, and in the fifty-fifth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN

1892–3.

NEW SOUTH WALES.

PUBLIC WORKS ACT OF 1888.

(RESUMPTION OF LAND FOR AND IN CONNECTION WITH THE DIVERSION OF MILL DRAIN, LIVERPOOL.)

Presented to Parliament, pursuant to Act 51 Vic. No. 37.

NOTIFICATION OF RESUMPTION OF LAND UNDER "THE PUBLIC WORKS ACT OF 1888," 51 VICTORIA No. 37.

NEW SOUTH WALES, to wit. } Proclamation by His Excellency The Right Honourable VICTOR ALBERT GEORGE, EARL OF JERSEY, a Member of Her Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief of the Colony of New South Wales and its Dependencies.

(L.S.)

JERSEY, *Governor.*

WHEREAS I, VICTOR ALBERT GEORGE, EARL OF JERSEY, the Governor aforesaid, with the advice of the Executive Council, have directed that a certain public work, that is to say, the Diversion of Mill Drain, Liverpool, in the said Colony, for which public funds are lawfully available, the estimated cost of which does not exceed twenty thousand pounds, shall be carried out under the provisions of "The Public Works Act of 1888" as an authorised work by the Minister for Public Works as Constructing Authority, and that the land described in the Schedule hereto, which is in my opinion required for carrying out the said work, shall be acquired by taking the same under "The Lands for Public Purposes Acquisition Act," as adopted by "The Public Works Act of 1888": Now, therefore, I, the said Governor, with the advice aforesaid, in pursuance of "The Public Works Act of 1888," do declare by this notification, to be published in the Government Gazette and in one or more newspapers published or circulated in the Police District wherein the said land is situated, that the Crown Land comprised within the description set forth in the Schedule hereto has been appropriated, and the private property within such description has been resumed, for the public purpose aforesaid, to the intent that upon the publication of this notification in the Gazette, the said land described in the said Schedule hereto shall forthwith be vested in the said Constructing Authority as a corporation sole on behalf of Her Majesty, for the purposes of the said "Public Works Act of 1888," for an estate in fee simple in possession, freed and discharged from all trusts, obligations, estates, interests, contracts, charges, rates, rights-of-way, or other easements whatsoever; and to the further intent that the legal estate therein, together with all powers incident thereto or conferred by the said last-mentioned Act, shall be vested in such Constructing Authority as a Trustee; and I declare that the following is the Schedule of the land hereinbefore referred to:—

SCHEDULE.

All that piece or parcel of land situate in the parish of St. Luke, county of Cumberland, and Colony of New South Wales, being part of the original Dummond Estate: Commencing at a point on the eastern boundary of a previous resumption bearing south 48 degrees 23 minutes west and distant 436 feet 6 inches from the north-east corner of the Drummond Estate; and bounded thence on the west by part of the eastern boundary of the previous resumption aforesaid, bearing south 20 degrees 51 minutes west 242 feet to the south east corner of resumption aforesaid; thence on the south by a line bearing south 69 degrees 9 minutes east 30 feet; thence on the east by a line bearing north 20 degrees 51 minutes east 242 feet; thence on the north by a line bearing north 69 degrees 9 minutes west 30 feet to the point of commencement,—be the said several dimensions a little more or less, containing 26¼ perches or thereabouts and said to be in the possession of Louis Haigh.

In witness whereof I have hereunto set my Hand, and caused the Great Seal of the Colony to be hereto affixed, at Government House, Sydney, this third day of January, in the year of our Lord one thousand eight hundred and ninety-three, and in the fifty-sixth year of Her Majesty's Reign.

By His Excellency's Command,

WILLIAM JOHN LYNE.

GOD SAVE THE QUEEN!

1892.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

WESTERN SUBURBS SEWERAGE SCHEME.

(RETURN RESPECTING.)

Ordered by the Legislative Assembly to be printed, 4 *October*, 1892.

[*Laid upon the Table of this House in answer to Question No.* 18, *of* 7 *September*, 1892.]

Question.

(18.) WESTERN SUBURBS SEWERAGE SCHEME:—MR. BAVISTER, FOR MR. CARRUTHERS, *asked* THE SECRETARY FOR PUBLIC WORKS,—

(1.) When was the Western Suburbs proposed sewerage scheme approved of by Parliament?

(2.) What was the estimated cost of the works approved?

(3.) What portions of the works have been let by contract; and for what amounts; and what is the time of completion?

(4.) What portions of the works remain to be undertaken before the scheme will be practically available to the people?

(5.) What is the estimated cost of the works so to be undertaken?

(6.) When is it probable that the remaining portions of the work will be undertaken?

(7.) What is the probable date of completion of sewerage scheme as a whole (approximately)?

Answer.

(1.) The Act providing for the construction of the main portion of the scheme for the Sewerage of the Western Suburbs was passed by Parliament on the 30th September, 1889; and the Act providing for completion and reticulation on the 7th October, 1890.

(2.) The amount voted for the main scheme was £830,000, and for completion and reticulation £313,592; in all, £1,143,592.

(3.) The following table shows the contracts that have been let, and the stage of progress reached on the works:—

Work.	Amount of Tender.	Total Cost, if Complete.	Whether Complete or in Progress.	Date for Completion.
	£ s. d.	£ s. d.		
Camperdown Branch	20,630 0 0	18,640 1 4	Completed	1 June, 1892.
Glebe Branch	26,205 14 4	26,082 18 6	do	20 May, 1892.
Glebe Submains	26,980 13 6	.....	In progress	2 July, 1892.
Tunnels in Main Outfall.....	61,042 10 6	.....	do	22 November, 1892.
Aqueducts in Main Outfall.....	98,141 11 5	.....	do	31 March, 1893.
	£233,000 9 9	£44,722 19 10		

(4.) The portions of the scheme remaining to be carried out are—
(*a*) Northern main sewer west of Johnstone's Creek, traversing Annandale, Leichhardt, and Balmain.
(*b*) The whole of the Eastern and Eastern Low-level Branches.
(*c*) The whole of the Northern Branch.
(*d*) The whole of the Western Branch.
(*e*) The precipitation works and main carriers on the Sewerage Farm.
(*f*) The reticulation to be undertaken by the Board of Water Supply and Sewerage.

(5.) About £853,726 14s. 4d.

(6.) Plans and specifications are ready for the invitation of tenders for two sections of the Eastern Branch, and are well advanced for Marrickville low level and the second section of the Northern main sewer at Annandale.

(7.) Six years, if money is available.

Sydney: Charles Potter, Government Printer.—1892.

[3*d*.]