

Public Accounts Committee
Parliament of New South Wales

**Report on the
Ravensworth Coal Washery**

1987-88

Parliament of New South Wales

**Public Accounts Committee of the
Forty-eighth Parliament**

Thirty-seventh Report

Inquiry pursuant to Section 57 (1) of the Public Finance
and Audit Act 1983, concerning the Ravensworth Coal Washery.

(Transcripts of Evidence are printed in a separate volume to this report).

October 1987

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MEMBERS OF THE PUBLIC ACCOUNTS COMMITTEE

The members of the Public Accounts Committee are **Mr John Murray, M.P.**, Chairman

John Murray, formerly a teacher, was elected Member for Drummoyne in April, 1982. An Alderman on Drummoyne Council for three terms, John Murray was Mayor of the Council for five years and served four years as Councillor on Sydney County Council. He is currently a member of the House Committee.

Dr Andrew Refshauge, M.P., Vice-Chairman

Andrew Refshauge was elected as Member for Marrickville in October, 1983. He previously practised as a medical practitioner with the Aboriginal Medical Service and was a past President of the Doctors' Reform Society. He is currently a fellow of the Senate of the University of Sydney,

Mr Colin Fisher, M.P.

Colin Fisher was elected Member for Upper Hunter in February, 1970. Former Minister for Local Government (1975) and Minister for Lands and Forests (1976), in opposition Colin Fisher has served as National Party Spokesman on Local Government, on Planning and Environment, and on Energy.

Mr Phillip Smiles, M.P.

Phillip Smiles was elected Member for Mosman in March, 1984. A management and marketing consultant since 1974, Phillip Smiles has been involved with entrepreneurial business activities since his teens. Since entering Parliament he has been actively interested in the areas of small business, emergency services, welfare and financial analysis.

Mr Allan Walsh, M.P.

Allan Walsh was elected Member for Maitland in September, 1981. Following eight years as a Mirage fighter pilot with the RAAF, he was involved in business management. Allan Walsh has also taught industrial relations, management and history at technical colleges.



Committee Members. From left: Andrew Refshauge (Vice-Chairman), Phillip Smiles, Colin Fisher, John Murray (Chairman), Allan Walsh

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This report follows the Committee's examination of matters arising from the Auditor-General's 1985-86 Report which referred to the financing arrangements for the Ravensworth Coal Washery. The Committee had also become aware of problems associated with the Washery from media reports.

The Electricity Commission and its associated colliery companies comprise one of the biggest public utilities in this State and consume a significant proportion of public funds. The Washery is owned and operated by Elcom Collieries Pty Limited, a wholly owned subsidiary company of the Electricity Commission of New South Wales. One would expect the highest level of efficiency and effectiveness from such an organisation.

Regrettably, the Committee found the history of the Washery to be a sorry story of ineptitude, inappropriate options and insufficient pre-planning. Certainly the decision to construct the Ravensworth Coal Washery was not taken in conformity with the expectation that one holds for such an organisation. To use the words given in evidence before the Committee it was a "fast track" project which unfortunately "came off the track".

When problems arose following construction of the Washery; remedial action was delayed. It seems that the Commission believed the problem would resolve itself. Concerns about the Washery and proposed solutions submitted by line staff to senior management appear to have been either rejected or ignored.

In these circumstances the project lurched from one problem to another. The Commission was faced with a \$70 million investment that was operating inefficiently. Yet only when questions were raised publicly and the Washery became the subject of media attention did the Commission attempt to fully address the issue. The Committee found that explanations and assessment reports were less than frank and often led to delays in revealing the true position.

To describe the Washery as "in regular commercial operation"; was a statement that I believe any ordinary person would interpret literally. Yet, in evidence before the Committee, the Electricity Commission sought to qualify the use of the phrase "in regular commercial operation" to suit its own purposes, which had the impact of not revealing the true situation.

Moreover, the project was plagued by the failure to observe clear lines of reporting and accountability. It became evident during the course of the inquiry that the lines of accountability and responsibility were confused and ignored by senior management. This inquiry has shown that much clearer management reporting lines are needed within the Commission.

(i)

I would like to express my appreciation to the Minister for Industry and Small Business and Minister for Energy and Technology, Mr Peter Cox, for the assistance provided by his staff and for his interest in this inquiry. The Committee also found the staff of the Electricity Commission and Elcom Collieries Pty. Ltd. to be generally helpful and cooperative.

On behalf of the Committee, I would like to thank the Committee Clerk, Mr John Horder and the Committee's Secretariat for their excellent work during the inquiry.

Finally, I would like to acknowledge the valuable assistance of Mr Peter Garlick for the technical services provided to the Committee.

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EXECUTIVE SUMMARY

The Ravensworth Coal Washery was planned and developed by the Electricity Commission of New South Wales (the Commission) between 1980 and 1985 at a cost of \$63 million, to improve the quality of coal being supplied to the Liddell Power Station from the Swamp Creek and Ravensworth No. 2 mines. Significant delays have been experienced in achieving successful operation of the Washery. The performance of the Commission in overcoming the problems and the quality and accuracy of Commission advice provided to the responsible Minister regarding ~~the~~ *status* of the Washery caused the Committee grave concern.

The Public Accounts Committee noted the comments in the Auditor-General's 1985-86 Report on the long term financing of the Washery and was also aware of questions raised about the Washery. Accordingly the Committee considered it appropriate to review the Commission's procedures for project commitment and development and to inquire into the accountability of the Commission to the Minister and Parliament.

The Committee found that many of the findings of the McDonnell Inquiry into Electricity Generation Planning in NSW, which was completed in mid 1986, were of relevance to the history of the Washery. These findings related particularly to the lack of a long term strategic plan for electricity development, shortcomings in investment appraisal procedures and a narrow approach to coal sourcing for power stations. The Committee endorses the McDonnell recommendation that consideration should be given to separation of the Commission's coal activities from power station activities.

In summary, this report recommends ~~that investment~~ *that investment* decisions and project commitment procedures be more clearly defined within the Commission and be subject to external review. Further, that internal management arrangements should be modified to ensure appropriate delegation and to enable clear lines of responsibility and accountability. Internal communications should also be improved to ensure that wider counsel is sought in the consideration of alternative options relating to future development proposals.

The Committee considers that advice provided by Commission management to the Minister in the form of Parliamentary Briefing Notes in September and October 1986 was not an accurate reflection of the true state of operation of the Washery ~~at~~ *at* time. Appropriate procedures must be adopted to ensure the accuracy and comprehensiveness of future Ministerial advice.

(iii)

Ravensthorpe Coal Washery

Recommendations

Recommendation

The Committee recommends that formal acceptance tests be carried out on the Washery and that these tests be independently and expertly witnessed and evaluated. The Committee believes that only by this process can the questions regarding Washery capability be proven to the satisfaction of independent observers.

Recommendation'2

The Committee recommends that formal investment appraisal procedures should be adopted by the Commission, which typically has one of the largest capital expenditure budgets in the NSW public sector. The Committee also endorses the recommendations of the McDonnell Inquiry that Commission investment decisions be subject to external review; such review to take place prior to the entering of major financial commitments.

Recommendation \$

Notwithstanding any lack of economic justification; the Washery is now in existence and the maximum benefit will be obtained by ensuring that future Washery operations are conducted to high levels of capability and availability. The Committee recommends that organisational arrangements of the Washery should be Carefully reviewed to ensure the success of future Washery operations. Private companies are understood to have expressed interest in taking over the Washery operation. The Committee notes that the Government is considering this option and has called for registration of interest in the lease or purchase of the Washery.

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Recommendation 4

The Committee recommends that an independent review of the senior management functions within the Commission should be carried out to ensure appropriate divisions of responsibility and accountability.

Recommendation 5

The Committee also recommends that the management review should include a comprehensive analysis of lines of communication of the Commission and its subsidiaries, with proposals to enhance internal communication.

Recommendation 6

The Committee also endorses the McDonnell Inquiry recommendation that consideration should be given to separation of the Colliery Companies from the Commission to ensure an appropriate "arms length" relationship.

Recommendation 7

As Parliamentary Briefing Notes represent the prime source of information available to the Minister and the Government in rendering due accountability to the Parliament it is essential that they be accurate, freestanding documents. Accordingly, the Committee recommends *that* appropriate procedures be adopted by the Commission to ensure the accuracy and comprehensiveness of such advice in the future.

REPORT ON THE RAVENSWORTH COAL WASHERY

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Ravensworth Coal Washery

1. Summary

Background to the Ravensworth Coal Washery

- 1.1. The Ravensworth Coal Washery is owned and operated by Elcom Collieries Pty. Ltd., a wholly owned subsidiary of the Electricity Commission of NSW; The Washery is located at Ravensworth in the Hunter Valley mid way between Singleton and Muswellbrook on the New England Highway.
- 1.2. The Washery was designed to process up to 6.9 million tonnes per annum (Mtpa) of coal from the Ravensworth No. 2 and Swamp Creek mines; reducing the ash level from an average of approximately 28% to 22%. Up to 1 Mtpa of this washed coal was originally intended to be supplied to the central coast power stations by rail. The Washery is very large by Australian and international standards and was planned at a time when there was limited experience in Australia in large scale washing of steaming coal.
- 1.3. Ravensworth No. 2 and Swamp Creek are large open-cut coal mines developed in the early 1970's as the main sources of low cost steaming coal to the nearby Liddell Power Station of four 500 megawatt (MW) units; The mines were developed by private companies on leases held by the Commission.
- 1.4. Selection of the private companies to develop and operate the mines was by open tender resulting in long term coal supply contracts being awarded in late 1967 to Costain Australia Ltd for Ravensworth No. 2 and Davison Contractors Pty Ltd (later the Hebden Mining Co.) for Swamp Creek.
- 1.5. At that time the boiler plant for Liddell had already been purchased based on a specified average as-fired ash level in coal of 18% with a peak ash level of 25.4%. Ash levels in the run of mine coal from Ravensworth No. 2 and Swamp Creek mines have typically averaged 27-28%. The effect of these

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high ash levels has been to limit the maximum capacity of coal milling plant providing fuel input to the boilers, and to accelerate the rate of erosion of boiler tubes in critical locations. Liddell has therefore suffered a loss of energy production over the years due to these effects. To limit the rate of tube erosion; normal operation at Liddell has been limited to maximum power output of 460 MW per unit although 500 MW operation is possible in emergencies.

- 1.6. In 1979 the Commission announced the construction of the four 660 MW unit Bayswater Power Station adjacent to Liddell. The units at Bayswater have been progressively commissioned between June 1985 and December 1986. The Bayswater boilers were specified to take as-fired ash levels up to 28%, based mainly on coal to come from the Commission's allocation of coal in the Mt Arthur North area.
- 1.7. Coal from Ravensworth No. 2, Swamp Creek and Liddell State mines can now be delivered to either power station. Additional coal contracts have now been let with other private coal mines in the area to provide the additional coal required by Bayswater Power Station. Mt Arthur North mine has not been developed and is indefinitely deferred.
- 1.8. The Ravensworth Washery was primarily intended to reduce the ash level of coal being supplied to Liddell to minimise loss of boiler availability (due to ash erosion and milling capability limits) and to enable ~~unrestricted~~ unit operation up to 500
- 1.9. The washery concept was developed within the Fuel Division of the Commission over the period 1977 to 1980. As the Commission had no experience in large scale washing of steaming coal, McNally Australia Pty Ltd (McNally) was engaged as coal preparation consultants to perform

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appropriate feasibility studies. McNally Australia was a subsidiary company of an American parent company based in Pittsburgh, USA.

1.10. Approval in principal to proceed with a detailed feasibility study of the Washery was given by the Commission in October 1980. The feasibility study was carried out by engineering consultants Gutteridge; Haskins and Davey Pty Ltd. (GHD) in association with McNally; with GHD doing the civil works and coal handling plant and McNally the Washery. Following the feasibility study, approval was given in July 1981 to negotiate a "design and construct" contract with McNally.

GHD continued in the role of civil engineering consultants.

1.11. A contract with McNally was signed in August 1982. Construction at site commenced in December 1982 and was largely completed by April 1985 at which time final project expenditure was expected to be \$63 million.

1.12. The design of the Washery is based on two separate parallel modules each rated at 850 tonnes per hour (tph). Each module comprises a large Baum type jig washer designed to separate the heavier, coarser stone fraction from the coal feed. On leaving each jig the coal stream is split into coarse, medium and fine size fractions. Each size stream is dewatered by different methods and *then* recombined as washed product coal.

1.13. Commissioning of the Washery commenced in October 1985 following delays in the negotiation of terms of employment for Washery staff. Serious problems in the throughput capacity of the Washery were encountered and operation was essentially halted in February 1986.

1.14. The throughput problem was mainly caused by the percentage of fine coal (smaller than 0.5mm) being much greater than catered for in the original design, resulting in overloading and blockage of the fine coal circuit.

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1.15. Between May and September 1986 a crusher bypass was installed at the Washery at a cost of \$3 million to enable a continuous feed of coal to be crushed and sent on to the power stations irrespective of whether the Washery was in service or not. Commissioning trials of the Washery recommenced in September 1986.

1.16. Modifications to the Washery were progressively carried out in the first half of 1987 and by June 1987 the Washery was achieving a significant throughput of washed coal. The final cost of these and other modifications currently proposed will be in the order of \$4 million giving a final capital cost of \$70 million..

Initial Planning and Decisions

1.17. A number of washery options were studied by McNally on behalf of the Commission's Fuel Division at a pre-feasibility level in late 1979 and early 1980. These studies considered different types of washing techniques and separate washeries at each mine as well as the single facility at Ravensworth. From these studies it was approved by the Commission in October 1980 that a single Washery be established at Ravensworth to be owned and operated by Elcom Collieries Pty Ltd. on a five day; three shifts a day operational basis.

1.18. In examining the problems associated with the Washery, the Public Accounts Committee considered four fundamental questions:

- should the Washery have been built at all?
- is it built in the best location?
- is the design soundly based?
- does the Washery represent value for money?

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- 1.19. On the need for the Washery, the Committee accepts that high ash levels outside of the boiler design specification range have caused plant availability problems at Liddell Power Station with resultant cost penalties. However, it has been suggested to the Committee that other alternatives could have been explored in the early planning stages which would have reduced ash levels in coal to Liddell and which would not have required construction of a \$70 million washery.
- 1.20. Specifically, renegotiation of the coal contracts with Costain and Hebden could have been sought with control of ash levels by selective mining and/or blending techniques.
- 1.21. As an alternative; and in retrospect, it would seem to have been more appropriate to design Bayswater Power Station for the higher ash coals from Ravensworth No. 2 and Swamp Creek so that lower ash coals could be purchased for Liddell Power Station from other mines'. This option would have required Liddell to continue with the high ash coal until Bayswater was commissioned in 1985, an event which has happened in any case.
- 1.22. In the absence of the presentation of detailed analysis; the Committee is unable to conclude whether these alternatives would have been more viable than construction of the Washery. The Committee considers that all alternatives should have received systematic and detailed consideration within a long term development strategy. Evidence before the Committee leads it to the conclusion that this was not done.
- 1.23. In respect to the location of the Washery, the industry norm is for washeries to be owned and operated by mine owners. This allows for Washery operation to be closely co-ordinated with the mining process. The Commission apparently selected the central washery on slightly advantageous economic grounds and because of sensitivity that the coal contracts with Costain and Hebden were due to conclude in the early to

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mid 1980's and might not be renewed. This doubt about the long term tonnages of coal to be washed still applies to some extent as the Swamp Creek contract, which was extended in 1982, is due to conclude in 1990. The Ravensworth No. 2 mine is to extend into the Ravensworth South area under a new fourteen year 3.9 Mtpa coal supply agreement signed with Costain in 1987.

- 1.24. The Committee in its deliberations found little evidence that the Commission's planning of the Washery had adequately addressed the option of establishing a Washery at each mine under the control of the mine owners or had fully considered the control and operational aspects of a centralised Washery.

As an example, evidence provided to the Committee indicates that the Washery proposals were not discussed in detail with either the mine operators or with Elcom Collieries staff with relevant experience. Consideration of the Washery alternatives apparently were concluded only between the Commission Chairman and officers of Fuel Division.

- 1.25. The design of the Washery was based on laboratory testing of coal samples taken from both mines in late 1977 under the supervision of McNally. The problems with Washery operation subsequently encountered showed that the early assessments of coal properties were significantly in error in respect to the percentage of fine coal to be handled by the Washery.

- 1.26. In view of the wide variability in coal quality and properties normally encountered from each mine, the Committee is of the opinion that the early assessment of coal properties was not sufficiently rigorous. Regrettably the Washery concept was not discussed with Liddell Power Station staff and station experience with coal properties was apparently not sought.

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- 1.27. It is clear that on matters of coal preparation technology the Commission was heavily reliant on advice from their consultants, McNally. Unfortunately, McNally were also commercially involved in the project. The Commission did not employ their own coal preparation specialist until mid 1981. Although reservations were apparently expressed about *the* coal characteristics; by that time the project was viewed as urgent and it was considered, that there was no time to engage in further coal testing.
- 1.28; The Committee is of the view that these matters reveal a fundamental lack of basic coal research within the Commission at that time. The propensity of the coal to break down into fine particles and the effects of clay content on the handleability of the coal had been experienced at Liddell Power Station since the early 1970's. Information supplied to the Committee suggests that these effects were also known by other mine operators and washery designers operating in the Hunter Valley at that time. An organisation the size of the Commission should not have needed to rely so heavily on consultants' advice.
- 1.29. Many washeries have to be planned and designed prior to mining operations on the basis of coal properties assessed from core drilling. In the case of the Ravensworth Washery, both mines had been in operation for some time and there should have been no reason for the assessment of coal properties to be in error.
- 1.30. In preparing the detailed Washery design in the second half of 1981, McNally proposed that the fine coal circuit include classifying cyclones, devices to separate the very fine clay particles from the coarser coal particles prior to thickening and filtration. This would also have required a tailings dam and disposal pipeline for final storage of the fine clay rejects. The Commission questioned the need for the cyclones and it was decided for economic and environmental reasons that they be deleted with provision

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for future installation if necessary. Classifying cyclones have now been installed as the primary solution to the Washery throughput problem.

- 1.31. The Committee had evidence from the Commission *that* installation of cyclones in the way originally proposed by McNally would still have resulted in restricted *output* of the Washery. However the Committee also believes *that* the plant modifications since found necessary would have been much expedited if the cyclones had originally been installed. Sedgman & Associates in their report to the Commission proposed installation of cyclones similar to the original McNally proposal. There is a difference of opinion between the Commission and Sedgmans over the best way of utilizing the cyclones.
- 1.32. The key issue of the Commission's decision to delete the cyclones is that the wording in the contract with McNally transferred responsibility for the satisfactory operation of the fine coal circuit from McNally to the Commission.

Construction and Commissioning

- 1.33. Construction of the Washery was essentially complete by April 1985. The Committee considers that construction management was competent and that once the design was finalised, the Washery construction was essentially completed on time and within the project budget.
- 1.34. However, substantial design changes to the coal handling and storage plant, which cost in the order of \$10 million, do not reflect well on the Commission's internal lines of communication. The Generation Division and Liddell Power Station staff were not consulted fore,ally in the planning phase and from the evidence their late involvement in the design phase was a significant factor in the necessary design changes.

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1.35. Between May 1984 and July 1985 the management of Elcom Collieries was engaged in the negotiation of terms of employment for Washery staff with the Combined Mining Unions. There was a concern on the part of management that agreement to conditions related to open cut mines in the area would have the potential to flow on to Elcom Collieries underground mining operations particularly in the central coast, leading to increased coal costs. A complete stalemate was evident in respect to the level of bonus payments which was resolved by direct intervention of the Minister in August 1985 following attention in the media.

1.36. The Committee considers that the approach adopted by the senior managers of the Commission and Elcom Collieries in the negotiations was not conducive to successful industrial relations. The completed Washery at that time was incurring financial charges in the order of \$0.75 million per month with no offsetting benefits which would have flowed from the plant's operation. The Commission considered that; as the Washery was not required to ensure reliability of electricity supply at that time, there was no need to expedite the negotiations, despite the continuing net losses.

1.37. The Washery commenced operation in October 1985 with commissioning under the control of Elcom Collieries staff. By February 1986 it was acknowledged that there was a serious throughput problem due to overloading of the fine coal circuit. An internal committee was established in early February 1986 to investigate the problem.

1.38. Commissioning of the Washery recommenced in September 1986 following installation of a crusher by-pass system. Independent coal preparation consultants Sedgman & Associates were engaged in late October 1986 to provide a review and advice on necessary plant modifications. The Commission Board established a Board Committee in early

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December 1986 to review the status of the Washery on the direct request of the Minister following questions in the House.

- 1.39. In the Committee's view the time taken to analyse the throughput problem and implement modifications was excessive. The Committee believes that this circumstance derives not from lack of competence on the part of Commission officers but from a failure to delegate the necessary responsibility and authority to expedite the solution.
- 1.40. There is evidence that line management recommendations were not being accepted by management. The Committee has the impression that management believed the problem would go away of its own accord. It is apparent that it was not until pressure was applied by the Minister that action was initiated. Once the authority of the Board and the General Manager were applied to the problem; the necessary modifications were forthcoming.

Current Status

- 1.41. Since February 1987 the Washery has progressively been modified. Installation of classifying cyclones into both modules was completed in May 1987. Further modifications to the Washery of a relatively minor nature are in the process of implementation.
- 1.42. The modifications, coupled with further plant tuning, have enabled the Washery to progressively increase the quantity of coal washed from 25% of coal delivered in February 1987 to 60% of coal delivered in August 1987. (Refer to Appendix 6 for production statistics).

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- 1.43. The plant has demonstrated its capacity to run at rated output on some days. The Commission has stated its intention to conduct an overall plant performance test before the end of 1987 following further minor adjustment and tuning.
- 1.44. While the operating results to date suggest that the plant could perform to design capability, until the plant is subjected to formal testing under controlled conditions *the Committee* does *not* consider *that* the maximum capability of the plant can be regarded as finally proven.

Recommendation I

- 1.45; The Committee recommends that formal **acceptance tests** be **carried out on the Washery and that these tests be independently and expertly witnessed and evaluated.** The **Committee believes that** only by **this process can the questions regarding Washery capability be proven to the satisfaction of independent observers.**
- 1.46. The Committee does not regard the performance of the Washery, as at the end of *August* 1987, as satisfactory. Clearly further work is required to improve the proportion of coal being washed. *The Committee* expects *that* the Commission is endeavouring to achieve improved plant throughput on a routine basis..

Investment Appraisal

- 1.47. Fundamental concerns of the Committee are the investment appraisal procedures used by the Commission in deciding to construct the Washery and its economic viability. Approval in principle to proceed with the Washery was originally given by the Commission in October 1980. However neither the internal Fuel Division report into washery options nor the associated Submission to the Board at that time included cost/benefit analyses. The estimated project cost at *that* stage was \$27.5 million.

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- 1.48. In July 1981, a meeting of the Commission approved a Submission that a design and construct contract be negotiated with McNally. In that Submission there is no mention that the detailed feasibility study completed by GHD/McNally in March 1981 had revised the total cost estimate to \$48.75 million. Again no cost/benefit analysis was presented.
- 1.49. Detailed design revisions to the project in 1982 and early 1983 added \$10 million to the project cost estimate. Again no re-evaluation of the project economics is evident.
- 1.50. The Committee considers that the original justification for the Washery in 1981 could have been reasonable given the perceived need for additional coal for the central coast power stations at that time. However this perceived need would have no longer been current by mid 1982 when the final decision to proceed with construction was made.
- This final commitment was influenced by media questioning of maintenance practices at Liddell following the Liddell generator failures in November 1981 and the subsequent Ombudsman's Inquiry into "Alleged Inadequate Maintenance" in early 1982.
- 1.51. The Committee considers *that* the final decision to proceed was not made on strict economic grounds and finds *that* Commission evidence relating to the economic justification of the project is unconvincing. Conceivably a formal economic appraisal carried out in mid 1982 could have resulted in cancellation or deferment of the project.
- 1.52. In September 1983 a cost benefit analysis of the Washery was carried out in response to a review of capital cost deferment possibilities requested by the new Commission Board. The cost/benefit analysis looked only at half the capital expenditure, as half had already been committed; and it was concluded that the project should continue.

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Recommendation 2

- 1.53. The Committee recommends that formal investment appraisal procedures should be adopted by the Commission, which typically has one of the largest capital expenditure budgets in the NSW public sector.. The Committee also endorses the recommendations of the McDone11 Inquiry that Commission investment decisions be subject to external review such review to take place prior to the entering of major financial commitments.

Recommendation 3

- 1.54; Notwithstanding any lack of economic Justification the Washery is now in existence and the maximum benefit will be obtained by ensuring that future Washery operations are conducted to high levels of capability and availability. The Committee recommends that organisational arrangements of the Washery should be carefully reviewed to ensure the success of future washery operation; Private companies are understood to have expressed interest in taking over the Washery operation; The Committee notes that the Government is considering this option and has called for registration of interest in the lease or purchase of the Washery.

Accountability

- 1.55. The Committee is of the opinion that accountability can only be exercised when responsibilities are clearly defined and accompanied by associated authority.

This applies to various groups within the Commission and the Commission's subsidiaries as well as between Commission management and the Minister and through the Minister, the Parliament.

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1.56. The Ravensworth Washery has had a history of substantial problems and significant delays in their resolution. The Committee was conscious of the need to examine the organisational and management issues which related to the problems.

1.57. In examining the history of the Washery the Committee found the responsibilities between the groups as being inadequately defined. The decision *that* Elcom Collieries should own and operate the Washery was apparently made without detailed consultation with the Colliery company management. The Mining Projects Group within the Fuel Division acted as project managers to Elcom Collieries *without* benefit of a formal consultancy agreement. On the Commission Committee set up to initially investigate the problem in February 1986, the Washery Manager (the client's representative) reported to the Mining Projects Engineer (the consultant's representative)..

1.58. In addition there seemed to be major problems with internal communications between the various Divisions of the Commission and the Colliery Companies. There were *many* instances of non consultation between groups which, had it taken place, would have ensured that the benefit of much additional relevant experience was brought to the project.

1.59. The relationship between the Commission and its subsidiary company is clearly not one of an "arms length" nature. Authority for expenditure at Elcom Collieries Board level is \$1 million, which means that any major expenditure items must also receive either the approval of the Commission's General Manager or the Commission Board.

1.60. The Committee is of the opinion *that* confusion in the respective roles of the various parties has inhibited resolution of the problem and diluted responsibility and hence *accountability*. Part of *the* confusion is considered to stem from the dual role of the Commission's Assistant

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General Manager in charge of the Fuel Division who, since March 1982, has also occupied the position of Chairman of the Colliery Companies. These two roles at times appear to be in conflict.

Recommendation 4

- 1.61. The Committee recommends that an independent review of the senior management functions within the Commission should be carried out to ensure appropriate divisions of responsibility and accountability.

Recommendation 5

- 1.62; The Committee also recommends that the management review should include comprehensive analysis of lines of communication of the Commission and its subsidiaries with proposals to enhance internal communication.

Recommendation 6

- 1.63; The Committee also endorses the McDonnell Inquiry recommendation that consideration should be given to separation of the Colliery Companies from the Commission to ensure an appropriate "arms length" relationship.
- 1.64. In respect to the responsibility of Commission management to the Minister, the Committee finds that Parliamentary Briefing Notes presented to the Minister in September and October 1986 were not an accurate statement of the Washery status at that time.

These Briefing Notes cover a period when questions were being asked in the House and the Minister was reliant on the Commission to provide a clear and accurate statement of the status of the Washery.

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1.65. The Committee questioned the General Manager of the Commission concerning *statements* made in the Briefing Notes as follows:

PUBLIC ACCOUNTS COMMITTEE : "Ministerial briefing notes made available to the Minister on 29 September 1986 say: Plant placed on line for regular commercial operation on Monday 22 September 1986 and operated satisfactorily.

What is meant by; " 'regular commercial operation' "?

GENERAL MANAGER: "It was, I think, at that time the hope and expectation of the officers concerned that it would be that, that it would be regular commercial operation."

* * * * *

Further questions and responses then followed which culminated in the following:

PUBLIC ACCOUNTS COMMITTEE: "That still gives me some concern, because statistics show *that* the *quantity* of coal washed in each of the months September to December 1986 was in the order of 20 thousand tonnes; representing only some twelve hours of Washery operation at full *output* per month. Could one allude *to that* as a commercial operation?"

GENERAL MANAGER: "No; you could not."

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- 1.66. The Commission's 1985/86 Annual Report presented a section on coal washeries which made no mention of the delays in commissioning due to ~~the~~ the bonus dispute or the design fault with the plant. The need for substantial modifications was euphemistically stated as "planning ,for adjustments"
- 1.67. The Committee concludes that the statements from the Commission's 1985/86 Annual Report do not represent an honest or accurate account of the Washery performance for that year. The Committee hopes that similar inaccuracies do not appear in other sections of the Commission's Annual Report.
- 1.68. The Committee considers that the inaccurate statements in the Briefing Notes, and the 1985/86 Annual Report, regarding the *status* of operations and further modifications, represent an attempt on the part of the fuel management function within the Commission to avoid public scrutiny of what could be interpreted as lack of performance or, at worst, incompetence.
- 1.69. The Commission's General Manager suggested in evidence that the Parliamentary Briefing Notes needed to be read in conjunction with other documentation available to the Minister through earlier Commission Board papers. The Committee rejects this proposition.

Recommendation 7

As Parliamentary Briefing Notes represent the prime source of information available to the Minister and the Government in rendering due accountability to the Parliament, it is essential that they be accurate, freestanding documents.

Accordingly the Committee recommends that appropriate procedures be adopted by the Commission to ensure the accuracy and comprehensiveness of such advice in the future.

3. BACKGROUND TO THE RAVENSWORTH COAL WASHERY

- 3.1. The Ravensworth Coal Washery was planned and developed by the Electricity Commission of New South Wales (the Commission) between 1980 and 1985 at a cost of \$63 million, to improve the quality of coal being supplied to the Liddell and Bayswater Power Stations. The Washery is owned and operated by Elcom Collieries Pty Ltd., a wholly owned subsidiary of the Electricity Commission of NSW. The Washery is located at Ravensworth in the Hunter Valley, mid way between Singleton and Muswellbrook on the New England Highway. Locality maps are provided as Figures 1 and 2 in Appendix 3.
- 3.2. The Washery was designed to process up to 6.9 million tonnes per annum (Mtpa) of coal from the Ravensworth No. 2 and Swamp Creek mines, reducing the ash level from an average of approximately 28% to 22%. Up to 1 Mtpa of this washed coal was originally intended to be supplied to the central coast power stations by rail. The Washery is very large by Australian and international standards and was planned at a time when there was limited experience in Australia in large scale washing of steaming coal.
- S.S. Ravensworth No. 2 and Swamp Creek are large open-cut coal mines developed in the early 1970's as the main sources of low cost steaming coal to the nearby Liddell Power Station of four 500 megawatt (MW) units. The mines were developed by private companies on leases held by the Commission.
- 3.4. Selection of the private companies to develop and operate the mines was by open tender resulting in long term coal supply contracts being awarded in late 1967 to Costain Australia Ltd for Ravensworth No. 2 and Davis Contractors Pty Ltd (later the Hebden Mining Co.) for Swamp Creek.

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- 3.5. The development of Liddell Power Station was announced in 1964 and the main boilers and turbines were purchased in 1965. The four units at Liddell were commissioned between mid 1971 and late 1973.
- 3.6. The boiler plant was therefore purchased before the sources of coal for Liddell had been determined. There were a number of potential coal sources for Liddell and to encompass these the boiler specification nominated a coal ash range of 14% to 22% with an average of 18% (as fired basis). The specification also required that the plant should be capable of operating at full load with coal ash up to 25.4%. Sulphur was specified to be in the range of 0.4% to 1.0% (as fired basis).
- 3.7. Fourteen samples of coal from seams in the Liddell area were tested in 1965 by Combustion Engineering Inc. of the USA. These test results were evaluated against the chosen boiler design by U.S. Consultants Ebasco Services Incorporated in a report dated June 1966. This report concluded in part that ash erosion of tubes could be significant and that coal grinding plant capability could be marginal with the higher ash content coals tested.
- 3.8. The coal supply tenders based on the Ravensworth No. 2 and Swamp Creek areas were selected because of their very low costs of production. However ash levels from these mines has been high, with a typical average of 27-28%, and above the specified range for the Liddell boilers.
- 3.9. The effect of these high ash levels has been to limit the maximum capacity of coal milling plant providing fuel input to the boilers, and to accelerate the rate of erosion of boiler tubes in critical locations. Liddell has therefore suffered a loss of energy production over the years due to these effects. To limit the rate of tube erosion normal

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operation at Liddell has been limited in recent years to maximum power output of 460 MW per unit, although 500 MW operation is possible in emergencies.

3.10. In 1979 the Commission announced the construction of the four 660 MW unit Bayswater Power Station adjacent to Liddell. The units at Bayswater have been progressively commissioned between June 1985 and December 1986.

3.11. The Environmental Impact Statement for Bayswater Power Station, issued in June 1979, stated *that* coal for Bayswater would come from the Ravensworth No. 2 and adjacent Ravensworth South area, from the Commission's underground Liddell State mine and from a new open cut mine to be established on the Commission's coal allocation at Mt Arthur North.

3.12. The Bayswater boiler design was mainly based on the seams in the Mt Arthur North area. The boiler specification nominated a typical ash level of 24% with a range of 20% to 28% (as fired basis). Sulphur was nominated to be in the range 0.3% to 1.0% (as fired basis).

3.13. Coal from Ravensworth No. 2 Swamp Creek and Liddell State Mines can now be delivered to either power station. A diagram of the coal conveyors which transport the coal between the mines, the Washery and the power stations is included as Figure 3 in Appendix 3. Additional coal contracts have recently been let with other private coal mines in the area to provide the additional coal required by Bayswater. Mt Arthur North has not been developed and is indefinitely deferred.

3.14. The Ravensworth Washery was primarily intended to reduce the ash level of coal being supplied to Liddell to minimise loss of boiler availability (due to ash erosion and milling capability limits) and to enable unrestricted unit operation up to 500 MW.

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3.15. The washery concept was developed within the Fuel Division of the Commission over the period 1977 to 1980. As the Commission had no experience in large scale washing of steaming coal, McNally Australia Pty Ltd (McNally) was engaged as coal preparation consultants to perform appropriate feasibility studies. McNally Australia were a subsidiary company of an American parent company based in Pittsburgh, USA.

3.16. Approval in principal to proceed with a detailed feasibility study of the Washery was given by the Commission in October 1980. The feasibility study was carried out by engineering consultants Gutteridge, Haskins and Daye Pty Ltd. (GHD) in association with McNally, with GHD doing the civil works and coal handling plant and McNally the Washery. Following the feasibility study, approval was given in July 1981 to negotiate a "design and construct" contract with McNally.

GHD continued in the role of civil engineering consultants.

3.17. A contract with McNally was signed in August 1982. Construction at the site commenced in December 1982 and was largely completed by April 1985, at which *time* final project expenditure was expected to be \$63 million.

3.18. The design of the Washery is based on two separate parallel modules each rated at 850 tonnes per hour (tph). Each module comprises a large Baum type jig washer designed to separate the heavier, coarser stone fraction from the coal feed. On leaving each jig the coal stream is split into coarse, medium and Fine size fractions. Each size stream is dewatered by different methods and then recombined as washed product coal. A Washery flow diagram is provided as Figure 4 in Appendix 3.

3.19. The Washery was designed to process broken coal up to 200 mm in size. After washing, the coarse fraction is crushed down to a topsize of 19mm suitable for power station use. Previously this final crushing was carried out at each mine.

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- 3.20. Commissioning of the Washery commenced in October 1985 following delays in the negotiation of terms of employment for Washery staff. Serious problems in the throughput capacity of the Washery were encountered and operation was essentially halted in February 1986.
- 3.21. The throughput problem was mainly caused by the percentage of fine coal (smaller than 0.5mm) being much greater than that catered for in the original design, resulting in overloading and blockage of the fine coal circuit.
- 3.22. Between May and September 1986 a crusher bypass was installed at the Washery at a cost of \$3 million to enable a continuous feed of coal to be crushed and sent on to the power stations irrespective of whether the Washery was in service or not. Commissioning trials of the Washery recommenced in September 1986.
- 3.23. Modifications to the Washery were progressively carried out in the first half of 1987 and by June 1987 the Washery was achieving a significant throughput of washed coal. Final cost of these and other modifications currently proposed will be in the order of \$4 million giving a final capital cost of \$70 million.
- 3.24. The following three sections of the report deal in detail with:
- Initial Planning and Decisions Construction and Commissioning Current Status

4. INITIAL PLANNING AND DECISIONS

- 4.1. In October 1979 McNally Australia Pty Ltd. (previously Kennedy Thompson Pty. Ltd.) were engaged by the Commission's Fuel Division to carry out a preliminary study into the various aspects of washing all or part of the coal from the Ravensworth No. 2 and Swamp Creek mines. This study was an extension of an earlier study carried out by Kennedy Thompson in late 1977 and early 1978.
- 4.2. The study was to consider different washing techniques and separate washeries at each mine as well as a single central Washery located at Ravensworth. The study examined 24 combinations of Washery type and location based on washery operation of two shifts per day, five days per week.
- 4.3. The study, completed in February 1980, recommended that a plant based on dense medium cyclones was preferable to plants based on Jig washing or dense medium baths. This recommendation was based on higher energy yields made possible by the use of dense medium cyclones.
- 4.4. Because of the substantial capital costs identified in the McNally study, the Commission concluded that it would be preferable for the plant to operate for three shifts per day (24 hours) rather than two shifts per day (15 hours) as this would allow a reduction in the size of the plant. Accordingly the McNally study was extended in March 1980 to examine the effect of three shift operation.
- 4.5. However only seven of the original 24 options were examined in the study extension. Six of these considered dense medium cyclone plants at the three locations. The seventh option was for a single jig based washery located at the central location (the option finally selected). The study extension was completed at the end of April 1980.

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4.6. In May 1980, engineering consultants Gutteridge, Haskins and Davey Pty Ltd. (GHD) were also engaged by the Fuel Division to carry out a study of a combined coal storage and rail loading facility in the Liddell area. At that time it was anticipated that there would be a need to continue to transport coal from the Liddell area to Newcastle for export or to the central coast power stations, primarily Vales Point Power Station. The GHD study was completed in July 1980.

4.7. The results of the McNally studies were evaluated by Fuel Division staff and the evaluation was presented to the

Manager of the Fuel Division on 8 July 1980. This evaluation concluded that a single central washery at Ravensworth would be preferable based on a five day, three shifts per day operation.

4.8. On the basis of this evaluation a Submission to the Commission was made in October 1980 and the recommendation to construct the Washery was duly approved in the following terms.

"that:

- (i) approval in principle be given to construct a coal washing plant, near Ravensworth, in order to improve the quality of the coal supplied to Liddell Power Station;
- (ii) in connection with (i) above, experienced and competent consultants be requested to submit proposals for the detailed design and construction management of the project" (Commission Minutes 8 Oct 1980).

4.9. Other statements of relevance in the Submission to the Commission were: "Studies into the possibility of coal cleaning have been reviewed and extended by McNally Aust. Pty. Ltd., and it has been concluded that a plant could be constructed at a cost of about \$25 million to

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produce a consistent product of 22% ash coal as power station feed with a loss of about 6% of the heat equivalent of the raw coal and a total cost including all financial and operational charges of about \$1.35 per tonne, equivalent to an increase in the cost of energy supplied to the power station of 24%.

The improvement in the quality of coal supplied would be expected to result in an increased availability of the Liddell plant and a reduction in operation and maintenance charges.

It is proposed that a suitable coal preparation plant would be owned and operated by Elcom Collieries Pty. Ltd., and constructed on a project engineering basis by consultants under the control of the Mine Development Group of Fuel Division.

The plant would be in service within a period of from 24 to 29 months from the date of an approval to proceed". (Submission to Commission 1 October 1980).

4.10. Development of the Washery concept in 1980 and 1981 occurred at a time when large increases in electricity demands were being forecast for aluminium smelters and other industrial developments.

4.11. In December 1980 a decision was reached between the Government and the Commission to abandon; on environmental grounds; development of an open cut coal mine associated with Eraring Power Station; then under construction. This decision; coupled with the high projected demands, indicated that there would be a shortfall in coal supply to the central coast power stations of fairly serious dimensions by 1984.

4.12. The Washery development was seen as a means of obtaining coal at reasonable cost to meet the shortfall. A decision was then made to increase the design capacity of the Washery to 6.9 Mtpa so that up to 1.0 Mtpa of coal could be railed to the central coast.

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- 4.13. By mid 1952 electrical load growth rates had declined and the aluminium smelter proposals had been shelved. The Commission forecast rate of load growth of 6% p.a. was reduced to 4.5% pa in August 1982 and to 3% pa in early 1983.
- 4.14. The long term need to rail coal to the central coast was therefore much diminished by mid 1982. However; previously in November 1981, two Liddell 500 MW units had failed; bringing to three the number of units out of service with major electrical generator faults.
- 4.15. This created an immediate short term need to increase coal shipments from the Hunter Valley to the central coast and a number of short term coal supply contracts were negotiated with private coal companies. Repair of the failed Liddell units progressed over the following eighteen months. The *tight* electricity supply situation was relieved in May and June 1982 with commissioning of the first 660 MW unit at Eraring Power Station and installation of 295 MW of emergency gas turbines at a number of locations'.
- 4.16. The Ombudsman conducted an Inquiry into maintenance practices at Liddell commencing in January 1982. The Inquiry covered the maintenance problems caused by high ash coal and the Inquiry Report presented evidence given by the Vice Chairman of the Commission as follows:

It is a matter of calculating whether (installation of washeries) is worthwhile or not on the basis of how long the *unit* will be out to replace or repair a boiler *tube* that leaked against the capital cost of having additional equipment there. Up until recently this *last* year or two, the odds have been heavily in favour of accepting boiler tube erosion as it arose; now the scale is

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tipping the other way. So the Commission is now deciding to wash coal, reduce the ash content; reduce to some extent the abrasiveness of the coal thereby keeping units in service for perhaps marginally longer.'

(Ombudsman's Report - Inquiry into Alleged Inadequate Maintenance p.100).

4.17. In the meantime development of the Washery had continued until the project became financially firmly committed at the end of August 1982 with the signing of a design and project management contract between Elcom Collieries and McNally.

4.18. In examining the problems associated with the Washery, the Committee considered four fundamental questions:

; Should the Washery have been built at all?

is it built in the best location?

: is the design soundly based?

does the Washery represent value for money?

The Need for the Washery

4;19. The Committee accepts that high ash levels outside of the boiler design specification have caused availability problems at Liddell with resultant cost penalties. However; it has been suggested to the Committee that other alternatives could have been explored in the early planning stages which would have reduced ash levels in coal to Liddell and which would not have required construction of a \$70 million washery.

4;20; Specifically, renegotiation of the coal contracts with Costain and Hebden could have been sought with control of ash levels by selective mining and/or blending techniques;

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4.30. The Committee in its deliberations found little evidence that the Commission's planning of the Washery had adequately addressed the option of establishing a Washery at each mine under the control of the mine owners or had fully considered the control and operational aspects of **centralised** Washery;

As an example; evidence provided to the Committee indicates that the Washery proposals were not discussed in detail with either the mine operators or with the staff of Bloom Collieries with relevant experience. Consideration of the Washery alternatives apparently were concluded only between the Commission Chairman and officers of Fuel Division;

The Design of the Washer.

4.31. Kennedy - Thompson Pty Ltd. (McNally) were engaged by the Commission in mid 1977 to examine whether it would be possible to produce washed coal from the Ravensworth No. 2 and Swamp Creek mines with an ash content in the range 23% to 24%.

4.32 Cargo Superintendents Co. (A/SIA) Pty. Ltd.. were then engaged by Kennedy - Thompson to sample and conduct laboratory tests on coarse coal taken from Ravensworth No. 2 and' Swamp Creek mines The sampling was carried out over four days in September 1977 under the supervision of Kennedy-Thompson; The laboratory work Comprised size analysis and float and sink testing..

4.33. The Cargo Superintendent's test report was presented to Kennedy-Thompson in February 1978.. The results Of this testing ultimately became the basis for the final design of the washery and the test report formed part of the August 1982 contract with McNally;

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4.34. In respect of the quantity of fine coal (less than 0.5 mm) that the Washery would have to handle, it was recognised that further degradation of the coal would occur in transportation to the Washery and within the Washery itself.

4.35. Allowances for the further degradation were estimated and agreed between McNally and the Commission. Addition of these allowances resulted in the design assumption that approximately 10% of the total plant feed would need to be treated in the fine coal section of the plant.

4.36. Operating experience with the plant has shown that the quantity of fine coal diverted to the fine coal circuit can be highly variable; but in general is in the order of twice the quantity for which the fine coal circuit was designed.

4.37. In view of the wide variability in coal quality and properties normally encountered from each mine; the Committee is of the opinion that the early assessment of coal properties was not sufficiently rigorous; Regrettably the washery concept was not discussed with Liddell Power Station staff and station experience with coal properties was apparently not sought;

4.38. It is clear that on matters of coal preparation technology the Commission was heavily reliant on advice from their consultants; McNally. Professional consultants are normally expected to provide unbiased independent advice. However McNally also had a commercial interest in the project as vendors of washery plant equipment;

4.39. The evidence indicates that at no stage prior to construction did the Commission consider alternative consultants or commission an independent audit of the McNally design proposals. Technical audits are commonly employed in highly specialized areas such as coal preparation.

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The Commission did not employ their own coal preparation specialist until mid 1981. Although reservations were apparently expressed about the coal characteristics, by that time the project was viewed as urgent and it was considered that there was no time to engage in further coal testing.

The Committee is of the view that these matters reveal a fundamental lack of basic coal research within the Commission at that time. The propensity of the coal to break down into fine particles and the effects of clay content on the handleability of the coal had been experienced at Liddell Power Station since the early 1970's and information supplied to the Committee suggests that these effects were also known by other mine operators and Washery designers operating in the Hunter Valley at that time. An organisation the size of the Commission should not have needed to rely so heavily on consultants' advice.

Many washeries have to be planned and designed prior to mining operations on the basis of coal properties assessed from core drilling. In the case of the Ravensworth Washery, both mines had been in operation for some time and there should have been no reason for the assessment of coal properties to be in error.

4.42. In preparing the detailed Washery design in the second half of 1981; McNally proposed *that* the fine coal circuit include classifying cyclones; devices to separate the very fine clay particles from the coarser coal particles prior to thickening and filtration. This would also have required a tailings dam and disposal pipeline for storage of the fine clay rejects.

4.43. Because it is not possible to achieve perfect separation of clay from coal the rejects would have included some proportion of coal with resultant financial loss. In

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In the absence of the presentation of detailed analysis; the Committee is unable to conclude whether these alternatives would have been more viable than construction of the Washery. The Committee considers that all alternatives should have received systematic and detailed consideration within a long term development strategy; Evidence before the Committee leads it to the conclusion that this was not done:

The Location of the Washery

- 4.27. The industry norm is for coal washeries to be owned and operated by mine owners. This allows for Washery operation to be closely coordinated with the mining process. Advance information on the quality of coal entering the washery allows for adjustment to the washing process. Low ash coal might not need washing at all.
- 4.28. The Commission apparently selected the central washery on slightly advantageous economic grounds and because of sensitivity that the coal contracts with Costain and Hebden were due to conclude in the early to mid 1980's and might not be renewed. This doubt about the long term tonnages of coal to be washed still applies to some extent as the Swamp Creek contract; which was extended in 1982, is due to conclude in 1990. A washery established at Swamp Creek would have had a very limited life if mining of Swamp Creek is not extended beyond 1990'.
- 4.29. The Ravensworth No. 2 mine is to extend into the Ravensworth South area under a new fourteen year 3.9 Mtpa coal supply agreement signed with Costain in 1987. Coal with ash levels up to 35% are expected to be produced from this area as the mine is to extract thin seams of coal which are currently discarded at Ravensworth No.. 2. If the Swamp Creek contract is not extended the Ravensworth Washery will have substantial spare capacity beyond 1990 with a further adverse effect on the economics of the Washery.

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- 4;30. The Committee in its deliberations found little evidence that the Commission's planning of the Washery had adequately addressed the option of establishing a washery at each mine under the control of the mine owners or had fully considered **the** control and operational aspects of a centralised washery.

As an example; evidence provided to the Committee indicates that the Washery proposals were not discussed in detail with either the mine operators or with the staff of Elcom Collieries with relevant experience; Consideration of the Washery alternatives apparently were concluded only between **the** Commission Chairman and officers of Fuel Division;

The Design of the Washery

- 4.31. Kennedy - Thompson Pty Ltd. (McNally) were engaged by the Commission in mid 1977 to examine whether it would be possible to produce washed coal from the Ravensworth No. 2 and Swamp Creek mines with an ash content in the range 23% to 24%.
- 4.32. Cargo Superintendents Co. (A/SIA) Pty. Ltd. were then engaged by Kennedy - Thompson to sample and conduct laboratory tests on coarse coal taken from Ravensworth No., 2 and Swamp Creek mines The sampling was carried out over four days in September 1977 under the supervision Kennedy-Thompson.; The laboratory work comprised size analysis and' float and sink testing.
- 4.33. The Cargo Superintendent's *test* report was presented to Kennedy-Thompson in February 1978. The results of this testing ultimately became the basis for the final design of the Washery and the *test* report formed part of the August 1982 contract with McNally;

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addition the cost of tailings dams and pipelines can be substantial and environmental approval is normally required for such facilities.

- 4.44. The Commission questioned the need for the cyclones and it was decided for economic and environmental reasons that they be deleted with provision for future installation if necessary.
- 4.45. Classifying cyclones have now been installed as the primary solution to the Washery throughput problem. The cyclones reduce the quantity of material reporting to the thickeners and vacuum filters; However, only 70% of the flow is being treated in the cyclones; not 100% as McNally originally proposed.

The Committee had evidence from the Commission that installation of cyclones in the way originally proposed by McNally would still have resulted in restricted output of the Washery; However the Committee also believes that the plant modifications since found necessary would have been much expedited if the cyclones had originally been installed. Sedgman & Associates in their report to the Commission proposed installation of cyclones similar to the original McNally proposal; There is a difference of opinion between the Commission and Sedgmans over the best way of utilizing the cyclones;

- 4.47. The key issue of the Commission's decision to delete the cyclones is that the wording in the contract with McNally transferred responsibility for the satisfactory operation of the fine coal circuit from McNally to the Commission;
- 4.48. This was acknowledged in the Interim Report dated 23 December 1986 of the Commission Board Committee established to inquire into problems at the Washery. The report stated:

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"(2) McNally's original design provided for the installation of classifying cyclones to separate and remove the ultrafine (-0.063 mm) material. This ultrafine fraction contains the clayey material mentioned in (1) above. The disposal of this material would require a tailings dam or other means of permanent disposal of tailings..

Prior to acceptance of the design the Commission requested McNally to delete the classifying cyclone circuits. This decision was taken in order to reduce capital costs, to reduce losses of coal in material disposed of, and to eliminate the need for disposal of fine material as tailings. In the absence of any indication from filtration tests of a potential problem with the fine material, this decision ~~at~~ time could be seen to be reasonable..

In retrospect it was the wrong decision and it was against the advice of McNally.

It reduced the capability of the fines end of the Washery plant to cope with the higher than expected quantity as well as the more difficult than expected filtration characteristics of the fine material.

Moreover; the decision would seem to have effectively nullified the value of McNally guarantees in respect of plant performance.

In retrospect; such a modification during the design phase should only have been implemented if accepted by McNally without qualification, or alternatively if the implications had been explicitly identified to Management; and through Management to the Board, and accepted at that level'.

However the Committee notes that when the decision was made to delete the cyclones, provision was made for the installation of a fine coal sump and pumping plant which would facilitate the subsequent installation of cyclones should they be needed in the futures."

Does the Washery represent value for money

The economic benefits which might flow from the investment of the \$70 million so far committed on the Washery are dealt with in detail in Chapter 7.

5. CONSTRUCTION AND COMMISSIONING

- 5.1. In July 1981 the Commission approved the direct negotiation of a design and construct (turnkey) contract with McNally for the Washery part of the project. This approach was not in accordance with normal Commission procedures', which would have required competitive bids, and was only adopted because the project was regarded as high priority and "fast track" construction was advocated;
- 5.2. GIID were separately engaged in September 1981 to provide design and project management services in respect to the civil and coal handling parts of the project. GHD were also engaged to prepare an Environmental Impact Statement (EIS) on the Washery project which was completed in January 1982.
- 5.3. The Development Application for the project, including the EIS; was submitted to Singleton Shire Council in February 1982. An objection to the development was subsequently lodged and as a result the Minister of Environment and Planning directed that a Commission of Inquiry be held.
- 5.4. In the meantime negotiations with McNally were continuing on the design and construct contract for the Washery. McNally submitted a formal offer in December 1981 and negotiations on the contract continued into 1982. These negotiations ultimately were unsuccessful as agreement on legal liability could not be reached between the parties..
- 5.5; In mid 1982 McNally were invited to submit an offer on the basis of design and project management with plant procurement and erection to be subject to normal Commission procedures. McNally complied and a contract was duly signed at the end of August 1982. At this point the priority for the project had apparently decreased and the need for "fast track" procurement procedures was no longer considered necessary.

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- 5.6. The Environmental Inquiry was held in October 1982 and; following the Inquiry, approval for the project was granted by the Minister of Environment and Planning in November 1982. Work on the site then commenced in December 1982 on a 24 month construction timetable.
- 5.7. Further delays were encountered in finalising the design for the coal handling and storage systems associated with the washery. Increased fee costs for GHD were approved by the Commission in April 1983 and again in October 1983. These fee increases largely derived from substantial alterations to the coal handling plant design philosophy. In addition; it was decided in early 1983; that the rail loading facility could be deferred (subsequently indefinitely)'.
5;8; Construction of **the Washery was essentially complete by April 1985. The Committee considers that construction management was competent and that; once the design was finalised;** the Washery construction was **essentially completed on time and within the project budget.**

However the substantial design changes to the coal handling and storage plants which cost in the order of \$10 million; do not reflect well on the Commission's internal lines of communication. The Commission's Generation Division and Liddell Power Station staff were not formally consulted in the planning phase? and from the evidence, their late involvement in the design phase was a significant factor in the necessary design changes;

- 5.9; Between May 1984 and July 1985 the management of Elcom Collieries was engaged in the negotiation of terms of employment for Washery staff with the Combined Mining Unions. There was a concern on the part of management that agreement to conditions related to open cut mines in the area would have the potential to flow on to Elcom Collieries' underground mining operations, particularly on the central coast; leading to increased coal costs.

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- 5.10. At a meeting in November 1984, management undertook to advise the unions of the management position within a week. That undertaking was not fulfilled. The Elcom Collieries Board discussed the issue at Board meetings in December 1984 and January 1985.
- 5.11. On 6 March 1985 a management meeting of the Elcom Collieries Board authorised the Elcom Collieries Managing Director to enter into further negotiations with the unions within the parameters advised.
- 5.12. Further meetings were held with the Combined Mining Unions in May and June 1985. The Elcom Collieries Managing Director testified on the difficulties associated with the negotiations and the deadlock reached by mid 1985.

"From their point of view they were not interested. When there are no employees on site, there is no great incentive to argue about fellows who are not working there anyway. They were arguing about future employees and what their future would be.. There was no compunction on us. The coal produced could be handled by Bayswater. You just do not rush into these industrial things and expect to cure them in five minutes.."

- 5.13. In late July 1985 the non operation of the Washery became the subject of *attention* in the media. In advice to the Minister for Mineral Resources and Energy on 31 July 1985, the Commission's General Manager stated:

"The washery was completed ready for operation by March/April of 1985. The unions have not been prepared to provide staff for the operation of the washery because of a continuing dispute over the level of bonus to be paid. The amount of bonus being claimed was in excess of \$200 per week which is *that* typically being paid by Hunter Valley open-cut mines engaged in the export coal market. The washery is located adjacent to the Commission's underground Liddell State Mine where bonus earnings are currently of the order of \$60 per week after a recent increase.

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The Commission and Elcom Collieries Pty. Ltd. have been concerned that resolution of the bonus dispute at the washery would have created claims for a flow-on to Liddell Mine and from there into other underground mines owned by the Commission on the Central Coast. The matter at issue is therefore of very great importance and in the absence of any compelling need to commission the washery in the short term the company has refused to accede to, union bonus demands. Negotiations with the unions are still being pursued and the unions are not available for a further meeting until 13th August."

- 5.14. The Minister subsequently met with the unions on 6 August 1985 and achieved a compromise agreement on the level of bonus payments. To the Committee's knowledge; to date there has been no flow on of this higher bonus to Elcom Colliery mines.

5.15. The Committee considers that the approach adopted by the senior managers of the Commission and Elcom Collieries in the negotiations was not conducive to successful industrial relations. The completed Washery at that time was incurring financial charges in the order of \$0.75 million per month with no offsetting benefits which would have flowed from the plant's operation: The Commission considered that; as the Washery was not required to ensure reliability of electricity supply at that time; there was no need to expedite the negotiations; despite the continuing nett losses.

- 5.16. The first Washery staff commenced work in September 1985 and operation commenced in October 1985. Only limited quantities of coal were washed in October and November 1985. Coal supply in these months was affected by industrial disputes in the mining industry and at the power stations.

- 5.17. 'Greater quantities of coal were washed in December 1985 and January 1986. By the end of January 1986 it was acknowledged *that* there was a serious problem due to overloading of the fine coal circuit in the Washery.

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5.18. An internal Committee of Review was established in early February 1986 under the convenorship of the Commission's Mining Projects Engineer. Also on the committee were the Washery Manager, the Commission's Coal Preparation Engineer and one other Officer of the Fuel Division.

5.19. The Australian Coal Industry Research Laboratory (ACIRL) was engaged in February 1986 for sampling and coal testing. GHD were also engaged on 20 March 1986 to prepare a preliminary design for a dry screening station which would bypass the fine coal around the Washery.

5.20. In April 1986 the Elcom Collieries Board approved the installation of a crusher by-pass system at the Washery. The Washery was designed to process coarse coal (up to 200mm size) and to crush the coal after washing to the size required by the power stations (up to 19mm). Any outage of the washery therefore affected the availability of coal for the power stations.

5.21. The case for *the* crusher by-pass was summarised in the Interim Report of the Commission Board Committee established in December 1986 as follows:

"When the feasibility study was prepared by Gutteridge, Haskins and Davey in 1981, it was assumed that crushed small coal could be satisfactorily supplied to the power stations during any shutdown of the Washery by the simple expedient of dumping any large coal in transit closing down the mine conveyor system for a short time and converting the crushers at the mines to produce crushed small coal instead of the large coal needed for the Washery.

In practice this concept has proved unworkable. Large coal has "hung-up" in bins and chutes between the mine and the take-off to the washery and has flowed irregularly to the power stations causing problems, in handling at those stations.

This feature presented serious delays to the programme of Washery testing during 1986 and it became necessary to install a crusher-sizer and

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by-pass facility at the Washery. This work began in May 1986 and was completed by August 1986 at a cost of \$2.9 million.

It removed the operational risks to the power stations and allowed the testing and tuning of the Washery to proceed with the Washery handling raw coal up to the limit of its capacity with the rest crushed to small size and sent on to the power station. It provided the essential facility to prevent the power stations being starved of their boiler feed in times of washery difficulties. It is a necessary permanent feature to provide such flexibility and should have been included in the original design."

(Interim Report p. 4)

5.22. On 12 March 1986 McNally submitted a review report which suggested a program of tests for ACIRL, offered comments on the problems encountered and offered further professional services in connection with the investigation. McNally suggested that modifications to the plant could involve one of three schemes:

- (i) Classifying cyclones with tailings disposal;
- (ii) Classifying cyclones with tailings recovery using filters;
- (iii) Dry screening of fine material.

Costs for such modifications would have been \$4-6 million.

5.23. Between early February 1986 and the end of May 1986 no coal was delivered to the Washery because of industrial problems affecting coal supplies to the power stations. Even if coal had been available to the Washery; it is apparent that only limited quantities could have been washed in this period.

5.24. Small quantities of coal were washed in July and August 1986. Commissioning of the Washery effectively recommenced in mid September 1986 following the installation of the crusher by-pass system.

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- 5.25. On 29 October 1986; independent coal preparation consultants; Sedgman & Associates were engaged by Elcom Collieries to undertake a review of the washery operation and advise on necessary plant modifications. The possibility of engagement of a consultant had previously been forshadowed in the progress report of the investigating committee in July 1986.
- 5.26. Following questions in the House and on the direct request of the Minister; on 2 December 1986 the Commission Board established a Board Committee to inquire into and recommend a course of action to overcome the problems at the Washery. The Board Committee comprised the Commission Chairman; General Manager and one other Commissioner.
- 5.27. The Board Committee subsequently prepared an interim report on 23 December 1986 and a final report on 3 February 1987. The report of Sedgman and Associates was also finalised on 23 December 1986.
- 5.28. A temporary bank of classifying cyclones was installed on one module in mid February 1987; Installation of these cyclones allowed the Washery to process 105,000 tonnes of coal in February 1987; equal to 25% of the total coal delivered that month, and a significant increase over previous quantities washed.
- 5.29. In the Committee's view the time taken to analyse the throughput problem and implement modifications was excessive; The Committee believes that this circumstance derives not from lack of competence on the part of Commission officers but from a failure to delegate the necessary responsibility and authority to expedite the solution;**
- 5;30; There is evidence that line management recommendations were not being accepted by management. The Committee has the impression that management believed the problem would go**

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away of its own accord. It is apparent that it was not until pressure was applied by the Minister that action was initiated; Once the authority of the Board and the General Manager were applied to the problem, the necessary modifications were forthcoming.

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6; STATUS AS AT THE END OF AUGUST 1987

- 6.1. Since February 1987 the Washery has progressively been modified. Following successful operation of the classifying cyclones temporarily installed on one module, a permanent installation of cyclones was completed on the second module in May 1987; Relocation of the trial cyclones to a permanent location on the first module remains to be done. Final cost of the cyclones is expected to be \$400,000.
- 6.2. Further modifications to the Washery of a relatively minor nature are in the process of implementation. As a result of operational experience a number of modifications are to be made to the flocculant dosing system feeding the thickeners and the filters. These modifications are expected to cost \$80,000;
- 6.3. At the present time the fine clay rejects are being temporarily disposed of in underground workings at the nearby Liddell State Mine. It is proposed that final disposal will be by a 4.2 km pipeline and pumping system to the Bayswater Power Station ash storage dam. This disposal system is estimated to cost in the order of \$3.0 million;
- 6.4. Installation of the cyclones, coupled with further plant tuning; has enabled the Washery to progressively increase the quantity of coal washed from 25% of coal delivered in February 1987 to 60% of coal delivered in August 1987; Detailed month by month production statistics are included in Appendix 6.
- 6.5. On 5 August 1987, in evidence to the Committee; the General Manager of the Commission stated:

"I would like to take the opportunity; if I may; to put it on the record that the washery is in operation; that it has demonstrated a capacity to achieve the design rating and to wash coal

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down to the target ash level of 22 per cent. Also in the year to date% following modifications that have been made, it has been able to wash almost 900,000 tonnes of coal"

6.6. The Committee sought additional information from the Commission to substantiate the statement that the plant had adequately demonstrated maximum capability. In reply, the Commission indicated that the capability of the plant had been demonstrated by observation of the plant performance during the months of July and August 1987.

6.7. Detailed production statistics in those months show that the plant has demonstrated its capacity to run at rated output or close to rated output on some days.; Peak daily capacity up until the end of August 1987 occurred on 26 August 1987 when 35600 tonnes of coal was washed, over an average of 22.1 hours of operation for each module. This was equivalent to an average module throughput of 805 tph, compared to rated module capacity of 850 tph.

6.8. On this peak output day the Washery processed virtually all of the coal delivered from the two mines. However this was the only day that the Washery had so far processed more than 90% of coal delivered since first going into service.

6.9. The Manager - Coal Preparation from ACIRL witnessed plant operation on three days in August 1987 and in a report to the Commission stated:

"All of the stoppages observed were typical of what could be expected in a normal, commercially operated plant and were not necessarily the result of inadequate design for the type of coal being processed..

On the basis of the observations for the periods given in Paragraph 1; the Ravensworth Coal Preparation Plant was found to be operating consistently near its rated capacity (demonstrated further by the record throughput of 35,600 tonnes being attained on 26th August, 1987., which was one of the days monitored)"

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6.10. The Commission further advised that:

"Further minor *adjustment* and tuning will be made over about the next three months after which an overall plant performance *test* will be carried out";

While the operating results to date suggest that the plant could perform to design capability; until the plant is subjected to formal testing under controlled conditions the Committee does not consider that the maximum capability of the plant can be regarded as finally proven.

Recommendation No. 1

The Committee recommends that formal acceptance tests be carried out on the washery and that these tests be independently and expertly witnessed and evaluated. The Committee believes that only by this process can the questions regarding washery capability be proven to the satisfaction of independent observers.

6.13. The Committee does not regard the performance of the Washery as at the end of August 1987 as satisfactory. Clearly further work is required to improve the proportion of coal being washed. The Committee expects that the Commission will be endeavouring to achieve improved plant throughput on a routine basis.

6.14; The Committee understands that there are a number of other problems to be overcome. Large rocks which pass through screens at the mines have disrupted operation of the jigs at the Washery; Reliability of the automatic coal sampling equipment has been affected by operation on coarse coal. Also the effects on power station operation of washed coal containing dispersed clay and flocculant, will need to be assessed'.

7. INVESTMENT APPRAISAL AND ECONOMIC VIABILITY

7.1. Fundamental concerns of the Committee are the investment appraisal procedures used by the Commission in the decision to construct the Washery and its economic viability. The Commission typically has one of the largest capital expenditure budgets in the NSW public sector. Over recent years this capital expenditure has varied between \$674 and \$965 million per annum.

7.2. In the context of expenditures of this magnitude the \$70 million cost of the Washery might be considered minor. However by normal public standards the Washery represents a major project and the community is entitled to expect such expenditure has some justification.

7.3. Approval in principle to proceed with the Washery was originally given at a meeting of the Commission in October 1980. The Submission to that meeting was based on an internal Fuel Division report prepared in July 1980 which analysed various Washery options from initial studies carried out by McNally in early 1980.

The report detailed costs associated with the various options. However neither the report, nor the associated Commission Submission, quantified the benefits of the project and formal cost/benefit analyses were not presented.

7.5. The estimated project cost at that time was \$27.5 million made up of \$25 million for the washery and \$2.5 million for the associated coal handling plant. The coal handling plant cost was a very preliminary estimate made by GHD in an initial study carried out in June 1980.

7.6. On the basis of the Commission approval, GHD and McNally were Jointly engaged by Fuel Division in November 1981, to prepare a detailed feasibility study, which would provide

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a more accurate project cost estimate. This study was completed in March 1981 and identified a total cost estimate of \$48.75 million. This project estimate was made up of:

	\$M
Washery	20.209
Alterations to exist; plant	0.730
Coal handling and storage	10.757
Balloon loop	2.710
Water supply	0.850
Rejects disposal	3.450
Buildings	1.242
Engineering	3.386
Contingency	5.416
	48.750

7.7. The estimate of \$3.45 million was for disposal of coarse rejects only by conveyor and no allowance was made for disposal of fine rejects.

7.8. In July 1981, a meeting of the Commission approved a Submission that a "design and construct" contract be negotiated with McNally in order "fast track" the project. At that time, with the projected smelter developments, the project was viewed as urgent because of a need to ensure maximum availability of Liddell Power Station and a projected shortfall in coal supply to the central coast power stations.

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This, together with other modifications, effectively added another \$10 million to the project cost bringing the total cost estimate up to approximately \$59 million.

7.15. Submissions were made to the Elcom Collieries Board in April and October 1983 for the increased consultant design fees and these were duly approved. However, there is no evidence that formal approval was sought for the increase in the overall project cost estimate or that the effect of the project cost increases on the overall economic viability of the project was assessed. Individual contracts continued to be approved as required.

7.16. At a Commission meeting in July 1983, the new Commission Board instituted a review of Capital Works projects which might be capable of deferment, in the interests of capital conservation. The Manager/Fuel was requested to prepare a report on the possibility of deferment of the Ravensworth Washery.

7.17. At the subsequent August 1983 meeting the Commission Board considered the Manager/Fuel's report which recommended continuation of the project. The recommendation was summarised in the following terms.

"The Ravensworth Washery project was planned to be constructed to treat raw coal from the Swamp Creek and Ravensworth No. 2 Mines so as to reduce boiler erosion and P.F. mill maintenance problems.

The project involves a total of some \$60 million of which approximately one-half has been committed at this stage.

Deferment of the project would undoubtedly result in a continuation of excessive boiler erosion and maintenance problems at Liddell and introduce such potential problems to the new Bayswater boiler.

In the circumstances and in view of the public criticism levelled at the Commission last year as to the use of high ash content coal, it is

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recommended that the project should not be deferred, but continue for completion in late 1984".

7.18. This Report did not attempt to quantify the economic benefits of the project. The Board approved *continuation* of the project subject to a further review by the Commission Chairman and General Manager (presumably so that the economics of the project could be examined).

7.19. In September 1983 the Manager/Fuel provided supplementary information to the General Manager which assessed the remaining \$30M of uncommitted expenditure against the benefit of improved plant availability at Liddell Power Station. The economic analysis determined a break-even improvement in Liddell availability and was summarised as follows:

"Using the above figure of \$168,000 per annual GWh the further capital plus capitalised operating cost of the Washery of \$75 million would require that the installation of the Washery enable Liddell to produce an additional 446 GWh per annum in order to break even. This is equivalent to an improvement in Liddell's availability of about 4.5 percentage points.

In as much as the Ravensworth Washery would serve both Liddell and Bayswater it might be expected that there would be an improvement in the availability of both stations. The required break even improvement of 446 GWh would be equivalent to an improvement of about two percentage points over the whole of Liddell and Bayswater;

Generation Division have indicated that the total loss of availability due to high ash content is approximately 6.5% at Liddell and 7% at Vales Point. There are insufficient data to establish with any precision the extent to which availability might be improved by reducing ash content from 30% peak to 22% consistent.

However, on the basis of the figures set out above it appears highly likely that the completion of the Washery project would be cost effective".

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"Could I comment that ;'. I want to emphasise that it was an overall system analysis that we were looking at. The cost of having to derate the Liddell units to 460 megawatts is really virtually nil at the present time of abundant system capacity. The benefits to be derived, in the absence of the pressure we faced in 1980 to get everything up at full stretch, are down the track.

If we can pick up 160 megawatts of additional capacity at Liddell, one *can* value *that at* the cost of the new capacity that one will not otherwise have to put in. That is perhaps the ceiling figure. *But it* is presently costing us a thousand dollars a kilowatt to put in new capacity. If we could recover that capacity at Liddell from 460 megawatts per unit to 500 megawatts per unit, *that* would be worth 160,000 kilowatts a thousand dollars per kilowatt,, which is \$180 million.

One has to reduce *that* somewhat because of its futurity: one will not make *that* saving today. But it will cut down on the *investment* in the future in new capacity."

7.27. The suggestion of the above seems to be that the continuation of reduced *output* of Liddell with high ash coal operation would be a permanent loss of plant output which would have to be replaced at some point in the future by new capacity. The Committee is not convinced that this line of reasoning is valid. If the plant can currently do full output when required as stated in Commission evidence, then no permanent loss of capability is evident.

7.28~ Examination of coal prices for 1987/88 submitted ,by the Commission during the hearings show *that* the Washery has a significant impact on the cost of coal delivered to the power stations. Figures presented to the Committee show that washing costs cause a rise in the cost of energy in the order of 25% (as compensated by the higher specific energy of the washed coal)'.

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- 7.29. The price paid for washed coal is significantly higher than the majority of the private sector coal sources for Bayswater Power Station.
- 7;30; The Committee considers that the original justification for the Washery in 1981 could have been reasonable given the perceived need for additional coal for the central coast power stations at that time. However, this perceived need would have no longer been current by mid 1982 when the final decision to proceed with construction , was made.

This final commitment was influenced by media questioning of maintenance practices at Liddell following the Liddell generator failures in November 1981 and the subsequent Ombudsman's Inquiry into "Alleged Inadequate Maintenance" in early 1982;

- 7.31. The Committee considers that the final decision to proceed was not made on strict economic grounds and finds that Commission evidence relating to the economic Justification of the project is unconvincing. Conceivably a formal economic appraisal carried out in mid 1982 could have resulted in cancellation or deferment of the project.

Recommendation 2

- 7;32. The Committee recommends that formal investment appraisal procedures should be adopted by the Commission, which typically has the largest capital expenditure budget in the NSW public sector. The Committee also endorses the recommendations of the McDonnell Inquiry that Commission investment decisions be subject to external review; such review to take place prior to the entering of major financial commitments.

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Recommendation 3

- 7.33. Notwithstanding any lack of economic Justification, the Washery is now in existence and the maximum benefit will be obtained by ensuring that future Washery operations are conducted to high levels of capability and availability; The Committee recommends that organisational arrangements of the Washery should be carefully reviewed to ensure the success of future Washery operation; Private companies are understood to have expressed interest in taking over the Washery operation; The Committee notes that the Government is considering this option and has called for registration of interest in the lease or purchase of the Washery.

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8. ACCOUNTABILITY

The Committee is of **the opinion that accountability can only be exercised when responsibilities are clearly** defined and **accompanied by** associated authority; This **applies to** various groups within the Commission; and its subsidiaries; as well as between Commission management **and** the Minister and through the Minister; the Parliament;

The Ravensworth Washery has had a history of substantial **problems and** significant delays in their resolution. The Committee **was conscious** of the need to examine the organisational and management issues which relate **to** the problems:

- 8.3; The early planning of the Washery in 1980 and 1981 was carried out by the Commission's Fuel Division; which was headed by a Manager/Fuel reporting direct to the Commission's Chairman. The Commission's Vice Chairman at that time was Chairman of the Colliery Companies

The Vice Chairman left the Commission in early 1982 and the Manager/Fuel was then also appointed in April 1982 to Chairmanship of the Colliery Companies. The Commission's Board was restructured in August 1982 and the Manager/Fuel subsequently reported to the Commission's General Manager.

- 8.5. In April 1985; the Manager/Fuel was appointed to a new position of Assistant General Manager/Operations and retained Chairmanship of the Colliery companies as well as taking on responsibility for operation of the Commission's power stations; A new Manager/Fuel was appointed in July 1985 as head of the Fuel Division reporting to the AGM/Operations.

Initial approval in principle for a Washery was given by the Commission at a meeting on 8 October 1980.. That approval covered a proposal *that* the Washery would be

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owned and operated by Elcom Collieries Pty. Ltd.. and constructed on a project engineering basis by consultants under the control of the Mine Development Group (later Mining projects Branch) of the Fuel Division:

- 8.7. This early meeting established the principle that the Mining Projects Division would act as project management consultants to the Owner/operator Elcom Collieries (the client). No evidence was presented to the Committee that this relationship was ever formalised by a written consultancy agreement.

Elcom Collieries Pty. Ltd. is the largest of the Commission's three subsidiary coal mining companies. The company owns and operates seven underground mines, including the Liddell State Mine; and operates coal washeries at Newstan Mine and Liddell State Mine..

- 8.9. In evidence to the Committee the Managing Director of Elcom Collieries stated that the company was "not involved in the original design of the plant". Subsequently he provided detailed written evidence to the Committee on the working relationship between the company and Mining Projects Branch during the construction of the Washery.

- 8.10. With respect to the initial involvement of Elcom Collieries in the project the evidence states:

"In 1980/81 the Company Chairman was also Vice Chairman of the Electricity Commission and as such would have participated in internal and Electricity Commission Board level discussions concerning proposals for a washery.

There was no involvement in the project planning process design or feasibility by officers from my level or below prior to November 1981. Written advice was received from the Electricity Commission on 18 November; 1981; advising of the status of the project and seeking discussions on the administrative arrangements. In December 1981, communications were established to

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determine Industrial Procedures; Commercial Procedures; Technical Standards and Administration Procedures".

8.11. On the evidence, the Committee concludes that the decision that Elcom Collieries should own and operate the Washery was made without detailed consultation with the Colliery company management. This seems extraordinary given that the Commission's only experience with Washery operation resided within the colliery companies.

8.12. At the end of the construction phase as each contract was completed, the plant was progressively handed over to Elcom Collieries. The plant was ready for initial commissioning in early 1985. The commissioning arrangements were outlined in the Elcom Colliery Managing Director's evidence as follows:

"The original management intention was that the commissioning of the Washery component of the work during the dry commissioning and water balance (commissioning with full water circuits but no coal) stages would be carried out by contractors under the direction of McNally staff and that, following this, the coal commissioning would be carried out by Elcom Collieries using their own staff; with McNally advice available as required.

The dry commissioning and water balance were completed by end January/early February 1985; however as no manning was available McNally staff then left site.

McNally staff were available to return to be involved and witness performance tests during coal commissioning if subsequently required.

Thus the commissioning of the Washery from February 1985 was the responsibility of Elcom Collieries Pty. Limited."

8.15.; The evidence indicates that responsibility for commissioning was taken on by the owner in the absence of direct involvement by the Washery design consultant.

In

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the absence of McNally; responsibility for the integrity of the design should have rested with Mining Projects.

However the evidence stated:

"Following practical completion of each contract the only responsibility retained by Mining Projects Branch was ensuring that contractors met any obligations in regard to outstanding items or deficiencies identified during the contract maintenance period. This was done."

When the problem of overloading of the washery fines circuit was acknowledged in February 1986, the Manager/Fuel set up an investigating Committee under the convenorship of the Mining Projects Engineer. The Washery Manager was a member of the Committee and ostensibly then reported to the Mining Projects Engineer. This seems to be an example of the client reporting to the consultant.

- 8.15-. The investigating Committee for the most part seems to have reported to the Manager/Fuel and through the Manager/Fuel to the Assistant General Manager. Submissions for further expenditure on the project continued to be directed to the Board of Elcom Collieries by the Mining Projects Engineer~
- 8.16. The Committee considers that prime responsibility to Elcom Collieries for the design of the plant should have resided with Mining Projects. In the circumstances it is difficult to see how Elcom Collieries can exercise responsibility for successful operation of the plant when they were not involved in the plant design. The Committee questioned the Managing Director of Elcom Collieries regarding the responsibility of Mining Projects to the Company for design of the plant as follows:

PUBLIC:
ACCOUNTS
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"Has Elcom Collieries board ever considered what claim Elcom Collieries might have against Mining Projects for failure of the plant to perform?,"

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MANAGING "I have never thought about that at all."

DIRECTOR:

PUBLIC: "Do you foresee any likelihood of such a
ACCOUNTS discussion taking place?"

COMMITTEE

MANAGING "Most remote, I would say."

DIRECTOR:

8.17; In examining the history of the Washery the Committee concluded that responsibilities between the groups involved were inadequately defined; In addition there seemed to be major problems with internal communications between the various Divisions of the Commission and the Colliery Companies. There were many instances of non consultation between groups which; had it taken place; would have ensured that the benefit of much additional relevant experience was brought to the project.

8.18. The relationship between the Commission and its subsidiary company is clearly not one of an "arms length" nature; Authority for expenditure at Elcom Collieries Board level is \$1 million; which means that any major expenditure items must also receive either the approval of the Commission's General Manager or the Commission Board.

8.19. The Committee is of the opinion that confusion in the respective roles of the various parties has inhibited resolution of the problem and diluted responsibility and hence accountability; Part of the confusion is considered to stem from the dual role of the Commission's Assistant General Manager in charge of the Fuel Division who; since March 1982; has also occupied the position of Chairman of the Colliery Companies; These two roles at times appear to be in conflict.

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Recommendation 4

The Committee recommends that an independent review of the senior management functions within the Commission should be carried out to ensure appropriate divisions of responsibility and accountability.

Recommendation 5

The Committee also recommends that the management review should include comprehensive analysis of lines of communication of the Commission and its subsidiaries with proposals to enhance internal communication.

Recommendation 6.

The Committee also endorses the McDonnell Inquiry recommendation that consideration should be given to separation of the Colliery Companies from the Commission to ensure an appropriate "arms length" relationship.

8.23. The Management of the Commission is accountable to the Minister and through the Minister to the Parliament. This *accountability* can be tested by questions in either House addressed to the responsible Minister'. In answering questions in the House it is normal practice for Ministers to rely on Parliamentary Briefing Notes prepared by responsible Departments or Authorities.

8.24. In September and October 1986 the General Manager of the Commission forwarded Parliamentary Briefing Notes to the Minister dealing with the Ravensworth Washery.

The Committee questioned the General Manager of the Commission concerning *statements* made in the Briefing Notes as follows:

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COMMITTEE:

Plant
Monday

"Ministerial briefing notes made available to the Minister on 29 September 1986 say: placed on line for regular commercial operation on

22 September 1986 and operated

satisfactorily';

What is meant by; " 'regular commercial operation'?"

GENERAL MANAGER: "It was, I think; at that time the hope and expectation of the officers concerned that it would be that that it would be regular commercial operation."

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My overall concern with the preceding

COMMITTEE

three or four questions I have asked you is that there is an implication in the briefing papers you provided the Minister *that* the Washery - at the time - is under some kind of regular commercial operation. My concern is; is not regular commercial operation something that only occurs at the end of the commissioning process; a process which at this stage as I understand; is still to be completed

GENERAL MANAGER:

ought
commissioning
from the batch type
only way in which
now be put on line
coal

"The phrase 'regular commercial operation' properly to be used for the completion of the phase. I think it meant that, as distinct processing which up to that point was the any testing could be done; the plant could and left on line and a controlled amount of

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fed to it on a continuous basis; and therefore it was regular, as against the intermittent operation which hitherto had been proven.

I agree that it is a moot and arguable point that it does not become commercial until commissioning is completed. But it was commercial in the sense that we were then washing useful quantities of coal'. They were not just the occasional batch for testing purposes.."

**PUBLIC ACCOUNTS
COMMITTEE:**

"That still gives me some concern; because statistics show that the quantity of coal washed in each of the months September to December 1986 was in the order of 20 thousand tonnes; representing only some twelve hours of Washery operation at full output per month.. Could one allude *to that* as a commercial operation?"

GENERAL MANAGER: "No, you could not.."

8.25. The Briefing Note of 29 September 1986 also stated:

"Dependant upon operations, further modifications may be required to optimise the process."

The Committee considers *that* the impression gained from this *statement* is *that* the plant is operating reasonably but *that* further minor modifications might be needed to improve the process.

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- 8.27. In reality the primary problem with the fines circuit was still in existence. The options to solve the problem were still considered to be dry screening or classifying cyclones and tailings disposal, modifications estimated to cost some \$4 to \$6 million.
- 8.28. On 3 October 1986 the Mining Projects Engineer made a submission to the Chairman of Elcom Collieries recommending additional design work by GHD on a dry screening station.
- 8.29. On 10 October 1986; a report to the Board of Elcom Collieries by a Superintendent outlined washery operation and stated that capacity of the washery was well below design;
- 8.30. On 15 October 1986, a question was asked in the Legislative Assembly regarding the status of Washery operation.
- 8.31. On 20 October 1986; the General Manager of the Commission forwarded to the Minister revised Briefing Notes dealing with coal supplies to Liddell and Bayswater Power Stations and the Ravensworth Washery. The Briefing Note dealing with the Washery was unchanged from the previous September Briefing Note;
- 8.32; **The Committee finds that Parliamentary Briefing Notes presented to the Minister in September and October 1986 were not an accurate statement of the Washery status at that time. These Briefing Notes cover a period when questions were being asked in the House and the Minister was reliant on the Commission to provide a clear and accurate statement of the status of the Washery.**
- 8.33. Statutory bodies such as the Electricity Commission are required each year to submit to both Houses of Parliament an Annual Report and Statement of Accounts. The Annual

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- 8.40. The Committee concludes that the above statements from the Commission's 1985/86 Annual Report do not represent an honest or accurate account of the Washery performance for that year. The Committee hopes that similar inaccuracies do not appear in other sections of the Commission's Annual Report.
- 8.41. The Committee considers that the inaccurate statements in the Briefing Notes and the 1985/86 Annual Report; regarding the status of Washery operations and further modifications, represent an attempt on the part of the fuel management function within the Commission to avoid public scrutiny of what could be interpreted as lack of performance or at worst incompetence.
- 8.42. *The Commission's General Manager suggested in evidence that the Parliamentary Briefing Notes needed to be read in conjunction with other documentation available to the Minister through earlier Commission Board papers. The Committee rejects this proposition;*

Recommendation 7

- 8.43. As Parliamentary Briefing Notes represent the prime source of information available to the Minister and the Government in rendering due accountability to the Parliament; it is essential that they be accurate, freestanding documents; Accordingly the Committee recommends that appropriate procedures be adopted by the Commission to ensure the accuracy and comprehensiveness of such advice in the future.

Ravensworth Coal Washery

Comment:

No mention is made of the fundamental design fault with the Washery. Coal supplies to the Washery were delayed between February and May 1986 but the Washery would have been able to process only small quantities of coal at that time even if coal had been available.

"By Year's end, sufficient testing had been completed to allow the planning of adjustments to the Washery so as to achieve commercial operation in the first quarter of 1986/87."

Comment:

Testing of the Washery had mainly been carried out in December 1985 and January 1986. There was no Washery operation between February 1986 and June 1986. The statement on "planning of adjustments" presumably refers to installation of the crusher/bypass which was carried out between May and August 1986 at a cost of \$3 million.

There was no possibility of commercial operation in the first quarter of 1986/87 without further substantial plant modifications.

8.39. "Total cost of the Washery, including modifications, is expected to be within the budgeted expenditure of \$65 millions"

Comment:

The additional expenditure required for final plant modifications will increase expenditure to the order of \$70 million.

Public Accounts Committee

- 8.40; The Committee concludes that the above statements from the Commission's 1985/86 Annual Report do not represent an honest or accurate account of the Washery performance for that year. The Committee hopes that similar inaccuracies do not appear in other sections of the Commission's Annual Report.
- 8;41; The Committee considers that the inaccurate statements in the Briefing Notes and the 1985/86 Annual Reports regarding the status of Washery operations and further modifications, represent an attempt on the part of the fuel management function within the Commission to avoid public scrutiny of what could be interpreted as lack of performance or at worst incompetence;
- 8.42. The Commission's General Manager suggested in evidence that the Parliamentary Briefing Notes needed to be read in conjunction with other documentation available to the Minister through earlier Commission Board papers. The Committee rejects this proposition;

Recommendation 7

8.43. As Parliamentary Briefing Notes represent the prime source of information available to the Minister and the Government in rendering due accountability to the Parliament, it is essential that they be accurate, freestanding documents; Accordingly the Committee recommends that appropriate procedures be adopted by the Commission to ensure the accuracy and comprehensiveness of such advice in the future;

APPENDICES

Public Accounts Committee

WITNESSES AT PUBLIC HEARINGS

DATE OF MEETING
WITNESSES

ORGANISATION REPRESENTED AND

5 August 1987 and 18 August 1987	ELCOM COLLIERIES PTY LIMITED
DIRECTOR	MR DANIEL HANRAHAN; MANAGING MR GERALD FLETCHER; SOLICITOR
6 August 1987 and 18 August 1987	ELECTRICITY COMMISSION OF N.S.W. MR FRANK BRADY; GENERAL MANAGER MR KEN SMITH; ASSISTANT GENERAL
MANAGER	MR JAMES HENNESS; MANAGER FUEL DR MICHAEL HALLAM; MINING PROJECTS ENGINEER
	NEWCOM COLLIERIES PTY LIMITED
	MR JOHANNES POST; COAL PREPARATION ENGINEER

APPENDIX

Ravensworth Coal Washery

DOCUMENTATION RECEIVED

1. "Technical Review of Investigation of Coals for Liddell Power Station" - Ebasco Services Inc - June 1966.
2. Liddell Power Station Coal Supply Contracts - ECNSW -December 1967.
3. "Feasibility Study Relating to the Possible Washing of Ravensworth and Swamp Creek Coals" - Kennedy Thompson Pty Limited - March 1978.
4. "Bayswater Power Station Environmental Impact' StatementECNSW - 1979.
5. Technical Section of Bayswater Power Station Boiler Specification - ECNSW - 1979.
6. "Report On Feasibility of Beneficiating Coal Supplies to Liddell Power Station" - McNally Australia Pty. February 1980.
7. "Report on Feasibility of Beneficiating Coal Supplies to Liddell Power Station - Further Investigation" - McNally Australia Pty Limited - April 1980.
8. "Liddell Coal Beneficiating Plant and Rail Load FacilityFeasibility Study" - Gutteridge Haskins and Davey Pty Limited and McNally Australia Pty Ltd. - March 1981.
9. Offer to Design and Construct the Ravensworth Washery -McNally Australia Pty Ltd. - December 1981.

APPENDIX 2

Public Accounts Committee

10. "Environmental Impact Statement for Ravensworth Coal Washery and Rail Loading Facility" - Gutteridge Haskins and Davey Pty Limited - January 1982.
11. Internal reports relating to the Ravensworth Washery development - ECNSW - 1979 to 1982.
12. Submissions to the Commission relating to the Ravensworth Washery - ECNSW - 1979 to 1982.
13. Contract for design and project management of Ravensworth Washery between McNally Australia Pty Ltd. and ECNSW - August 1982.
14. Submissions to the Board of Elcom Collieries Pty Ltd. relating to the Ravensworth Washery - ECNSW - 1981 to 1986.
15. Minutes of Design Review Meetings between McNally Australia Pty Ltd. and ECNSW - 1981 to 1983.
16. Submissions to the Board of ECNSW relating to the Ravensworth Washery - ECNSW - 1982 to 1986.
17. "Coal Sourcing Strategy Report" - ECNSW - September 1983.
18. Minutes of meetings between the Combined Mining Unions and Elcom Collieries Pty Ltd; relating to conditions of employment at the Ravensworth Washery - May 1984 to August 1985
19. Internal reports relating to performance problems at the Ravensworth Washery - ECNSW - 1986 and 1987.
20. Communications and advice between ECNSW and the Minister for Energy and Technology - July 1985 to June 1987.

Ravensworth Coal Washery

21. ECNSW Annual Report for 1985/86 - ECNSW - October 1986.
22. Interim Report on Inquiry into Problems of Ravensworth Coal Washery - ECNSW Board Committee - December 1986.
23. "Ravensworth Coal Preparation Plant, Review of Operation and Performance" - Sedgman and Associates - 23 December 1986.
- 24.. Final Report on Inquiry into Problems of Ravensworth Coal Washery - ECNSW Board Committee - 3 February 1987.

APPENDIX 3

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MAPS AND DIAGRAMS

FIGURE NO. 1 - Ravensworth Washery Location.

FIGURE NO. 2 - Ravensworth Washery Locality Map.

FIGURE NO. 3 - Coal Conveyor Arrangements Between
Mines and Power Stations.

FIGURE NO. 4 - Ravensworth Washery Simplified
Washery Flow Diagram.

● MUSWELLBROOK

▣ Ravensworth Washery

● SINGLETON

● CESSNOCK

NEWCASTLE

SYDNEY

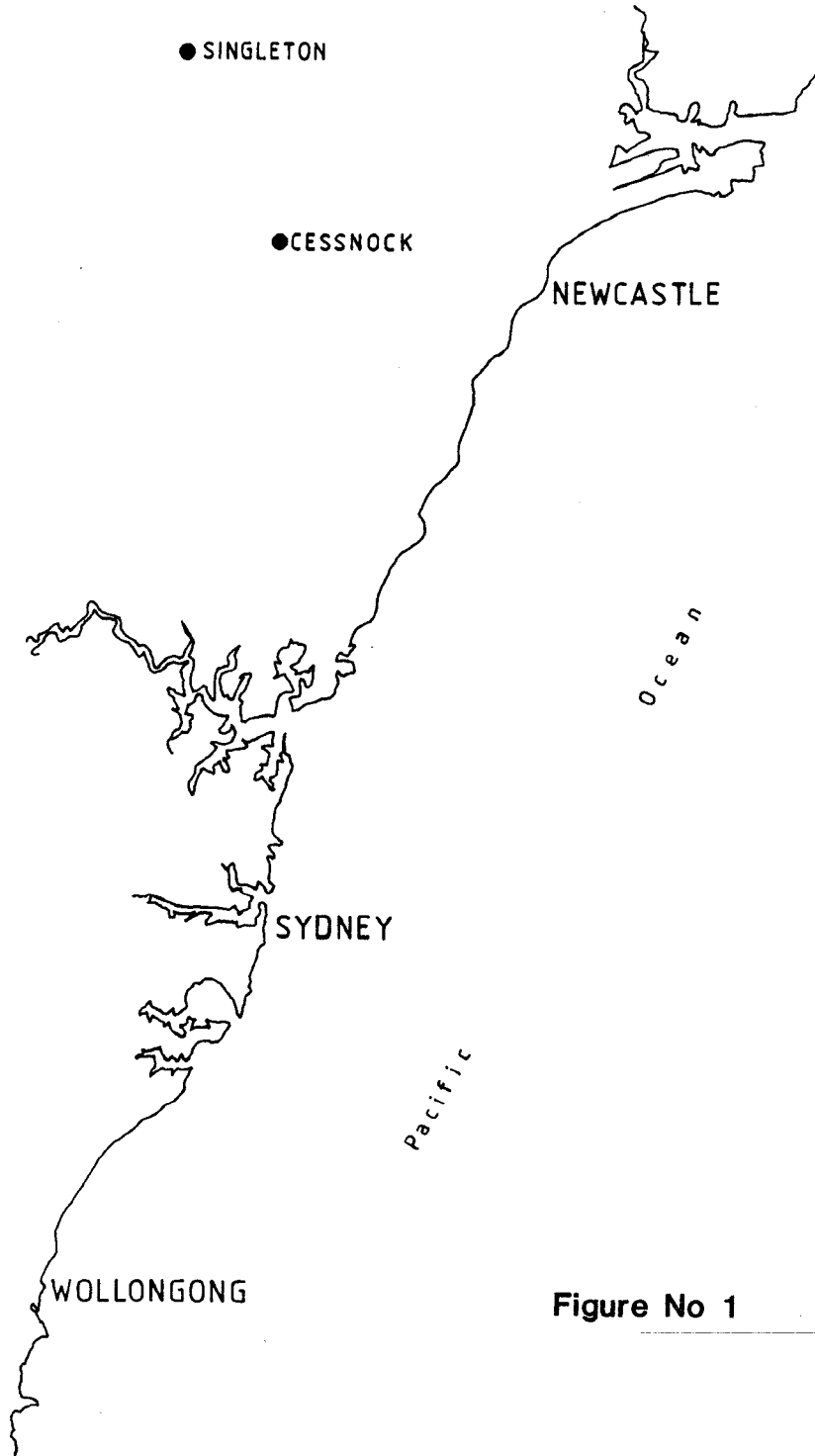
WOLLONGONG

Ocean

Pacific

N

Figure No 1



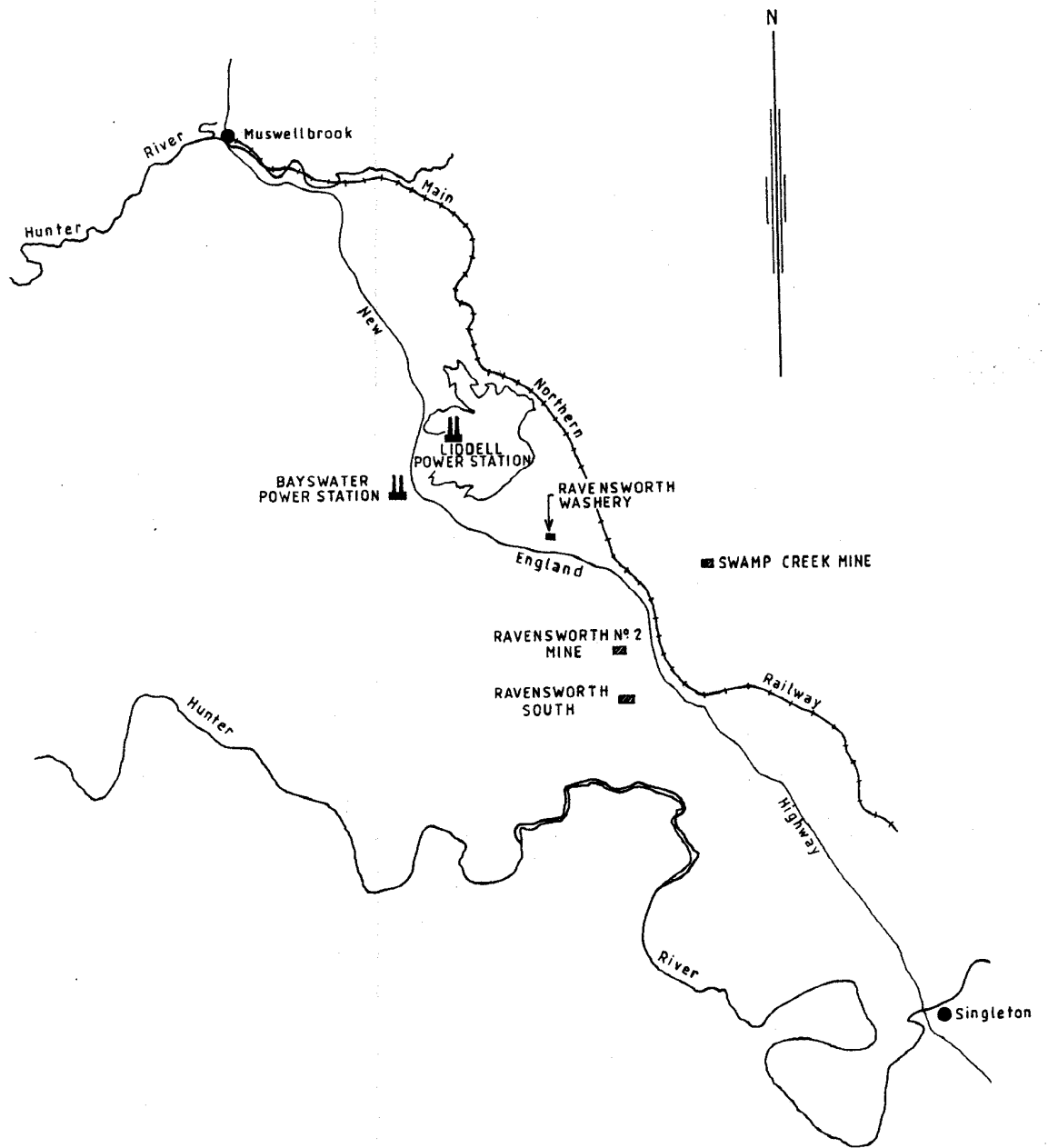
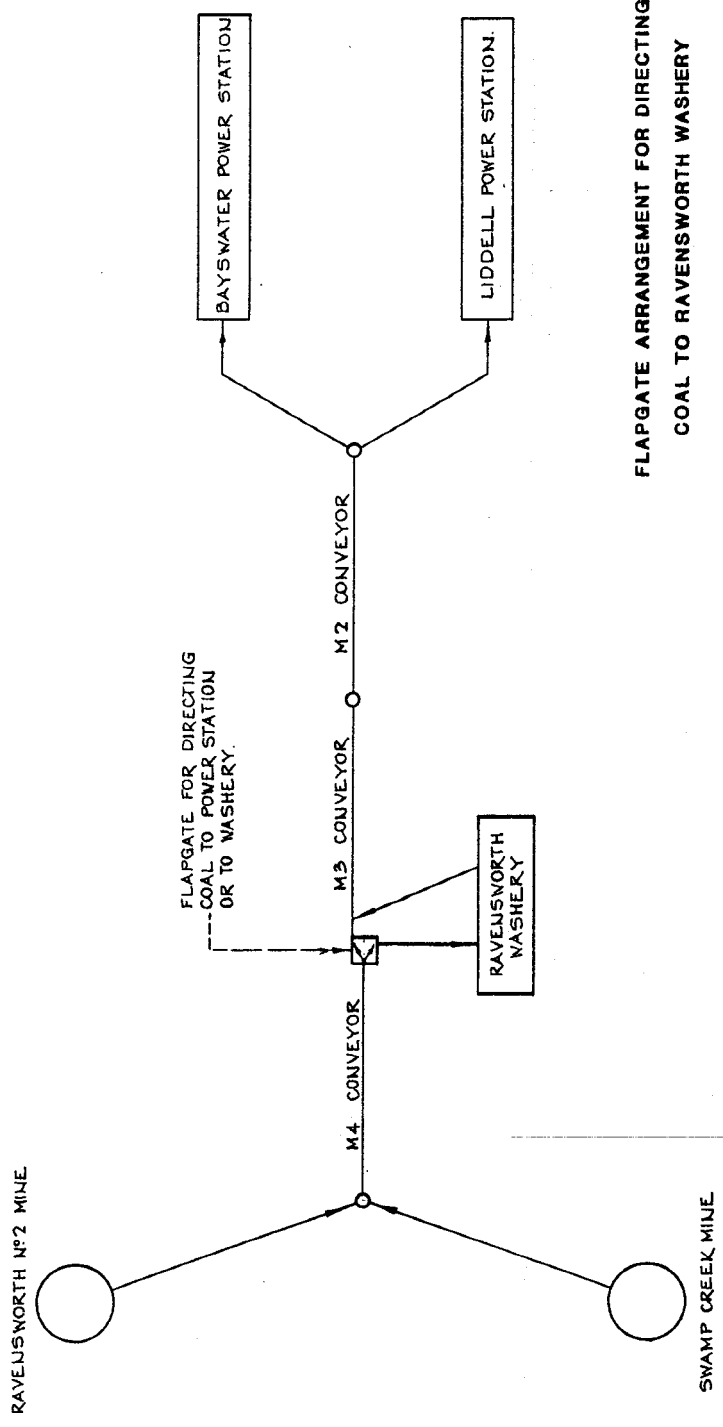
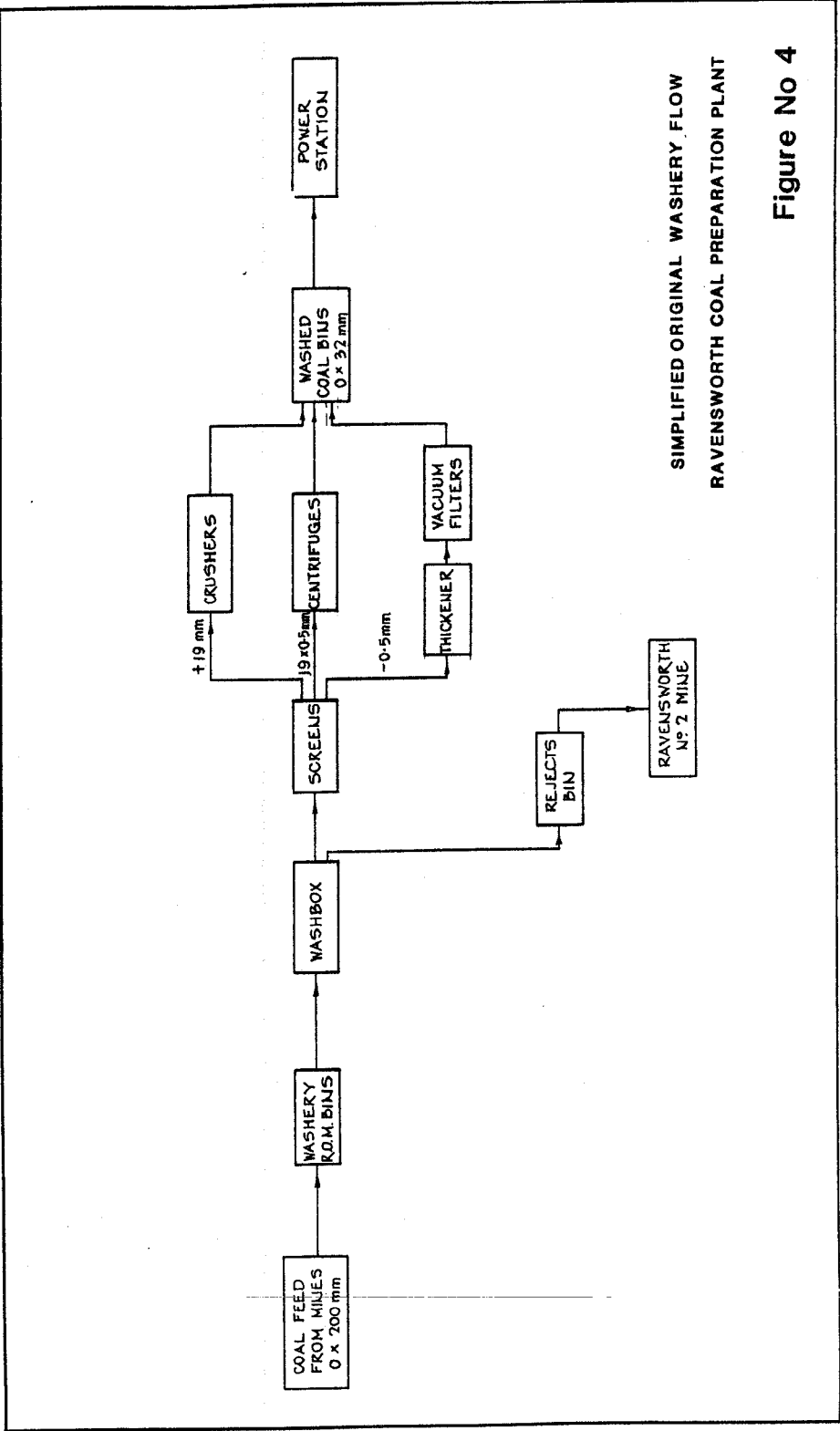


Figure No 2



FLAGGATE ARRANGEMENT FOR DIRECTING
COAL TO RAVENSNORTH WASHERY

Figure No 3



SIMPLIFIED ORIGINAL WASHERY FLOW
RAVENSWORTH COAL PREPARATION PLANT

Figure No 4

Ravensworth Coal Washery

VISITS TO INSTALLATIONS

In the course of its inquiry the Committee undertook the following inspections:

24 June 1987	Tarong Coal Washery and Meandu Mine owned and operated by Pacific Coal Pty. Ltd. (a CRA Ltd subsidiary) supplying Tarong Power Station.	Queensland
25 June 1987	Blackwater Mine and Washery owned and operated by BHP Utah supplying Gladstone Power Station,.	Queensland
15 July 1987	Ravensworth Washery Ravensworth No. 2 Mine owned and operated by Costain Australia Ltd. supplying Liddell and Bayswater Power Stations.	Hunter Valley
30 July 1987	Bayswater and Liddell Power Stations -	Hunter Valley

Public Accounts Committee
CHRONOLOGY OF EVENTS
 EVENT

DATE		EVENT
	1964	Liddell Power Station announced.
	1965	Liddell boiler tenders received.
June	1966	Ebasco report on coals for Liddell.
Dec	1967	Contracts let with Costain (Ravensworth No. 2) and Hebden (Swamp Creek) for coal supply to Liddell.
May	1971 to	Liddell 500 MW units commissioned. Coal supply
Dec	1973	ash levels outside boiler specification range.
July	1977	Elcom considers washing coal for Liddell because of boiler tube erosion problems. Kennedy Thompson Pty. Ltd. (later McNally Australia Pty. Ltd.) engaged for preliminary study.
Sept	1977	Test samples of coarse coal taken over four day period at Swamp Creek and Ravensworth by Cargo Superintendents (Asia) Pty. Ltd. under Kennedy Thompson Supervision.
Feb	1978	Coal Test report submitted by Cargo Superintendents.
March	1978	Prelim study on Washery submitted by Kennedy Thompson.
April	1979	Bayswater Power Station announced.
June	1979	Bayswater P.S. EIS issued.. Refers to source of coal for Bayswater Power Station from Ravensworth; Liddell State and Mount Arthur North.
Sept	1979	McNally requested to submit offer to undertake study of coal washing options.
Oct	1979	Chairman (Mr F Brady) approves McNally study.
Feb	1980	McNally report submitted based on 5 x 2 shift operation of 24 Washery options.
March	1980	McNally letter advising cost to extend study to consider 5 x 3 shift operation of seven of the 24 options, rather than 5 x 2.
April	1980	Chairman (Mr F Brady) approves study extension.

Ravensworth Coal Washery
CHRONOLOGY OF EVENTS

DATE	EVENT	
30 April	1980	Revised McNally report submitted.
May	1980	Manager/Fuel (Mr B Heal) proposes to engage Gutteridge Haskins & Davey Pty Ltd. to undertake feasibility study into fall loader and storage facility near Liddell State Mine. Approved by Vice Chairman (Mr J Riordan).
July	1980	GHD study report submitted. Total cost estimate of facilities for raw coal and coking coal from Liddell State mine \$17.2M.
8 July	1980	Report to Manager/Fuel (Mr B Heal) by Fuel Div staff concluding that a central Washery at Ravensworth would be best.
1 Oct	1980	Submission to the Commission by Manager/Fuel. (Mr B Heal) seeking approval in principle to construct a Washery at a cost of \$25M to be owned by Elcom Collieries and project managed by Fuel Div using consultants.
8 Oct	1980	Approved by the Commission.
16 Oct	1980	Submission to the Commission by Manager/Fuel (Mr B Heal) that Elcom Collieries construct and operate the rail loading facility at a nett cost increase on the washery cost of
22 Oct	1980	Approved by the Commission.
17 NOV	1980	Meeting between GHD/McNally and Commission to discuss feasibility study.
25 Nov	1980	Letter from GHD confirming feasibility study details.
1 Dec	1980	Development Application for Eraring opencut coal mine cut withdrawn. Shortfall for coal supply to central coast power stations forecast.

Public Accounts Committee

CHRONOLOGY OF EVENTS

I	DATE	EVENT
	March 1981	Washery feasibility study completed. Project estimate now \$48.75M made up of: \$20.209 Washery. \$ 0;730 Alterations to exist. plant \$10.757 Coal handling and storage \$ 2;710 Balbon loop \$ 0;850 Water supply \$ 3;450 Rejects disposal \$ 1.242 Buildings + engineering \$3;386 and contingency \$5.416
	March 1981	Liddell No. 3 Unit suffers generator failure.
	25 June 1981	Memo from Mine Der Eng (Mr P Tort) to Chairman (Mr F Brady) proposing that McNally submit a firm proposal to design and construct the Washery. Approved on 29 June 1981..
	27 June 1981	Liddell No. 3 generator fails again on return to service'.
	8 July 1981	Submission to Commission by Manager/Fuel (Mr B Heal) that approval be given to negotiate directly a "design and construct" contract with McNally so as to expedite the project..
	15 July 1981	Approved by Commission.
	July 1981	Commission employs coal preparation engineer.
	1 Sept 1981	Submission to Commission by Manager/Fuel (Mr K Smith) that approval be given to engage Girl) and others to undertake design and project management services on the Washery. Project cost estimate of \$50M mentioned,.
	9 Sept 1981	Approved by Commission.
	Nov 1981	Liddell Generators Nos 2 and 4 fail.
	4 Dec 1981	Electricity restrictions introduced.
	8 Dec 1981	Submission to Board of Elcom Collieries from Managing Director (Mr D Hanrahan) to accept offer of McNally Australia to design and construct washery at a cost of \$25.8M including contingency; Approved by the Board.

APPENDIX 5

Ravensworth Coal Washery

CHRONOLOGY OF EVENTS

DATE		EVENT
14 Dec	1983	Submission to Commission Board by (Mr K Smith) seeking increase in fees to McNally.
20 Dec	1983	Approved by Commission Board.
	1984	<i>Construction</i> proceeds,.
22 May	1984	First Industrial meeting between Miners Federation, ETU and Elcom Collieries regarding conditions of employment for washery staff. Wet Commissioning of Washery scheduled for early 1985.
25 July	1984	Meeting between Elcom Collieries and Combined Mining Unions to discuss manning scale for washery.
19 Nov	1984	Meeting with Elcom Collieries and CMU to discuss manning and various allowances. Management undertake to advise unions of their position within a week.
9.1 Nov	1984	Washery manning discussed at Board meeting of Elcom Collieries and Chairman (Mr K Smith) and Managing Director (Mr D Hanrahan) agree to confer on the basis of further discussions.
28 Nov	1984	Managing Director (Mr D Hanrahan) of Elcom Collieries drafts a report addressed to Chairman (Mr K Smith) on the manning issue.
15 Jan	1985	Quarterly Report on Coal Supplies. Initial operation of coal washery expected in February 1985. Employment condition negotiations continuing - if quickly resolved then design capacity operation anticipated by mid May 1985.
16 Jan	1985	Managing Director (Mr D Hanrahan) finalises report to the Board on the Washery manning issue.
21 Jan	1985	Managing Directors report considered at special Management meeting of Elcom Collieries. Detailed figures on bonus to be submitted to Chairman within four days,.
28 Feb	1985	Report to Management meeting of Elcom Collieries states <i>that</i> no further negotiations with unions have been scheduled.

APPENDIX5

Public Accounts Committee
 CHRONOLOGY OF EVENTS
 EVENT

DATE	EVENT
6 March 1985	Management meeting of Elcom Collieries authorises Managing Director (Mr D Hanrahan) to enter into bonus negotiations with the unions within the parameters advised..
March 1985	Washery substantially complete.
April 1985	Manager Fuel (Mr K Smith) appointed to position of AGM/Operations of the Commission.. Retains Chairmanship of Colliery Companies,
9 May 1985	Formal negotiations recommence between Elcom Collieries and CMU on bonus and other issues.,
6 June 1985	Further meeting between Elcom Collieries and CMU.
July 1985	New Manager/Fuel appointed (Mr J Henness).
31 July 1985	Advice to Minister from GM (Mr F Brady) in response to media article regarding bonus dispute. Advice was concern about flow-on of bonus to Liddell State and other Elcom underground mines.
6 August 1985	Meeting between Unions and Minister resolves deadlock.
13 August 1985	Meeting between Unions and Elcom Collieries to finalise remaining issues and set dates for labour on site.
14 August 1985	Colliery Company Industrial Report foreshadows problems with Unions re. bypassed coal and effect on bonus payments.
	Plant expected to be fully manned by 21 October, 1985.
5 Sept 1985	Advice from GM (Mr F Brady) to Minister concerning dispute over 2 F.E.D.F.A. union members because they were not nominated by Union.
16 Sept 1985	First Washery staff arrives.
1 Oct 1985	First coal washed.
Nov 1985	No coal delivered because of industrial disputes.

Ravensworth Coal Washery
CHRONOLOGY OF EVENTS
EVENT

DATE	EVENT
Dec 1985	Manager/Fuel's Quarterly report - Plant fully staffed for 4 shift operation. Commissioning delayed by equipment failure and fines circuit capacity problems.
Dec 1985 - Jan 1986	Commissioning trials reveal <i>throughput</i> problem in fines circuit..
6 Feb 1986	Committee set up by Manager/Fuel (Mr J Henness) to investigate problems under Mining Projects Engineer (MPE) (Dr M Hallam).
12 March 1986	Review report submitted by McNally covering initial testwork and proposal for study.
13 March 1986	Commission Board verbally advised of status of Washery investigations.
18 March 1986	Washery Committee Progress Report 2 to Manager/Fuel.
19 March 1986	Memo from MPE (Dr M Hallam) to Mgr/Fuel (Mr J Henness) outlining lack of coal for testing purposes due to industrial problems and requesting information from Generation Div on the economic benefits of beneficiation to various levels;
4 April 1986	Memo from Mgr/Fuel to AGM/Ops (Mr K Smith) and GM (Mr F Brady) outlining the fines problem and the lack of coal for <i>test</i> purposes.
10 April 1986	Status Report from MPE (Dr M Hallam) to Mgr/Fuel (Mr J Henness) summarises options to solve fines problem. Forwarded on to Generation Div.
21 April 1986	Submission to Elcom Collieries Board by MPE re proposed crusher bypass system so washery can by-pass coal until modifications to solve fines problem can be installed. Cost estimates quoted are \$1m for by-pass and \$5m for plant modifications.
30 April 1986	Elcom Collieries Board approves bypass but defers plant modifications for further consideration. Tenders for supply of crushers and coal chutes approved;

Public Accounts Committee
 CHRONOLOGY OF EVENTS
 EVENT

DATE		EVENT
30 April	1986	Question in Legislative Assembly C. Fisher MP - mentions washery built by Elcom 12 months ago not yet washing coal. Mentioned in reference to rising Electricity Charges.
I May	1986	Advice from GM (Mr F Brady) to Minister re <i>press statement</i> by C.M. Fisher (M.P. Upper Hunter).
1 May	1986	Cox M.P. replies in House - problems with industrial disputes, fines etc.
12 May	1986	Submission to Elcom Collieries Board on tenders for electrical equipment for crusher by-pass.
12 May	1986	Quarterly Report by Fuel Division indicates "serious" Washery <i>performance</i> problems with fines. Investigation of problems hampered by inadequate coal supply industrial dispute.
20 May	1986	Advice to Minister from Commission Board <i>that</i> report on Washery problems forthcoming.
20 May	1986	Telex from MD (Mr D Hanrahan) of Elcom Collieries to AGM/Ops (Mr K Smith) on location of crushers.
20 May	1986	Submission to Elcom Collieries Board on additional costs for crusher/bypass.
28 May	1986	Submission to Elcom Collieries Board by MPE (Dr M Hallam) proposing interim engagement of GHD to design dry screening station.
30 May	1986	Submission to Commission by Mgr/Fuel (Mr J Henness) outlining problem and status of remedial action.
16 June	1986	Submission to Elcom Collieries Board for final engagement of GHD to design dry screening station.
25 June	1986	Memo from MPE (Dr M Hallam) to Mgr/Fuel (Mr J Henness) advising that no information yet received from Gen/Div on cost benefits of various washery options.

Ravensworth Coal Washery
CHRONOLOGY OF EVENTS

I DATE		EVENT
4 July	1986	Progress Report No. 3 from MPE (Dr M Hallam) to Mgr/Fuel (Mr J Henness) advising <i>that</i> 15,000 t of coal was delivered in late May, early June and outlining <i>status</i> of test work and modification options.. Possible engagement of consultant mentioned.
23 July	1986	Progress Report No. 3 discussed at meeting of Elcom Collieries Board.
24-25 July	1986	Raw coal in bins washed; "60 Minutes" team present.
29 July	1986	Quarterly Report by Fuel Division April-June 1986 states: - <i>test</i> washing commenced on 24 July 1986 - satisfactory operation. - by-pass facility to be finished by Mid August.
12 August	1986	Washery <i>testrun</i> - thickeners overloaded.
20 August	1986	Submission to Board of Elcom Collieries by Acting MPE/(Mr Clark) proposing design changes to dry screening station and for GHD to prepare designs and specifications. Deferred for further review by Chairman (Mr K Smith).
21 August	1986	Crusher/ <i>bypas</i> completed and ready for commissioning. No coal available because flap gate not working.
4 Sept	1986	Memo from Washery Mgr (Mr P Schilling) to Elcom Collieries outlining status.
5 Sept	1986	Submission to Elcom Collieries Board by Acting MPE/(Mr Clark) outlining progress.
12 Sept	1986	Testing of crusher/ <i>bypass</i> commences with some problems.
16 Sept	1986	Report to Board of Elcom Collieries by M D (Mr D Hanrahan) on problems with crusher/ <i>bypass</i> .
18 Sept	1986	Coal available and plant goes on line either washing or by-passing.
26 Sept	1986	Minister seeks urgent briefing on status of plant.

Public Accounts Committee

CHRONOLOGY OF EVENTS

DATE		EVENT
29 Sept	1986	Briefing Notes provided under covering letter signed by Commission General Mgr (Mr F Brady). "Plant placed on line for regular commercial operation on Monday 22/9/86 and operated satisfactorily". "Dependant upon operations; further modifications may be required".
3 Oct	1986	Submission to Chairman of Board of Elcom Collieries by MPE (Dr M Hallam) recommending additional design work by G.H.D. on dry screening station (deferred from August Board meeting).
10 Oct	1986	Report to Board of Elcom Collieries by Superintendent (Mr Williams) outlines washery operations but states that capacity is well below design.
15 Oct	1986	Question in Legislative Assembly by Fisher M.P. - Washery still not functioning.
20 Oct	1986	Another set of Briefing papers sent to Minister - again signed by GM (MF Brady).
29 Oct	1986	Sedgman and Associates engaged to review proposals to overcome washery capacity problem.
12 Nov	1986	Message to Minister from General Manager (Mr F Brady) that control system fault shut down washery on 10/11/86.
17 Nov	1986	Fuel Division Quarterly Report July/Sept. Announces appointment of Sedgmans as Washery consultant.
18 Nov	1986	Questions by Minister forwarded to Commission seeking information on Washery operating levels.

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Ravensworth Coal Washery
 CHRONOLOGY OF EVENTS

DATE	EVENT
19 Nov 1986	Letter from Minister to Chairman (Dr D Brown). · expressing concern that he has not been kept fully informed. · seeking a comprehensive report and regular updates.
20 Nov 1986	General Manager (Mr F Brady) advises Minister on answers to questions raised on 18 November 1986~
28 Nov 1986	Summary Report by AGM/Ops (Mr K Smith) to Commission resulting from Minister's Letter of 19/11/86, copy forwarded to Minister.
1 Dec 1986	Further Questions forwarded to General Manager (Mr F Brady) from Ministers Office.
2 Dec 1986	Commission Board resolves <i>that</i> sub-committee of the Board will review washery further.
2 Dec 1986	Minister seeks clarification from Chairman (Dr D Brown) regarding conflicting washery capital expenditure figures quoted by Mr F Brady (\$78m) and indicated in 1985/86 Annual Report (\$65m).
2 Dec 1986	Reply by General Manager (Mr F Brady) to questions raised on 1/12/86.
8 Dec 1986	Advice from Chairman (Dr D Brown) to Minister clarifying expenditure figures. \$78m = current cost of "original" estimate \$65m = correct figure - i.e. revised budget.
23 Dec 1986	Interim sub-committee report referred to Minister.
23 Dec 1986	Sedgman's report Submitted and referred to Minister.
7 Jan 1987	As requested by Minister a number of Commission files forwarded to Minister's Office., (Mainly McNally reports),
9 Jan 1987	Confidential reply by General Manager (Mr F Brady) to Minister's questions raised regarding deletion of cyclones and estimate of fines.

Public Accounts Committee
CHRONOLOGY OF EVENTS

DATE	EVENT
.Feb 1987	Set of cyclones installed on one module by washery staff.
3 March 1987	Advice to Minister of the Commission's approval to install cyclones (\$70,000) and engage McNally for further modification program.
4 March 1987	Chairman (Dr D Brown) report to Minister that cyclone test runs show McNally's method working better than Sedgmans.
9 March 1987	GM (Mr F Brady) advises Minister of two proposals (McNally and Sedgman) for Washery modifications including cost analysis and performance data. Ultimately neither proposal accepted and washery staff carry out modifications.
May 1987	. Second set of cyclones now installed.

Ravensworth Coal Washery

RAVENSWORTH WASHERY
PRODUCTION STATISTICS

	MONTHLY TONNAGES MONTHLY DELIVERED FROM WASHED RAVENSWORTH NO. 2 OPERATION AND SWAMP CREEK (HOURS)*	MONTHLY WASHED HASHING	TONNAGES	%
October 1985	492455 3.8	6450	1,3	
November 1985	564845 1.4	2343	.4	
December 1985	429944 12,5	21235	4.9	
January 1986	124222 15.4	26231	21.1	
February 1986	449606 4.2	7188	1.6	
March 1986	524086	0	0	0
April 1986	183052	0	0	0
May 1986	372451	0	0	0
June 1986	297148	0	0	0
July 1986	656652 4.6	7752	1.2	
August 1986	401463	889	.2	.5
September 1986	469453 12.6	21515	4.6	
October 1986	183694 9.6	16262	8.8	
November 1986	385623 11.2	19030	4.9	
December 1986	223297 11.1	18789	8.4	
January 1987	43568	0	0	0
February 1987	422584 61.6	104716	24.8	
March 1987	602090 87.4	148512	24.7	
April 1987	222924 50,8	86406	38,8	
May 1987	310185 71.6	121747	39.2	
June 1987	435716 134.8	229077	52.6	
July 1987	415417 120,5	204870	49.3	
August 1987	438834 154.2	262084	59.7	

*Based on design performance of 1700 tonne per hour

RELATED FINDINGS OF THE INQUIRY INTO ELECTRICITY GENERATION
PLANNING IN N.S.W.

In May 1985 the NSW Government announced an Inquiry into Electricity Generation Planning in N.S.W. Mr Gavan McDonell, an independent consulting engineer and economist, was appointed to conduct the inquiry; Mr McDonell had previously conducted two other public inquiries, although not in the energy field; and had experience as a consultant in over twenty countries;

The Inquiry, which became known as the McDonell Inquiry, commenced in July 1985 and concluded at the end of June 1986. Public hearings were conducted at Sydney and Gosford in September and October 1985. Over eighty written submissions were received by the Inquiry representing a wide range of community; industrial and commercial interests. The Inquiry was conducted under the Energy Authority Act and secretariat support was given by that Authority. In addition; the Inquiry was assisted by a number of eminent and independent expert assessors.

The Inquiry published four Discussion Papers and produced three reports:

- Report One - Planning; Economy; Flexibility:
Development Options Through the Mid 1990's
- Report Two - Planning Process and the Public
- Report Three - Planning, Resources; Priorities

The reports include many findings and recommendations on a range of planning, resource; economic and procedural matters. In general; selected findings of the McDonell Inquiry can be summarised as follows:

that there was a lack of public information and participation in the planning process.

Ravensworth Coal Washery

that there was a need for formal open procedures to review short and medium term investment proposals.

that greater emphasis should be placed on research and development.

that there was evidence of a lack of an arms length relationship between ECNSW and its subsidiary colliery companies.

that coal supply to power stations should consider coal from all sources including private suppliers.

The Ravensworth Washery is now an integral part of the coal supply arrangements for Liddell and Bayswater Power Stations. The above findings are therefore relevant to the Inquiry into the Ravensworth Washery conducted by the Public Accounts Committee. The specific findings from the Inquiry Reports which relate to the above summary are shown below..

Specific Findings of the McDonnell Inquiry

McDonnell Report One

"Public access to information on electricity generation planning should be considerably enhanced". (Page 10).

"In uncertain times, there are important reasons for strengthening ECNSW's approach to tactical and strategic planning and in particular to planning the management of change; to the appraisal of feasible competing options; to securing public acceptance; to assessing and managing socio-economic impacts; and to the development of new supply sources" (Page 10)

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"The situation has been reached when a better formulated and integrated set of procedures is required in dealing with the issues of electricity generation planning and the associated energy questions, and which develop and make more effective those which already exist".
(Page 10)

McDonnell Report Two

"The Inquiry finds that electricity generation planning in NSW suffers from procedural problems as well as a general lack of consultation with the public, in an industry which is totally funded by consumers. The problems requiring resolution are:

- a) a general lack of information in the public domain, and of effective public consultation processes;
- b) difficulties in co-ordinating energy policy advice to the Minister on electricity generation and related resource use;
- c) absence of a statement of long-term objectives and planning strategy 'for electricity generation development which would help resolve competing claims on the State's resources of capital; labour; fuels, land and water; for example, the use of gas or coal for energy production, of water for power or irrigation, of land for urban development or power stations, of coal for export or domestic use;
- d) inadequate processes for reserving sites for future electricity generation development;
- e) absence of formal open procedures to review short to medium-term investment proposals, the consequential level and structure of the tariff, and the economic and financial performance of investments in electricity generation and related resource use, and

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Ravensworth Coal Washery

- f) limitations in the depth and scope of research, development and demonstration activities". (Pages 1 and

"From its examination of the planning and performance of electricity development in NSW, particularly in the areas of investment planning, site and project selection, tariff setting, technology choices, and research and information programmes, the Inquiry finds *that* there is a need for well articulated, continuing public participation processes with the following objectives:

- a) make ECNSW more directly accountable to electricity consumers;
- b) ensure appropriate political control over long-term electricity generation planning and of individual projects as part of a State-wide system;
- c) ensure *that* essential major programmes are not continually blocked by well-based public opposition;
- d) modify through exposure to wider social influences the monopolistic and inward-looking characteristics of large, technological production utilities".

(Page 4).

"The Inquiry finds that there is a strong case for the independent and publicly accountable review of operating performance and investment proposals which emerge from the strategic planning process, particularly as they affect the level and structure of the tariff. The objectives of such a process are to:

- a) give electricity consumers, including distribution authorities, greater confidence in the tariff setting process and in the economic performance of the electricity supply system;

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- b) promote greater stability, rationality and information regarding the tariff, thereby aiding consumer investment decisions;
- c) provide open scrutiny of the tariff setting process and of operational and investment performance, based on investment and resource use guidelines established by the Government.

The Inquiry further finds that such review should be conducted by an independent body with appropriate powers delegated under the Energy Authority Act.

The Inquiry also notes recent government decisions on the performance audit and public accountability of major public authorities and proposes that its findings and recommendations should be co-ordinated with those". (Page 17)

"The Inquiry finds that, particularly if investigations into operational matters are discounted, the overall level and scope of research, development and demonstration supported by ECNSW is inadequate. The procedures for determining R, D & D priorities are inward looking, there is an overwhelming emphasis on engineering priorities, little R, D & D is contracted out, and there is little emphasis on the demonstration of new technologies". (Page 19)

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"In relation to resource allocation and costing principles, the Inquiry finds that:

Most resource allocation difficulties in electricity generation planning identified by the Inquiry relate to a failure to evaluate resources according to the accepted criterion of economic or social opportunity cost. These difficulties apply to the pricing Of capital, tariff setting procedures, the allocation and pricing

Ravensworth Coal Washery

of coal, gas water, land and environment, and the valuation of the electrical energy not supplied at times of system supply constraint ie. shortages and restrictions.

The concept of economic cost is applicable even in areas where economic values are difficult to determine. For example, environmental concerns can be difficult to quantify *but* the economic cost of accommodating these concerns can be quantified. Such analyses can resolve some conflicts unambiguously, and refine the areas of disagreement in others.

The failure to apply rational resource allocation procedures to electricity generation in NSW can be ascribed to:

- a) the lack of appropriate policy guidelines relating to electricity generation within the energy administration in NSW;
- (b) the use of narrow financial measures of cost in ECNSW corporate objectives and accounting practices;
- c) the lack of a comprehensive strategic planning process for the development of electricity generation in NSW;
- d) inappropriate administrative and pricing arrangements for the allocation of coal and water". (Pages 3 and 4)

"In relation to capital, the Inquiry finds that:

There are no rigorous financial constraints or performance indicators (as distinct from evaluation procedures for new investments) to discourage over-investment in electricity supply.

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While there are difficulties associated with requiring public authorities to achieve a target real rate of return on assets, the rate of return criterion is a useful and practicable measure of performance, and is widely used elsewhere., including Victoria". (Page 5)

"Regarding powerstation planning and coal supplies; the Inquiry finds that:

1. ECNSW has adequate coal resources (for double life power stations) at existing stations, where appropriate, and for proposed power plant up to Mt Piper Stage 1 and one unit (possibly two) at Tallawarra. The Inquiry also notes that there are extensive privately held coal resources that could be available;
2. While questions of supply reliability must always be taken into account in planning and procurement for electricity generation, the Inquiry takes the view *that* since coal costs make up a major proportion of the costs of electricity production, ECNSW should always consider the least cost available coal supplies in power station planning. To achieve this, ECNSW procurement procedures should formally provide for consideration of coal supplies from private coal mines as well as from its own deposits. Arrangements need to be established to allow private coal sources to be considered systematically in power station planning.
3. ECNSW's captive coal supply mines are now only part of a large thermal coal mining industry in NSW. Coal supplies for ECNSW power stations should be considered within the context of the total coal mining industry in the State".
(Page 13)

"Regarding coal prices and the relationship between ECNSW and its colliery companies the Inquiry finds that:

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ECNSW does not allocate all costs associated with coal Supply from its own mines to those mines; does not value coal according to established economic and financial principles; and its comparisons of coal prices for coal from its own mines and from private mines are not made on a consistent; equivalent basis. An efficient system is needed for costing coal from ECNSW mines to ensure that equitable coal price comparisons can be made and sources selected which will minimise the cost of electricity supply to the community. It may be necessary to develop an arms length relationship between ECNSW and its coal suppliers to achieve this.

ECNSW ownership of captive mines is not necessary to ensure security of coal supply;

Many; and probably most; other generating authorities obtain secure supplies from purchased coal; notable examples are the Japanese utilities; most US utilities; the South African electricity utility which is one of Australia's major competitors in the coal export trade; and the Queensland Electricity Commission. In other situations in Australia where the electricity utility operates captive mines; notably Victoria and South Australia, coal export industries do not exist". (Pages 14 and 15)

Public Accounts Committee

GLOSSARY OF TERMS

- | | | |
|-----------------------|---|--|
| Ash | - | Non combustible mineral matter present with and within coal and which is left as a residue after combustion. |
| Ash design range | - | The range of coal ash contents which a power station is designed to accept. |
| Ash design value | - | The coal ash content specified in the power station boiler design. |
| Availability | - | The ratio (expressed as a percentage) of equivalent hours during which electricity generating plant is available for full load service, over the total hours in the period (usually one year). |
| Baum Jig | - | Pneumatically pulsed Jig which processes a coal/water mixture in coal washing plants to lift and remove a lighter and low ash fraction (coal) from a denser one containing rocks and high ash material (dirt) which is stratified downwards and separately withdrawn.. |
| Centrifuge | - | Equipment rotating at very high speed which separates coal from water by centrifugal force. |
| Classifying Cyclone - | | A conical device which separates suspended particles ,in water into different size fractions by centrifugal force. |

Ravensworth Coal Washery

- Coarse Rejects - The reject material (mainly stones) separated from coal in Washery jigs.
- Crusher - A machine featuring rotating drums which crush coarse coal down to a maximum top size (typically 19mm or 32mm) suitable for power station use.
- Fine Rejects - The reject material (usually ultrafine clays) separated from fine coal in classifying cyclones. (also known as tailings);
- Flocculants - Reagent chemicals which promote coagulation of fine suspended particles; to assist in their separation from water in thickeners and/or flitters;
- Handleability - A measured characteristic which assesses the relative ease with which coal will flow from bins and through chutes.
- Tailings - Another name for fine rejects.
- Thickener** - A large circular vessel which separates solids from fluid by gravity; The solids are continuously worked towards a central hole in the bottom by means of revolving rakes.
- Vacuum Filter - Equipment featuring a large fabric covered cylinder used to separate fine coal from water and which uses vacuum to extract the water leaving the fine coal on the Surface of the fabric.
- Washbox - Another name for a jig washer;

APPENDIX 9

Public Accounts Committee
TRANSCRIPTS OF EVIDENCE

<u>Date of Meeting</u>	<u>Name of Witnesses</u>	<u>Page</u>
5 August; 1987	ELCOM COLLIERIES PTY LIMITED	1
	* Mr Daniel Hanrahan Managing Director	
	* Mr Anthony Fletcher Solicitor	
6 August 1987	ELECTRICITY COMMISSION OF N.S.W.	79
	* Mr Francis Brady General Manager	
	* Mr Ken Smith Assistant General Manager	
	* Mr James Henness Manager of Fuel	
	* Dr Michael Hallam Mining Projects Engineer	
	NEWCOM COLLIERIES PTY LIMITED	
	* Mr Johannes Post Coal Preparation Engineer	
18 August 1987	ELECTRICITY COMMISSION OF N.S.W.	180
	* Mr Francis Brady General Manager	
	* Mr Ken Smith Assistant General Manager	
	*Mr James Henness Manager of Fuel	
	* Dr Michael Hallam Mining Projects Engineer	
	NEWCOM COLLIERIES PTY LIMITED	
	* Mr Johannes Post Coal Preparation Engineer	
	ELCOM COLLIERIES PTY LIMITED	
	* Mr Daniel Hanrahan Managing Director	