

INQUIRY INTO SYDENHAM-BANKSTOWN LINE CONVERSION

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Submission to NSW Legislative Council Portfolio Committee No. 6 – Transport and Customer Service inquiry: aspects of the planned conversion of the Sydenham-Bankstown Line from heavy rail to metro.

Thank you for the opportunity to make a submission to this inquiry.

The inquiry might note a book on the history of subways – Metros – concludes:

*‘The way to Avernus is easy;
Night and day lie open the gates of death’s dark kingdom;
But to retrace your steps, to find your way back to daylight,
That is the task, the hard thing.’ⁱ*

I make four recommendations. In summary, they are:

- i. Determine the underlying reasons for Government decisions on Sydney Metro.**
- ii. An expert inquiry advise Parliament of implications of Sydney Metro.**
- iii. No further action on Sydney passenger rail projects until Parliament has considered the results of the expert inquiry (of recommendation ii).**
- iv. Note that conversion of the Bankstown line to Metro is the worst possible option.**

This submission is in three parts:

- 1. Background.
- 2. Response to terms of reference.
- 3. Conclusion and recommendations.

I would be happy to expand on these in writing and in person if the Committee wishes. As ever, I also would be happy to be corrected on matters of fact.

J Austen
23 September 2019

1. Background

1.1 Interest

My background includes around twenty years advising NSW and the Commonwealth on transport, including Sydney urban rail, plans and projects up to retirement in mid-2014. Since then I have not had - and do not seek - any pecuniary or employment interest in these matters.

My primary interest in this inquiry is as a Western Sydney resident. Western Sydney communities will be permanently adversely affected by NSW rail related policies: directly via reduced access to opportunities; indirectly via reduced trust in government.

I have a further personal interest in seeking to ensure the reputation of myself and other former advisers is not damaged by association with those policies.

I do not have affiliations with any political organisation, lobby or advocacy group, or with any party offering opinions on matters related to this inquiry or its terms of reference.

1.2 Information

Since 2015 I have operated a website 'blog' which draws only on information readily available in the public domain – official publications, internet, major media. Posts are referenced to allow readers to identify sources, provide corrections and form their own conclusions.ⁱⁱ

Since May 2016, some posts on that site have looked at issues relevant to this inquiry. Also, I have authored relevant posts on the Pearls and Irritations site of John Menadue.ⁱⁱⁱ

My original intention for these sites was to focus attention on Commonwealth activities in land transport. That matter became topical following the High Court's Williams decisions.^{iv}

However, the picture emerging about two specific matters of interest to the Commonwealth – roads policy and Sydney Metro – led to much of my limited time being spent on them.^v

Readership of my site fluctuates. There appear to be significant increases around the time of posts on Sydney Metro. Presently there are around 1,000 page reads per week.

1.3 Inquiry

Sydney Metro has consequences at least as great as the opening of the harbour bridge. However, unlike the bridge, Metro consequences are not largely positive.

By late 2016, I formed the view the public explanation of Metro was so strange as to warrant a formal inquiry into reasons for, and effects of, relevant NSW decisions. The purpose of inquiring into reasons for NSW decisions is to provide the public with confidence. The purpose of establishing effects of decisions is to understand options.^{vi}

Since that time, I have repeatedly called for an inquiry possibly with judicial type powers. This is because nothing I have seen in the public domain has started to address the issues raised. Indeed, information becoming available to the public heightened concerns.^{vii}

I therefore welcome the Committee's inquiry.

While the inquiry is to focus on the Sydenham-Bankstown segment, it will not be possible to address the terms of reference without some understanding of issues arising from other Metro segments. At the least, term of reference (I) allows this.

In undertaking its work, the Committee might wish to consider my comments on the Legislative Council's inquiry report on the effects of WestConnex. These were to the effect that (future) inquiries into infrastructure project matters should be deeper and tougher than the WestConnex report.^{viii}

Committees should vigorously challenge:

- any withholding of information on 'confidentiality' grounds; and
- the provision of unclear, inconsistent or conflicting information by Government representatives. This is important to improve infrastructure outcomes and critical to assert Parliament's rightful authority.

2. Summary response to terms of reference

Details of the following responses to the terms of reference are in the Appendix.

(a) the adequacy of the business case and viability of Metro

Information readily available in the public domain does not suggest there was or is any real business case for Metro or any part thereof.

The essential element of any proper business case for Metro is examination of the necessity - and opportunity costs - of its core aspects of tunnel diameter and central city route.

There is a public document titled '*Sydney Metro City & Southwest Business Case Summary*' published in October 2016. It does not refer to / explain the core aspects of Metro.

Infrastructure Australia claimed to have considered a Metro business case. However, the absence of a final financial cost estimate and failure to acknowledge core aspects of Metro suggest it did not consider any business case.

There is no public evidence indicating Metro might be viable. There is public information suggesting it is not.

(b) the consideration of alternatives for improving capacity and reducing congestion

There is no readily available public evidence of real consideration of alternatives to Metro, its core aspects, routes, or conversion of the Sydenham-Bankstown segment. There is no public evidence of credible reasons for decisions on the core aspects of Metro or its commencement with North West rail.

There is public evidence of expert and independent advice, including commissioned by the NSW Government and Infrastructure NSW, which does not support that Government's:

- claims about Metro;
- decisions regarding its routes and conversion of the Sydenham-Bankstown segment.

There is public evidence of fundamental conflicts between:

- Government claims and plans for Metro;
- claims and plans for Metro made by different Government agencies.

(c) the factors taken into account when comparing the alternatives and the robustness of the evidence used in decision-making

There is little public evidence of factors on which, in my opinion, a competent transport or planning decision maker could make the Metro decisions made by the NSW Government.

There is little public evidence that significant, credible advice regarding key Metro issues was considered by the Government or some of its predecessors.

(d) whether metro is a suitable means of transport over long distances

Sydney Metro is not a functional rapid transit system. It seeks the functions of a commuter railway yet is unsuitable for commuting and less than optimal for rapid transit.

The design of Metro jeopardises and may preclude optimal rapid transit and further commuter rail in much of the metropolitan area. It works against rail travel between Sydney and elsewhere.

It copies the worst infrastructure characteristics of Paris' Metro decisions of the late 1800s which France reportedly has been trying to mitigate for the past 60 years.

(e) the consultation process undertaken with, and the adequacy of information given to, community, experts and other stakeholders

Information presented to the public (supposedly) around the time of the initial decision re Metro implied intentions opposite to what the Government did. Subsequent consultations demonstrate an increasing disregard for the community. It would be better for the Government to not pretend to consult.

(f) the impact on the environment and heritage conservation

No comment.

(g) any lobbying, political donations or other influence of the public or private sector in relation to making that decision

In my view, the history of Metro in Sydney is peculiar. It includes: disregard of published expert advice; implausible explanations; claims a consultant was engaged to review other expert's work and was noted by Infrastructure NSW as the source of some key information for Transport for NSW.

(h) the tender process for appointing private operators

(i) the contractual arrangements entered into in respect of the project

(j) the adequacy of temporary transport arrangements during the conversion process, including for people with a disability

No comment.

(k) the impact on the stations west of Bankstown

The readily available public information suggests nine stations will be closed: Yagoona, Birrong, Regents Park, Berala, Sefton, Chester Hill, Leightonfield, Villawood, Carramar.

Conversion of the Bankstown line will result in a disproportionate reduction in the capacity of the network used by Sydney Trains.

(l) any related matter

Serious matters

The inquiry should not underestimate the gravity of the situation Sydney and NSW face.

The Metro decisions permanently divide, and reinforce geographic inequities, in Sydney. They will reduce access of people in the metropolitan area and beyond to central Sydney much as the similar Paris Metro decisions intended in the late 19th century in that city.

Speculation on reasons

Given the absence of plausible explanation for the core Metro aspects - small tunnel diameters, city route – and commencement with North West rail, there has been considerable guessing as to underlying reasons. Much speculation appears ill-founded.

Completion of a North West rail link was a key plank of promises made by the Government elected in March 2011. However, this does not explain the Government's change of mind from it being a Sydney Trains link to becoming an independent Metro.

None of industrial relations, privatisation or property development reasons is capable of contributing to an explanation of the core aspects of Sydney Metro.

The CBD route now under construction appears similar to a 2008 proposal - under a Labor Government - that alarmed the independent inquiry chaired by Sydney's most eminent railway authority, Mr Ron Christie AM. This was not simply because it entailed a 'break of gauge' – the '*last thing we need*' – but because that proposal:

'would have jeopardised, perhaps fatally, future heavy rail capacity expansion and congestion-relief options within the CBD and across the harbour, thereby effectively dooming almost all of the CityRail network never to be able to cater for the inevitable and rapid growth in patronage demand in the future'.

Plausible reasons to convert the Bankstown line have not been made public. In transport terms it is the worst option. It serves no beneficial transport purpose yet inflicts the most damage on Sydney Trains and the metropolitan rail network.

Ministers claimed decisions had been guided by experts. It is unclear who those experts were or what they advised. A range of real, identified experts have publicly criticised the decisions.

Options

If Metro type policies are to continue, by far the best option is to terminate Metro near the CBD. Among the reasons is that Metro reliability – and therefore effective capacity - which is already challenged, will reduce further if its line is extended.

If a Metro line is to be extended beyond the CBD, it should be to areas of highest demand to which a quasi-rapid transit system is most suited. The only two reasonable options are:

- towards Strathfield, as recommended by Infrastructure NSW and its experts in 2012;
- conversion of the Airport line.

Worse would be Metro conversion of a pair of tracks on the Illawarra line. This should be ruled out for freight reasons unless and until there is amplification and extension of the Southern Sydney Freight Line and completion and operation of the Maldon-Dombarton line.

The worst option is to extend the Metro line to Bankstown. That would misallocate irreplaceable cross-harbour capacity to the least transit important but most networked line.

3. Conclusion and recommendations

Conclusion

The gravity of issues facing this inquiry should not be underestimated.

Infrastructure has delayed yet pervasive and long-term effects. Policies and projects change people's possibilities in life - depending on where they reside. Australian democracy depends on the effects and reasons for relevant government decisions being widely known.

The ramifications of bad projects – like those of misinformation about projects - are not limited to 'infrastructure'. They corrode trust in government.

Parliament is the essential link in the chain between a Government and the people it is supposed to serve. It is the institution on which democratic accountability rests.

The present inquiry should vigorously pursue information about reasons for and consequences of Government decisions. It must not be put-off by the types of excuses which deterred the inquiry into WestConnex from getting the information it needed.

My comments are based solely on information in the public domain.

It is most unfortunate this information is confused, contradictory and lacks regard for readers. None of the important questions has been answered. While the present NSW Government is the principal contributor, previous Governments and so-called 'independent' agencies have much to answer.

In the circumstances, the only sensible approach is to pause current projects and plans and to engage properly independent experts to advise on the situation and options. That process should be conducted in the public domain. However, if it is (wrongly) assumed current Metro projects must continue, the public information shows conversion of the Bankstown line to be the worst of all available options.

Recommendations

- i. This present inquiry determines, on balance of probabilities, the underlying reasons for NSW decisions on Sydney Metro and especially its core characteristics of small diameter tunnels and central Sydney route.**
- ii. An expert public inquiry, independent of the NSW Government, be established to report to Parliament on**
 - a. implications of Sydney Metro and related NSW policies and proposals, including for Western Sydney rail; and**
 - b. options for public transport policies and projects affecting Sydney.**
- iii. There be no Government consideration of, or action on, any Sydney passenger rail project including extension of Sydney Metro, prior to Parliament deliberating the report of the expert public inquiry (arising from recommendation ii).**
- iv. If, notwithstanding the above, work on Metro is to continue, this inquiry should find that conversion of the Bankstown line to Metro is the worst possible option.**

ⁱ Benson Bobrick, *Labyrinths of Iron, A History of the World's Subways*, Newsweek Books 1982 p.325.

ⁱⁱ The jadebeagle.com

ⁱⁱⁱ <https://www.thejadebeagle.com/sydney-metro.html>
<https://johnmenadue.com/?s=austen>

^{iv} <https://johnmenadue.com/john-austen-the-high-court-the-williams-case-and-transport/>

^v E.g. <https://www.thejadebeagle.com/roads.html>
<https://www.thejadebeagle.com/glory-without-power.html>

^{vi} <https://www.thejadebeagle.com/a-reply---october-2018.html>

^{vii} <https://www.thejadebeagle.com/western-sydney-rail-response.html>

^{viii} <https://www.thejadebeagle.com/urbans-admonition.html>

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(a) the adequacy of the business case and viability of Metro

a.1 Business cases

The term 'business case' is now often used by a Government to give the public the impression an infrastructure proposal has some objective merit.

It is borrowed from the private sector. There it refers to documentation etc. assessing proposals for a firm to adopt a course of action, such as to invest in certain assets. The case is intended to inform decision makers whether a proposed action is aligned with the business' core directions and is likely to contribute to its future value.

The former aspect – alignment – concerns the intention of the proposal.

The latter aspect – contribution to value - involves a financial evaluation of revenues enjoyed and costs borne by the firm as a result of adopting the course of action. Revenues come at the expense of other parties. Costs, denoted in monetary terms, represent opportunity costs. Opportunity costs relate to the 'next best' alternative foregone by the firm, often being to invest in securities.

It is possible for a business case to indicate the firm should reject a proposal because it is beyond the scope of, or unlikely to add value to, the firm.

A business case is not relevant to the firm's accountability. Rather accountability is informed by accounts made available to the firm's owners by e.g. directors. Accounts assist the process of owners assessing directors, directors assessing management etc. against financial performance.

Government fundamentally differs from firms. Government objectives relate to the welfare of citizens rather than its own financial profits. In a democracy, a 'business case' of a government action is directly relevant to accountability.

The criteria to decide on government proposals should differ from those used by private firms. In particular, criteria are needed for factors other than finances. Decisions should consider opportunities foregone by society. Important aspects include: assessment of options; estimation of benefits and costs not borne by the government. Externalities, such as environmental effects, are the best known of such benefits and costs. Monopoly power is another.

For transport infrastructure, a common assumption is additional social effects are dominated by externalities: environmental impacts; accident costs; travel time savings. However, substantial social costs can also rise from monopoly power. In transport this power arises from discontinuity in systems. It is readily observable by economic rents at route junctions etc.

Hence, for government, the term 'business case' for transport infrastructure refers to a publicly documented exposition of intentions, effects, benefits and financial and social costs were a proposal adopted.

The accuracy, thoroughness and impartiality of such a business case can be relevant for decision making. Most importantly, these attributes are fundamental for democratic accountability.

a.2 Sydney Metro and opportunity costs

In most government rail transport business cases, costs – opportunities foregone by society - are fairly represented by financial outlays and asset stranding risks. This is because most such projects:

- exhibit positive externalities by diminishing road costs;
- are interoperable – usable by a range of vehicles and systems.

However, this is not the case for Sydney Metro which:

- is likely to diminish road costs, but not by as much as ‘the next best alternative’;
- is not interoperable.

The latter is a critical matter. Tunnels and other characteristics of Sydney Metro apparently do not permit interoperability – Sydney Trains fleet - on its infrastructure.

Some of the Sydney Trains network can be readily converted to Metro. However, it would be difficult to convert new Metro route to accommodate trains with the dimensions of Sydney Trains. For the reason of tunnel diameter alone – a break of gauge - the cost of each Metro route will be greater than its financial cost.

In 2010, the Independent Inquiry into Transport Planning in Sydney, chaired by Mr Ron Christie AM, (Christie Inquiry) was deeply concerned about the route proposed for the then Labor Government’s CBD Metro. Its public report not only trenchantly criticised the proposed break of gauge by metro, especially in inner Sydney, it included an extraordinary claim: the CBD metro route, which appears similar to the present route of Sydney Metro:

‘would have jeopardised, perhaps fatally, future heavy rail capacity expansion and congestion-relief options within the CBD and across the harbour, thereby effectively dooming almost all of the CityRail network never to be able to cater for the inevitable and rapid growth in patronage demand in the future.’ⁱ

A 2019 article in the Conversation blog appeared to confirm the present route has such an effect:

‘In 2012, the city’s first transport priority was another north-south harbour crossing. However, it was decided instead to build the Sydney Metro under the harbour and then take both of the CBD’s north-south heavy-rail corridors.’ⁱⁱ

If correct, this route matter compounds the cost of Metro. The financial cost of construction may be dwarfed by the (more or less) permanent foregoing of opportunities:

- to construct or operate other railways including Sydney Trains type systems but possibly also including high speed rail etc. into central Sydney areas;
- to expand or amplify other railways in any location where networking to central Sydney may be of value, for example servicing a new airport at Badgerys Creek.

Given this, the central questions in any government Sydney Metro business case are:

- whether the tunnels and route – the core aspects of Metro - have such effects and if so the quantification of their costs;
- whether other options – such as pursued in Paris and Tokyo - would avoid such costsⁱⁱⁱ;
- if those costs are accepted, what are the true intentions behind the scheme.

a.3 Presented business case

In 2011-12, Infrastructure NSW commissioned experts who referred to a *Sydney Strategic Economic Appraisal Long Term Rail Strategy, August 2011* by PWC. The experts reported results of benefit:cost ratios of 1.0 or less for seven long-term Sydney rail system options; including four options for ‘three tiers’ of rail service.

The tiers were: ‘single-deck for short haul, double-deck for longer haul suburban/ inter-urban trips’.

An outline of the options presented to the experts showed substantial pre-existing confusion:

- only two types of fleet for ‘three tiers’;
- some had the North West Rail line – which is longer haul – served by single-deck trains;
- metro trains capable of using existing track and probably mingling with double-deck trains.

It appears some reported benefit:cost ratios were essentially the same for single-deck and double-deck trains with the latter having an additional harbour crossing.

Apart from questioning whether benefits had been overstated, the experts commented:

‘In our view, when the scale of potential investment is as large as that described in these studies, decisions must be based first on a strategic appraisal that includes other transport interventions at the city, regional and even national level that may be vying for funding’.^{iv}

Later parts of their report indicated: a preference for first increasing the utilisation of double-deck trains; ignorance of the tunnel dimension and central city route issues.

The experts implied an expectation of single-deck and double-deck trains sharing tracks. Because of opportunity costs, this implies a view that new cross harbour infrastructure should be able to take double-decks – and this would be significantly economically superior to what is under construction.

A web search does not identify any result for a business case for the Sydney Metro Sydenham-Bankstown extension. A search does identify a single public document - ‘*Sydney Metro City & Southwest Business Case Summary*’ - published in October 2016. This claims to address a project which includes an extension of Metro Sydenham-Bankstown.^v

The document does not refer to any reasonable options to - or for - such an extension. It does not refer to the core aspects of Metro. It provides no real reasons for decisions on those core aspects or extension to Bankstown – perhaps because decisions were made in advance of the business case.^{vi}

The critical parts of the document are irrational. It contradicts – without comment – the stated assessment and intentions outlined in Appendix 1.b.

It is not a summary of a business case appropriate for government consideration. The document cannot be used in serious analysis. The point of publishing such a document is unclear. Possible purposes could be public relations and creation of pressure on the Commonwealth. These are antithetical to the critical democratic accountability function of a government transport infrastructure business case.

Its defects are so serious as to undermine public confidence in Government decision making. It would have been better for it not to be published.

More detailed consideration of the document, posted in January 2017, is at:

<https://www.thejadebeagle.com/toucheth-not-the-monorail-metro-summary-business-case.html> .

That consideration was prior to the Government referring to ‘Paris etc’ technology to be used for Sydney Trains. That reference destroyed the capacity ‘rationale’ for Sydney Metro by saying Sydney Trains could run every 90 seconds, more frequently than Metro (every 120 seconds).^{vii}

The implication is the January 2017 consideration was unduly kind to the document.

a.4 Infrastructure Australia's assessment

Infrastructure Australia purported to assess a 'Sydney Metro City & Southwest Business Case'. Presumably this was a longer version of the summary document. It published a 6-page assessment in mid-2017. A review is at <https://www.thejadebeagle.com/earth-to-canberra-2.html>

Infrastructure Australia assessments of State project business cases, such as Sydney Metro are significant for several reasons:

- the organisation is supposedly independent of proponents, and a positive appraisal is represented as an independent endorsement of a State Government policy;
- at one time, results of an assessment may have triggered some tax concessions;
- results of an assessment may be considered relevant to the provision of Commonwealth grants to the State for a project.

Each is a serious matter. Yet Infrastructure Australia's assessments have deficiencies. Their sub-standard practices include: almost total reliance on proponents for information; conduct behind closed doors which precludes challenge to proponent claims; failure to publish drafts for comment.

However, even ignoring those shortcomings, the assessment of Sydney Metro is concerning. Compared with all other positive appraisals, the assessment was unusual. It did not report final cost estimates and in effect assessed only half a project. It appeared to take a different – more favourable – approach than that for Queensland's Cross River Rail assessment which was conducted at the same time. It did not refer to previous reservations expressed by Infrastructure Australia.

Further, its assessment failed to acknowledge the core aspects of Metro. There is no evidence Infrastructure Australia:

- comprehended these basic elements of Metro;
- could have known of its costs;
- considered any proper government business case.

a.5 Viability of Metro

As there is no published government business case, it is not possible for the public to be informed on the viability of Metro. Infrastructure Australia's opinions on that matter should be discarded for the reasons given above.

However, information available in the public domain suggests Metro was and is not economically viable.

A review by an international expert of a 2008 North West Metro proposal – a project '*uncannily*' similar to the one constructed – was reportedly damning of the proposal's potential to have a satisfactory business case. This is noted in Appendix 1.g.

Section a.3 (above) has some high-level assessment undertaken for the Government showed marginal economic viability of a metro scheme which included an interoperable harbour crossing – removing this interoperability would negate any such viability.

Infrastructure Australia's 2017 assessment reported NSW Government claims of a benefit:cost ratio of 1.3: 1.0. This ratio is likely inflated by 'rescue' of the North West segment of Metro. That is, it excludes all costs of the North West segment, but includes some of the benefits generated by that segment. This means the benefit:cost ratio is substantially overstated.

Further, I surmise the cost figures underlying the benefit:cost ratio relates to construction and operation. They do not reflect all opportunity costs. The sources of the two largest opportunity costs – small diameter tunnels and central Sydney route exclusion of other railways – are not mentioned in relevant documents or by Infrastructure Australia.

Were opportunity costs considered it is almost certain Metro would be deemed economically non-viable.

(b) the consideration of alternatives for improving capacity and reducing congestion

Information available to the public regarding consideration of alternatives for improving Sydney urban passenger rail capacity, post 2010 is at <https://www.thejadebeagle.com/dogs-breakfast-for-all.html>. That article also outlines capacity issues.

b.1 Capacity

Since 2011, Governments and agencies claimed capacity is a determining criterion for choice of passenger rail technology improvements in Sydney.

They also claimed capacity is the total possible number of passengers – seated and standing – consistent with keeping near perfect on-time running. That entails a fundamental mistake. The relevant measure of capacity for on-board journeys of more than - say - 20 minutes is seating. Nonetheless, their claims are summarised in Figure b.1.1, from Infrastructure NSW, in late 2012.

Figure b.1.1

Table 8.5 Indicative passenger capacity of double deck and single deck train systems

	Train capacity ⁽¹⁾	Seats per train	Trains per hour	Total passengers per hour
Double deck	1,200	890	20	24,000
Single deck – comfortable ⁽²⁾	1,200	600	30	36,000
Single deck metro – max ⁽²⁾	2,000	400	30	60,000

⁽¹⁾ Double deck assumes a nominal capacity of 1200 people with seating in line with Waratah train specifications. Planned frequency of 20 tph across the harbour bridge from Sydney's Rail Future. Single deck 'high seating' capacity could have 500-600 seats (Source: Halcrow 2011), single deck would be based on standard international design with 3 doors per side.

⁽²⁾ Source: MTR for Transport for NSW.

Figure b.1.1 implies (comfortable) single-deck trains have near the same per-line seating capacity as double-decks. Yet the single-decks purportedly have 50% more per-line total – seating and standing – capacity. In this it is grossly misleading. It presents a false comparison - of existing Sydney Train operations with far more modern single-deck systems. It does not consider any option to increase capacity other than 'single-deck'. It omits any potential to modernise double-deck trains.

In this regard, Infrastructure NSW:

- had commissioned an expert who advised in April 2012 that (at least) 27 double deck trains per hour could run on a modernised Sydney Trains system – not the 20 in Figure b.1.1; yet
- reported capacity information only from Transport for NSW;
- records the provenance of metro capacity claims as '*MTR for Transport for NSW*'.

Transport for NSW had commissioned an expert – not MTR - whose advice is not reflected in the numbers in Figure b.1.1.

From the start, independent observers doubted Government and agencies' claims re capacity. In 2014, an ABC 'Fact Check' considered the claims dubious.

The issue again came to the fore in 2018 with the Premier's reported claims of 'Paris' etc. technology for Sydney Trains. These claims confirmed the comparison in Figure b.1.1 is false. The correct comparison for single-deck trains (in the above table) would be: Double-deck: 30+ trains per hour, total capacity between 55,000 and 72,000 passengers per hour per line – as outlined in Appendix 1.d (below). A similar point had been made by the Christie Inquiry.

The publicly available information is not consistent with capacity – either seating or total – being a determining factor in: starting Sydney Metro; its core aspects; its routes (e.g. Appendix 1.b.4 below).

b.2 Consideration

Figure b.2.1 briefly outlines what the public has seen about consideration of alternatives to Metro and the Bankstown route.

Figure b.2.1

	Christie Inquiry mention	Expert advice named	Proper capacity comparison	Alternatives to Metro	Alternatives to Bankstown	Other
Independent Public Inquiry (Christie Inquiry) May 2010	N. A	Yes	Yes	Yes	Yes	Most recent comprehensive review of alternatives
Douglas for Transport NSW 2011(12?)	No	N. A	Yes	Yes	N. A	Also engaged by Infrastructure NSW on related project
Interfleet for Infrastructure NSW Apr. 2012	No	N. A	Yes	Yes	Strathfield recommended	Appears to propose Rapid Transit and Sydney Trains on some same tracks. Did not mention Douglas
NSW Government - Sydney's Rail Future June 2012	No	No	No	Part	Part	Did not mention Douglas Text rejected independent metro.
Infrastructure NSW - State Infrastructure Strategy Oct. 2012	No	Part	No	Part	Strathfield recommended; Bankstown indicated	Confused services with infrastructure. Used expert advice on route but not capacity
NSW Transport Masterplan Dec. 2012	No	No	No	No	No	Terminology confused. Ambiguity re Metro
Infrastructure NSW - State Infrastructure Strategy Oct. 2014	No	No	No	No	No – Premier had decided	Identified Western Sydney Airport Terminology confused
NSW/Commonwealth - Western Sydney Rail Scoping Study discussion Sep. 2016	No	No	No	No	No	Confused services with infrastructure. Apparent bias to Metro.
NSW Government - Metro summary final business case Oct. 2016	No	No	No	No	No	Ignored Western Sydney Airport.
Infrastructure Australia July 2017	No	No	No	No	No	Endorsed stand-alone Metro despite absence of options and of cost
NSW Government – Future Transport Oct. 2017	No	No	No	No	No	Contradicted Greater Sydney Plan
NSW Government - Greater Sydney Plan Oct. 2017	No	No	No	No	No	Contradicted Future Transport
Infrastructure NSW - State Infrastructure Strategy Feb. 2018	No	No	No	No	No	Terminology confused
NSW/Commonwealth- Western Sydney Rail Scoping Study outcomes Mar.2018	No	No	No	No	No	Confused services with infrastructure. Seating criteria omitted

Figure b.2.1 indicates after April 2011 (the Interfleet report for Infrastructure NSW) each of the significant publications from the NSW and Commonwealth Governments and agencies suffer grave flaws. Their mistakes, some of which are astonishing, are too many to summarise here.

Figure b.2.1 understates the abysmal situation. Only the Christie Inquiry alluded to the core aspects of Metro – tunnel diameters and central Sydney route. It did so as a warning.

It seems the two named independent experts – Douglas and Interfleet – were unaware of the tunnel diameter issue, the latter proposing Sydney Trains and rapid transit use some of the same tracks.

The publicly available information indicates Infrastructure Australia was given a ‘heads-up’ in November 2011 about small diameter tunnels. By 2017 the issue had been in the public domain for some time. However, it escaped attention in Infrastructure Australia’s assessment.

The Figure b.2.1 also does not show the ongoing deterioration in information provided to the public. Examples include agencies flatly contradicting Government statements about capacity, omission of seating as a criterion in public transport and claims that single-deck and double-deck trains cannot use the same tracks. This is discussed in Appendix 1.e.

b.3 Sydney’s Rail Future

The NSW Government’s main (supposed) public assessment of alternatives to Metro is in *Sydney’s Rail Future* (2012).^{viii}

A later document, ‘*Sydney Metro City & Southwest Business Case Summary*’ purported to consider options to Metro. It is outlined in Appendix 1.a.3. As it:

- post-dates commencement of construction of the North West Metro;
- presents Metro alternatives limited to straw-men e.g. ‘regulatory reform’, (inefficient) ‘network efficiency’; and
- supports the assessment of *Sydney’s Rail Future*

it does not add to that (latter) document.^{ix}

Sydney’s Rail Future claimed:

*‘The NSW Government considered **up to 15** different options for the future of Sydney’s rail system, which were ultimately grouped into four broad options’.*

(My emphasis added).

It concluded:

‘In the Sydney context an independent metro system would deliver few benefits in terms of service enhancement, capacity improvements or better operating efficiency on the existing rail network. A dedicated metro-style system would not maximise the use of the existing rail assets. It would create a separate system that would divert funding away from service improvements on the existing rail network and only provide benefits to customers who use the new lines.’

This conclusion reflected the assessment shown in Figure b.3.1 below.

Figure b.3.1 Comparison in Sydney's Rail Future

Figure 9: Comparative performance of alternative rail futures against key criteria

Key criteria	Suburban services		Differentiated services	
	New CBD rail capacity and Harbour Crossing	Existing network New CBD rail capacity and convert existing Harbour Crossing	New network New CBD rail capacity and Harbour Crossing	Existing network New CBD rail capacity and Harbour Crossing
	Suburban Option	Rebuild Option	Independent Transit System Option	Preferred Option
Customer focus	●	●	●	●
Network capacity	●	●	●	●
Network resilience	●	●	●	●
Delivery risk	●	●	●	●
Cost effectiveness	●	●	●	●

Key: No support for objective (Red), (Yellow), (Grey), (Green), Strong support for objective (Dark Green)

Summary

The planning process has determined that Sydney's Rail Future is the right option because it:

- Offers tailored services, which better meet the expectations of the majority of **customers**
- Provides the required **capacity** and flexibility to respond to Sydney's growing demand for rail transport
- Creates a more modern, **resilient** and faster service
- **Delivers** a seamless and less disruptive way of modernising Sydney's rail
- Is more **cost effective** for the results it will deliver.

While there are problems with this assessment, Figure b.3.1 shows the preferred option to be differentiated services, existing network, new CBD capacity and harbour crossing. Noting the table separates services (delivered by trains) from network (which comprises infrastructure), it means:

- amplification and new lines for the 'existing network' i.e. Sydney Trains, in central Sydney;
- new fleet and stopping patterns to run on parts of this network i.e. differentiated services.

Post 2011, this appears to be the only public document where NSW demonstrated any understanding trains differ from infrastructure.

In other places in *Sydney's Rail Future* there were claims that three tiers of urban rail services required different tracks. This was odd since three service tiers had long operated in Sydney via express/intercity, suburban and local services.

I am aware of claims 'differentiated services' mean different and/or independent tracks. Those claims are wrong. It is possible to run differentiated services on common tracks as is reportedly the case on Tokyo's metro. The point of interoperable infrastructure is to allow for differentiated services. The error in those claims is the same as: 'single-deck and double-deck trains cannot operate on the same tracks.' It confuses track-infrastructure with train services. Claimants might also reconsider their proposition that three service tiers require only two track tiers.^x

In the above text and Figure b.3.1, the Government advised the public there would not be an independent Metro. This conflicts with Infrastructure Australia endorsing a '*stand-alone*' Metro proposal from the Government. The Sydney Metro City etc. final business case document outlined that proposal even though its assessment implied the opposite – by confirming the (above) preferred option of *Sydney's Rail Future*.

Claims made in various document, including *Sydney's Rail Future* - rapid-transit services are 'turn-up and go' – betray further basic misunderstandings. 'Turn-up and go' depends on services operating to a single stopping pattern i.e. a line with a single terminus point. Unlike the three south rapid transit termini – Hurstville, Cabramatta and Lidcombe - identified in *Sydney's Rail Future*.

It is far from clear anyone in NSW in 2012 knew what they were considering – what Metro was. Hence, it is equally far from clear they could have considered alternatives.

b.4 Routes

Introduction

The seven pre-existing (2011) Sydney rail options identified by the experts engaged by Infrastructure NSW in (see Appendix 1.a.3 above) did not specify routes. Rather, the options mostly related to CBD 'extensions'. The experts noted west options, e.g. west metro, had been studied but were '*currently not being pursued*'.

Sydney's Rail Future identified area routes for 'rapid transit' services. These were the North West Rail, through central Sydney to Hurstville, Lidcombe and Cabramatta via Sydenham. Included in this is the segment Sydenham-Bankstown.

Sydney's Rail Future did not give reasons for these 'rapid transit' route proposals.

Strathfield and Sydney Airport

Nor is there explanation – if there was to be rapid transit – of omission of obvious options of a line to Strathfield or to Kingsford Smith Airport.

Strathfield had been recommended by Infrastructure NSW and its experts in 2012. Being 12 km from (within 15 km of) Central, the expert engaged in 2008 would have considered it more acceptable than more distant places like Bankstown (19km) or Hurstville (18km).

The Kingsford Smith situation is even stranger – given the idea of extending Metro to lines south of the CBD except the one to the airport.

Kingsford Smith Airport is a far superior candidate for rapid transit than Sydenham or Bankstown. It is 8 km from Central. It would be better served by single-deck trains than it is today by double-decks. Demand patterns, driven by airline travel, suggest benefits from much higher frequency services than at present. Passengers travel in both directions for most of the day – unlike commuting tasks, say from Bankstown, which have much larger directional peak flows.

The line extending beyond the airport becomes four tracks probably allowing ready conversion of two tracks with minimal disruption. The four tracks extend to significant suburban centres including Kingsgrove, Padstow and Revesby. Figure c.1.1 (below) indicates a much greater need for capacity augmentation in this area than through Sydenham or Bankstown. The continuation of two tracks beyond Revesby extends to Macarthur, picking up most of outer south-west Sydney.

Some of the world's rapid transit type systems operate from the CBD to an international airport. Examples include Paris, London, San Francisco, Singapore, Hong Kong, despite these airports being much further from the CBD and therefore less suitable for rapid transit - than is the case for Sydney.

Redevelopment along Sydney's airport line between CBD and Kingsford Smith has continued apace. There are reports of transport problems arising from this e.g. Green Square being described as Sydney's 'public transport disaster'. These problems appear to relate to short trips rather than long commuter journeys, and are more amenable to rapid transit than commuter transport solutions.

In a metropolitan strategy, extension of Metro to Kingsford Smith makes much more sense than bypassing the airport in favour of Sydenham and Bankstown. The claim of Sydney as a 'global' city, refers to the 'global arc' between Macquarie Park, through the CBD and to Kingsford Smith.

The arc is among the most suitable (least-worst) places for rapid transit in Sydney. However, the Metro extension avoids the southern half of the arc, meaning Metro serves only half of the potential rapid transit territory. Given airline travel characteristics, it serves the wrong half.

Moreover, at the time of identifying/deciding on extension to Sydenham and Hurstville/ Bankstown/ Cabramatta/ Lidcombe, the NSW Government was publicly opposed to a second airport in Sydney. A proper transport strategy to support this position would have planned for rail enhancements from the CBD to Kingsford Smith.

In the above context, the proposition to by-pass the airport and instead have lines through Sydenham to Cabramatta, Lidcombe, Bankstown and Hurstville is perverse.

Hurstville

The segment Sydenham-Hurstville narrows to four tracks beyond the junction near Wolli Creek (Meeks Rd). The junction exists to allow freight trains from the Sydney dedicated freight network join the Illawarra line. Destinations include Bomaderry (Nowra) and Port Kembla. Port Kembla relies on rail - due to its coal terminal and industrial imports and production.

The four tracks in the segment also carry passenger trains from the Wollongong area, Waterfall and Cronulla - in 'tier' terminology: intercity and suburban trains.

Were a pair of tracks between Sydenham and Hurstville converted to metro, there would be severe restrictions – perhaps cancellation – of rail freight movements between Sydney and Port Kembla etc. This would not sit well with the privatisation of Port Kembla announced one week before release of *Sydney's Rail Future*.^{xi}

To avoid such an effect, any rapid transit between Sydenham and Hurstville would need to:

- be interoperable with Sydney Trains i.e. not Metro; or
- be entirely underground – at least a further 10km - at prohibitive cost; or
- rely on termination of all Sydney Trains from Wollongong, Cronulla etc. at Hurstville.

Quite sensibly, the idea was later dropped.

However, the question of how the idea ever made the public domain as an official option should be of interest to the present inquiry, not least because the same process generated the idea of the extension to Bankstown.

Given the unsuitability of extension to Hurstville or through Bankstown, there is a further question of why a route to Sydenham was chosen. Appendix 1.g identifies former Labor schemes comprising a North-West metro, an apparently similar route through the CBD and a West metro towards Parramatta. Were the Government to extend Sydney Metro towards the west, it would effectively be resurrecting the schemes Labor eventually abandoned.

Implications

The above effects imply the Hurstville idea arose in a thoroughly incompetent process whose source of decisive information lacked the least care or understanding of Sydney, NSW, its transport or its railways. The failure to identify the obvious route options – Strathfield and Kingsford Smith – support the implication.

Yet, properly functioning, NSW Government Departments cannot be accused of such lack of knowledge. Indeed, those involved in the privatisation of Port Kembla would probably have been greatly alarmed at a suggestion as irresponsible as converting a line to Hurstville to Metro.

Given *Sydney's Rail Future*:

- proposed a scheme which was not adopted;
 - proposed rapid transit routes which were not fully adopted;
 - did not propose obvious options for rapid transit routes;
 - did not refer to the core aspects of Metro – tunnel diameter and central Sydney route;
- it is not evidence of consideration of any alternatives to Metro or Metro routes.

Later documents, which purport to show later Government consideration of alternatives to Metro and its routes, can be discounted because of straw-man options and recitation of *Sydney's Rail Future*.

b.5 Conclusion

On face value, the public evidence is the most recent Government consideration of capacity alternatives was prior to June 2012, recorded in *Sydney's Rail Future*. However, the failure of that document to mention the core aspects of Metro, false capacity comparisons and its adoption of a badly rated scheme, means it is no evidence of consideration of alternatives.

The public evidence is: the most recent consideration of capacity alternatives was by the Christie Inquiry. This warned against the core aspects of the scheme now adopted. However, the Inquiry has not been referred to in relevant public documents. The public evidence is there was no bona fide consideration of well-known alternatives which offer more capacity – and better metropolitan outcomes - than Metro.

(c) the factors taken into account when comparing the alternatives and the robustness of the evidence used in decision-making

c.1 Factors

The factors ostensibly taken into account in comparing alternatives are shown in Figure b.3.1.

Given that Government decisions have not reflected those comparisons, presumably other factors were taken into account. As indicated in Appendix 1.I (below), it is unknown what they might be.

Post the 2012 decisions, information provided to the public by the Government frequently referred to capacity. It claimed single-deck trains have greater per-line capacity than double-decks. Yet:

- this was doubted if not refuted by the Christie Inquiry;
- at least one independent expert advised the Government otherwise;
- it did not take into account problems with standing for long periods or on crowded trains;
- it was contradicted by later Government claims re 'Paris' etc. technology;
- it is irrelevant to decisions on the core aspects of Metro – tunnel size and CBD route.

Seating and passenger comfort were not criteria used by the Government.

Appendix 1.b (above) inferred from public evidence that capacity was not a determining factor.

That inference is further supported by considering claims about the Bankstown line. It was claimed Metro extension to Bankstown would increase available capacity for Sydney Trains in the CBD, City Circle. However, if the point of Metro was to maximise such capacity it would be extended – if anywhere - to routes with the highest Sydney Trains patronage or most crowded trains: towards Strathfield; to Kingsford Smith Airport.^{xii}

The options presented for Metro extensions - Bankstown and Hurstville were the worst on capacity expanding criteria. This is demonstrated by Figure c.1.1 from the 2012 Transport Masterplan.

Figure c.1.1: Transport Masterplan 2012 – crowding on trains

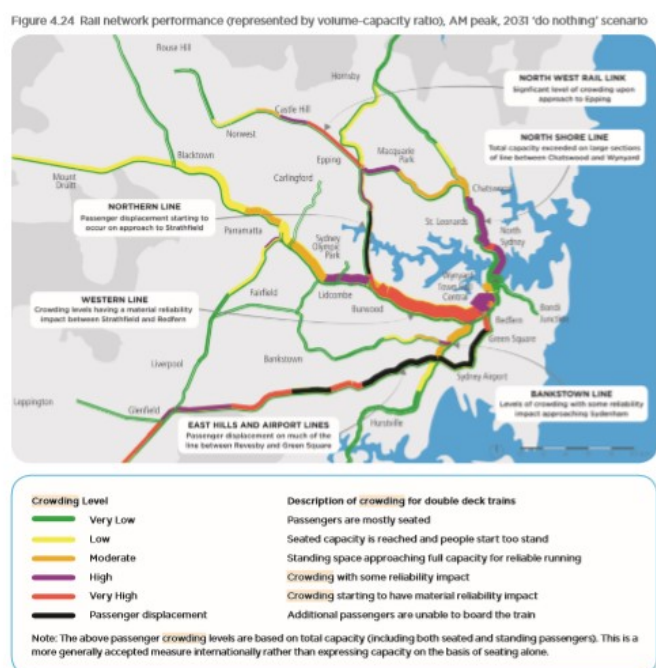


Figure c.1.1 shows expected crowding to be greatest on the West Line (through Burwood which is adjacent to Strathfield) and on the Airport Line. Crowding is expected to be much less on the line through Hurstville and least on the lines through Bankstown. This was confirmed in the article in the Conversation in March 2019.^{xiii}

The above implies selection of the Bankstown line for conversion to Metro is a result of:

- faulty analysis, were the objectives to include augmentation of rail capacity; and/or
- primary objectives – factors - other than rail capacity augmentation.^{xiv}

Similarly, if the idea was to free-up CBD capacity, great care would have been taken to ensure any Metro route did not preclude (later) options for more Sydney Trains lines in the CBD and across the harbour. An implication of public claims is the opposite occurred.

An inference is: decision-makers idea of the ‘capacity’ advantage of Metro over double-deck trains was solely the number of trains per line per hour. And even that may be wrong - as will be shown further in Appendix 1.d.

The view put to the public was that the maximum number of trains per line was determined by ‘dwell time’ – stopping time at stations. Less dwell time leads to greater capacity of the line for trains. In theory, single-decks with more and wider doors would have a lower dwell time when fully loaded than double-decks with narrow doors. However:

- in 2012 an expert advised the Government this was dubious; and
- the Government’s later reference to ‘Paris’ etc. technology refuted this proposition.

The Paris RER system can operate many double-deck trains on a particular line when the track splits into two tracks near a station - allowing two trains to be at the station simultaneously i.e. removing dwell time as the constraint. Given Government claims about Paris etc. technology, presumably this was known. With knowledge of Paris etc. technology, the only reasonable course to address capacity would have been to ensure any diameters of any new tunnels - including Metro tunnels - are able to take double-deck trains. As Dr Bradfield did early last century.

As this was not done, and given the earlier comments, there is no real evidence that capacity was a determining factor in decisions on Metro, or on Metro routes.

Similarly, there is no public evidence that some significant, credible advice - including to the NSW Government - regarding critical Metro related issues was considered by the Government or some of its Labor predecessors. Further, the absence of reference to Christie’s Inquiry is consistent with decisions made contrary to some authoritative views.

The inference is: some advisers and decisions makers for these Governments wanted to set up a rail system in parallel to Sydney Trains as outlined in Appendix 1.g. They did not seek a new tier of a railway as occurs in cities such as London or as recommended to Infrastructure NSW.

c.2 Robustness of evidence

It is not possible for the public to understand the robustness of evidence used in decision making regarding Metro.

Although the Government claims it relied on expert advice, the expert advice that is readily accessible in the public domain does not support the Metro decisions it has made.

It is probable the Government received other advice. However, that advice is not readily available to the public.

The Transport Masterplan 2012 stated there were four advisory groups with 55 members. The advice from these groups is not public. Mr Christie was mentioned – thanked - as one of the members yet the decisions made by the Government are contrary to the recommendations of the Inquiry he chaired in 2010.

(d) whether metro is a suitable means of transport over long distances

d.1 Introduction

Issues regarding rapid transit rail, 'metro', were authoritatively addressed in the Christie Inquiry.

Its answer on whether rapid transit/metro is suitable for transport over long distances was: 'no'.

Moreover, its key point was the need for compatibility between settlement and transport.

It concluded that for Sydney to develop along the lines of large European cities – like London or Paris – expansion and augmentation of commuter rail systems such as Sydney Trains or Paris RER is needed. A focus or reliance on rapid transit or Metro would be unsuitable for a 'European Sydney'.

It also concluded that extensive development of rapid transit would lead to Sydney evolving towards an East Asian style city such as Hong Kong.

This section adds some further comments.

d.2 Western rapid transit

Sydney Metro is supposedly the 'rapid transit' tier of a 'three-tier railway'.

The best known western rapid transit systems of tiered railways are in Paris (Metro), London (Tube) and New York (Subway). They were started in the late 19th century. Each aimed to cater for internal travel within their (central) cities rather than for commuting from metropolitan areas and suburbs to the central city areas. They represent two, not three, tiers. Passengers transfer between tiers (to over-simplify): to rapid transit for travel within the inner city; to commuter trains for travel between the city and suburbs; in the case of Paris, to commuter trains for travel through the inner city.

The reasons for their development of rapid transit was chronic above-ground road congestion in the cities while commuter trains terminated at city peripheries. Principal rapid transit characteristics are: mainly underground routes; short distances between stations; high train frequencies. Their trains run to major stations and terminals where passengers can interchange with commuter trains.

Reflecting these characteristics, passenger trips on rapid transit are relatively short and of short duration. On-board standing is not a significant issue on these systems even though standing is considered a problem on commuter trains – for which there have been 'standards' for design e.g. maximum standing time of 20 minutes.

Rapid transit characteristics have long been observable in Sydney's city underground railway. This railway evolved in the 1920s-1950s when there were commuter terminals at city outskirts – at Central and Milson's Point. Sydney's underground railway has long been regarded as a subway – a type of metro – even if trains carrying commuters run on it.^{xv}

d.3 Paris service comparator

The name 'Metro' (Metropolitain) comes from Paris. It is one of the two main rail systems in that city – the other being RER.

Paris was cited by the NSW Government as user of technology to be adopted to increase the capacity of Sydney Trains via automation. In Paris this technology is to be applied to RER.

RER reportedly runs significantly more trains per line per hour than Sydney Trains (or Sydney Metro). There are reports RER has the same capacity to run trains as Sydney Metro – 30 per line per hour. The RER target with new technology is trains every 108 seconds – more than Sydney Metro.^{xvi}

Several experts, including Christie's Inquiry, recommended Sydney look to Paris RER:

'If people seriously want "metro-style" operations on a suburban railway system, they need look no further than the Paris RER, which runs high capacity "heavy rail" trains, both double deck and single deck, at close headways, right through central Paris. With only five lines so far, it already carries over twice as many passengers as the Sydney system.'^{xvii}

RER operates both single and double-deck fleet. In 2012, Infrastructure NSW's experts referred to this and said:

'Around the world, it is not common for inner-suburban railway passengers to expect a seat. The CityRail approach of providing double-deck stock to do this, even for those on very short (e.g. 10- minute) journeys is unusual; the Paris RER, which is one of the few other systems worldwide with double-deck stock, concentrates on serving passengers from more distant suburbs. The normal situation, exemplified by the ex-KCRC lines in Hong Kong, is to provide capacity through maximising standing space, with some longitudinal seats.'

Noting the qualifier 'inner-suburban' is consistent with the discussion in Appendix 1.d.2 (above), the text implies RER serves passengers from suburbs whose journeys are in excess of 10 minutes. For this, seating is considered important. In contrast, Paris Metro serves inner-urban passengers whose journeys are shorter, and for whom seating is not so important.

It is claimed RER has:

'a major social impact. By bringing far-flung suburbs within easy reach of central Paris, the network has aided the reintegration of the traditionally insular capital with its periphery.'

Paris Metro is:

'designed to provide local, point-to-point service in Paris proper and service into the city from some close suburbs. Stations within Paris are very close together to form a grid structure, ensuring that every point in the city is close to a metro station..... but this makes the service slow 20 km/h..... The low speed virtually precludes feasible service to farther suburbs.'

Figure d.3.1 compares the two Paris systems with Sydney Metro

Figure d.3.1: Paris and Sydney Metro

	Paris RER	Sydney Metro	Paris Metro
Average line length (km)	123	66	15
Average distance between stations (km)	2.3	2.1-2.5*	0.6
Line layout	Through city to suburbs	Through city to suburbs	Within city
Max. train frequency per line (per hour)	30	30	>30
Max. passengers per line per hour	>55,000	46,000?	
Journey speeds	Commuter rail	Commuter rail	Slow
Tunnel diameter	6.3m single to 8.7m double.	6.0m single.	Too narrow for mainline trains.

* Excluding Bankstown line stations

Figure d.3.1. demonstrates Sydney Metro is not Paris style rapid transit but a commuter rail system. Sydney Metro service is more analogous to RER than Metro. This is confirmed by Sydney Metro:

- taking over two commuter lines in Sydney's suburbs;
- seeking to compete with Sydney Trains on transit time, especially in inner areas;
- having transit time in inner areas lowered by fewer stations; between Chatswood and Sydenham (including the CBD) less than half the stations of Sydney Trains – 5 compared with 12;
- leading to an increase in transit time for some Sydney Trains in those inner areas;
- having new stations significantly further apart than - 1km or 62% - than pre-existing stations;
- having no significant difference in distances between outer and inner suburb stations;
- peak train frequency – at 15 per hour – is less than some Sydney Trains lines;
- having a substantial reduction in off-peak trains to 6 per hour.^{xviii}

Sydney Metro's only rapid transit service characteristic is few seats in single-deck cars.

Inner Sydney Trains' stations are closer together than those of Sydney Metro. In central Sydney, Sydney Trains is a closer service analogue - than Sydney Metro - to Paris Metro.^{xix}

The Government's rail policy is not only opposite to what it stated in 2012, but has inverted its own idea of a tiered commuter/metro railway.

d.4. Paris infrastructure comparator

Sydney Metro proponents point to similarities between its single-deck many-door fleet and those used in rapid transit elsewhere, including Paris. The single-deck is needed in those two cities because their Metro tunnel diameters are too small for double-decks.

This raises a further analogy Paris. Paris Metro tunnels were built in the late 1800s for the purpose of precluding other trains from moving through Paris. It is said this reflected long-standing antagonism between Parisian and French national authorities - since the late 14th century. Paris authorities did not want people from elsewhere in France to have easy access to their city.^{xx}

By the 1960s Paris Metro was overcrowded. To alleviate this, the French Government considered extending its railway – SNCF (now RER) - through Paris, rather than terminating trains at the edge of the city. But SNCF could not use the small Metro tunnels. New tunnels were needed so:

'Might trains of RAPT and SNCF one day use the same tunnel and would it be feasible to interconnect their networks? A committee visited Japan to confirm ... the feasibility of through operations of different operators in the same tunnels...'

Hence:

'RER's tunnels have unusually large cross-sections. This is due to a 1961 decision to build according to a standard set by the Union Internationale des Chemins de Fer....'

Since then, RER has been migrating to a double-deck fleet, which is enabled by the big tunnels. Its target capacity may be as high as 72,000 passengers per line per hour.

Despite the talk, Sydney is not getting Paris-style Metro services. It is getting a substandard mis-specified RER. It is copying the very worst aspect of Paris Metro – small tunnels to prevent another railway – in Paris intended to keep people out of the city. Worse, the geography of Sydney and the route of Sydney Metro may forever preclude the remedy pursued in Paris over the last 60 years. Paris reportedly salvaged their railway by running more commuter trains through the central city via big tunnels. Sydney Metro may prevent that here.^{xxi}

(e) the consultation process undertaken with, and the adequacy of information given to, community, experts and other stakeholders

e.1 Introduction

The standard for Sydney public transport/rail plans and consultation was set by the 2009-10 Christie Inquiry. Its reports provided comprehensive principles, considered all reasonable – and some other! – approaches, set out pros and cons of options and put its view on what was operationally sound and financially feasible. All in detail and with clarity.

This section draws comparative attention to some subsequent NSW Government consultation processes: Sydney Metro (2012); the Sydney Metro Environmental Impact Statement re Sydenham-Bankstown segment (2017); Future Transport / Greater Sydney Regional Plan (2017); Western Sydney Rail (2016-18).

e.2 Sydney Metro

Some early discussion of this is at <https://www.thejadebeagle.com/sydney-2-exhibit-2-toucheth-not-the-monorail.html>, <https://www.thejadebeagle.com/badgerys-creek.html> and <https://www.thejadebeagle.com/doubling-up.html>. Information presented to the public regarding the initial decision re Metro – *Sydney's Rail Future* - stated Government intentions opposite to what the Government then did and continues to do. It also failed to mention the core aspects of Metro.

Such misinformation is the antithesis to what is needed for bona-fide consultation.

e.3 Environmental Impact Statement - Bankstown

The Environmental Impact Statement for Sydney Metro Bankstown contained information undermining the case for converting part of the Bankstown line to Metro. However, it did not present this information in intelligible form.^{xxii}

Figure e.3.1, comparing like with like, corrects this defect.^{xxiii}

Figure e.3.1: Indicative train capacity comparison, Bankstown line

	Metro	Sydney trains	Difference
Environmental Impact Statement (a)			
Trains per hour	15	10	+5
Seats in 3 hours	17,000	26,400	-9,400
Total 3 hr pax. capacity	40,500	36,000	+4,500
Potential (b)			
Trains per hour	15	12	+3
Seats in 3 hours	17,000	31,680	-14,680
Total 3 hr pax. capacity (b)	40,500	43,200	-2,700
Total 3 hr pax. capacity (c)	60,750	63,000	-2,250

(a) From Environmental Impact Statement (EIS above) with 2 people per square metre

(b) From EIS (above) and for Sydney trains with 2 people per square metre

(c) From EIS (above) and for Sydney trains with 4 people per square metre

Figure e.3.1 indicates the Bankstown line (not just trains) has:

- less seating capacity than current potential Sydney train operations;
- less total passenger capacity than Sydney trains operating at comparable levels.

The Environmental Impact Statement claimed Metro offers faster travel between Bankstown and Sydney's CBD. This relies on some Sydney Trains having new stops at Erskineville and St Peters.

The effect is a deterioration in travel time for people on those trains. Metro offers faster travel time because the Sydney Trains network is slowed down – further support for the concluding observation in Appendix 1.d.3 (above).

One point of Environmental Impact Statements is to seek community views on proposals. A proposal whose effect is obscured – the case here – stops any potential for meaningful consultation.

e.4 Future Transport/ draft Greater Sydney Regional Plan

These documents heralded the ‘three cities’ concept. The drafts were used in consultation processes simultaneously run by Transport for NSW and the Greater Sydney Commission. They:

- failed to present the key facts;
- conflicted and suffered internal contradictions;
- were considered in flawed processes.^{xxiv}

Together with an absence of sensible options, the result was consultation processes based on propaganda and rubbish and showing a complete lack of interest in the views of the community. It is addressed at <https://www.thejadebeagle.com/future-transport.html> and outlined below.

Failure to present the key facts

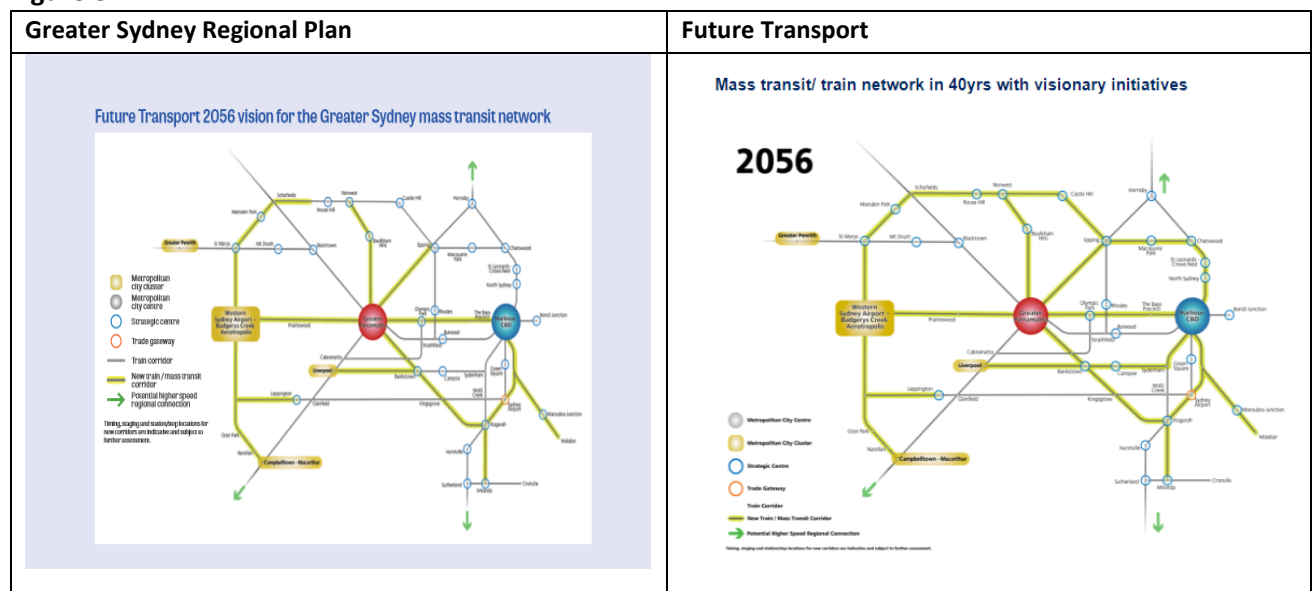
Among the key facts not presented were:

- travel time; seating capacity;
- ability to retrofit infrastructure for other uses;
- core aspects of Metro;
- metropolitan implications of these core aspects.

Conflict and contradiction

Figure e.4.1 demonstrates fundamental conflict between the documents.

Figure e.4.1



Differences in Figure e.4.1 include:

- the titles; the Commission’s plan infers all Sydney railways are to be converted to mass transit;
- definitions of ‘train’ and ‘mass transit’;
- line segments such as CBD-Chatswood.

Contradictions in the documents included:

- varying use of the term 'mass transit';
- the claim of 'turn-up and go' services that travel to different destinations;
- different versions of the '30 minute' city concept;
- projects that directly undermine (two of) the 'three cities';
- claims of the customer being at the centre while the key customer criteria were ignored;
- proposals diametrically opposed to the given principle of optimising infrastructure use.

Topping these off was a claim that Metro can only run as many trains as commuter rail, a flat contradiction of all previous Government statements – yet possibly true as shown in Appendix 1.d.

Flawed process

Given the confusion in the documents, it was unclear what they proposed at any level: principles; direction; detail. They failed to refer to authoritative work such as: the Christie Inquiry (2010); estimation of rail capacity for the NSW Government (Douglas, 2012). They failed to refer to another inquiry underway - the joint Commonwealth-State Western Sydney rail needs study.

The Future Transport consultation process included a travelling caravan (literally), staffed by officials. The officials I met were unaware of the above, or of the core aspects of Metro. They had apparently been misled and severely let down by their Department.

The implication was consultation sought *carte blanche* for whatever somebody had in mind. The three cities talk was offensive; it basically indicated an intention to further divide Sydney into haves and have-nots - with Metro only useful for the former (who travel short distances) and an impediment for the latter.

Further, while the public was to be consulted on the drafts for (just) 6 weeks – until early December – this proved too long a period for the Government to resist making decisions undermining their stated intentions. These included: rejection of the only proposal to link Port Botany and Kingsford Smith airport to Westconnex; a car registration rebate which was a major setback for proper road charging; a housing release of land 'earmarked' for a rail corridor vital to Badgerys Creek airport and Sydney's west.^{xxv}

e.5 Western Sydney Rail study

The Western Sydney Rail study issued a *Discussion paper* in September 2016. Decisions were announced in March 2018. The matter is discussed at <https://www.thejadebeagle.com/toucheth-not-the-monorail-western-sydney-rail.html> and <https://www.thejadebeagle.com/no-deal.html>.

Discussion paper

The paper made frequent reference to *Sydney's Rail Future* although the latter (like the 'business case' and EIS) studiously ignored the proposed airport at Badgerys Creek. This was consistent with NSW policy which, in 2012, opposed such an airport. The implication that rail policy might need to be redone was lost on the *Discussion paper*.

The discussion paper sought submissions in response to a series of questions which could not be sensibly answered until some basic matters were settled. These matters included: study area; types of demand for rail; effects of recent decisions; network wide impacts; freight etc. As the paper did not address these, the consultation process was a mockery.

As a further insult to readers, while the paper claimed reasons for options were forecasts of rail use, it included a map demonstrating the claim to be wrong - Figure e.5.1.

Figure e.5.1: Discussion paper, network capacity use 2051

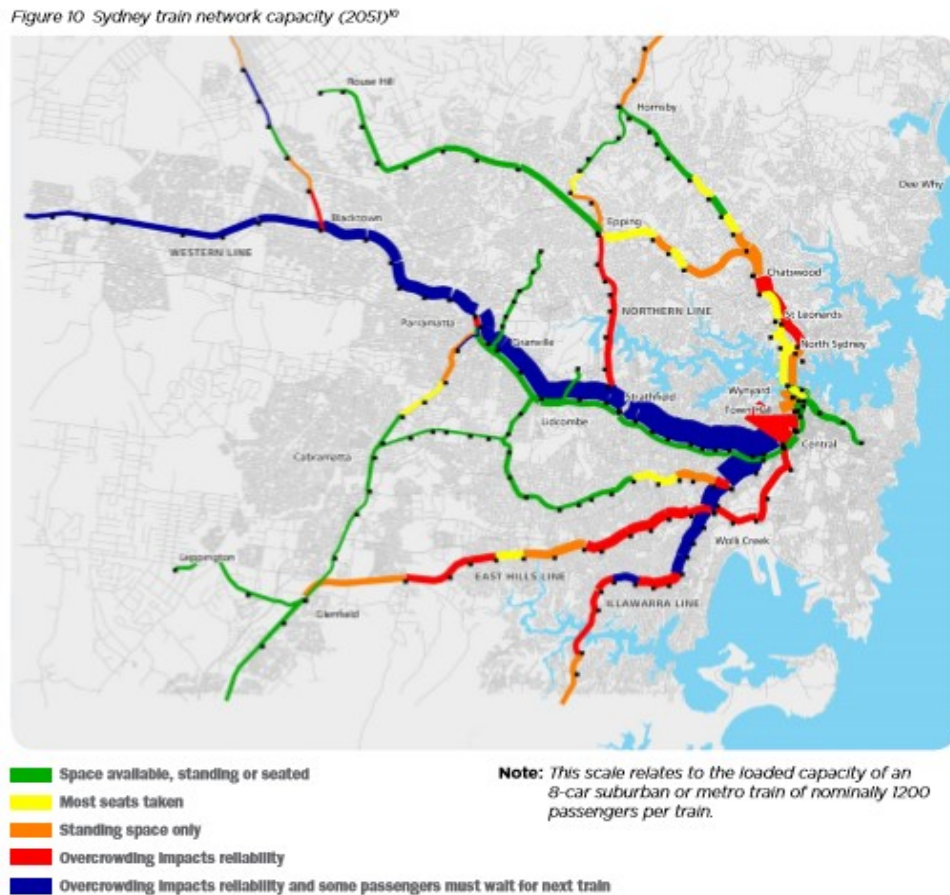


Figure e.5.1 shows the Western Line (between Blacktown and the CBD) and the Illawarra Line are expected to face the most significant capacity issues. It shows the Bankstown line to be the one with the most available passenger capacity. In many other respects the map is a mess.

The discussion paper indicated criteria for assessment of options had already been settled. Those criteria did not include seating, although seating features prominently in Figure e.5.1.

The presentation of indicative options was a disgrace. It showed bifurcation of the metropolitan area – between West and East – offensive to the target audience. It omitted the fact Metro does not connect with the existing rail system. In fact, the discussion paper appeared entirely ignorant of the key rail issues – such as seating, standing time, characteristics of rapid transit, effect of junctions etc.

The paper's omission of well-known ideas – like Parramatta-Epping – raised suspicions of it being an attempt to cover up the results of NSW policies. The suspicions were reinforced by all of its pictures of trains being of the Sydney Trains fleet - not one was of a Metro train. Yet the proposals were essentially to extend Metro! The disgrace is depicted in Figure e.5.2 below – which is from the paper.

Figure e.5.2: Discussion paper, identified rail options

Figure 15 Western Sydney rail options



My submission in response to the discussion paper said:

- ‘3. The most important rail issues in and of western Sydney are
 - a. Effective access to all of Sydney’s global arc
 - b. Passengers being seated on trains as fundamental to such access
 - c. A hub for metropolitan (as distinct from local) travel, such as in Parramatta
 - d. Freight.
4. Reported state government decisions in 2012 may have set a trajectory that unnecessarily jeopardise these.
5. That the Discussion paper fails to recognise these matters undermines confidence in the ability of governments to comprehend, let alone address, western Sydney rail needs’.^{xxvi}

Decisions

While comments on the discussion paper were sought within six weeks, announcement of the Governments’ decision took more than a year and a half. It was more than a year overdue.

Worse, it was idiotic. The lines to the Aerotropolis/airport were back to front – transposed.

The obvious option was ignored in favour of a far more expensive approach that would lead to at least four different and separate passenger railways in Sydney – where two separate railways had previously been criticized as being based on a ‘bizarre premise’. People in South Western Sydney would need to change trains several times to get to the Western Sydney airport but not at all to get to Kingsford Smith!

The given reason for this mess was that single and double-deck trains cannot use the same tracks. A reason later ‘confirmed’ by the Commonwealth Minister.^{xxvii}

A pre-election sequel completed the farce. In it the Prime Minister, while on a visit to St Marys, referred to a double-deck train as something Western Sydney will see more of. The Western Sydney rail 'decision' does the opposite.^{xxviii}

The Western Sydney rail case demonstrates contempt for the community and for Commonwealth politicians, including the Prime Minister.

e.6 Result

The result of this faux consultation is in the *Future Transport Strategy 2056* and Greater Sydney Plan. Unsurprisingly, the latter again did not accurately copy the Strategy's key schematic.^{xxix}

Apart from an apparent lack of care in drafting – for example, Bondi Junction was not represented as being on the rail network in 2056 – the schematics continued to be confused and deceptive.

The Metro/Sydney Trains fiasco of the consultation was avoided by not discussing either. There was evident confusion between mass transit, rapid transit and trains. 'Turn-up and go' (presumably) continued to be misrepresented – unless the intention is to force many passenger interchanges, for example six for a journey between Cronulla and the CBD.

The Bankstown lines to Lidcombe and Cabramatta were not shown. Arrangements for Western Sydney Airport were covered-up; the diagrams did not show the Leppington line extension stopping several km short of the airport – in a manner that led to the failure of a railway to JFK in New York. Perhaps the worst aspect was the attempted replication of networks in inner Paris, London or New York on the vastly larger Sydney basin – the 'vision' seems to be of Sydney with a population like Greater Tokyo, Greater Mexico City or Shanghai – 30 million or so - rather than the more modest expectation.

(f) the impact on the environment and heritage conservation

No comment.

(g) any lobbying, political donations or other influence of the public or private sector in relation to making that decision

This submission is limited to information in the public domain. Hence, I have no direct views on this term of reference.

However, the public information is consistent with long standing attempts to introduce Metro somewhere – ‘almost anywhere’ – in Sydney.

The history outlined at <https://www.thejadebeagle.com/dogs-breakfast-for-all.html> is summarised below. It should be considered in the context of my comments about public consultations.

That history notes proposals seem to have arisen after the Sydney Olympic Games via a unit in the Premier’s Department. The unit, established in 2005, conducted work formerly undertaken in the Department of Transport. There were reports of a ‘*dream of a European style metro*’ and refusal to consider proposals that relied on the ‘*outdated CityRail (now Sydney Trains) network*’.

In 2008, a proposal for a North West Metro was reportedly reviewed by an internationally renowned expert. The expert was unimpressed, criticising its ‘*inferior network planning*’, 38km length and location. ‘Reportedly’ as the review was not published and apparently ‘*disappeared*’ from a pile of documents requested by Parliament. The review also reportedly commented that if Sydney wanted a metro, it should be close to the city and about 15km in radial length.

Nonetheless, reports had then Premier Iemma and Minister/Treasurer Costa wanting to proceed with ‘*building a new rapid transit system in parallel*’ with CityRail. There are reports the now-constructed North West Metro is ‘*uncannily*’ in keeping with ‘*the vision*’ of that time.

In September 2008, Premier Iemma was replaced by Premier Rees who scrapped the North West Metro proposal and came up with two new proposals within a short period: a CBD (Central to Rozelle) metro; a west metro (Central to Parramatta/Westmead). The former idea was famously depicted on an ABC Four Corners episode with the Premier (and advisers) at the CBD Metro announcement apparently having no idea how much it might cost.

The plan was for people to be forced to use the CBD Metro by terminating many more trains, including from the Western Suburbs, at Central. This was equivalent to an attempt to saddle Sydney with rail problems faced by Paris, London and New York over a century before.

In 2009, the Sydney Morning Herald established an independent public inquiry into Sydney transport planning. Chaired by Mr Ron Christie AO, it produced a draft report in February 2010 and a final report in May 2010.

The final inquiry report considered rapid transit/metro issues at some depth, arguing they should fit land-use patterns of which there were two basic types European (London, Paris) and East Asian (Hong Kong). It said the latter is associated with widespread metro lines, ‘investment’ largely in the eastern half of Sydney rather than the Western suburbs and high-rise development.

The Inquiry report criticised the (then) metro proposals as entailing a break of gauge and a CBD route that would jeopardise Sydney’s development. It suggested that RER in Paris was preferable to metro for Sydney.

Premier Keneally replaced Mr Rees in December 2009 and cancelled the Metro projects in February 2010.

Nonetheless, there appears to have been a deal of sensitivity about Metro. In February 2010, the Sydney Morning Herald claimed *'bureaucrats and political fixers inside the state's transport agencies altered official reports as part of a widespread government effort to suppress criticism of the controversial \$5.3 billion CBD Metro'*. There were later suggestions that work continued on exploring conversion of some of the CityRail network to Metro.

In March 2011, a new Government took office on a platform including construction of the North West Rail link. Initially Transport Minister Ms Berejiklian was reportedly critical of Metro and in April *'confirmed'* double deck trains would operate on the link.

Presumably the following excerpt of a transcript of Ms Berejiklian in Budget Estimates, October 9 2012, involves a mistake:

'When I was shadow Minister for Transport and then became the Minister for Transport I assumed that single-deck carriages were the best option for the new north-west rail line'.^{xxx}

The long-standing debate about single and double deck train reached the public domain in late 2011. Proponents of single-decks claimed shorter dwell-time allowed for more trains and more people to be carried per line.

In October 2011, Transport for NSW engaged an expert who, like Christie's Inquiry, in effect refuted that view. However, Transport for NSW does not seem to have publicly referred to the expert's report or information in it.

In November 2011, a Transport for NSW submission to the Commonwealth – that is public - made a reference to tunnel diameters for the North West Rail Link. The diameters would preclude double-deck operations i.e. North West Rail would no longer 'link' and would be severed from the network. The submission otherwise suggested the North West Rail Link would operate double-decks.

Also, in November 2011, the Sydney Morning Herald carried a report of Government considering 'Paris' style trains – but not the RER mentioned by the Christie Inquiry.^{xxxi}

That November 2011 report also claimed MTR, which operated the train network in Melbourne, would 'review' other consultants work for the Government on future rail needs. I have been unable to find a report from MTR on this task.

However, that MTR did undertake some work is indicated in a footnote in a report by Infrastructure NSW – Figure b.1.1.

In 2012, Infrastructure NSW had engaged an expert who, apparently independently of Transport for NSW's commissioned expert, came to similar conclusions about the relative capacity of Sydney Trains and metro. Yet those conclusions were not reflected in Infrastructure NSW's later 2012 Infrastructure Strategy. Rather, that document's capacity estimates were sourced – in the footnote - to Transport for NSW and MTR.

In 2018, the Premier and Transport Minister referred to 'Paris etc' technology, effectively confirming the Sydney Trains capacity estimates of the above (apparently ignored) experts, thereby refuting what the Government and Infrastructure NSW had provided to the public. Confirmation of the expert's estimates may imply the technology was known at the time of comparisons made by the Government. This is consistent with the predecessor to Sydney Trains – CityRail – running tests of a precursor technology a decade or more earlier.^{xxxii}

(h) the tender process for appointing private operators

No comment.

(i) the contractual arrangements entered into in respect of the project

No comment.

(j) the adequacy of temporary transport arrangements etc.

No comment.

(k) the impact on the stations west of Bankstown

The readily available public information on this matter, while ambiguous, suggests closure of these stations and the lines through them.

The key schematic from *Future Transport 2056* and the Greater Sydney Plan does not show the lines between Bankstown and Cabramatta/Lidcombe - Figure k.1

Figure k.1 Future Transport 'Vision'

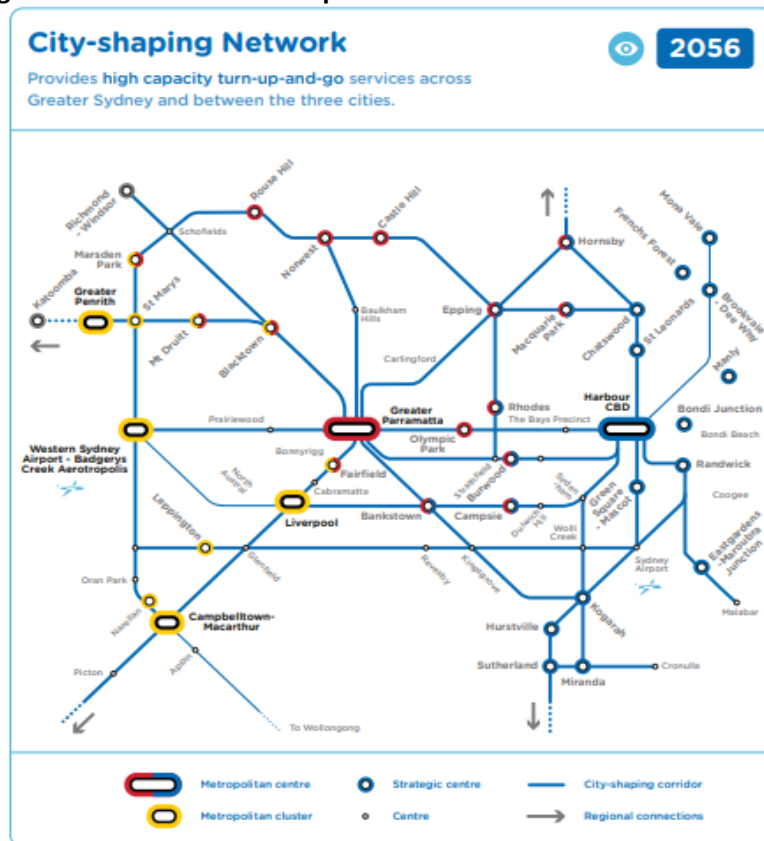


Figure S1: Greater Sydney Mass transit/train Network (visionary)

Figure k.1 while titled 'City-shaping network' is sub-titled 'Mass transit/train Network'. As these are different things it is unclear what Figure k.1 represents. Apart from the absence of the existing lines from Bankstown, Bondi Junction is no longer on whatever the Network might be. Yet Appin is.

While this term of reference may have been framed with the nine stations between Bankstown and Cabramatta/Lidcombe, there will be substantial effects on stations etc. on all lines that pass-through Cabramatta and Lidcombe.

One effect of conversion of the Bankstown line is to reduce flexibility in train operating plans and therefore options for passenger train timetables on the various lines. The direct impacts will extend to at least Macarthur, Leppington, Liverpool etc; the T2, T5, T8 lines even with full 'sectorisation'. Another effect is to reduce options for incident recovery including in relation to freight trains.

Conversion of the Bankstown line will result in a disproportionate reduction in the capacity of the networks used by Sydney Trains. This is because of the newly created need to turn-back Sydney Trains at various locations. Turning-back trains results in reduced network capacity.

(I) any related matter

I.1 Serious matters

The inquiry should not underestimate the gravity of the situation Sydney and NSW now face as a result of the Metro decisions to date.

The decisions will permanently divide and reinforce geographic inequities in Sydney.^{xxxiii}

They will reduce access of most people in the metropolitan area and beyond to central Sydney much as the similar Paris Metro decisions did from the late 19th century in that city. The inquiry should note the efforts of the French Government over the last sixty years to attempt to remediate that unfortunate legacy.

I.2 Speculation on reasons

There has been considerable speculation as to reasons behind the Metro decisions, its core aspects and routes. Suppositions include: NSW Treasury; haste; privatisation; industrial relations; property development; personalities; government within a government; arithmetic errors; cover-up of previous mistakes. I do not wish to add to these but note such speculation is a natural consequence of the absence of plausible explanation.

There are problems in some speculations e.g. those claiming an anti-union, privatisation or property developer agenda.

Completion of a North West Rail Link was a key plank of promises made by the Government elected in March 2011. However, this does not explain the Government's change of mind from that link being part of the Sydney Trains network to being an independent Metro.

Those claiming anti-union motives point to driverless trains etc. However, the technology for driverless trains was known to be usable by a double-deck fleet, in Sydney, at the time of – in fact well before – Metro decisions. Anti-union motives do not explain Metro.

Similarly, a privatisation agenda does not explain the Metro decisions. Existing commuter railways, akin to Sydney Trains, had been privatised in the United Kingdom and Victoria.

Most significantly, none of industrial relations, privatisation or property development reasons – indeed any of the public speculation – is capable of contributing to an explanation of the core characteristics of Sydney Metro: tunnels too small for a Sydney Trains-size fleet; central city route.

This is demonstrated by operation of Metro trains through existing large tunnels on the Epping-Chatswood segment and by reference to small tunnels in November 2011 when the official position was for the North West Rail Link to be served by double-deck Sydney Trains.

Ministers claimed decisions had been guided by experts. It is unclear who those experts were or what they advised. Yet a range of genuine, identified experts have publicly criticised the decisions.

My suggestion of decision makers being cursed because they tore down the monorail was intended to mock this ludicrous situation. Yet it may still be among the more plausible public explanations.^{xxxiv}

I.3 Options

In the circumstances - of jeopardy to transport and planning for unknown reasons - the conversion of the Bankstown line is the worst option now available to NSW.

The core aspects of Metro and its initiation including Epping-Chatswood severely limit reasonable options for 'extension'. These aspects imply there may be no further rail lines though Sydney and the global arc north of Central. Half of the rail capacity through this area will be forever allocated only to the south Metro extension line. In comparison, the other half of rail capacity – Sydney Trains – can be flexibly allocated among several lines and therefore areas of Sydney because of its route and larger tunnels.

The extension of Metro, unlike extension of other rail systems such as Sydney Trains, raises the most serious transport and planning issues.

The best option is for all work on Metro to immediately cease and for Parliament to establish an authoritative and independent public inquiry to advise on an appropriate plan for railways in Sydney.

If Metro type policies are to continue, by far the best option is to terminate Metro near the CBD. Among the reasons is that Metro reliability – and therefore effective capacity - which is already challenged, will reduce further if its line is extended. Sydney will not have a tiered railway such as in London etc. without such termination of Metro near the CBD.

If the Metro line is to be extended beyond the CBD, it should be to areas of highest demand or a structure of demand to which a quasi-rapid transit system is most suited. The only two reasonable options are:

- towards Strathfield, as recommended by Infrastructure NSW and its experts in 2012;
- conversion of the airport line.

Worse would be Metro conversion of a pair of tracks on the Illawarra line. This should be ruled out for freight reasons unless and until there is amplification and extension of the Southern Sydney Freight Line and completion and operation of the Maldon-Dombarton line.

The worst option is to extend the Metro line to Bankstown. That would misallocate irreplaceable cross-harbour capacity to the least transit important but most networked line. That is, the Bankstown option appears to have the least objective benefit yet be the one most damaging to Sydney Trains and the metropolitan rail network.

ⁱ *Independent Public Inquiry into a Long-Term Transport Plan for Sydney, Final Report*, May 2010 (Christie Inquiry) at: <http://www.catalyst.com.au/>.

ⁱⁱ <https://theconversation.com/which-lines-are-priorities-for-sydney-metro-conversion-hint-its-not-bankstown-111844>.

In the discussion thread I raised the quote as follows:

'is it intended to mean there is no longer an opportunity for another 'heavy rail' north south CBD/harbour crossing, a possibility warned against by Mr Christie in 2010. if so is there a stated reason for this? and how does this match with the 2012 Sydney rail futures which implied another heavy rail harbour crossing?'

Kieran Nelson in reply to Petal B Austen

'And why would a higher capacity rail corridor being built instead of a proposed rail corridor be worse?'

Petal B Austen in reply to Kieran Nelson

i am not making a judgement and am not interested in a capacity debate. i just want to know. and also whether there is an authoritative source'.

As my question remains unanswered, I assume the opportunity has been lost, Mr Christie's warning was ignored, *Sydney's Rail Future* was contradicted and as yet there is no public reason.

ⁱⁱⁱ Paris is discussed in Appendix d. Tokyo was the subject of a 2016 report to the OECD: <https://www.itf-oecd.org/sites/default/files/docs/coordinating-tokyo-urban-rail-services.pdf> which contains the following:

'Currently, many suburban rail services feed directly into the metro network in the CBD of Tokyo. This so-called "direct-through operation" enables passengers to change from a suburban rail line to a metro line while remaining on their original railcars without physical transfers between connecting stations. The alternative would be for suburban and metro services to operate independently, with each actor operating services on their own tracks. By avoiding the time and inconvenience of transferring between services, direct-through operation delivers large benefits to travellers. In addition, it is in line with the government policy that aims to reduce in-station congestion and realise an efficient and convenient urban rail network, which improves economic productivity in Japan's capital city.'

'Direct-through operation was first proposed by the Council for Urban Transport in 1956 and has been introduced in the Tokyo Metropolitan Area gradually since then as it provides a win-win-win solution for urban rail passengers, the government, and rail operators. As of 2010, the total length of rail network under direct-through operations reached about 880 km, or more than 35 per cent of the total urban rail network in the Tokyo Metropolitan Area, as shown in Figure 1. This approach inspired the interconnection of RER, the SNCF's suburban lines with metro lines in Paris (Sato and Essig, 2000)'

^{iv} http://www.infrastructure.nsw.gov.au/media/1162/interfleet_rail_network_strategy_review.pdf

^v <https://www.thejadebeagle.com/toucheth-not-the-monorail-metro-summary-business-case.html>
<https://www.thejadebeagle.com/earth-to-canberra-2.html>

^{vi} <https://www.thejadebeagle.com/dogs-breakfast-for-all.html>

^{vii} E.g. <https://www.abc.net.au/news/2018-06-10/nsw-trains-to-get-new-technology-on-the-tracks/9854992>

^{viii} While there are other NSW Government statements about rail – such as responses to Parliamentary Questions and the NSW Transport Masterplan, they do not provide significant new information and they refer to *Sydney's Rail Future*. Some, such as the Transport Masterplan, appear confused for example referring to metro as mass rather than rapid transit.

^{ix} For completeness, the assessment Table in the summary business case is at Figure ix.

Figure ix: Sydney Metro summary business case options

Table 4.3 Assessment of alternative options against Project objectives

Alternative options	Project objectives	Project objectives	Project objectives	Project objectives	Project objectives	Project objectives	Project objectives	Project objectives
	Improve the quality of the transport experience	Provide a system that is able to satisfy long-term demand	Grow public transport patronage and mode share	Support the productivity of the Global Economic Corridor	Serve and stimulate urban development	Improve the resilience of the transport network	Improve the efficiency and cost effectiveness of the public transport system	Implement a feasible solution recognising impacts, constraints and delivery risk
Regulatory, governance and better-use reforms	●	●	●	○	●	●	○	●
Road and bus alternatives	■	■	●	●	■	●	●	■
Network efficiency (up to 20 trains per hour)	●	■	●	■	■	○	○	○
Network efficiency (up to 24 trains per hour)	●	■	●	●	●	■	○	■
Sydney's Rail Future preferred network option	○	○	○	○	○	○	○	○

KEY: ■ Weak support for objective ● Medium support for objective ○ Strong support for objective

^x See note (iii) above.

^{xi} <https://www.abc.net.au/news/2012-06-13/port-kembla-sale/4067714>

^{xii} <https://www.thejadebeagle.com/fit.html>

^{xiii} <https://theconversation.com/which-lines-are-priorities-for-sydney-metro-conversion-hint-its-not-bankstown-111844>.

The discussion thread indicated some criticism of the article, but this was ill-founded. This is explained in <https://www.thejadebeagle.com/fit.html>.

^{xiv} <https://www.thejadebeagle.com/fit.html>

^{xv} <http://www.visitsydneyaustralia.com.au/history-railways-plan.html>

^{xvi} <http://www.railjournal.com/index.php/rolling-stock/paris-rer-new-generation-train-design-unveiled.html>

^{xvii} Highly respected rail analyst Mr A. W. Wardrop, in Appendix 3: *Fitness for duty. The capabilities of double and single deck rolling stock.* <https://trove.nla.gov.au/work/37406431>

^{xviii} P.11 https://www.sydneymetro.info/sites/default/files/document-library/16118%20Sydney%20Metro%20Project%20Overview_WEB.pdf

^{xix} The matter of Paris and Tokyo commuter trains offering ‘metro’ frequency is discussed in <https://www.citymetric.com/transport/paris-vs-tokyo-two-different-models-express-commuter-rail-stopping-patterns-2834>:

‘Many cities have large commuter rail networks, which function as urban rapid transit and extend into the suburbs. They use mainline rail rather than separate subway tracks, but are identical in other respects to conventional metro systems: urban stop spacing, frequency, and fares are all within the range of metro systems. The biggest systems are in Japan, where Tokyo and Osaka carry the vast majority of their public transport passengers on commuter trains and not metro trains. In Europe, the biggest system is the Paris RER while in the German-speaking world all major cities have S-Bahn networks.’

^{xx} Benson Bobrick, *Labyrinths of Iron, A History of the World’s Subways*, Newsweek Books 1982.

^{xxi} As a final, if inadvertent homage to the home of Metro, the Sydney Metro station for the ‘growth centre’ of Rouse Hill overlooks a cemetery: some 19th century Parisians feared that their underground railway would become the *Necropolitain*. See: Benson Bobrick, *Labyrinths of Iron, A History of the World’s Subways*, Newsweek Books 1982 pp 133-169.

^{xxii} <https://www.sydneymetro.info/sites/default/files/document-library/Sydenham%20to%20Bankstown%20Environmental%20Impact%20Statement%20Overview.pdf>

^{xxiii} Submission to Future Transport and Greater Sydney Regional Plan, November 2017 at <https://www.thejadebeagle.com/future-transport.html>

^{xxiv} Cover note and submission to Future Transport and Greater Sydney Regional Plan, November 2017 at <https://www.thejadebeagle.com/future-transport.html>
<https://johnmenadue.com/john-austen-the-nsw-infrastructure-mess-keeps-getting-worse/>

^{xxv} <https://johnmenadue.com/john-austen-trouble-in-nsw-infrastructure-paradise-part-2/>

^{xxvi} <https://www.thejadebeagle.com/western-sydney-rail-needs---submission-october-2016.html>

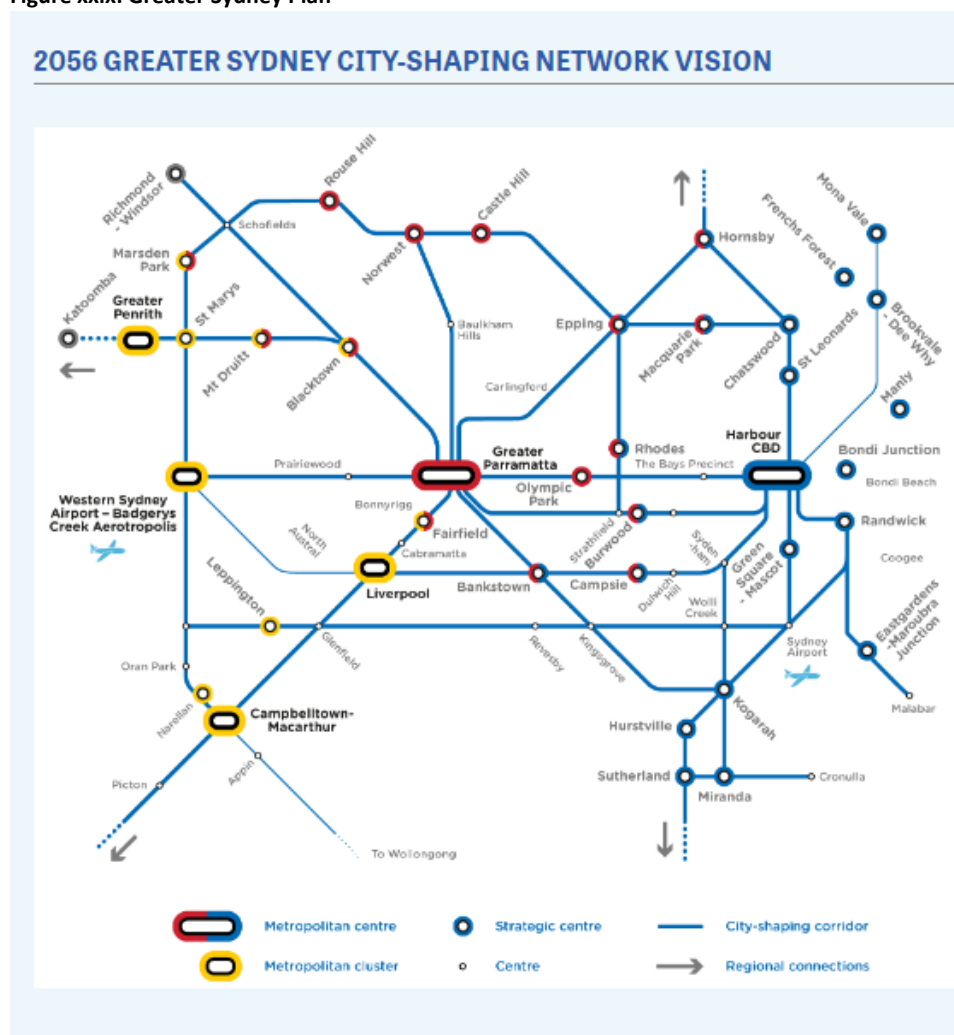
^{xxvii} <https://johnmenadue.com/john-austen-more-on-the-sydney-transport-mess-the-western-sydney-dud-deal/> and <https://www.thejadebeagle.com/western-sydney-rail-response.html>

^{xxviii} <https://www.thejadebeagle.com/doublet-of-ramses.html>

^{xxix} https://future.transport.nsw.gov.au/sites/default/files/media/documents/2018/Future_Transport_2056_Strategy.pdf
<https://www.greater-sydney/metropolis-of-three-cities/productivity/well-connected-city/metropolis-of-three-cities-%E2%80%93-integrated>

The key schematics are: Figure k.1 (in the text) from the Transport Strategy; Figure xxix (below) from the Plan.

Figure xxix: Greater Sydney Plan



Unlike Figure k.1, Figure xxii does not refer to 'turn-up and go', 'high capacity', 'Mass transit/train Network' etc.

xxx GENERAL PURPOSE STANDING COMMITTEE NO. 3 Tuesday 9 October 2012 Examination of proposed expenditure for the portfolio area UNCORRECTED PROOF TRANSPORT
https://www.parliament.nsw.gov.au/lcdocs/other/8530/121009%20Transport_Highlighted%20transcript.pdf

xxxi E.g. <https://railbotforum.org/mbs/index.php?topic=6825.0>

xxxii For example: Peter Symons, *Application of ETCS Technology to the RailCorp Network – ATP Pilot Trial*, AusRAIL Plus 2007 and
<https://www.alstom.com/press-releases-news/2016/6/alstom-delivers-australias-first-etcs-level-2-signalling-system-in-sydney>

xxxiii <https://johnmenadue.com/john-austen-inquiry-into-sydney-metro-part-1/>
<https://johnmenadue.com/john-austen-the-sydney-metro-the-doubt-and-mess-continues/>
<https://johnmenadue.com/john-austen-sydney-metro-again-10billion-more-to-build-something-later/>

xxxiv <https://www.thejadebeagle.com/sydney-2-exhibit-2-toucheth-not-the-monorail.html>