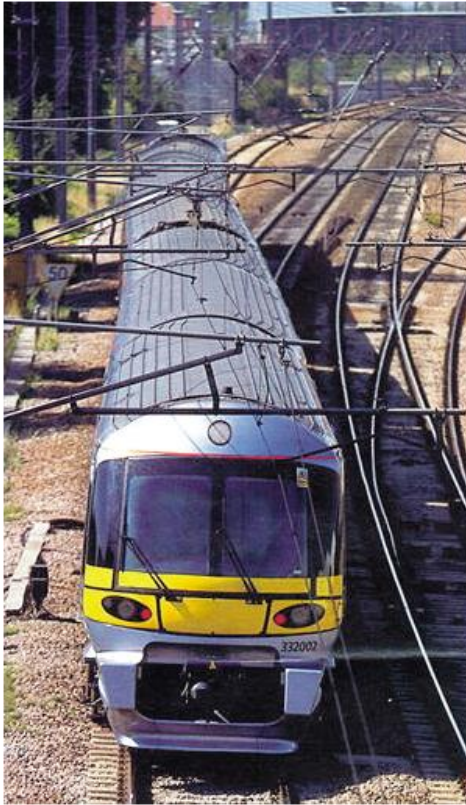


(2008) Discussion Paper: Western Sydney Public Transport Projects



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Over the past twenty years the author's principal involvement in Sydney's transport policy development came through serving on the boards of the then State Rail Authority (1989-1993), Macquarie Infrastructure Group (1995-2007), Metro Transport Sydney - light rail (2003-2005), Sydney Roads Group (2006-7) & Leighton Contractors' Western FastRail consortium (since 2002). Without pinning any responsibility for the content herein, in preparing this paper the author acknowledges assistance from Peter Hicks and Bob Hunter, Leighton Contractors; SKM's Alastair Burns, Peter Prince, and Ted Nye. Additionally, Craig Alchin, Professor Robert Freestone, Dr Garry Glazebrook, Professor David Hensher, Dr Ric Simes, and others made many useful suggestions on earlier versions of this paper. A draft of the paper was presented at the NSW Fabian Society Conference on "Fixing Sydney" on 18 October 2008. The author is responsible for all opinions and errors.

Discussion Paper: Western Sydney Public Transport Projects

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A. Executive Summary

Over the years some significant western Sydney public transport priorities have been muddled by politicians and planners asking the wrong questions and misunderstanding the problems to be solved.

This has caused a high level of cynicism by the public and dysfunctional processes to solve the main challenges facing current and potential western Sydney public transport users.

With the Rudd government's commitment, through Infrastructure Australia, to fund or co-fund major new infrastructure projects in metropolitan centres, there is now a once in a generation opportunity to get Sydney's major public transport problems fixed – with co-operation and investment required from the Federal and state governments, as well as the private sector.

This paper outlines potential government expenditure of around \$2.2b of the public transport requirements. In the discussion on Western FastRail (WFR), the paper argues that an investment by the Federal government would attract a larger investment from the private sector.

Immediate issues before the NSW government include:

- Lack of capacity in the system, particularly in the CBD, with resulting bottlenecks;
- Constrained funding environment;
- Absence of sufficient, dedicated resources allocated to integrated transport planning;
- Support by Federal government to fund major western Sydney rail feasibility studies;
- Congestion on the Western line, the busiest corridor of Railcorp's CityRail services;
- Government credibility, including past commitments to North West Metro; and,
- Ensuring that commuters can more easily access public transport, such as via park and ride carparks

This paper addresses these issues and provides solutions, outlining arguments for a package including:

- From Rouse Hill and Hills district, feeder bus rapid transit services along the M2 and to Epping;
- From Emu Plains to Parramatta, a high-speed metro service;
- From Parramatta to the City, a high-speed metro service;
- New CBD corridor, including new platforms at "City West Metro", connected to Town Hall, as well as at Wynyard/Barangaroo;
- New park and ride carparks – potentially at Penrith, Blacktown and Seven Hills, etc.;
- From Blue Mountains, option to connect to a high-speed metro service;

- Better connections and throughput from south west Sydney; and,
- Ensuring that commuters are not any worse off.

Additionally, the paper suggests that the North West Rail Link should be re-evaluated, but in the context of staging bus rapid transit as the first step.

This Discussion Paper pulls together an analysis of major issues, problems, and solutions. The central theme is the need to integrate metro transport and land use planning. The paper attempts to raise awareness of problems, constraints, and opportunities, but also to resolve major problems through a particular package, with emphasis on the Western FastRail (WFR) project.

The main focus is on western Sydney, including the north west. In so doing, detailed attention is given to rail, as the author is more familiar with the issues there. But the paper tries to give fair weight to competing public transport technologies and options. In response to anticipated criticism that the paper does not attempt a systematic documentation of existing problems and an exhaustive evaluation of options, the author pleads guilty. Although, the author believes that the paper does reference the major issues and challenges, including a critical comparative evaluation of solutions.

Key points are that:

1. It is critical to integrate transport and land use planning. Ideally, as discussed in the paper, the proposed Transport Co-ordination Authority would also have responsibility for strategic land use planning, especially as transport is probably the most significant instrument affecting the future city form and structure.
2. Fixed heavy rail systems only work where there are very high population densities. Typically, these densities are found in cities whose main form and structure was determined before the advent of the motor car. The literature suggests that around the western world, cities that have built new urban rail systems in new areas in the last 50 years struggle to receive an adequate return on their investment – that is, the sum of fares and external benefits as against the costs of the investment and operating costs. This is often because transport and urban planning are not integrated.
3. It is important to emphasise the role of different forms of public transport – especially buses in dedicated lanes – and how these routes can be up-graded to light rail and possibly heavy rail if the need (ever) emerges. Thus, one conclusion of this paper is: “If Sydney stays relatively low density in world terms, then busways that can still be converted to rail in the future is the way forward.”
4. For rail transport, the most cost-effective solution invariably tends to be about using the existing networks better, rather than building new expensive networks. In particular, City Rail is struggling with capacity constraints. In 2008 the NSW Transport Data Centre published information that shows that investment in system improvements is needed just to maintain the present quality of service. Other NSW government reports cite the lack of capacity along key rail corridors

and in the CBD as core challenges. Therefore, investment to deal with these capacity constraints makes good sense.

5. Cross regional connections in the Sydney metropolitan area are important to the debate. Indeed, 60 per cent of all origin-destination trip activity in Sydney is cross-regional, and this proportion is increasing. Rail is heavily focussed on delivering people to the CBD, but it is only responsible for 5 per cent of all passenger journeys in Sydney, and only 10 per cent of the passenger kilometres. Improving cross-regional journeys is likely to deliver a far bigger social return per dollar invested than improving access to the CBD. This emphasises the importance of integrating transport and strategic land use planning.
6. Much of what is wrong and needs to be done is known. For example, the report by Ron Christie (2001) on the *Long-term Strategic Plan for Rail*, discussed in this paper, is still very relevant. What is badly lacking is the mechanism to drive cost effective solutions. Almost everything is wrong – with poor planning, secretive, dysfunctional processes, and repeated, expensive mistakes. Because of capacity constraints and critical under investment, City Rail is at crisis point. Many needed decisions have been avoided for too long.

What a tragedy it would be if the monies to be allocated by Infrastructure Australia for NSW transport, including rail infrastructure, were misallocated. Driving superior results, through value for money solutions, is crucial. Nowhere is this more acute than in western Sydney, where the transport problems are arguably worse for more people than anywhere else in metropolitan Australia.

B. Asking the Wrong Questions

Asking the wrong questions goes with not thinking hard enough about the problems needing to be solved.

Key problems include capacity constraints in the existing rail and bus networks, value for money investment and understanding that for western Sydney, the major priority issues are improved services to outer western Sydney, where today most people in Sydney live and work. This requires addressing problems along the CityRail western rail line, as well as better transport connections to the Hills district.

Western Sydney is where the population growth is concentrated, where transport journeys are longest, where transport costs are highest (accentuated by recent oil price rises) and where the need to plan better is greatest.

An opportunity exists to solve many of these problems through an integrated solution. As discussed in this paper, a package is advocated that covers rapid bus transit from the north west, a new rail link corridor into the CBD, fast journeys along a discrete western Sydney corridor and, as well, more scheduled services and greater reliability of services across the network. Such a package needs to also address congestion and reliability

issues from the south west, including improved train services from Campbelltown and Liverpool.

Getting the right result turns on intelligently considering the options. Alas, a culture of secrecy is a problem. Decision-making processes should be improved by the provision of rational, market-oriented incentives. This ought to reduce the chances of over-investment and poor investment in public infrastructure. Yet government is generally reluctant to publicly air its thinking and reluctant to encourage debate on priorities.

For example, the handling of the Christie Report is illustrative. This 89-page overview report *Long-term Strategic Plan for Rail* prepared by Ron Christie when Co-ordinator-General of Rail in June 2001, hereafter referred to as the Christie Report (2001),² was marked as ‘confidential’ by the government. It did not surface until a leaked copy was extensively reported in the *Sydney Morning Herald* on 25-27 February 2002. The report pressed for a huge expansion of Sydney’s railways, arguing that travel around the metropolis would become very awkward otherwise. (Other arguments, such as impact on air pollution and safety, were also advanced). The government’s public response to the publication was to welcome the report. But government media briefings suggested that the Report was a “shopping list” of possible projects. Shorn of public knowledge of its contents and the context in which reforms were advanced, the debate about this list was necessarily limited. Following pressure from the crossbench of the Legislative Council, the report was officially released in May 2002.

In contrast, the Parry Report (2003) on *NSW Rail Operations* was published by IPART and publicly released for comment.

A more recent example is the Boston Consulting Report (2008) on Railcorp operations. Although delivered to government in April 2008, at the time of writing, the Report is still to see the light of day. It is expected, however, to be publicly released by IPART later in 2008.³

Some advocates of one means of transport technology can be extreme, attracted and held to an idea, as they became impervious to contrary arguments or evidence. With such thinking, the technology fits the problem, not the other way round. The solution, however, is not to ideologically prescribe one transport mode over another. Rather, a “horses for courses” approach is needed based on mode capacity, catchment areas, risks, and rewards. The starting point should not be an obsession with one mode of technology or another; instead, the beginning should be consideration of the needs of a particular area, and then adopting the appropriate niche solution.

C. Disjointed Decision Making

² Ron Christie (2001) *Long-term Strategic Plan for Rail*; the paper is usefully reproduced at <http://www.aptnsw.org.au/christie/index.html>; hereafter referred to as the Christie Report (2001).

³ See Linton Besser, Rees Seizes the Controls of Runaway Railcorp, *Sydney Morning Herald*, October 8, 2008.

Clearly the problems of western Sydney are only a part, rather than the whole.

Transformative solutions are required to fix Sydney's public transport problems. The 2006 *Moving On* report, jointly authored by the Rail Tram and Bus Union (RTBU) and the UTS Institute for Sustainable Futures, states that there is a crisis:

An unreliable and run-down transport system threatens Sydney's position as the financial capital of Australia and gateway to Asia, and yet successive governments (state and Commonwealth) have failed to deliver solutions. Investment has been incremental. Whilst the government plays 'investment catch-up' for decades of under-investment, passengers are forced to endure cuts in service frequency as transport operators attempt to maintain running times. At the core of the problem lies an historical under-investment in public transport. This means that major stations like Town Hall now operate at absolute capacity and surface streets are full of buses crawling through the CBD. Whilst trying to rectify this historical lack of investment, the government has capitalised on some relatively 'easy wins' to 'greenfield' development sites. The massive task of untangling a railway system, that has not been progressively or strategically enhanced, has captured attention. This form of 'infrastructure catch-up', however, is not an excuse to fail the many residents of Sydney's outer western suburbs who have never had a decent rail system.

Whole-of-government planning is required. Yet there is a plethora of government agencies involved in transport planning, including the Co-ordinator General's Office, Railcorp, the Transport Data Centre of the Ministry of Transport, the Transport Infrastructure Development Corporation (TIDC), the Premier's Department, the NSW Department of Planning and NSW Treasury. Admittedly this response signals the sheer complexity of the problems, but it underscores the merit of the idea of the independent NSW Transport Coordination Authority (TCA) proposed in the "Moving On" report. The proposal is that the TCA should be:

- Modelled on the successful example of the Olympic Roads and Traffic Authority;
- A statutory body, reporting to Parliament, with responsibility for transport planning and allocation of funds across all modes of transport; and
- Charged with the task of developing and implementing the plan to achieve a world-class sustainable public transport system.

Most importantly, this cannot become yet another layer in the bureaucratic process. It must truly be a decision body with sufficient power to deliver fast outcomes. Currently, one project at a time, unco-ordinated dealings between the bureaucracies and lack of transparency are the hallmarks of decision making. Not that the government is not trying – but its efforts are often feeble and unsystematic.

Since 1998, the NSW government has had guidelines, the *Working with Government* guidelines, which are supposed to encourage unsolicited proposals from the private sector for rail and other projects. Under those guidelines, the Head of Premiers is required to decide whether a project is worthy of assessment. If so, then a preliminary appraisal is made. Thereafter feedback is given to the proponent who may then respond. Once that happens, a final examination of the case is made. So far, based on the government's record, not one good idea for public transport services has come

forward – or deemed of compelling interest. Perhaps this is a fault of the current system. Or perhaps it is deeper than that.

The role of the Head of Premiers is now complicated by the Coordinator General's role. Effectively, the latter has taken over all major planning controls for public transport, by way of delegation by the former Premier and the force of the personalities involved. There are sweeping responsibilities, extending to most new infrastructure projects – not just public transport – that require the attention of the Office of the Coordinator General.

This Office was established in April 2007 to “support major government and non-government initiatives that aid development of New South Wales.” On its website, the role of the Office of the Coordinator General is described as to:

- Support private sector project proponents;
- Assist and encourage private sector investment in major projects and infrastructure;
- Facilitate the interface on major projects between government and non-government proponents; and
- Guide and expedite delivery of key government infrastructure projects.

Located within the Department of Premier and Cabinet, a key objective of the Office is to ensure “alignment between planning, investment and delivery for strategic public and private projects through a coordinated, whole-of-government focus.”

This focus is certainly needed in public transport, as poor co-ordination across government agencies is endemic. This has observably handicapped the efficacy of major rail transport projects.

For example, around a square kilometre of Green Square, in the decade since the Airport Rail Link was under construction the opened, nothing happened. A masterplan sponsored by Landcom was finally approved in 2008. This was too little, too late. Only now the densities and appropriate land use patterns have been prescribed that, in turn, will feed patronage.

The Green Square experience reflects a wider pattern. For example, with the new Epping to Chatswood Rail link, due to open in the first quarter of 2009, the planning authorities are only now in the early stages of working out densities and land use changes appropriate to the land corridor. Yet it is eight years since construction contracts were awarded and nearly fifteen years since the project was first announced. It is clear that, at present, there is virtually no possibility that the new rail line will be strongly patronised by local commuters in large numbers because few new high density residential developments are located near any of the new stations.

The website for the Office of the Coordinator General states that “In addition, the Office considers unsolicited proposals from the private sector which are designed, usually through infrastructure investment initiatives, to improve delivery of government services. In such instances, the *Working with Government Guidelines* provides a framework for facilitating innovative solutions.”

This highlights an issue. By referring only to improving delivery of government services – not new services independently merited – is the mindset of the Office of the Co-ordinator General revealed. Because so much is asked of the Office of the Coordinator General, it is understandable why there is a limit to what they can do in focusing on public transport. This is precisely the problem.

Is a discrete transport authority (the TCA) needed? Sydney is crying out for better coordination and strategic decision-making. One body for Transport can sound good, but the senior personnel, the commitment and funding from government, as well as support from Cabinet, are as important as the structuring. The problems require high-level political decisions that cut across numerous interests (including at the community/local government level) and portfolios (i.e., more than transport). The nature of the decisions, however, means that they need to be made within the political process. Ideally, this is a task for a well-functioning Cabinet (e.g., arguably Victoria can make decisions of this ilk; in Western Australia similarly, where transport development was part of the Ministry of Planning and Infrastructure). Singapore's Land Transport Authority (see <http://www.lta.gov.sg>) is a model of how land transport and urban planning can work efficiently. The closest NSW got to it was after the 2003 State elections when Premier Bob Carr gave Minister Craig Knowles the Department of Planning Infrastructure and Natural Resources (DIPNR) portfolio. There were problems, however, with how DIPNR/Knowles worked in practice. If Cabinet is working effectively, this model could potentially work. Perhaps a TCA could sit under an overarching portfolio of this nature.

Presently, the Co-ordinator General's office deals with many "value for money" assessments of major government projects, from desalination plants to the funding of sporting stadia. Its present role in public transport includes deciding what projects are assessed, dealing with the Federal government on allocation of grant monies, as well as championing the proposed metro networks and assessing the Western FastRail proposal.

A discrete Authority, or its equivalent, dedicated to public transport is surely better than this part-time body of almost theoretical *raison d'être*. The coordination issue is both big and difficult and goes beyond just the delivery agencies on transport and includes coordination of a wider group of agencies to deliver transport, housing, and jobs. Further, of this 'triangle' only jobs drive economic growth – transport and housing do not drive growth in their own right but are a necessary support to growth. Sir Rod Eddington found some evidence of this for transport in the UK, as discussed later.

D. Users of Public Transport

According to Professor David Hensher of the Institute of Transport and Logistics Studies at the University of Sydney, "Many of the issues [of public transport] are often

shrouded in ideology, politics and prejudices that typically cloud the real merits of a solution.”⁴

Professor Hensher posits that the accumulating evidence is that, in relatively advanced societies such as Australia, the individuals most likely to travel on urban public transport are:

- People who work in a central city and/or live in a densely settled area;
- School children;
- Low income households;
- Elderly citizens;
- Those with no automobile;
- Urban tourists; and
- Special event users.

Any meaningful transport planning thus needs to take these points into account, noting that as an absolute percentage of transport journeys, public transport is losing out to the automobile. Only where public transport offers a superior service does mode shift actually occur. With better land use planning, all this could be vastly improved. It does require, however, forethought and commitment.

One study by Australian academic, Paul Mees, comments:

Public transport is already cheaper for most people than owning and operating a car. It is flexibility, convenience and door-to-door travel times that count most, and public transport performs poorly in these areas for most trips in dispersed cities. Thus Adelaide, which has Australia’s cheapest public transport fares, nevertheless has the most rapidly declining public transport patronage.⁵

With respect to commuters travelling to the Sydney CBD, the State Plan advises that in 2005 during the peak hour, some 72.8% of journey-to-work trips to the Sydney CBD were made by public transport. This figure, however, changes to 22% when considering the proportion of journey-to-work trips being made by public transport across the Sydney Metropolitan area.

Cross regional transport needs are part of the public transport story. Over 60 percent of all origin-destination trip activity in the Sydney metro area is cross-regional, where CBD centric public transport does not serve such users well. The current need to have to either (i) drive and park to catch a train or (ii) bus-train to a destination which involves modal interchanging is a negative for many current car users. What can we do about this issue? A big focus must be on ensuring that public transport takes one to the destination and only a walk is then involved. So, destination-based planning is crucial. Too often the focus is on the residential (origin) end which can be ‘solved’ by better parking at stations so people can drive and safely park, or where we have high frequency and spatially good bus services feeding the rail hubs. Bus rapid transit (BRT) has much merit throughout Sydney as value for money to not just feed rail but to complement it so that there is good coverage for the large amount of cross-regional trip activity.

⁴ David Hensher, *Urban Public Transport Challenges*, 2000.

⁵ Paul, Mees, *A Very Public Solution: Public Transport in the Dispersed City*, Melbourne University Press, Carlton South, Victoria 2000.

CityRail claims to have a 53% share of all journey-to-work trips in the CBD (Railcorp Annual Report 2006/7). But this percentage has been falling over recent years.

According to the “Moving On” report, between 1999 and 2004, the proportion of passenger journeys to work by public transport decreased. In 2004, only 20% of passenger journeys to work were made by public transport, compared to 73% made by car, falling short of the 30% target in the NSW Government’s *Action for Air* Report (1998). In 2004, the top 3 reasons for using a car to travel to work included:

1. Shorter travel time (47%);
2. Bus/train unavailable or inaccessible (33%); and
3. Problems with public transport (26%)⁶.

The fifth Annual Survey of CityRail Customer Services by the Independent Transport Safety and Reliability Regulator, noted that the top five aspects of service, ranked on “expectations not met” criteria were:

- Over-crowding in trains at peak commute times (55%);
- Availability of secure car parking (42%);
- Clarity of announcements on the train (38%);
- Staff visibility on platforms in the evenings (38%); and
- Personal safety in train carriages in the evenings (36%)⁷.

Not surprisingly, given the capacity constraints of the network, earlier noted, crowding has become an increasingly annoying experience for commuters.

Professor Hensher argues that public transport is increasingly a niche provider of land passenger transport services which, if positioned and managed better, is capable of delivering appropriate service levels to satisfy the needs of the set of niche market segments. That is the challenge for public transport planning in Sydney. It is certainly challenging, but eminently achievable.

E. Catchments and the Appropriate Transport Mode

These factors are extremely significant in determining the right transport mode for a transport corridor: the catchment, including densities along the catchment, and the carrying potential of the rolling stock.

The railways’ most significant barrier to entry over any other guidance system-based technology is by virtue of their right of way – their land corridor. This is also the case for lightrail and bus transitways. The core technology of a railway is rigid flanged wheels on an axle running on a pair of metal guides. That single, simple technological concept seems to have changed very little. Yet like the woodsman’s axe, while rail transport might appear to have changed little, what has changed, however, is the entire engineering understanding. With advances in metallurgical science, the design of those

⁶ “Moving On”, RTBU/UTS 2006.

⁷ Survey published on 23 September 2008.

seemingly unchanging components keep pace with the demands of more sophisticated railway vehicles, both in terms of running speeds, and also axle loads.⁸

As a general guide:

- Heavy Rail trains can carry circa 1600 people on a 8 car set at 160 kph. With 2-2.5 minute headways, this means 38,000 passengers in each direction per hour.
- Light Rail can carry circa 250-300 people at speeds of up to 80 kph. Again with 2 minute headways, this means 5000-6000 each direction per hour.
- Autotrams can carry circa 200 people at speeds of up to 80 kph. With 1.5 minute headways, this means 4500 passengers in each direction per hour.
- Buses can carry circa 60 people at speeds up to 80 kph. At a frequency of 40-100 buses per hour on kerbside bus priority can carry 2400-6000 people per hour or, on a busway, 300 buses per hour can carry up to 18000.

With respect to catchment areas along a potential or existing transport corridor:

- The catchment for a public transport station is most effective within a 10 minute walking distance (or, typically, within 800m of a rail station).
- Carparking and interchanges can improve this but they need to be efficiently designed to ease commuters from one transport mode to another.

On an optimistic basis, outer Sydney densities mean that with a total walking distance of, say, 1 km of public transport, the total potential market is no more than 4000 people. If half of these catch public transport, then each transit station would attract say 2000 people and with a spread of say five hours the most per hour would be 600 persons per station.

So which mode?

- If Sydney stays relatively low density in world terms, then busways that can be converted to rail in the future is the way forward;
- As a precedent, it is noteworthy that Brisbane is constructing a network of busways that can be converted to light rail;
- Sydney has built the North-West transitway and the South-West transitway, which are useful precedents.

The Sydney T-Way Experience

On 6 December 2004, Leighton Contractors were awarded the \$524m T-way project which included:

- 14 kilometres of new bus only roads connecting with three kilometres of bus lanes on existing roads linking Parramatta with the new Rouse Hill Town Centre;
- 7km of new bus only roads linking Blacktown with Parklea;
- 10 new bridges, two underpasses and 10 new signalised intersections;
- 27 T-way stations;
- 20km of new off-road cycleway;

⁸ Peter Thornton, The Future for Rail – A perspective for Australia, paper delivered to the ATSE National Symposium at the 'New Technology for Infrastructure - The World of Tomorrow' Conference, 2006.

- Peak-hour services every 10 minutes; and
- Off-peak services at intervals from 15-30 minutes, seven days a week.

The SW Transitway has been running the longest and patronage has grown steadily since T-way services began running in February 2003. More than 5 million passengers have used the T-way since it began operating. At present, more than 39,000 people are using the service each week.

What should be done to improve services:

- Build busways to serve low density development (Rouse Hill).
- Link busways to existing heavy rail stations (link to Epping).
- Provide more capacity on existing heavy rail network (build Western FastRail).

These solutions are all cheaper and more practical alternatives to the much publicised rolls royce, new metro services once proposed along low density corridors in north western Sydney.

F. Journey Times and Consumer Choice

It is interesting to note that, for discretionary travel, elasticity of demand is mainly determined by price, comfort, and time. Professor Peter Newman of Curtin University, one of the three inaugural NSW Sustainability Commissioners (2003 to 2004) is a noted champion of the “Marchetti constant” as an important consideration in land transport and urban planning. Marchetti’s Constant is a term for the average amount of time spent travelling each day. Developed by the Venetian physicist Cesare Marchetti, the theory posits that although forms of urban planning and transport may change, people gradually adjust their lives to their conditions (including location of their homes relative to their workplace) such that the average travel time stays approximately constant, which is approximately one hour per day. Anything more and the individual looks to relocate – either home, job, or both.⁹

Newman says:

...the half hour average for the journey to work or a little less is the same in every city and has been for all-time... Transport planners still seem to think that people will adapt and just increase their travel times. They do not. They will adapt and move, but the city as a whole on average will stick to this one hour per person per day... This Marchetti constant helps us to understand a lot of things about cities, but it does explain why the inner ring has very high public transport, because within that one-hour travel time budget you can use public transport very effectively. It is in fact quicker within that ring than by car for many journeys – important journeys – but not in the outer suburbs. So, this is a very different city to the outer suburbs... Automobile dependence can be explained in these terms. It is where a city can only remain functional within that Marchetti constant travel time budget, if it uses automobiles as its major means of transport. If to keep within that one-hour budget the only way you can do it is by car you will do it. You will not somehow switch to using public transport because it is more

⁹ Cesare Marchetti, Anthropological Invariants in Travel Behavior, *Technological Forecasting and Social Change* International Institute for Applied Systems Analysis, Laxenburg, Austria 1994 pp. 75-88.

comfortable or something. It will only compete if it can get you there quicker and as a way of keeping within that budget. So, we need alternative options in infrastructure and land use that keep within the one-hour travel budget.

He went on to say:

That leads to two critical policies. One is to ensure that public transport is faster than cars in all main corridors; and, secondly, that we create local centres and town centres that are viable... The data on it is very clear. The cities that have effectively overcome automobile dependence have faster transit systems than they do their traffic system. So, in Europe you can see 39 kilometres an hour is the speed of their public transport system, 34 for the traffic. In Sydney it is 37 for the average speed of the traffic and 32 for the transit system. The buses average around 19, the trains 42. So, it is important to have train systems that can in every corridor enable a faster speed.¹⁰

The Marchetti constant has been criticised for claiming too much. It seems doubtful that an hour is universal and the same constant for commuters in New York, Tokyo, London, and Sydney. It seems that people in different cities have different tolerances for travel times. Even so, the concept is a useful insight that transport corridors are most effective the faster the journey times. And that urban centres are more viable where closely linked, such as within half an hour, to other centres.

Interestingly, in 2005 the NSW Department of Planning published a “City of Cities” strategy document that highlights the need for better transport connections between the major urban centres – the cities of Penrith, Parramatta, Liverpool and Sydney and North Sydney CBDs. As argued later in this paper, the Western FastRail proposal attempted to breathe life into the concept that Penrith (and Blacktown) and Parramatta could be vitalised as major employment centres through fast rail services to and from the CBD.¹¹

Newman’s view is that for public transport to be a major contributor to effective cities, it must be faster than car travel on key corridors. Without serious efforts to improve on this dimension, public transport can only play only a minor incremental role in the planned development of cities, including Sydney. Any initiative that reduces rail journey times will have a substantial economic benefit.

Some support for this proposition can be found in “The Eddington Transport Study. The Case for Action” (2006) delivered to the UK Government. This report advised the Government on the long-term links between transport and the UK’s economic productivity, growth and stability.

The Study demonstrates that the performance of the UK’s transport networks is a crucial enabler of sustained productivity and competitiveness and commented that a reduction in travel times through new investment and better performance would have

¹⁰ All quotes from Peter Newman, *Address to Metropolitan Sydney Futures Conference*, May 2004; see also: Peter Newman, *Why We’re Reaching our Limits as a One-Hour City*, *Sydney Morning Herald*, 26 April 2004.

¹¹ See NSW Department of Planning *City of Cities: A Plan for Sydney's Future*, Metropolitan Strategy Overview, Sydney 2005.

telling economic impacts: “Good transport systems support the productivity of urban areas, supporting deep and productive labour markets, and allowing businesses to reap the benefits of agglomeration. Transport corridors are the arteries of domestic and international trade, boosting the competitiveness of the UK economy.”



Map from the City of Cities Report Showing Major Sydney Population Centres.

The very first of the “Key Findings and Recommendations” of the Eddington UK Report is:

There is clear evidence that a comprehensive and high-performing transport system is an important enabler of sustained economic prosperity: a 5 per cent reduction in travel time for all business and freight travel on the roads could generate around £2.5 billion of cost savings – some 0.2 per cent of GDP.

In Australia, anyone standing at peak hour at, say, Blacktown station can observe that speed matters. Cityrail “fast services” are packed; all station and limited station stops depart half empty. Many people choose to stand, rather than be seated on slower services, to get to work earlier. They value their time. The importance of time savings has been one of the key arguments in the debate by the advocates of Western Fast Rail.

G. Railcorp Capacity Constraints

The rail network in the metropolitan area of Sydney is owned, maintained, and operated by Railcorp, presently a NSW State government owned corporation, though soon to report directly to the NSW Minister for Transport. Railcorp operates passenger trains under the Cityrail brand. Long distance trains run through Sydney under the Countrylink brand.

Until 1972, the railways in NSW were operated by the New South Wales government railways department, then replaced by the Public Transport Commission (PTC), which was also responsible for bus and ferry services. In 1980, the PTC was broken up into the

State Rail Authority, responsible for rail services, and the Urban Transit Authority (UTA) responsible for bus and ferry services. The UTA later became the State Transit Authority.

The NSW rail sector has changed extensively over the past decade, following the breakup of the former State Rail Authority. The corporatisation of NSW railways was heralded as the key to reform. In 2001, the State Rail Authority had its “above track” operations separated from its track ownership and maintenance operations. The track maintenance operations and track ownership were moved to a newly created Rail Infrastructure Corporation (RIC), with the breakup of the State Rail Authority into a “below rail” operator (the RIC) and an “above rail” operator (the residual State Rail Authority). The RIC became the “owner and maintainer of the NSW rail network. This separation into a horizontally operated rail system was criticised for the passing of blame for rail delays and accidents between authorities, and hence in 2004, railways in Sydney became a vertically operated system again with the creation of Railcorp, a fusion of the State Rail Authority and the urban sections of the RIC. Railcorp was established as a statutory state-owned corporation on 1 January 2004 under the *Transport Administration Amendment (Rail Agencies) Act 2003*. On 1 January 2004, RIC ceded “ownership” of the greater metropolitan rail network to a newly-created body, Rail Corporation New South Wales (Railcorp). The aim was to improve “safety, cleanliness and reliability”.

Railcorp provides 2,300 services daily which carry almost a million passengers to and from 302 stations. To achieve this, Railcorp operates a fleet of more than 1,500 carriages over more than 2,000 kilometres of track.

The Sydney Rail Network consists of four major lines radiating into the Sydney CBD from the north, south, west, and southwest:

1. The Illawarra line from Redfern south to Sutherland and on to Wollongong and the South Coast;
2. The Main Southern Line, from Lidcombe, through Regents Park and Cabramatta and southern NSW;
3. The Main Western Line, from Central through Strathfield and west to Penrith and western NSW; and
4. The Main Northern Line, from Strathfield north to Hornsby and on to northern NSW.

Other passenger lines branch from or interconnect with the four mainlines:-

- The Airport Line, an underground line linking the airport to the city;
- The Bankstown Line, from Sydenham to Lidcombe via Bankstown;
- The Carlingford Line, from Clyde to Carlingford;
- The City Circle, a mostly underground loop in central Sydney;
- The Cronulla Line, from Sutherland to Cronulla;
- The East Hills Line, from Tempe to Glenfield via East Hills;
- The Eastern Suburbs Line, a mostly underground line from Central to Bondi Junction;
- The North Shore Line, from Central to Hornsby via the Harbour Bridge;
- The Old Main South Line, from Granville to Cabramatta via Fairfield;

- The Olympic Park Line, a balloon loop line between Lidcombe and Olympic Park; and,
- The Richmond Line, from Blacktown to Richmond.

Since the 1980s State Rail has attempted to operate CityRail services in three discrete rail network “sectors”, so as to minimise the impact of any service disruptions in any one sector on the rest of the metropolitan rail system:

- Sector 1 (Illawarra), extending from the Bondi Junction terminus of the Eastern Suburbs Railway to Bomaderry.
- Sector 2 (south), essentially covering the south-western suburbs of Sydney, and
- Sector 3 (northwest), essentially covering the western and northern suburbs of Sydney, the Blue Mountains, the Central Coast, Newcastle and the Hunter.

While Sector 1 is still largely discrete, the growth in patronage (and hence train services) in recent years has led to considerable interaction between Sector 2 and Sector 3 services along the Main West line corridor between Granville and the CBD, and even in the case of Sector 1 rapid growth in patronage on the Illawarra line has forced some diversions of Sector 1 train services onto the City Circle, which was previously only reserved for Sector 2.

This problem reflects the fact that in the last 50 years there have been almost no track amplifications on the metropolitan rail network. This means all types of services – fast and slow, and to and from a wide variety of locations via a wide variety of routes – are forced to share the same overcrowded tracks, with few if any overtaking opportunities and with major congestion at the routes’ various junctions.

The Christie Report (2001) notes that within each of the current three main operational sectors of CityRail there is a complex mix of “fast” (“express” and “limited stop”) services – generally those travelling longer distances, including intercity services – and slower trains with a variety of station stopping patterns, including trains which stop at all stations on their routes. This mixture of services reflects the need for CityRail to accommodate three types of demand on the one network: relatively long-distance intercity and outer suburban demand, short-haul suburban demand and “inner city distribution” demand.

The map below traces the Sydney Rail network:



The Sydney Rail Network

As presently configured, the system is rapidly approaching gridlock, as there is a finite limit on how many trains can reliably and safely use each track and, even more significantly, on how closely they can follow each other through multiple congested junctions and/or wait their turn.

The forced breakdown of “sectorisation” as train numbers have increased beyond the capacities of any one sector is one of the factors contributing to the increased sensitivity of CityRail peak services to disruptions. The Christie Report (2001) urged that the restoration and strengthening of “sectorisation” operational approaches – or clearways – is critical. But he argued that this required both increases in the inherent capacity of the rail infrastructure – the equivalent of road widening programs – and the physical separation of the tracks and routes used by trains operating on different existing and new operational sectors.

Better scheduling and configuration of trains could obviate many present problems. Nearly all the “time” delays and cancellations on CityRail are caused by switch and crossing failures. So sectorisation or the clearways strategy is important to improving the efficiency of the CityRail network. Potentially some congestion constraints of the south western lines could be lifted through routing some services to the north shore, rather than the city circle. This is discussed later in this paper.

In April 2008, Boston Consulting Group provided to government a report (commissioned by the state government) recommending inter alia that Railcorp implement numerous reforms, including tougher industrial reforms. The report covered significant capacity constraints on the existing CityRail network. The report was meant to provide fresh direction for CityRail. Savings were to be spent on security, including specialised police to patrol trains and stations. The report proposed that all maintenance of carriages be outsourced. The report is expected to be publicly released once IPART's review of rail fares is finalised towards the end of 2008.

One reaction of the government was to shake up Railcorp's management. In October 2008, the Premier announced that Railcorp would cease to be a statutory authority. It is unclear whether this "reform" is a first step towards the difficult reforms, including industrial reforms, recommended in the Boston Consulting Group's report. IPART (the Independent Pricing and Regulatory Tribunal) in its review of Railcorp fares, independently discovered \$480 million every year could be carved from the bloated Railcorp bureaucracy by 2012. In its latest report, IPART calculated the reforms would save NSW \$1 billion over the next four years.

Despite high public transport growth in other Australian metropolitan centres, capacity constraints in the NSW CityRail network have severely limited the passenger growth of the network. As higher petrol prices continue to impact, however, this has driven higher demand for rail services. Although the experience was that rail journey numbers in the Sydney metropolitan system were relatively static, this has recently begun to change:

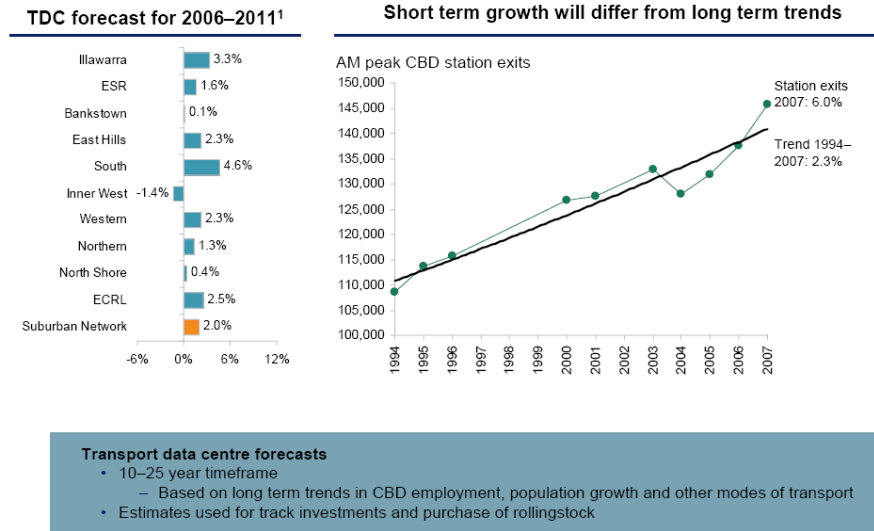
CityRail	03-04	04-05	05-06	06-07
Passenger Journeys (million) ¹²	273.3	270.3	273.7	281.3

This is supported by the observation of the Minister for Transport, David Campbell, that CityRail patronage numbers in 2007/8 were 296m, a 5.2% increase.¹³ Railcorp and the NSW Government's Transport Data Centre (TDC) have published information on forecasts of rail corridor growth which shows that recent, short term growth exceeds forecasts:

¹² *Railcorp 2006/7 Annual Reports.*

¹³ Report in *Daily Telegraph*, 24 September 2008.

Our understanding of TDC forecasts, and long run RailCorp data



1. Excludes intercity.
Source: TDC travel demand model November 2006, RailCorp ticket reporting system and manual counts (for exits through wide gates)
3.12 - 221740-12-PRES-FIN-20080215-Growth Handover Material.ppt



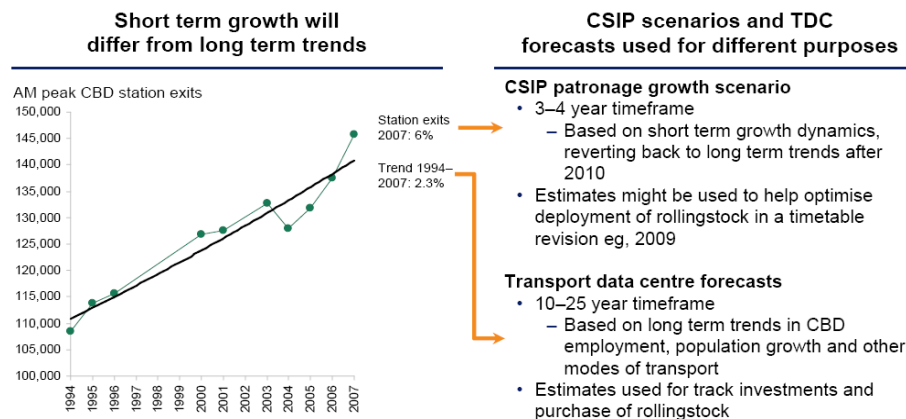
21

Source: Railcorp¹⁴

Within Railcorp there is some debate whether recent increases are due to a short-term spurt, induced by higher oil prices, returning to a steadier rate of increase in the longer term. The extract below from Railcorp's Growth discussion paper (February 2008) illustrates the story (note that CSIP stands for Railcorp's Customer Service Improvement Program):

¹⁴ Both tables on this page are taken from the Customer Service Improvement Program (CSIP) Report, Railcorp February 2008, found at http://www.nsw.gov.au/docs/Railcorp/3.12_Growth.pdf

CSIP scenarios and TDC forecasts can be used consistently



Source: RailCorp ticket reporting system and manual counts (for exits through wide gates)
3.12 - 221740-12-PRES-FIN-20080215-Growth Handover Material.ppt

Source: Railcorp

RailCorp

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Due to increasing population pressures, capacity constraint problems are likely to become worse. The latest ABS population forecasts released in September 2008 indicate that Sydney could grow by a further 1.4 million people by 2031, rather than the 980,000 assumed in the NSW Department of Planning's Metropolitan Strategy.

Bernard Salt, the KPMG demographer recently suggested that new population projections by the Australian Bureau of Statistics will change the ball game relevant to metropolitan planning. Salt wrote:

The same logic applies to Sydney. City of Cities was built on the basis that 980,000 residents were to be added to the city between 2006 and 2031. But now this outlook has been upped by the ABS to 1.427 million. How does Sydney cope with an extra half-a-million residents over and above the number that was initially planned for? Can Kellyville and Rouse Hill really accommodate the "storm surge" generated by new projections? And if not, then where are these extra bodies going to fit? And then there's the issue of what infrastructure is required to facilitate new growth areas? There's also the issue of how an apparently "broke" state Government will fund this infrastructure.¹⁵

The NSW Minister for Planning, Kristina Keneally, announced in October 2008 that the ABS data would now be utilized by the Department in its urban planning assessments. Her media release dealing with this matter suggested that the number of Sydney

¹⁵ See Bernard Salt, New Population Forecast Means Rethink on Urban Planning, *The Australian*, 18 September 2008.

households will increase from 1.62 million in 2006 to 2.35 million by 2036 - an increase of 740,000 or 46%.¹⁶

This population increase will undoubtedly add to the pressure on public transport. Failure to meet these transport challenges threatens Sydney's Global City status.

Understanding the major capacity constraints in the CityRail network is critical to considering and deciding on solutions.

H. The Main Problems are well Known

Much of what is wrong and needs to be done is known. For example, the Christie Report (2001) highlights that because of capacity constraints and critical under investment, City Rail is reaching crisis point.

It is important to distinguish between the operational challenges facing NSW public transport and the larger strategic issues. Some of the ongoing operational barriers that mitigate against an effective Cityrail service operating include: the lack of investment in an entirely new signalling and communications system for the network; the inability to substantially change Railcorp's operating procedures (something explored in detail in the 2008 Boston Consulting Group Report to Government); the unnecessary maintenance and life-cycle costs of so many different models of rollingstock operating on the network; the inability to restructure the fare system to allow for the introduction of a travel card to be used across all transport modes (T-card style); and, the lack of modern station and interchange design (Chatswood and North Sydney are both poor examples of design).

More significant are the strategic challenges. Seven years ago, Christie attested:

... all types of services – fast and slow, and to and from a wide variety of locations via a wide variety of routes – are forced to share the same overcrowded tracks, with few if any overtaking opportunities and with major congestion at the routes' numerous junctions. The system is rapidly approaching gridlock. This is already manifest in the extreme day-to-day sensitivity of CityRail services to even the most minor of disruptive incidents.

We have long known the main problems to be solved.

Foremost is the evidence that points to severe capacity constraints on the Railcorp network. This is highlighted by the following:

1. Generally, across the rail network, throughput is limited due to out-of-date signalling, bespoke rolling stock, and sub optimal rail alignments;
2. Poor transport connections to stations is a problem. There are few park and ride car parks anywhere on the Railcorp network. Recently, the Premier rode a train from Toongabbie and he was reported to have noted this message from

¹⁶ See Kristina Keneally, Key Findings: State Population Projections, *Media Release*, October 2008 at http://www.planning.nsw.gov.au/population/pdfs/mrel_o81020_nsw_state_regional_population_projections.pdf.

commuters: it is hard to get to stations. Yet potential carparking space exists at Penrith, Seven Hills and Blacktown;

3. Poor bus connections. These are typical across the Railcorp network – with major exceptions, such as Chatswood and Parramatta where in recent years there has been significant investment by government;
4. Near peak-hour capacity at Town Hall and Wynyard stations;
5. Tangled lines leading into the City. This is a major reason supporting the Government's clearways project; and
6. Structural and safety issues with the Goulburn Street carpark. This also adds to the bottlenecks due to trains slowing down on approach and departure of this past-its-use-by-date and potentially unsafe construction – at the beginning of the underground network.

The Christie Report (2001) observes that the factors affecting passenger rail system capacity on any particular section of the rail network, and hence CityRail's ability to meet rapidly increasing patronage demand, include:

- The number of passengers able to be carried on each train. For many years the growth in patronage was successfully handled by introducing double deck trains – the equivalent of cramming more people into each car on the road – but the temporary relief afforded by this measure has now been almost totally absorbed.
- The number of CityRail trains available to carry passengers during the peaks. The major constraint is the total number of CityRail trains, which is failing to keep pace with the growth in patronage demand.
- The number of tracks. This is a severe constraint, as in the last 50 years there have been almost no track amplifications – the equivalent of converting two-lane roads into multiple lane roads – on the metropolitan rail network.
- The need for CityRail to accommodate three types of demand on the one network: relatively long-distance intercity and outer suburban demand, short-haul suburban demand and “inner city distribution” demand. This necessitates a mix of station stopping patterns, with “fast” (“express” and “limited stop”) services sharing the tracks used by slower trains, some stopping at all stations. Because there are limited (if any) overtaking opportunities, this significantly reduces the capacity of many key lines.
- The long train “dwell” times required at the busiest stations, including the main CBD underground stations, as passengers leave trains and others wait on overcrowded platforms to board.
- The large number of “flat” (i.e., non grade-separated) junctions, many of which necessitate complex “conflicting” train movements (i.e., trains cannot enter until other trains crossing or merging with their path have either passed through the junction or have been held back from entering the junction themselves). The congestion at these junctions substantially reduces the capacity of all lines feeding into the junctions. (Again, there have been almost no grade separations of rail junctions – the equivalent of road intersection grade separations – in the last 50 years.)
- The inability of the signalling system to permit trains to travel closer together, thereby providing greater service frequencies, even in those sections of the rail network where this would otherwise not be ruled out by the necessary mixing of

service patterns, junction merging and crossing requirements and long station dwell times.

Christie observed that “In some cases the different services are able to be segregated from each other on four or six track sections of the network, allowing the faster services to overtake. In most cases, however, the almost total absence of track amplifications and junction grade separations in the last 50 years means this option is not available, and complex and disruption-sensitive timetabling is required.” He goes on to comment that as the number of trains has increased, the operational robustness of timetables, with complex mixes of types of services, has declined. This is similar to the points made by Professor Tom Parry in his *Report into Sustainable Transport in New South Wales* (2003) which identified a number of causes for the then reduced level of reliability, safety and service quality that were found on CityRail services. Those causes included:

- The range of services – complicating scheduling and timetabling – provided on the CityRail network.
- The “entanglement” of the operating sectors.
- Poor route and timetable decisions.
- Complex stopping patterns.
- Complex crew-rostering practices.
- Need to improve management of “closedowns”.

Professor Parry marshalled arguments in favour of improving operations. To overcome operational impediments, many proposals were considered, particularly the need for clearways.

Both reports call attention to the need to separate track (sectorisation), with Christie arguing for new pathways into the CBD (e.g., new track through the western part of the CBD) and across the harbour. The Christie Report’s focus was on the transport tasks most suited to the movement of large numbers of people at comparatively high speeds. In doing so, however, Christie expressly recognised that in many situations other public transport modes, including road and “transitway”-based buses and light rail, are more suitable, especially when relatively small numbers of people are involved.

For example, in the case of several of the possible new longer-term rail corridors in suburban Sydney, Christie said that other modes should probably be used at the outset, with rail modes being adopted for a corridor only if and when the much higher speeds and capacities of heavy rail become important or when constraints such as road congestion prevent buses from fulfilling their transport tasks. In short, transitways and other “feeder” bus services serve a vital role in combination with heavy rail.

Christie stated in his Letter to the Minister, accompanying his report: “Probably the most important single aspect of the Long-Term Strategic Plan for Rail, however, is its clear identification of the seriousness of the looming problem of severe capacity constraints on the metropolitan rail network.” This problem reflects the fact that, in the past 50 years, there were almost no track amplifications – the equivalent of road widening to provide extra traffic lanes – on the Sydney metropolitan rail network. A detailed program of changes for essential capacity-enhancing works including the physical separation of different types of CityRail services, was advocated. Yet, if

(sectorisation) is pursued without new lines, then improvements in efficiency will not be matched by improvements in capacity.

Christie strongly argued for a new rail route through the inner city and the CBD. “In essence”, he said, “the situation now is analogous to that before the Eastern Suburbs Railway was built in the 1970s. By providing a new route through the inner city and CBD, the Eastern Suburbs Railway provided vital relief for the City Circle and the North Shore line through the CBD, but this capacity relief will shortly be completely used up, even with all the capacity augmentations proposed for the next ten years, and another additional route through the CBD will once again be required.” Even though Christie commented that initial investigations into the new route were then underway – and that a relatively early decision would need to be made by the government – the evidence appears to be that no-one in Railcorp and/or the government was seized with a sense of urgency to address and deal with this challenge.

I. Current NSW Rail Improvements will not Reduce Journey Times Much

The greatest limitation on CityRail train frequencies are (1) the available train paths; (2) the onload/offload capacity at the CBD stations. At present CBD station capacity is close to peak. Since most services pass through the CBD, there is minimal ability to increase total network capacity until CBD capacity is improved.

For timetabling purposes, it is generally accepted that the maximum capacity for many sections of the CityRail network is 20 trains per hour. This is low by world standards (where 25 to 30 plus trains per hour are common). The main reason for this is the dwell time necessary at key stations such as Town Hall; the dwell time is based on the time needed to detrain and entrain passengers from double-deck rolling stock. This stock, with its upper and lower saloons, is limited to only 2 sets of doors, while the 2+3 seating arrangements severely constrains the access and egress of passengers.

This limit has already been reached on one CBD line (North Shore line in the AM peak) and it is anticipated that other lines will also soon reach their maximums. This puts a limit on the ability to increase frequencies by providing additional services.

In contrast to some claims, the current Clearways strategy being pursued by Railcorp will improve reliability and add to scheduling capacity to the network. With one significant exception, discussed below, without faster journeys and new rail corridors such reforms will have little impact on altering the attractiveness of public transport versus the private car. Railcorp’s clearways project’s core objective is to decomplicate the network and increase reliability, not to reduce journey times. The improvements in reliability on the existing Railcorp model are potentially at the expense of increased journey times. Over time this will reduce potential revenue take for Railcorp, because more travellers will elect to travel by car if journey times are uncompetitive.

An important means to reduce journey times is to increase frequency. Essentially this means reducing the wait times at stations, even if the real journey is unaltered.

Unfortunately, in Sydney's situation, the potential for frequency is limited by rollingstock design and the capacity of the lines through the CBD.

Frequency increases are limited by the capacity of lines through the CBD. Trains from the North and West have reached this capacity in the AM Peak. But frequency also increases patronage substantially; therefore, a new alignment through the CBD is needed, as Christie and others have observed. Without new capacity, new lines, and a new CBD rail corridor, the Railcorp service will continue to operate on congested lines, even if more "reliably".

This is not to underestimate the impact of strategic operational changes that could improve throughput in the system. With new investment in rail corridors, many more operational changes are possible. For example, through the combination of a new CBD corridor and the scheduling of certain SW trains over the Sydney Harbour Bridge, throughput could be significantly improved to and from the south west. This could avoid the current scheduling problems associated with the routing of trains from the south west of Sydney (such as East Hills, Liverpool & Campbelltown, etc., services) through the city circle. One of the ancillary benefits of the Western FastRail (WFR) proposal, including a new CBD corridor, is to create greater capacity and flexibility for SW train services.

J. Public Transport is Expensive

NSW public transport is expensive to own, operate and maintain. New capacity is also expensive to build and operate. Four examples highlight this story: the cost of the existing service; the example of the new Epping to Chatswood line; the cost of rolling stock on the CityRail network and the projected costs of the North West Metro.

With respect to Railcorp operations, the latest available figures are for the financial year ending 30 June 2007. In summary (\$M):

Passenger revenue	568	
Other revenue	257	
<i>Total</i>	<i>825</i>	
Operating expenses	1946	
Depreciation	446	
<i>Total</i>	<i>2392</i>	
<i>Deficit</i>		<i>1567</i>

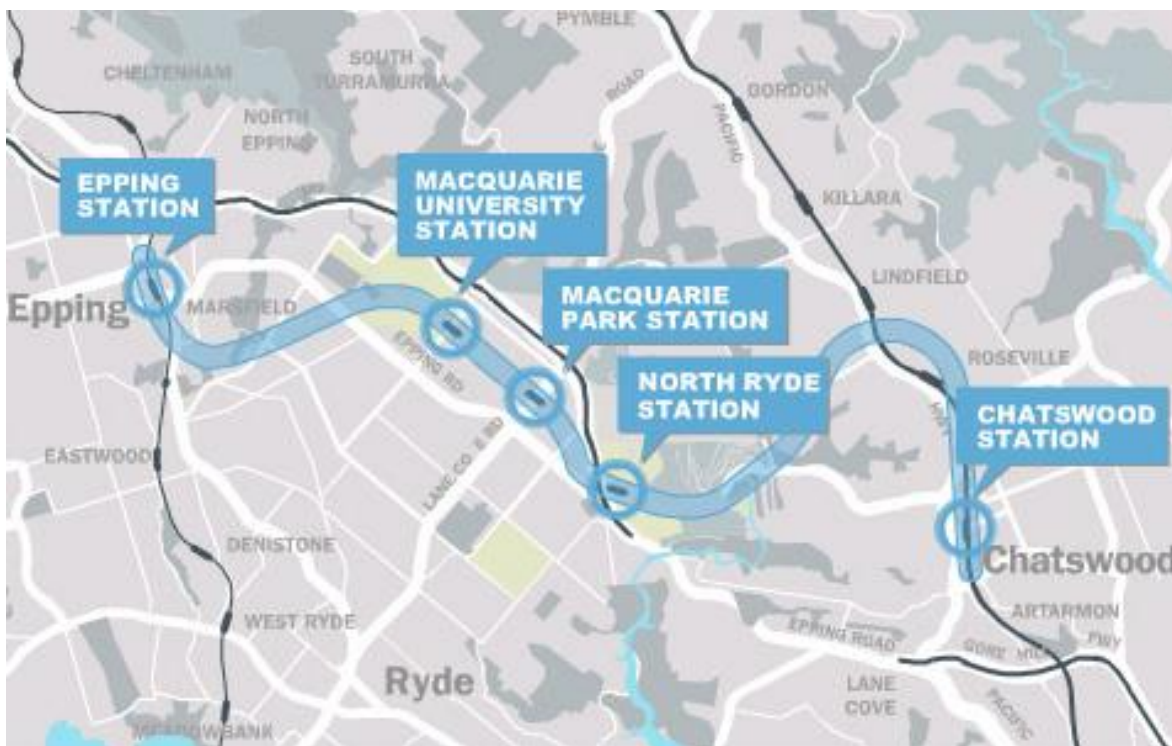
The government typically supports the annual deficit with subsidies. In addition, in the year in question, 2006-07, the government contributed \$554m to capital expenditure.

With respect to a return on capital, Railcorp has property plant and equipment of \$12.7 billion. Railcorp does not pay interest. With \$12.7billion of assets the minimum capital service charge (i.e., recovery of capital and interest) would be 10%. So Railcorp's economic cost is, say, operating costs of \$1946m plus unrecovered capital cost of say \$1.3billion – total, say, \$3.2billion pa. Passenger numbers in the year in question were

281 million. Each passenger had a cost of around \$8.50 but the recovery from the passenger was about \$2.

Of course, so much of Railcorp's costs are fixed and not variable. The new Epping-Chatswood line, for example, needs to carry full trains to provide a little help to assuage the massive haemorrhage. Will it?

The Epping-Chatswood project was announced in 1994 (during the Parramatta by-election), tenders were awarded in 2000 and the line looks likely to open in March 2009. Original costs were \$800m, final construction costs are estimated at \$2.3b and rising.



The Epping to Chatswood link

Admittedly, however, although the Parramatta to Chatswood line was announced by the Fahey government in 1994 and reaffirmed by Labor prior to the election of the Carr Labor Government in 1995. The progression of the Parramatta to Epping project was put on hold soon after the 1995 elections. This was so as to review route options and to consider Epping to Chatswood as the first stage of the project. In July 1998, the then Transport Minister, Carl Scully, announced in principle support for the building of a \$1.4b line from Parramatta to Epping. Closer costing showed that instead of \$800m for the Epping to Chatswood part, a higher figure might be required, thus \$1.4B was stated as available to fund the Epping to Chatswood section “first”. This was justified on the basis that the link, ultimately to Parramatta, would free up to 4 train movements per hour on the western line. But in early 2003, the then Minister for Transport, Michael

Costa, killed off the link from Epping to Parramatta claiming that only 12,000 passengers per day would use the link.

The Epping Chatswood rail link is said to be a model of engineering achievement. But it is also an example of what is wrong. This is no criticism of the Transport Infrastructure Development Corporation (TIDC) which has had to take over the project, with all of its technical complexities. But consider these facts: the project will take 15 years from thought to finish; costs have ballooned. Construction is over 8 years. There has to be a better way. There have been enough lessons learnt from other projects to effectively deliver an equal or better product whilst still shifting risk and delivery responsibility to the private sector.

It is a fact of commercial life that rolling stock on the CityRail network has become increasingly expensive; each carriage costs around \$3.4m. A standard 8-car train set costs about \$27.0m. Those costs are significantly higher than for comparable networks around the world. This is due to expensive, specific CityRail requirements, including double decker trains. Rolling stock tenders are based on yards of detailed specifications. “Over engineering” with highly prescriptive tendering processes is only a part of the story. Signalling, the typography of routes, integration issues, endogenous safety factors, designs of platforms – a host of factors – contribute to those costs. Interestingly, both the Western FastRail (WFR) proposal and the North West Metro concepts recommend using international standard, single decker rolling stock along a dedicated route and expect this to result in significantly lower cost to Railcorp trains.

With respect to the North West Metro, when announced in March 2008, the cost of the North West Metro was estimated at \$12b – that’s almost the value of the whole of the existing rail network, according to Railcorp’s books. Patronage, fully ramped up, was estimated at 40m passenger journeys per year. At a very conservative, non-commercial capital service charge of 10%, the Government should expect a return of \$1.2b per year. Assuming the patronage estimates are accurate, the economic cost per passenger journey is therefore around \$30. Yet even this figure of around \$30 does not include the cost of opex and depreciation. A ‘back of the envelope’ calculation suggests that, if, instead, we assume a total cost of, say, \$45 per passenger journey, and make the very optimistic assumption that the external benefits are equivalent to 2/3 of the total cost, that would leave an average fare per trip of \$15.

NSW Treasury did not believe the North West Metro patronage forecasts. The UK expert hired by Treasury in early 2007 pointed out that the low density through the proposed route, lack of key population centres and the frequent, slow stopping service (e.g., too many stations) mean that patronage will only be a fraction of the predicted 40m passenger journeys.

It’s reasonable to factor in the risk that the subsidy per journey, if the project was built, would be of the order of \$40, \$50 or higher. This is understandably Treasury’s main concern.

As both the rail and metro transport “solutions” are expensive, caution should be adopted before embarking on any project. Consideration should be given to all factors affecting cost and delivery of any solution to the problem to be addressed.

Specifically, on transport, the answer is about the most cost-effective solution, which invariably tends to be about using existing networks and gateways better, rather than building new expensive networks. It involves rigorous cost benefit analysis (CBA) and project appraisal. Priority deserves to be given to projects with the highest Benefit Cost Ratio (BCR).

From a whole of government perspective, this cost-effective approach applies equally to planning and transport interaction. Significant upfront effort is required to identify trade-offs and synergies between the spending plans of the planning and transport departments. This should help deliver a more cost-effective pattern of growth. This does need to be enforced from the top, however, because agency incentives are often to use other agency demands as a lever for additional funding.

Most importantly, heavy-rail investment takes a long time to come to fruition.

Therefore, it is prudent to consider transitional strategies that deliver accessibility benefits far earlier, and then increment, as appropriate, to the more expensive heavy rail, if and when, it is required.

One possible way of achieving this would be through strategic sequencing of the right-of-way (including over and under-passes, tunnels etc) with lower cost but with service-effective activity above the right-of way, such as a high frequency bus service that can serve the extensive origin-destination traffic with direct services and those with minimal but efficient interchanges. The experience from the Brisbane Busway system provides a very useful reference point. This illustrates the way in which an integrated bus service, on its own right-of-way, was designed to light rail standards but operated initially as a bus transitway. It has proven so successful, that government has decided to extend it. The reason is simple – it delivers very high capacity and does it at a much lower cost (capital, operational and maintenance) than light rail or heavy rail.

K. Funding Public Transport

Traditionally, public transport infrastructure in NSW is funded by the state government, with some limited private sector involvement, such as financing leases (such as with rolling stock), as well as design-and-construct arrangements (under set contracts) and alliancing arrangements – sometimes, at a stretch, described as a public private partnership.

Sources of funding could and do include:

- Budget appropriations as capital works payments – derived from consolidated revenue;
- Budget appropriation to fund operational expenses – also derived from consolidated revenue;

- Borrowings by government;
- Public Private Partnerships in various guises;
- Leasing arrangements, such as is typical with rolling stock leases – nowadays usually arranged between the rolling stock provider and financiers;
- Fares and other charges;
- Direct subsidies (such as school concessions) – derived from consolidated revenue;
- Rarely, such as in Honeysuckle in Newcastle, Special Purpose Vehicles (SPVs) have been created – involving a mix of funding sources, including user charges, debt financing and subsidies – for the funding of infrastructure. SPVs, however, have not been significant for rail transport in NSW; and
- Development charges or levies such as applied in the growth centres in south west and north west Sydney. For example, new development is charged \$23,000 per lot to fund infrastructure in those areas; this is needed currently to help fund new rail links to Leppington and elsewhere in the south west, new release areas of Sydney.

Many funding issues confront the present administration in NSW, including the fact that significant parts of the rail infrastructure are ageing and in need of repair and replacement; for example, antiquated signalling systems complicates the efficiency of the network and adds to costs.

A central problem with major rail projects is sorting out funding/financing models. By funding, whether we use general revenue – today or for a future generation – or a version of user or beneficiary pays (such as fares or developer charges) to service the costs of the infrastructure. This is the hard bit and can be helped by clearly defining property rights ahead of time (as indicated below). If this is sorted, decisions whether to have the infrastructure financed/owned by the public or private sector should not be hard, at least in principle.

As noted elsewhere in this paper, the strategic focus should be directed to all manner of possible ‘solutions’ and not limited by any particular preference for a specific technology (i.e., light rail, heavy rail, bus rapid transit, conventional bus and increased road capacity for cars).

Extensive economic appraisal needs to give a complete definition to the range of alternatives that may best reveal the subset that can truly deliver the greatest amount of accessibility per dollar of government expenditure for all current and future residents of a transport corridor.

In terms of financing, generally government debt financing is the primary means for funding infrastructure (in general it is the most cost effective in terms of borrowing) but, where the risk can be transferred properly, a PPP type approach is a viable alternative. For example, this could potentially be shared with the private sector taking on equity financing & the Government sourcing debt. There are many variants and combinations in capital financing.

The Christie Report (2001) suggested investment in improved rail operational safety, reliability and efficiency, and in particular:

- “Sectorisation” of CityRail services and enhance this approach by developing separate new “sectors” through the combination of new lines and extra tracks on existing lines, so that increasingly CityRail trains will operate on much simpler, much more segregated and much more robust “end to end” service patterns;
- The associated ability to simplify the “mixing” of fast and slow CityRail services on the major rail corridors;
- The ability to create new “turnback” facilities, thereby removing obstructions to through services and increasing line capacity;
- The potential of new computerised signalling control systems in parts of the metropolitan area to improve both operational efficiency (for example, through automatic route setting and the ability to precisely monitor all train movements) and infrastructure and train maintenance efficiency (through automatic logging and reporting of asset conditions and failures);
- The ability of emerging communications-based “in cab” signalling technologies to improve both rail safety (through Automatic Train Protection systems which would prevent over speeding and the passing of signals “at danger”) and the capacity of the rail network (through “moving block” and similar systems which could permit trains to travel closer together with reduced “headways”); and
- The introduction of new technologies and facilities improving both the reliability and performance of the CityRail fleet and the cost-effectiveness of rail infrastructure and operations, such as upgraded infrastructure and train maintenance capabilities and systems, alternating current electric traction and, in the longer term, more efficient types of wheel-on-rail rolling stock and possible magnetic levitation or similar technologies.

Adding capacity to the network and adding new services are difficult to achieve without new funding sources. Although it is sometimes asserted that government can always do it “cheaper and better” because its cost of debt is lower, this glosses over reality. A joint article by John Pierce, Secretary of the NSW Treasury and Ian Little, the then Secretary of the Victorian Department of Treasury and Finance points out:

But why would a government seek to use private-sector finance to build infrastructure, when it can borrow at lower interest rates by issuing government bonds? It’s a myth that governments have access to ‘cheaper’ finance to undertake projects: a government’s ability to borrow more cheaply is purely a function of its capacity to levy taxes to repay borrowings. But, when it comes to raising finance for a project, it’s the risk of the individual project that determines the real cost of finance... The difference between the private and the public sectors is that private-sector capital markets explicitly price in the risk of a project into the sources of finances. In the public sector, taxpayers implicitly subsidise the cost of a project by bearing the risk of cost overruns, time delays or performance failures, which are not priced into the government borrowing rate.¹⁷

Indeed, without Federal government assistance and financing from the private sector, the NSW public transport sector faces a dire period ahead. The federal government,

¹⁷ John Pierce and Ian Little, Taxpayers Need Value from Partnerships, *Australian Financial Review*, 8 April 2002.

however, has foreshadowed its interest across Australia in considering and funding major new, metropolitan public transport projects. The 2008 Federal Budget announced that part of the present and future surpluses would be put into an infrastructure fund, with an initial allocation of \$20b. In early 2008, an advisory body, Infrastructure Australia, was formed. Infrastructure Australia is chaired by Sir Rod Eddington, the former CEO of Ansett Airlines, and more recently CEO of BA airlines. In recent years, Sir Rod has written reports on policy, priorities and funding options for public transport for both the UK Government (2006) – “The Eddington Transport Study: The Case for Action” (December, 2006) – and also the Victorian state government (2007). Mr Michael Deegan, a former Secretary of the NSW Ministry of Transport, was named as the first Co-ordinator General of Infrastructure Australia.

Infrastructure Australia’s functions are set out in the *Infrastructure Australia Act 2008*:

(1) Infrastructure Australia has the primary function of providing advice to the Minister, Commonwealth, State, Territory and local governments, investors in infrastructure and owners of infrastructure on matters relating to infrastructure, including in relation to the following:

- (a) Australia’s current and future needs and priorities relating to nationally significant infrastructure;
- (b) policy, pricing and regulatory issues that may impact on the utilisation of infrastructure;
- (c) impediments to the efficient utilisation of national infrastructure networks;
- (d) options and reforms, including regulatory reforms, to make the utilisation of national infrastructure networks more efficient;
- (e) the needs of users of infrastructure;
- (f) mechanisms for financing investment in infrastructure.

Additional functions

(2) Infrastructure Australia has the following additional functions:

- (a) to conduct audits to determine the adequacy, capacity and condition of nationally significant infrastructure, taking into account forecast growth;
- (b) to develop lists (to be known as Infrastructure Priority Lists) that prioritise Australia’s infrastructure needs;
- (c) to review and provide advice on proposals to facilitate the harmonisation of policies, and laws, relating to development of, and investment in, infrastructure;
- (d) to evaluate proposals for investment in, or enhancements to, nationally significant infrastructure;
- (e) to identify any impediments to investment in nationally significant infrastructure and identify strategies to remove any impediments identified;
- (f) to promote investment in infrastructure;
- (g) to provide advice on infrastructure policy issues arising from climate change;
- (h) to review Commonwealth infrastructure funding programs to ensure they align with any Infrastructure Priority Lists;
- (i) to undertake or commission research relating to Infrastructure Australia’s other functions;
- (j) any functions that the Minister, by writing, directs Infrastructure Australia to perform;

(k) any other functions conferred on Infrastructure Australia by this Act or any other law.

It remains to be seen if Infrastructure Australia (IA) will merely accept whatever is put forward by the states as “their preferred projects” or whether IA will rigorously assess projects, including competing projects, on a merit basis. It is encouraging, therefore, that Infrastructure Australia’s published guidelines say that they will systematically consider cost benefit analysis. (See the discussion on choosing between projects, later in this paper).

Interestingly, the Federal government, also in the 2008 Budget, allocated \$20m to the NSW government for the funding of feasibility assessments of western Sydney rail transport projects. The NSW government, under the previous Premier, on the advice of the Office of the NSW Co-ordinator General, allocated those funds to an evaluation of the two announced Sydney metro projects (i.e., the north west and west metros).

Even significant federal funds for new projects are not enough to finance the needs of Sydney and NSW’s public transport needs. This is partly due to the many years of neglect in spending on new transport projects. And due to the uncreative approach of Government in ensuring that the private sector invests and takes on risk and is significantly exposed to failure of a public transport project.

Of course, government needs to ensure that projects meet real needs and are properly costed. And in doing so, avoid some of the mistakes of the past.

As outlined in the discussion below on Western FastRail (WFR), Leighton Contractors proposed a real risk transfer of delivery and operation of a new rail network at considerable savings to government. Yet because of the way government is structured to deal with new transport projects, this proposal proved too hard to fully assess. If, however, Federal government funds are allocated to assessing all worthy western Sydney rail and public transport solutions, there may be an opportunity to revisit some of the arguments put forward in the WFR proposal – perhaps, via an adapted Metro West proposal.

Let us now examine, more closely, the main proposals recently considered by the NSW government. First North West Metro, then Western Fast Rail.

L. North West Metro

The North-West (NW) Sector of the Sydney Metropolitan Area is currently subject to detailed transport review as government seeks to find appropriate ways of providing much needed transport accessibility to residents’ preferred destinations throughout the metropolitan area.

In 1998, the North West Rail Link (NWRL) was announced in the State government’s Action for Transport 2010 plan as “essential” and due for completion in 2010. Later, in 2005, the project was re-announced as part of the Metropolitan Rail Expansion Program (MREP). This heavy rail addition to the Railcorp network never happened.

The project was still on the drawing boards in 2006. In that year, the “Moving On” report said: “The next step to be undertaken in the planning process is reservation of the land corridor for the NWRL, which is a time-consuming process. However, despite repeated calls from officials for sites to be bought as early as 1998, the State government... failed to acquire land. As a consequence, acquiring land to build the future Rail Link will be more costly, with land prices having tripled... Therefore, to ensure the necessary land is available for the construction of the NWRL, immediate action is required”. Instead, in March 2008 the government committed to a 38km underground North West Metro tunnel.

According to the NSW government’s own website (www.sydlink.com.au), metro rail is the favoured mass-transit system of many of the world's great cities. Each metro system is individually designed to meet the needs of the city it serves: “Using Euro style metro trains, Sydney's metro system will be tailored to the needs of our city and will revolutionise Sydney's public transport system:

High frequency services will make timetables unnecessary. With a metro train every few minutes waiting times are kept to an absolute minimum.

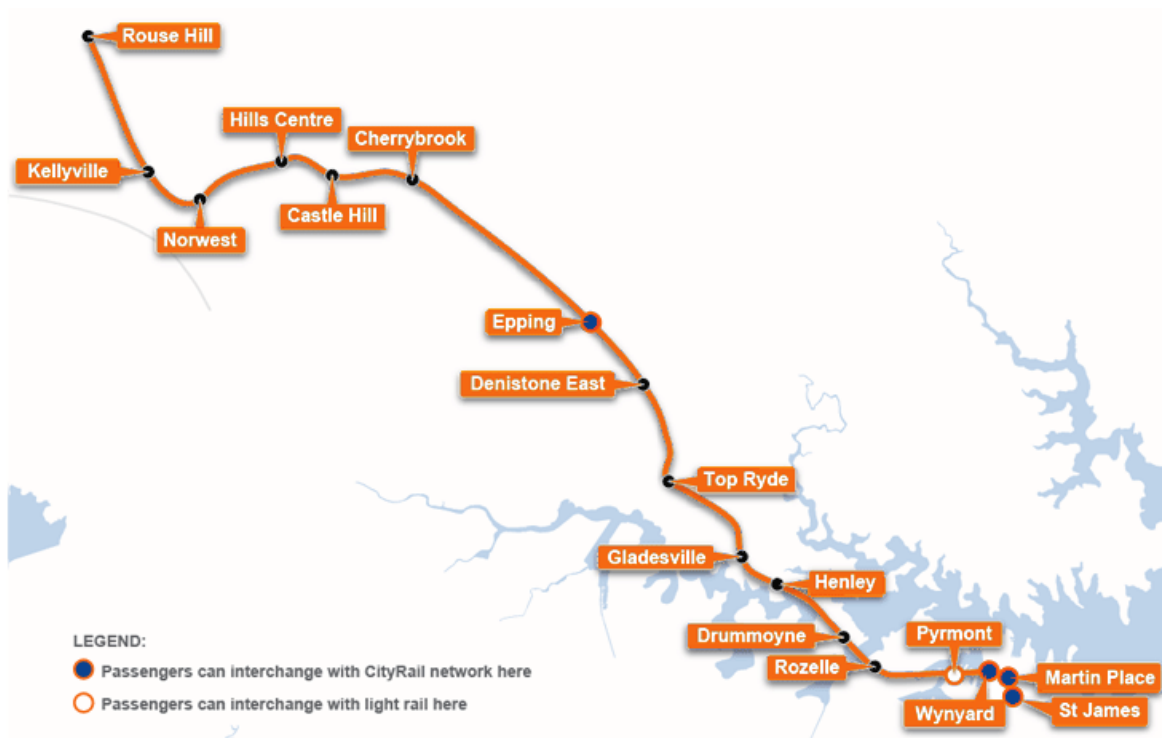
More doors mean that passengers can get on and off faster, delays at stations are reduced and overall travel times are much quicker.

Operating independently of other modes of transport, energy efficient metros will run predominantly on underground routes that will feature new, passenger friendly stations.

Metros can add substantial capacity to existing transport modes, reducing traffic congestion and passenger crowding.

Some metro lines around the world can reliably move more than 60,000 people in an hour, while CityRail lines are limited to a maximum of about 30,000 people per hour.

Western Fast Rail (WFR) puts forward similar transport mode objectives. Additionally, WFR emphasizes shorter journey times as important. Such transport systems arguably only work where there is significant density along the corridor.



The North West Metro route

The 38km North West Metro route is from Rouse Hill, through the Hills district, to Epping, then Top Ryde to the city.

In October 2008, the project was formally shelved. Members of the Rees government knew that in its current form the North West Metro project was unaffordable, especially in a tight fiscal environment.

At a cost of \$12B, the project was expensive. As noted earlier, the costs of the North West Metro are about as much as the book value of the entire Railcorp network. The sister, Inner West Metro, between Parramatta and the city, as earlier conceived, was expected to cost an additional \$6b to \$8b. In combination, therefore, those two metro lines were likely to cost up to \$20b. That is if they ever go ahead.

The feasibility studies are yet to be completed; some have not started. Some are now indefinitely deferred. The Federal government's allocation of \$20m to the State government to assist western Sydney rail projects should now be better targeted to projects with biggest bang for dollars allocated.

Some people insist that metro rail is "the solution". The North West Metro was an issue in the by-election in Ryde lost by the government in October 2008. The proposed North West Metro goes through this previously marginal electorate and, if built, might ease traffic along Victoria Road. Hence the protest signs on the Iron Cove Bridge: "No Second Bridge, Metro Way to Go".

Partly due to incessant publicity, including in 2008 expensive television advertising by the NSW government for the North West Metro, public expectations were high that the metro should be built. The previous Premier, Morris Iemma, saw the metro projects as his legacy. But by putting this technology/mode solution forward, without the justifying density and potential patronage, it might truly be said that Premier Iemma was ahead of his time.

At least Premier Iemma put more efficient public transport and rail services on the agenda. He tried to do something. Because, over the years, land had not been reserved for an above-ground transport corridor in the north west, this meant that any rail network there would necessarily be expensive. Far from being a cynical political response to pressures, or a deceptive attempt to fob off an illusory solution on an unknowing public, the metro rail solution was the well-meaning product of a powerful myth. It is a classic case of technology defining the solution, rather than the reverse.

In fact, the best possible metro line would be through the west of Sydney, along the western line, where employment and population are the most dense in Sydney.

According to Professor David Hensher: “Expanding public transport rail services far into suburban areas in contexts where we are losing the dense corridors linked to a major destination is precisely what has the least market potential. Improving bus services however may have a more appealing role. Investing in new rail systems as an isolated strategy is a very expensive way of attacking the general problem. The results where this has been undertaken in urban areas with a dominating automobility have been disappointing – low ridership, and debilitating subsidies”¹⁸. Though not written with the North West Metro in mind, Professor Hensher’s formulation of eight years ago looks presciently apposite.

An alternative to the north west metro, is to step up transport links from the North West to the city. First, with sophisticated buses or autotrams as used in WA and elsewhere; then, perhaps, lightrail, then heavy rail. This might unfold over a ten to twenty year plus scenario. As density and commuter numbers increase, then the next stage becomes more feasible. If one went bus rapid transit, the tunnelling is still important and contributes very well to the overall conclusion. The crucial issue is to get a decent corridor that can deliver accessibility and then find the relevant transport capability (i.e., right capacity per hour) given cost per km.

In sum, to ensure that the North-West Sector of the Sydney Metropolitan Area (the Hills District) is served by improved public transport that delivers maximum net social benefit per dollar of taxpayers’ investment (i.e., value for money), it is recommended that the following emphasis be given to the development of improved public transport services:

- That the provision of improved bus services, as either main line or feeder services, not be restricted to serving existing or future rail systems (metro, heavy and/or light rail).

¹⁸ David Hensher, *Urban Public Transport Challenges*, 2000.

- That an integrated bus network system be an alternative to new rail, in part at least, to both provide more direct and efficient services as well as to take pressure off the existing and future rail system, given anticipated growth in demand for public transport in the NW sector.
- Serving the needs of the entire population of the North West sector must be emphasised to ensure that any focus on investment in radially-focussed public transport does not restrict the financial capability to deliver effective outcomes for the large number of actual and potential users of public transport who have regional and cross regional travel needs to be served.
- A mix of services that includes (i) direct CBD services, using articulated buses, bus priority along the route (including the M2) and in the CBD and a combination of re-routing and through-routing strategies in the CBD; (ii) high frequency feeder services to Epping rail or to the Hills Centre if the NWRL is built; and (iii) an enhanced high frequency North West Transitway service to Parramatta, connecting to a new 'fast west' rail line to the CBD, the later connecting Parramatta and the CBD in 11 minutes, with possible stops at Homebush and Strathfield and progressing onto Blacktown and Penrith.
- That a focus on the higher frequency service mix noted above will provide a system-wide increase in service capacity that can start to benefit radial and cross-regional trip activity.
- That a Bus Rapid Transit be developed for the corridor being reserved for heavy rail beyond the Hills Centre to Rouse Hill (and possibly from Epping to the Hills Centre) as a transition investment that can bring forward a public transport system capable of handling up to 20,000 trips per hour one-way, built to light rail standards, with incremental investment up to heavy rail being able to be made in the future should demand grow and needs are not met by advanced Bus Rapid Transit systems. This would be similar to the successful system in Brisbane.



Photo of the new “auto-tram” in WA

Thus, under this thinking, complementing existing bus services, the first step would be to lay the foundation for a dedicated bus transitway or high speed autotram corridor, from Rouse Hill to Epping station. Commuters from Epping would then catch a train to the city.

As a preliminary calculation, Leighton Contractors estimates that the cost of this connection, from Rouse Hill to the M2 to Epping, a distance of 21km, would be around \$700m (not including the cost of buses or autotrams, estimated at another \$100m, though more likely fundable through leasing arrangements).

A growing proportion of all travel activity is regional and cross-regional, with existing infrastructure (especially rail) being predominantly radial (towards the CBD), with a continuing focus on buses as a feeder service to rail stations. The plans to incrementally introduce cross-regional direct bus services under the strategic corridors plan rollout, creating competition between bus and rail, a desirable initiative to both improve service levels (reducing transport interchanges) and spreading the load across a much over-stretched public transport system, is an excellent start. Recent pressures to construct a heavy rail corridor to serve a relatively limited amount of the North West sector residents, however, raises some fundamental questions about whether this is a desirable strategy. It is not only very expensive (in absolute terms and in terms of net social benefit) but also potentially cuts off funds that might be better invested in lower cost but

more effective technologies that can provide greater service coverage for all North West residents.

Buses connect to Epping Station already – with a flyover from the M2 taking buses to Epping station. Direct City Buses are required, however, due to lack of train capacity or frequency at Epping. The rail-bus terminal at Epping needs to be increased in size and be well designed. To make this proposed north west busway operate efficiently, there should be choice for commuters to either keep going on the bus towards the city or to catch the train from Epping. So as to make this choice appealing, there should be an increase of frequency of services on the rail network; the new Epping-Chatswood-City line will help; so too will WFR or a new version of Metro West (discussed below) improve overall network capacity and efficiency, allowing for more frequent services from Epping.



Bus network showing connections from Rouse Hill.

Politically, the sell would be that the new north west transit way or autotram route is an efficient, public transport corridor, with the potential for lightrail and heavy rail conversion. This does not exclude considering the feasibility of a rail link from Rouse Hill to Epping. The new bus route from Rouse Hill to Epping and connecting to the M2 and running along the busway in the middle of the M2 could be built by March 2011. But there is a need for more than this, as the M2 is already congested and buses disgorging at morning peaks in the CBD are close to capacity. Inescapably, new dedicated transit lane tunnels and more & better interchanges are required.

M. Western FastRail (WFR)

From its first dealings with the NSW government, the Western FastRail Consortium proposed that ultimately there be an overlay network of high-speed rail links across the Sydney metropolitan area, consisting of five key corridors:

- Western Line
- South-West
- North West Shore
- Lower North Shore
- Central Coast

These were discussed in detail in the original (2002) submission. The first corridor proposed was along the Western Line, called Western FastRail. While WFR could fit as the first stage in an integrated network, the proposal stood on its own merits. The economic and social benefits did not rely on completion of the other potential FastRail corridors.

In putting forward, in detail, the WFR proposal, the Consortium was aware of the need for extra capacity on the network. Thus, for example, new CBD capacity was addressed. The original FastRail proposal was submitted to the Head of Premiers in April 2002 by a consortium led by Leighton Contractors. The proposal was for government to consider:

- Trains from Blue Mountains, Emu Plains and also Quakers Hill;
- Quadruplicating the track from Penrith to St Mary's;
- Sharing of two of the four tracks between St Mary's & Westmead;
- Underground tunnel from Westmead to the City;
- No or limited stops from Parramatta to the City;
- New city route through CBD, with new platforms at Central, new station in the CBD (either at Pitt Street or Sussex Street, linked to Town Hall station) and use of disused platforms at Wynyard;
- Use of CityRail rolling stock, possibly through single decker carriages, if that were supported by City Rail;
- Compatibility of rolling stock through dual voltage;
- Sharing of fare box (such that the then State Rail Authority, now Railcorp, would keep base fare and FastRail receiving a supplement for new services);
- Option of State Rail Authority operating the service; and,
- Upgrading of stations at Wynyard, Central St Mary's, Penrith, Katoomba & Lithgow.

The consortium emphasized that all the above points were options and that the consortium would welcome discussion on what might be favoured by government.

A distinct line would be operational with 11-minute journeys to Parramatta, 18 minutes to Blacktown, 30 minutes to Penrith. Standard, international rolling stock would operate on the network. (For details, see: <http://www.fastrail.com.au>). The travel time comparisons were:

Travel times to and from the CBD (minutes)			
	Now	<i>FastRail</i>	Saving
Parramatta	26 to 34	11	15 to 23
Blacktown	33 to 45	17	16 to 28
Penrith	48 to 74	28	20 to 46

Cutting travel time by 33% to 70% creates a transport experience that cannot be matched by car.

The Western Fast Rail consortium argued that the proposal would bring the city to the west and ultimately make the major western Sydney business centres more thriving as employment destinations and liveable cities. Significantly, the ‘underground tunnel’ would add to capacity in the clogged rail arteries leading to the city – thereby enabling the clearways priorities of Railcorp.

One of the consequences of Western FastRail would be to dramatically improve the viability of Western Sydney population centres by significantly impacting the employment and demographic patterns of Sydney thus ensuring that:

Parramatta effectively becomes part of the Sydney CBD with an 11-minute train journey. Parramatta as an accessible quick trip away: as close as Bondi Junction now is from the City.

Blacktown and Penrith also become more viable as employment centres closely connected to the CBD.

Jobs would eventually move to where the population is rather than the other way around. Just as Oakland is to San Francisco, Newark to New York, so too will Penrith, Blacktown and Parramatta be spurred by excellent transport links to the CBD of Sydney; significant employment, including "back office" jobs, would be stimulated through this infrastructure

As such, the consortium presented Western FastRail as an ambitious project meriting assessment as an urban planning idea, as well as a transport engineering project.

Using modern train control technology, and with alignments separated from the rest of the network, Western FastRail would achieve much higher train frequency. For WFR services, trains do not need to be super speed. Running on a straight-line track underground achieves the speeds required. The rolling stock proposed was standard, single decker trains that could be compatible with the rest of the Railcorp network. In the 2002 proposal, FastRail suggested absorbing the existing Cityrail “fast/semi-fast”

service, with the slower “all stations” services continuing on the Railcorp track. For operational reasons, the Consortium proposed the selection of 25kv AC in the tunnel – with 1500v DC rollingstock on the network from Westmead to further west. Thus, dual voltage trains would operate on WFR.

WFR waived any rights to copyright or proprietary knowledge, though requested that its financial forecasts be kept confidential.

During 2002, there were various discussions and interactions with the government. Towards the end of the year, however, the government was in election mode (an election was due in March 2003). Eventually, the government’s preliminary, written advice (in December 2003) inter alia covered (a) criticism that the government took on too much risk with the proposal; (b) the suggestion that the consortium should take on rolling stock risk; (c) critiques of track access issues (the government suggested considering sharing of two of the four tracks from St Mary’s to Westmead, rather than WFR exclusively operating two tracks); (d) issues to do with timetabling and stops (more were suggested), and so on. The Consortium was told that the implications of the Christie Review of rail were still being considered. Emphatically, the NSW government stated that there was no money for the project from state coffers and that the WFR consortium would need to fund all improvements. The consortium decided to reconsider its proposal in the light of this feedback.

In 2004, the then Minister for Transport, Carl Scully, recommended to the consortium that the government would be prepared to consider a proposal emanating from Penrith/Emu Plains, but not from the Blue Mountains.

In 2005 the Consortium decided to resubmit, this time proposing that the WFR consortium take on more risk and offer a more seamless service. In December 2006, the Hon. Michael Costa, Treasurer and Minister for Infrastructure, wrote to the Western Fast Rail Consortium stating:

I refer to our recent meeting at which your consortium tabled an alternative for a fast train proposal from Penrith to Wynyard, that indicated a willingness to accept:

- full market risk on patronage;
- full risk on financing any rollingstock required; and
- the design, development and construction risk for the tunnel section from Westmead to Wynyard.

I am pleased to advise you that the government has considered your revised proposal and sees merit in undertaking more detailed investigation of the project, particularly any constraints to sharing rail access between Westmead and Penrith. The government resolved to form an inter-agency working group to be chaired by Dr Col Gellatly to prepare a detailed investigation report for government’s consideration, I would seek your consortium’s cooperation in providing whatever additional analysis reports you may have completed since your submission to government in April 2002. In the same month, in an article by the then Leader of the Opposition, Kevin Rudd, he outlined his thoughts on the need for an incoming Labor government to focus on the major cities. Specifically, he referenced the “huge new infrastructure pressures on the

Sydney basin.” Mr Rudd said: “On rail, we will look at providing funding support for projects like the fast rail link to Penrith.”¹⁹

On 5 March 2007, Dr Col Gellatly wrote to the WFR consortium to propose:

I refer to our meeting on 7 February and confirm that the government has decided to undertake a detailed investigation of your revised Western FastRail proposal. The government has considered your request for a memorandum of understanding to cover further investigative work but has decided not to agree to enter into a MOU. I am therefore writing to outline the process which will be followed for this investigation and to clarify the respective roles and responsibilities of your consortium and the Government. As you have indicated, the Proposal is for an alternative fast train service to be provided by the private sector under a PFP delivery structure to extend from Penrith to Wynyard with shared rail access from Penrith to Westmead and new tunnel to be constructed from Westmead to Wynyard. In order to further consider the Proposal, the government intends to form a Western FastRail Working Group which I shall chair. I will advise you further when the Working Group is established but can indicate that at this stage it is likely to include representatives of Premier’s Department, NSW Treasury, Railcorp, the Transport Infrastructure Development Corporation, the Ministry of Transport and the Department of Planning. I appreciate any assistance you are able to provide the Working Group and ask you to nominate your preferred point of contact between the Working Group and WFR. All members of the Working Group would be subject to confidentiality deeds in handling information from WFR.

The Working Group's immediate task will be to review the Proposal - with particular consideration of the additional track requirements - in accordance with relevant strategies and policies. In this regard, it is important to emphasise that the Government's consideration of the Proposal will be undertaken in the broader context of its strategic transport planning. As was indicated at our meeting on 7 February, the Premier's Urban Transport Statement addresses the longer term issues and needs of Sydney's transport system. This includes consideration of the merits and feasibility of Metro lines as a new transport mode, separate from the existing rail network. I can advise that the Government is undertaking further studies into Metro lines and will consider the reports of both the Metro studies and the Western FastRail Working Group before making any decision. Neither process would preclude the other project from proceeding at any time in the future.

As it is the government’s intention to establish the Working Group as soon as practicable, I anticipate that the Group will report to Cabinet within the next six months. I confirm that if the government decides to proceed with the WFR Proposal as a PFP, a competitive tender process will be undertaken in accordance with the *Working with Government: Guidelines*. Western FastRail will be invited to participate in that process. The process I have outlined will proceed in

¹⁹ See Kevin Rudd, Labor’s Major Cities Plan No Minor Matter, *The Daily Telegraph*, 19 December 2006.

strict confidentiality. Information which is exchanged between the government and WFR as part of this process will only be used or disclosed for the purposes for which it was provided unless otherwise agreed between the parties. No media statements will be issued without consultation and the agreement of the other party...

In March 2007, the WFR consortium wrote to accept this process and nominated Peter Hicks of Leighton Contractors as the preferred point of contact with the government. The additional track requirements referred to by Dr Gellatly related to both the tunnel from Westmead to the city as well as the potential options west of Westmead.



The Western FastRail corridor.

In interaction with the government to early 2007, discussion focused on the consortium taking on rolling stock risk and reviewing track alternatives from St Mary's to Parramatta. The 2007 proposal was for:

- Trains starting from Penrith or Emu Plains;
- Quadruplicating the track from Penrith to St Mary's;
- Sharing of two of the four tracks between St Mary's & Westmead or building of new capacity; the consortium suggested that developing a seamless route from St Mary's to Parramatta would be expensive and SKM were commissioned to do research on potential options;
- Underground tunnel from Westmead to the City;
- Limited stops from Parramatta to the City, with at least Olympic Park included;
- New city route through CBD, with new platforms at Central, new station in the CBD (either at Pitt Street or Sussex Street, linked to Town Hall station) and new platforms at Wynyard or a new station at Bangararoo;
- Consortium leases new rolling stock, preferably single decker carriages, independent of Railcorp;
- Compatibility of rolling stock through dual voltage;
- Western Fastrail to determine and keep the fares;
- Western Fastrail operating the service, with Railcorp, under a service agreement, selling tickets on platforms; and,

- Upgrading of stations, including at Wynyard, Central, St Mary's and Penrith.

As with the original (2002) proposal, WFR put to government in 2007 that these were options and that the consortium would welcome interaction with government so as to develop a more robust, acceptable proposal.

The consortium emphasised that ultimately, once government decided on what it wanted to do, then the WFR consortium would expect to bid in an arms' length, competitive process for effectively a new network.

The method of assessment adopted by the government working party in 2007 was not to evaluate cost benefit scenarios, but to mark the proposal against the criteria that there be "no cost to government", an exacting formulation. A much better and standard methodology is the use of the benefit-cost ratio (BCR) formula or variant thereof. This is an indicator, used in the formal discipline of cost-benefit analysis, that attempts to assess the overall value-for-money of a project or proposal. A BCR is the ratio of the benefits of a project or proposal, expressed in monetary terms, relative to its costs, also expressed in monetary terms. All benefits and costs are expressed in discounted present values.

The Western Fastrail consortium made various submissions to government updating past information and pleaded that there be discussion and debate on options, including varying project specifications. Yet there was little interaction between the Working Party and the consortium. The Head of Premier's and Chair of the working party, Dr Gellatly resigned from the public service in July 2007. The evaluation of the project, in the terms promised, "fell between the cracks", as government bureaucrats frankly, if privately admitted.

In October 2008, at a NSW Parliamentary Select Committee hearing, the new NSW Minister for Transport, Mr David Campbell, offered this critique:

I refer to an unsolicited proposal by the private sector known as Western FastRail consortium to develop a fast rail service between Western Sydney and the central business district and I make these comments. I am advised that the last two proposals that were considered did not stack up and they were both rejected. Last year the Western FastRail consortium, comprising Leighton contractors and ABN AMRO Australia, revised and resubmitted the Western FastRail proposal to government. I am advised that the Office of the Coordinator General, which is part of the Premier's department, established an interagency working group to review the latest proposal in accordance with the *Working with Government* guidelines. I am advised that the government has yet to consider advice from the Coordinator General as part of that process.

Preliminary advice to me is that this proposal may improve travel times for relatively few people at a cost to the thousands of commuters who use the CityRail network. As I understand it, under the fast rail concept the fast trains would not stop at all between Parramatta and the central business district. Between Penrith and Parramatta trains would stop only at St Mary's, Seven Hills and Blacktown, so nine stations west of Parramatta would miss out. Passengers

would not have access to fast rail from Kingswood, Werrington, Mount Druitt, Rooty Hill, Doonside, Toongabbie, Pennant Hills, Wentworthville or Westmead, or, as I already mentioned, at any stops between Parramatta and the central business district.

If the fast rail proposal got the “green light”, CityRail services from Penrith to Parramatta would have to become all-station services, and express CityRail services could not operate because two of the four rail tracks between Penrith and Westmead would have to be dedicated to the fast rail. The dedication of two of the rail tracks to the fast rail would also lead to major congestion problems on the rail network as the intercity western line, Cumberland line and freight services would all be forced to operate on the remaining two rail tracks. I am advised that passengers who wanted to use the proposed fast rail would also have to pay a \$3.80 premium — that is an extra \$38 on top of a weekly ticket for Western Sydney people who commute five days a week.

For people who could not afford the extra \$38 a week their only option would be to stay on the all stations CityRail train that would take up to 30 minutes longer than their current trip. That is 79 minutes instead of the current 49 minutes for Blue Mountains passengers, and 65 minutes instead of the current 40 to 45 minutes for Mount Druitt passengers. The Western FastRail proposal would not improve services on the western line; it is a proposal to improve services for some of the people on the line – those who have access to the five stations west of Parramatta where the train would stop and those who can afford to pay an extra \$38 a week for the privilege. An unsolicited proposal is being considered by the Office of the Coordinator General.²⁰

Perhaps, based on the minister’s statements, the WFR consortium has done a poor job in communicating its offering. Yet there were many attempts by the consortium to address the problems mentioned. The Minister’s “critique” ignores the suggestion made by both the former Treasurer and the then head of Premier’s, Dr Gellatly, that the government working party review new tracks between Westmead and further west. This is covered in the SKM study referred to below.

Track options were closely evaluated by the WFR consortium. In 2007 the WFR consortium hired Klaus Clemens, a respected railway consultant of RMAus and a former General Manager, Organisational Development with the then SRA, to investigate interface and track sharing issues. His report was given to the government working party. The report concluded that options for the sharing of tracks between CityRail’s Intercity services and WFR services would be both operationally viable (even with retention of all or almost all of City Rail’s services) and beneficial to Railcorp and its CityRail customers.

To quote from the presentations made to government in 2007: “The overall benefits of the western FastRail project to both Railcorp and its Cityrail customers would be

²⁰ All quotes from NSW Parliament *Hansard*, General Purpose Standing Committee, No. 4, 15 October 2008, p. 8f. Similar arguments are canvassed in Linton Besser, *The Boomerang Train*, *Sydney Morning Herald*, 23 August 2008.

maximised – significantly so – if Railcorp selectively reduced some of its main West line services once Western FastRail services commenced.

“It is stressed that these conclusions are not intended to force any changes in Cityrail service patterns, but merely to suggest the possibilities Railcorp might choose to consider in order to maximize its abilities to meet its customers’ needs and desires.

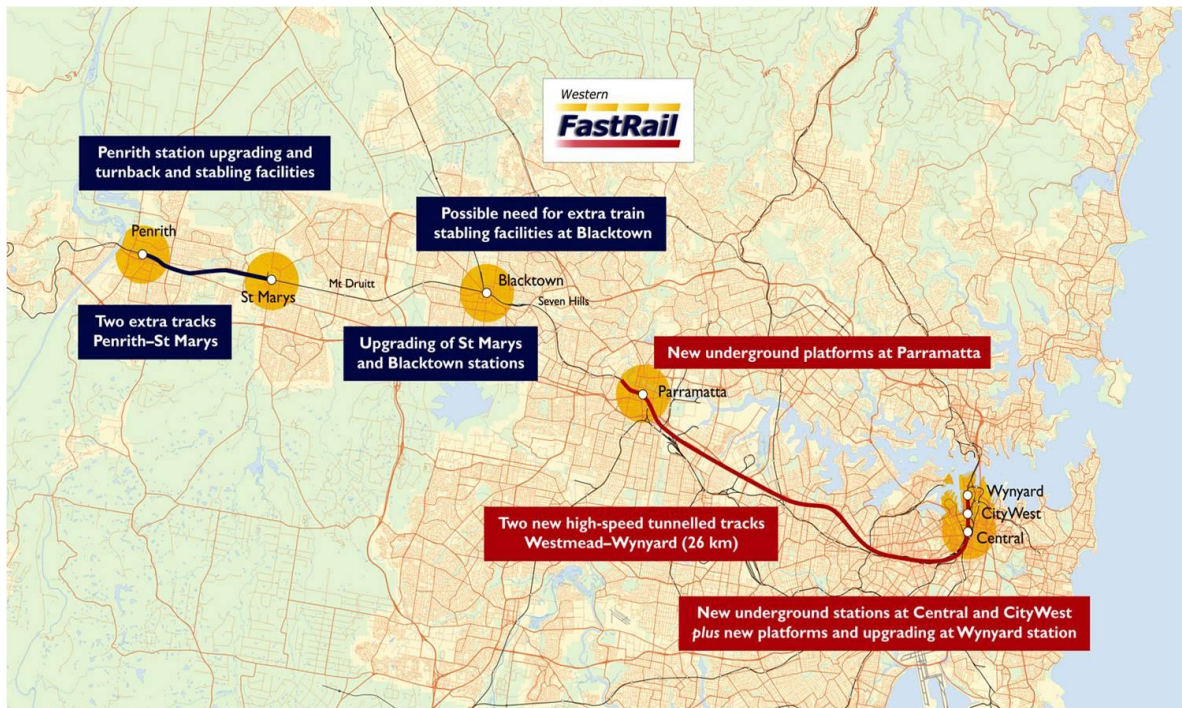
“It is also stressed that under the Western FastRail consortium’s policy that there ought to be no fare premium for trips (or portions of trips) within western Sydney, no rail users would be forced to pay more even if Railcorp did reduce its services. This WFR policy therefore gives Railcorp the maximum possible flexibility in deciding how best to adapt its services (if at all) in response to the commencement of 10 to 16 additional WFR services per hour.”

Metro West incorporates a major upgrade of existing rail infrastructure along Sydney’s busiest rail corridor, including upgraded track between Penrith and St Mary’s, new rail alignment along the M4 between St Mary’s and Parramatta, and a dedicated 38km rail tunnel from Westmead to the city. Alas, there was no dialogue whatsoever with the NSW government on such suggestions and the working out of solutions.

It is not true that if WFR gets up then there will be inferior CityRail services to the Blue Mountains. Indeed, this is turning reality on its head. If WFR were to operate then Railcorp would naturally make a judgement of the likely demand for its services. As every transport planner knows, timetabling and scheduling of services is a dynamic process. Demand for certain services will be affected by choice to travel on a higher speed service. Hardly unexpectedly, Railcorp’s judgement is likely to be that if there is less demand for its services, including fast trains on the WFR line, then Railcorp would be likely to signal its intention to reduce the number of services, particularly its faster services from Emu Plains and consequently from the Blue Mountains.

Regarding services from the Blue Mountains and the argument that people from the Mountains will lose out if WFR goes ahead, it is interesting that presently residents in the Mountains travelling to the city are already on the fastest service. This is because the gradient and the track from Katoomba to Emu Plains mean that the service between those centres is slow even if WFR operated. Therefore, the fast service (speed and cutting out stops along the route to the city) only begins at Emu Plains.

The FastRail Proposal



Outline of Western FastRail route.

Railcorp monitors the ‘train load count’. In morning peak hours, on Blacktown Station for example, it is an observable fact to see nearly empty ‘all stations to the city’ trains depart and, on another platform, a fast train to the city absolutely packed to the gills. Commuters are pouring into the overcrowded carriages because speed matters to them. It is not unreasonable to suggest that many Blue Mainline commuters would change over at Emu Plains for a much faster, continuing service. But, as the Klaus Clemens report highlights, if they did not a similar or the same service would still be available.

The criticism of WFR is a reminder of the adage about the straw man argument: “the problem with the straw man is that there’s an empty head”. It is an attack on a proposal defined at its weakest.

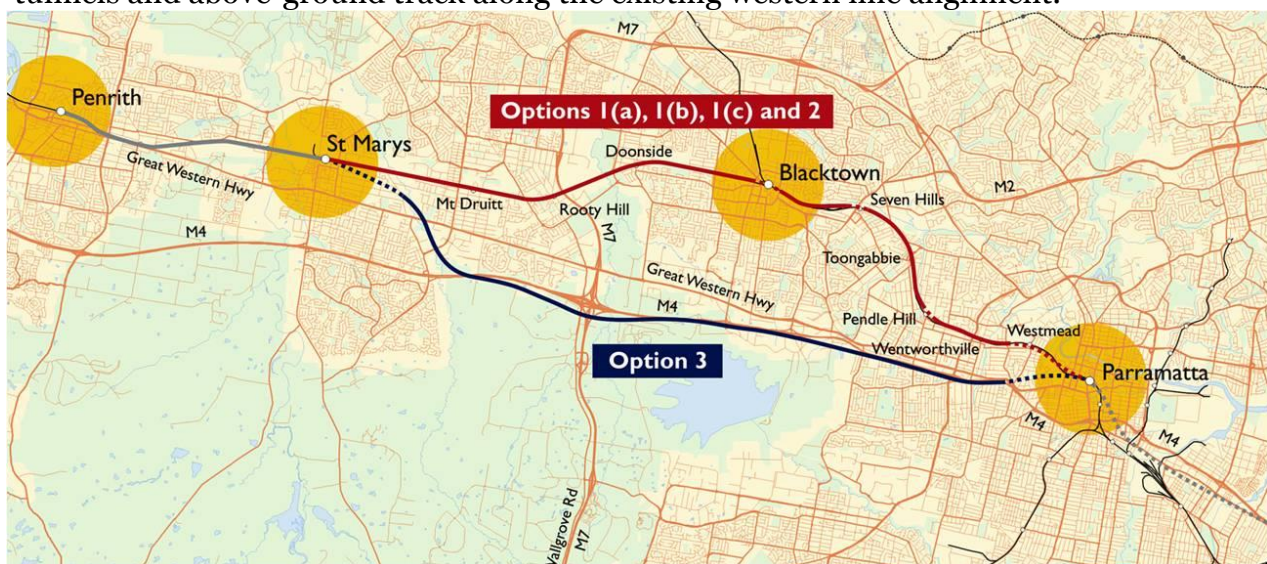
WFR by freeing up capacity on the western line and building new capacity in the city (City West Metro stop at Sussex Street, platforms at Wynyard or a new station at Barangaroo) will allow greater throughput capacity for trains travelling from Epping, including those connecting to and from the north west transit. Extra rail capacity would complement the bus links from the north west.

Additionally, as earlier outlined, because of the systemic benefits of WFR, the number and reliability of South West services can be significantly improved.

With government support (facilitation, sharing of tracks or building of new lines from St Mary’s), the project ultimately needs to be put to the open market. *WFR only ever wanted a fair, robust assessment – and someone to talk to.* Thus, the need for a Transport Co-ordination Authority – or its equivalent.

The feasibility of new transport projects all turn on the potential patronage assumptions. WFR's indicative base case patronage forecasts, after a four year ramp up period, were for 53.5m passenger journeys per annum. This was estimated to be likely to be achieved over a four-year period through 28m transfers from competing, but slower CityRail services, 20m transfers from car travel to WFR and 5.5m newly generated trips. Is this overstated? WFR's patronage studies were independently corroborated by leading engineering firm SKM. Note that in contrast to WFR, along a much lower density corridor, the North West Metro is projected by its advocates to achieve 40m passenger journeys (or around 80% of WFR's estimates for its corridor).

With respect to the St Mary's to Westmead part of the corridor, the SKM study reviewed five options, four options along existing routes and one along the M4. Depending on the easement along the route, the preferred St Mary's-Westmead option is a combination of tunnels and above-ground track along the existing western line alignment.



Extract from SKM Report for WFR on St Mary's to Westmead options

In 2007, WFR estimated that the costs would be \$3.2b with the private sector taking on the risk and responsibility of the underground tunnel and rolling stock. The cost of the St Mary's to Westmead leg of the journey was estimated by SKM at an additional \$700m in 2007 dollars (now likely at around \$750m). The estimates put to government by WFR included 60% debt funding through bank debt and CPI bonds.

Since most recently submitting to government in 2007, the world has changed dramatically – especially from mid 2008 onwards! – with the cost of debt increasing, equity return expectations lifting, cost of construction rising, and other capital requirements becoming more challenging. Still, based on its WFR base case assumptions, Leighton were confident of raising most of the equity required.

A key issue emerged with the NSW government as to the likely construction costs. Understandably, government did not want to commit to a project that was optimistically priced. If the project was to be tendered, it is in the interest of the government to have a view as to the likely costs and sensitivities. In a meeting with the NSW Transport

Infrastructure Development Corporation (TIDC) in August 2008, Leighton Contractors representatives, for WFR, noted that the construction cost estimates were in the form of a preliminary proposal, not a government standard business case. The estimates were then explained in detail by Leighton Contractors. The WFR order of magnitude costs were based on Leighton Contractors' tendered rates from the Chatswood to Epping project for the tunnel and on South East Queensland projects for the on-grade track. For those projects, the grossed-up rate for tunnel and rail was \$75m/km.

TIDC, however, presented some comparisons from recent international metro project experience prepared by Turner Townsend (TT) including Paris Metro Phase 1 – \$400m/km, Docklands Light Rail – \$150m/km, Madrid Metro – \$90m/km. WFR was priced by TIDC on the same basis and estimated at \$150m/km. The Epping to Chatswood publicly announced figure is \$2.3 billion.

The WFR project cost was estimated by Turner and Townsend at \$5 billion and separately by TIDC at \$5.3 billion.

The WFR and the TIDC/TT estimates for the engineering costs for tunneling and track were close – except for the TIDC allowance for extensive sections of floating slabs under track. TIDC also allowed for additional scope in station developments and the inclusion of a major maintenance facility. Also included in the TIDC costs, but excluded from the WFR costs, were:

- Railcorp Interface (\$307m).
- Price escalations to the end of the project.
- Property costs.
- Government Client Costs (\$370.7m).
- Project Contingency (\$631m).

After taking the above into account, WFR & Leighton Contractors felt that the raw construction costs prepared by both TIDC and WFR were actually fairly close. But obviously the figures used by TIDC are indicative of what a government funded and managed project might cost.

Notably, the government cost estimates included costs for land already in government ownership and contingencies needed for a government delivered project, not a private sector delivered project. Indeed, in this context it is worth mentioning that Leighton Contractors offered, if selected, to underwrite costs on an agreed route. Given the balance sheet of the company, that was a watertight transfer of risk to the private sector. Even so, the NSW Co-ordinator General's office, in August 2008, verbally advised that the WFR's resubmitted proposal was formally rejected. But the office agreed to reconsider and report back to the consortium on the cost assessments. WFR requested a Preliminary Assessment as required by the NSW government guidelines. No doubt due to the NSW Co-ordinator General's office's deep, time consuming involvement in re-inventing CBD Metro, this explains the absence of communication between the consortium and the NSW Co-ordinator General's office over the past several months.

N. Redefining Metro West

Clearly WFR potentially competed with the Inner West Metro, because two underground tunnels from Parramatta to the city are perhaps not feasible.

It is probably useful to consider WFR as akin to an outer west metro as opposed to the Inner West Metro. Both proposed services are high speed, energy efficient, high capacity independent networks utilizing their own rolling stock and an underground tunnel from Parramatta to the city. In contrast, the WFR track and services seamlessly goes further west, mostly above ground, from Emu Plains to Westmead.

Thinking in this way changes the debate, from the old turf war of WFR versus Inner West Metro, to 'what kind of service should there be along the western corridor?'

The debate is largely about 'who takes the tunnel?' And 'how many stops there are along the route'. And whether fast journey times are important. The current Inner West Metro proposal is for an estimated 9 to 16 stops between Parramatta and the city, though this is still under examination.

Note that the more stations, the slower the travel times to the city and back; additionally, the more stations, the greater the construction costs with building platforms and creating large station chambers. Even with the Metro West project, as currently proposed by government, journey times will not be faster from Parramatta. It will still be around 34 minutes.

So much of the debate between WFR & Western Metro turns on what the government wants to do. Each is an attempt to deal with, and solve, particular issues. With Inner West Metro, it is trying to deal with throughput constraints. It is ridiculous that many inner-city stations only get 4 trains an hour. Inner West Metro tries to address that. But it does not do much for speed and closer connectivity between far western Sydney & the city. That is the big beef of WFR. One thing that Inner West Metro tries to do is to increase the ability to run more trains (by taking 'slower' ones above ground off the track).

The WFR idea, however, is to take the tunnel. In doing so, the same arguments work in reverse. That by taking fast trains underground, extra capacity is freed above ground. So, more inner western services can be offered on the above ground track. Plus, the tunnel is essential for speed to the west. There is no other transformative option around.

The extension of the network into a new underground corridor in the CBD, from Central into the City, say, either Pitt Street or Sydney Metro West (along Sussex Street) is important. In doing so, a lot of problems get fixed. Throughput, and therefore the ability to run more trains along the western corridor, could be increased with this connection. Everyone seems to agree with that. Leighton Contractors, as part of the WFR offer, actually proposed building a new rail corridor and new stations in the city.

Based on the core WFR proposal, with limited stops between Parramatta and the city, including a new station at Olympic Park, new Metro West is able to provide a significant

reduction in travel times for people living in the largest and fastest growing areas of Sydney.

<i>Metro West – Estimated travel times to and from the CBD (in minutes)</i>				
	<i>Now</i>	<i>Metro West</i>	<i>Time Saved</i>	<i>Weekly Time Saving</i>
Parramatta	26-34 mins	11	15-23 mins	2hrs 30mins – 3hrs 50mins
Blacktown	33-45 mins	17	16-28 mins	2hrs 40mins – 4hrs 40mins
St Marys	44-66 mins	24	20-42 mins	3hrs 20mins – 7hrs
Penrith	48-74 mins	28	20-46 mins	3hrs 20mins – 7hrs 40mins
Lithgow	156-164 mins	104	52-60 mins	8hrs 40mins – 10hrs

There are three broad options available to the Government which should be fully assessed as part of the review of western Sydney's transport needs. These are:

The original WFR concept of a very fast single deck train in tunnel from Parramatta to the CBD. This could have limited (Olympic Park) or no stops between Central and Parramatta, may follow the existing rail alignment east of Strathfield (as this is likely to be easiest from an engineering perspective), with gentler curves and no flat junctions for a fast (11 to 12 minutes) travel time to Central. This could be fed by trains from the Western line (Emu Plains/Penrith) and potentially also from the Richmond line. (Perhaps up to 24 trains per hour eventually). The rolling stock would be single deck, but the trains could be long (perhaps eventually up to 200m long). This is a very fast train concept designed to benefit outer Western Sydney and to bring Parramatta closer to the CBD. It would also provide space on the existing western line for additional trains because it would send some of the existing trains from the west into the new route.

A pure metro, relatively slow speed, between CBD and Parramatta. This could have perhaps 10 stops or even more, and travel time of perhaps 30-33 minutes (slower than fast trains now). It would have its own rollingstock, optimised for metro style operation. In this case the alignment is open, either along the existing rail corridor or, say, along Parramatta Road, in order to open access to areas other than that already served by the western line. This option benefits the inner and central west, and would cater for the population growth in that area, including Olympic Park etc. It would not really benefit the outer west to any extent. It would provide some improved access to Parramatta from the East. Though journey times from Parramatta to the City are barely changed. Rollingstock would be single deck, possibly less than 160m long, but up to 30-36 trains per hour and potentially fully automated. This is largely the current proposal supported by the Office of the Co-Ordinator General.

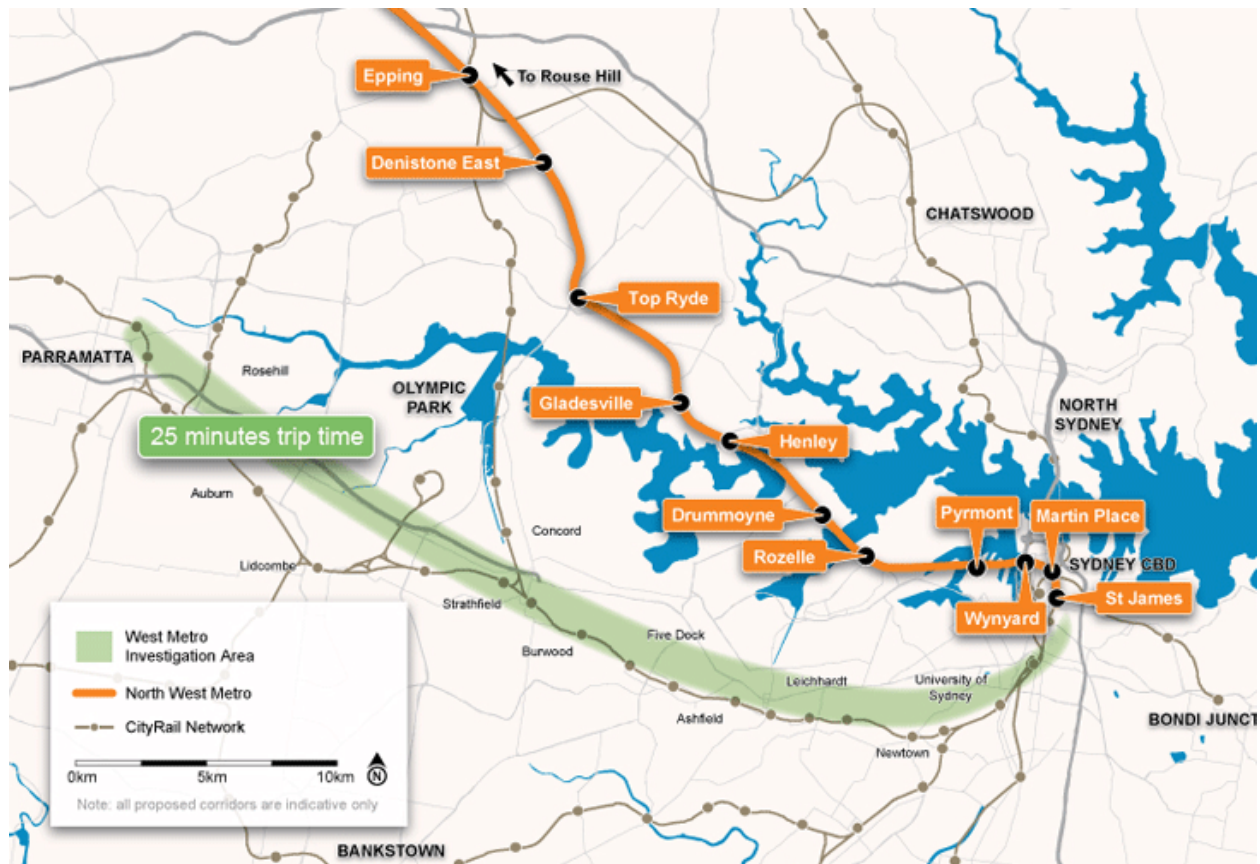
A hybrid of the above – i.e., a relatively fast metro, with perhaps 5 stops (perhaps including Olympic Park, Strathfield, Sydney University, and a few others) with travel times of perhaps 20-22 minutes between Parramatta to Central. This would be slightly faster than the existing fast trains by about 5-7 minutes. A small premium to the regular fare might be justified but probably not much. This option would benefit both the inner, central and outer western suburbs. Trains for the proposed route could either be stand

alone (with some people transferring at Parramatta) or the line could be extended west of Parramatta to connect with the main west at Westmead, with trains running directly into the new route (as in option (a)). Again, it is assumed this would be a single deck rollingstock, probably 160m long, with up to 24 trains per hour.

Any of the above could potentially be extended north through the CBD and across the north shore on various options, perhaps to the Warringah peninsula in the long term. Also of note, is the potential to add to the Western FastRail corridor. For example, if one day Richmond becomes a second overflow airport, then a link to Blacktown, then fastrail to the City should be possible.

This paper advocates that option (a) is most appropriate. But Western FastRail consortium has always said that it is up to government to choose what it wants, such as more stops. WFR believes, however, that faster journey times matter. And this is borne out by research conducted by URM for the consortium. URM focus group research showed that there was strong public support for a faster service from the West to the CBD, with a premium of \$3.80 above existing Railcorp charges.

The inner west, from Parramatta inwards, is an area of Sydney comparatively well treated by rail and with excellent government bus services. Far western Sydney is not so lucky. There are about 70 twists and turns in the existing above ground Railcorp track from Parramatta to the city. Speeds are necessarily limited by the existing, tortuous route, complicated signalling, and tired infrastructure. If the new route, a tunnel, becomes an Inner West Metro it dooms Penrith and outer western Sydney commuters to the existing, slow above ground track. If the government opts for an Inner West Metro for the inner west, then nothing changes for the people of far western Sydney.



The Inner West Metro investigation area; also showing North West Metro

Far better to redefine the debate to what kind of metro is appropriate along the western corridor. What is the best metro solution for where most people live in outer western Sydney?

A Metro West that takes commuters from far western Sydney frees up capacity along the existing inner west CityRail corridors and provides a win-win for everybody.

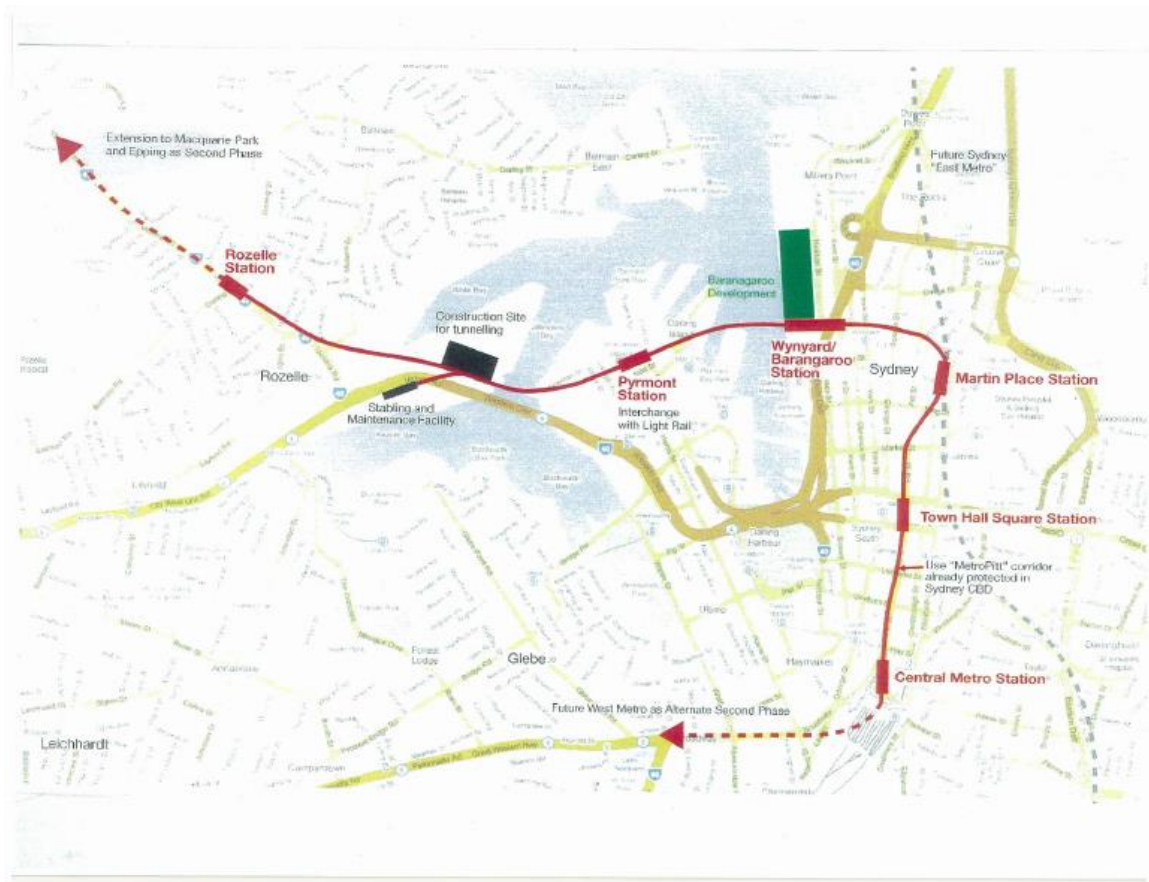
Metro West should be redefined by adapting the best ideas of WFR.

O. The CBD Metro

Following a meeting with Infrastructure Australia, on 24 October 2008, the Premier, Nathan Rees, released his vision to ease congestion and improve public transport in NSW. This centred on a CBD Metro “to allow for future metro projects to Western and North Western Sydney”.

At an estimated cost of \$4 billion, the proposal would see construction begin in 2010 with completion expected four to five years thereafter.

The diagram below shows the proposed line, from Central Station to Rozelle, with stations at Town Hall, Martin Place, Barangaroo/Wynyard and Pyrmont.



The CBD Metro Proposal

The Premier said that: “This project will ease rail congestion straight away and is the first step towards a metro line for both Western and North Western Sydney. The simple fact is that the worst congestion on our rail line starts when you get to the CBD. People converge on Central from all over Sydney – six lines meet at this station. But we only have three lines to take them through, so obviously this causes a bottleneck, putting pressure on Town Hall and Wynyard. This is the first step in extending the metro to the West and the North West. It is the future of transport in NSW.”

The proposal also attempts to deal with bus congestion in the City and on the Anzac Bridge. By creating a bus interchange at Rozelle, north west buses will terminate at Rozelle, without crossing the Anzac Bridge and clogging traffic when disgorging on York Street. Commuters would then travel to the City from the Rozelle interchange. The project calculates that the M4 East road extension may be unnecessary.

With hectares of Government surplus land at White Bay/Rozelle, significant density might be encouraged in that locality.

Potentially there are many good things with this proposal. The CBD corridor proposed – from Central to Town Hall, Martin Place and then to Barangaroo – tackles the need identified by Christie and others that a new CBD link is crucial to increase capacity, reliability and the efficiency of the CityRail network.

(Note that for Railcorp's long term expansion, there are two reserved, underground rail corridors into the city from Central. One is along the western CBD, under Sussex Street to Wynyard, which can easily be adapted to Barangaroo. The other CBD corridor is under Pitt Street. This is proposed to be used by the CBD Metro. Thus, the western CBD alignment remains available to Western FastRail, the new West Metro and/or other services).

But the expense of twice dipping under the harbour from Barangaroo to Rozelle is likely to be prohibitively expensive. The Epping/Chatswood rail link's most expensive decision was going under the Lane Cove River. As a general rule, water is the enemy of rail! Although over-engineering should not be automatically assumed, it is likely that deeper tunnelling, steeper grades, waterproofing, are likely to massively add to costs. Interestingly, the staff of the NSW Co-ordinator General, previously working on the North West Metro, were immediately reassigned to work on this new metro "solution". The Premier's comments about keeping the north west metro option alive, as if the CBD Metro is "a first step", attempts to defer some of the difficult questions mentioned earlier in this paper. It's as if half a loaf is better than none. But the correct analogy is probably that the idea is 'half baked'.

The project, as it stands, is disconnected from the rest of the rail network. Because the proposed CBD Metro begins at Central – or at White Bay/Rozelle – there will be a massive interchange problem. This is so at both ends. It is ambitious to assume that patronage will be strong; the CBD Metro, on its own, requires commuters to change over from rail services terminating at Central then on to the metro at one end, or use of the large bus exchange at the other.

Clearly, the project needs to be assessed against alternatives, on a cost benefit analysis. Back of the envelope calculations now need to be backed up and scrutinised in detail.

P. Choosing Between Projects

Choosing between competing rail options raises complicated questions associated with benefits to costs. There are a number of mechanisms available to transport planners to assess proposals. In the absence of funding constraints, the best value-for-money projects are those with the highest net present value. Where there is a budget constraint, the ratio of NPV to the expenditure falling within the constraint is used. In practice, the ratio of NPV to expenditure is expressed as a benefit-cost ratio (BCR). This formulation has been used extensively in the field of transport cost-benefit appraisals. The NPV is evaluated over the service life of the project.

A potential shortcoming of BCRs is that, by definition, they ignore non-monetised impacts. Attempts have been made to overcome this limitation by combining BCRs with information about those impacts that cannot be expressed in monetary terms, such as the UK's *New Approach to Appraisal* framework. A further complication with BCRs concerns the precise definitions of benefits and costs. These can vary depending on the funding agency.

Without getting into too much technical detail, the *New Approach to Appraisal* (NATA) is a framework used to appraise transport projects and proposals in the United Kingdom. NATA is a multi-criteria decision analysis based tool that builds on already well established cost-benefit analysis and environmental impact assessment techniques (such as those contained in the Highways Agency's Design Manual for Roads and Bridges (DMRB)) for assessing transport projects and proposals. The UK Government recently announced some immediate changes to NATA, which will become part of the definitive guidance from April 2009, principally:

- Taking account of carbon emissions: The latest DEFRA CO₂ valuations are now incorporated into the NATA guidance and software tools.
- New methods to capture the value of more reliable journeys: New guidance to capture the impacts upon travel time variability of transport investment; both the Eddington Study and the NATA consultation emphasised the importance of reliability to travellers.

With respect to assessing projects, Sir Rod Eddington commented in his UK Report, "The Case for Action" (2006) that the conventional benefit: cost ratio (BCR) refers to the welfare measure conventionally used as part of the appraisal framework; he states that: "In my view, while the conventional BCR is the most certain measure of welfare, it is incomplete in a way which makes it difficult to compare projects. The value for money measure (the vfm BCR) is the most complete 'single measure' of transport's welfare consequences, though it is more uncertain than the conventional BCR because the evidence base is relatively new, and some of the effects are inherently hard to monetise."

Infrastructure Australia is alive to such issues and challenges. In September 2008 Infrastructure Australia published its *Prioritisation Methodology* for the assessment of projects.²¹

This document outlines the key steps that will be undertaken to determine consideration and evaluation of initiatives for the Infrastructure Priority List. It includes detailed advice on carrying out profiling and economic appraisals of initiatives. Proponents are required to outline a logical, evidence-driven, robust methodology.

The audit framework consists of 7 steps: 1. Goal definition; 2. Problem identification; 3. Problem assessment; 4. Problem analysis; 5. Option generation; 6. Solution assessment; and, 7. Solution prioritisation.

Infrastructure Australia states that its methodology is to provide an integrated framework that harmonises the information and data resulting in a balanced range of initiatives and uses cost benefit analysis (CBA) as the primary tool for prioritising initiatives. The aim of the methodology is to be:

- Logical and well defined – as it is systems focused and based on and conforms to Infrastructure Australia's aims, objectives, strategic priorities, and principles;
- Clear and transparent – as it promotes the open sharing of information;
- Evidence driven – as it uses quality and suitable data and consistent tools; and,

²¹ See: http://infrastructureaustralia.gov.au/files/Prioritisation_Guidelines_v5.pdf.

- Robust – as it is comprehensive by looking through multi-lenses to solving a complex problem.

This declaration – of adding some science to the process of project selection – is most welcome. So is the commitment to transparency and sharing of information by Infrastructure Australia. This openness is something sorely lacking in many past rail assessments in NSW.

The appraisal phase of the Infrastructure Australia’s prioritisation methodology adopts ‘monetised’ cost benefit analysis as its core tool. This is complemented by ‘non-monetised’ effects. Together, a picture of the wider economic, environmental, and social merits of each initiative can be determined.

The profiling phase of the Infrastructure Australia’s prioritisation methodology assesses the compatibility of the range of initiatives to Infrastructure Australia’s strategic priorities. A picture of the potential national productivity value of initiatives can be determined while producing a balanced view of the initiatives and their linkages and dependencies to other initiatives. The appraisal phase is interested in both the overall efficiency of an initiative as well as its equity and distributional impacts.

Efficiency is determined by comparing the benefits and costs of an initiative – it specifically addresses the question: “When all the benefits and costs are combined, will the initiative deliver net benefits (benefits in excess of costs)?” On the other hand, the issue of equity and distributional effects is concerned with who bears the benefits and costs.

Cost benefit analysis (CBA) is the primary appraisal tool by which Infrastructure Australia assesses the net benefit of an initiative. It is an objective tool that combines ‘monetised’ benefits and costs – those expressed in dollar value terms. In the Infrastructure Australia methodology, as many benefit and cost are monetised as widely as possible. Estimates of wider economic benefits and costs (WEBs) are to be included where relevant.

Returning to WFR and competing rail projects, the following table is instructive:

Comparison of Metro Rail Projects

	<i>CBD Metro (Central to Rozelle)</i>	<i>Inner West Metro (Central to Parramatta)</i>	<i>NW Metro (Rozelle to Rouse Hill)</i>	<i>New Metro West (Emu Plains to Barangaroo - based on WFR options)</i>
Cost to the taxpayer	\$4bn	\$4bn	\$12bn	\$1.4bn
Construction time	4-5 years	Depends on number of stations built	7 years	4 years
Goal	Creates new CBD capacity Keeps “alive”	Provides more services along inner western corridor	Tackles congestion in Hills district & related areas	Transformative, high speed service Provides significantly

	the north west and inner west metro options.			<p>improved services to residents of outer western Sydney</p> <p>Creates new CBD capacity</p> <p>Is equitable – providing services where they are most needed</p> <p>Invites private sector investment and risk transfer</p>
Problem identification	Major strategic rail reports have argued for increased CBD capacity	Addresses capacity constraints in inner west and potentially creates new stations	Deals with problem of successive NSW Governments not reserving land for an above ground corridor	<p>Major strategic rail reports have argued for increased CBD capacity</p> <p>More likely to address Sydney population pressures than any other competing service.</p> <p>International experience, as well as local research shows that speed to destination is highly rated by commuters</p>
Problem assessment	Recently generated option, yet to be assessed	Services from Parramatta take about the same time as presently	Main difficulty is low densities along most of corridor	<p>Comprehensive solution for a known route</p> <p>Best fits the “City of Cities” strategy of the NSW Government, linking the CBD, Parramatta and Penrith, as well as subregional centres.</p>
Problem analysis	Key risks include potential engineering challenges and potential cost blowouts between Barangaroo and Rozelle	Not known	Not known	<p>Significant investment by private sector in new rail corridor.</p> <p>Transfers most of the delivery risk to the private sector</p> <p>SKM, RMAus, PCIE & URM reports apposite</p>
Option generation	<p>Allows new capacity</p> <p>Keeps metro projects “alive” or as a future, add-on option</p>	Allows new capacity	Not known	<p>Allows new capacity across the network.</p> <p>Prefers to take the Metro West CBD rail alignment.</p> <p>Connection from Riverstone could be scheduled into the</p>

	Takes Pitt Street CBD rail alignment			operation of services
Solution assessment	See summary below	See summary below	See summary below	See summary below
Key Direct Benefits	<p>CBD capacity & flow on effects</p> <p>Greatest benefits for inner west commuters</p>	<p>More services on inner west line</p> <p>Greatest benefits for inner west commuters</p>	<p>Rail services once capacity reached on rapid bus transit</p> <p>Benefits for north west commuters</p>	<p>Transformative solution for western Sydney</p> <p>CBD capacity & flow on effects</p> <p>Fast services to outer western Sydney</p> <p>Frees up capacity for more services on inner west line</p> <p>Greatest benefits for outer west commuters</p> <p>Benefits for inner west commuters comparable to Inner West Metro</p>
Indirect Community Benefits	Pollution savings	Pollution savings	<p>Pollution savings</p> <p>Potential stimulation to urban development</p>	<p>Stimulates urban development in far western Sydney</p> <p>Significant pollution savings</p> <p>Massive time savings</p>

With respect to WFR, an economic evaluation was undertaken by the consortium, following NSW Treasury Guidelines for major investment projects associated with the public sector. Pacific Consulting on Infrastructure and Environment (PCIE) carried out the evaluation for the WFR consortium. (PCIE has carried out a number of evaluations for Railcorp and the Commonwealth government).

The net economic benefit of Western FastRail was determined by comparing the proposed new rail link with a “base case” characterised by existing Railcorp services without additional infrastructure enhancement and without significant improvement in the road network. Economic net benefit (ENB) was considered from the perspective of NSW as a whole. It used the consumer/producer surplus methodology, as this gave a more comprehensive analysis of the benefits produced. By quantifying the benefit enjoyed by users in excess of the amount they paid, several elements are included:

- The value of the time saved by all passengers.
- Decreased stress in not having to drive on crowded roads.
- Increased certainty of arriving on-time at the destination; and.
- The well being from using an environmentally friendly form of transport.

In 2007 the ENB was estimated (before ramp-up discount) to be \$312 million. Using the Lower Case forecast an estimated 43 million passengers would use the tunnel every year. With each passenger saving a minimum 20 minutes per journey, the total time saving would be 14.33 million hours. The minimum economic benefit from time savings alone would be \$110 million per annum. There are also extra time savings for passengers travelling from beyond Parramatta to the CBD – plus passengers travelling between greater Western Sydney stations.

With respect to environmental considerations, on the Base Case forecasts, after ramp-up, around 18.8 million car trips per annum would be eliminated, climbing with population and economic growth to 30 million per annum over 30 years. These translate to 480 million fewer vehicle kilometres in the first year of operation, rising to 745 million per annum over 30 years. This directly supports the NSW Government's "Action for Air" 25-Year Quality Management Plan. Western FastRail would reduce several forms of environmental degradation created by cars: noise pollution, air pollution and greenhouse gas emissions. Using figures from the Bureau of Transport Economics, Western FastRail calculated that by eliminating many car trips CO₂ emissions would be reduced by 34,000 to 45,000 tonnes per annum. The impact of CO₂ reductions also manifests in economic terms as savings in air pollution impacts of approximately \$16 million to \$21 million per annum (see PCIE Report in the original submission).

Other environmental savings will follow, including reduced numbers of road accidents (fewer trips, and less congestion for remaining road users), injuries and deaths.

Reduced road usage would lead to reduced wear and tear on the roads themselves. Western FastRail is equivalent to several new motorways, yet it is considerably more favourable in pollution terms.

Additionally, as noted earlier, WFR high speed services would stimulate employment growth in areas such as Blacktown and Penrith. Pollution in Sydney would be substantially cut if more people use rail. Thus, the project is unashamedly geared to maximising time savings, convenience, and other benefits to the millions of commuters from Parramatta and the outer west.

CBD Metro's benefits are significant – new CBD corridor, potential for extra capacity from western Sydney & potential to assist with bus congestion in the CBD (by taking Victoria Road services out of the city, off the Anzac Bridge, and to the proposed Rozelle bus exchange). The most significant of those benefits is the new CBD corridor – something that WFR offered. The expense of under the water connections between Barangaroo to White Bay/Rozelle, however, is more difficult to justify. Because the CBD Metro begins at Central (at one end) it will rely on commuters interchanging at the already congested Central station. At the Rozelle end, the Metro requires significant urban development and a massive transfer of commuters off buses, then on to the Metro.

Although, with further extensions to create a discrete corridor, the proposed CBD Metro project is arguably compatible with both Western FastRail and Metro West (however

redefined) this is an academic point. On its own it might actually complicate current problems. The CBD Metro benefits, compared to WFR, are inferior. WFR offers a service from the west to the city. CBD Metro is half a solution, at best.

In choosing one project over another WFR argues that the benefits flowing to outer western Sydney, including positive economic, environmental, and social benefits, are significantly greater than compared to any alternative.

Q. A Package of Western Sydney Public Transport Options

From the present crisis in public transport planning, there is the opportunity to do the right thing, the right way. If the key objectives are to:

- Ensure any solution is rigorously assessed, costed and cost efficient;
- Provide significantly improved services to residents of western Sydney;
- Is equitable – providing services where they are most needed;
- Operate efficiently and cost effectively;
- Understand the potential risks; and
- Invite private sector investment and risk transfer;

then these measures are suggested:

Transport Co-ordination Authority

A Transport Co-ordination Authority (TCA) or its equivalent is required; the Federal Government's Infrastructure Co-ordination Authority is a potential model. Potentially, TIDC's responsibilities could change to become the TCA. Whatever model is adopted, those who have got us into the current mess should not be rewarded with a new role to undo what they have helped to create. The evidence suggests it is time to move on from the present system of unco-ordinated, "fly-by-the-seat-of-the-pants", highly politicised planning processes. Such an Authority could consider major, strategic land transport options, integrating transport and urban planning.

Moneys Saved From the North West Metro Should be Reallocated

Money no longer spent on the north west metro should be allocated to other public transport initiatives, including relevantly to the north west corridor. The feasibility of a heavy rail connection from Rouse Hill to Epping should be re-examined, perhaps starting as a bus rapid transit. Down the track, the North West Rail Link (NWRL) should be further investigated. The North West Metro, however, was never the place to start a new metro service in Sydney. The busy western corridor is the place to start.

Rapid Bus Transit or Auto Tram Service from Rouse Hill

New, improved bus routes in the form of bus rapid transit or autotrams from Rouse Hill should be planned. These could both connect to the M2, onto the city, and also to Epping, and then on connect through heavy rail to various destinations.

A potential corridor could be planned on the heavy rail alignment, which could be the beginning of an ultimate conversion to heavy rail.

But detailed investigation of route options is required.

A Metro West That Suits Far Western Sydney

We advocate a Metro West service with a tunnel with limited stops from Parramatta to the city. This metro should not terminate at Parramatta. It should go further to outer western Sydney to Emu Plains. The guiding criteria should be ‘where are the greatest needs and how can they be met?’

The greatest benefit for where most of the people live ought to be a guiding principle. A new Metro West, based on best ideas from WFR, is the place to start.

Additionally, the systemic benefits to the rest of the Railcorp network should be considered. For example, as outlined in the paper, WFR contributes to more throughput of rail services from south west Sydney.

New Stations to Cater for Congestion at Town Hall & Wynyard

As indicated, there is a need for a station at Town Hall (say, a new Metro City West station on Sussex Street, to alleviate congestion at Town Hall). This was proposed as part of WFR and should be part of the new Metro West. Additionally, given new development at Barangaroo on Hickson Road (first stage is a population of 15,000), and the congestion at Wynyard station, a new station on the western side of the City, pedestrian connected through to Wynyard, is needed.

In the future, such stations along this new city corridor provide options for planners to connect across the harbour

“Park and Ride” Carparks

As the Premier has recently highlighted the need for carparking at rail stations, this can be added to the total mix. For example, there is potential carparking capacity at Penrith (disused defence lands on one side of station could be an option), Blacktown (redevelopment of Council carpark and/or currently uneconomic land on other side of station) & Seven Hills (on vacant industrial land).

As earlier noted, the annual survey of CityRail customer services by the Independent Transport Safety and Reliability Regulator noted that 42% of commuters were dissatisfied about the poor availability of secure car parking near rail stations.²²

Bus Interchange at Epping

²² *The Fifth Annual Survey of CityRail Customer Services*, Independent Transport Safety and Reliability Regulator, 23 September 2008.

The upgrade of the bus interchange at Epping is already part of the Epping-Chatswood rail link construction programme. This exchange has operated at Epping for decades. With the new transport connections proposed here, the new terminal needs to seamlessly cater for new demand.

Additionally, better train management (the combination of trains, communications, signalling and tracks) must be part of the story of rail service improvement in the Sydney system.

R. Financing the Package

When WFR first put its proposals to the NSW Government (in 2002) and as recently as 2007, the NSW Government claimed that, other than the clearways projects, there was no money available for new, significant, investment in rail. With the election of the Rudd Government in 2007, new options have opened for the funding of metropolitan rail projects.

Hopefully, the Federal Government will not favour a ‘cargo cult’ mentality with projects getting the tickoff from Infrastructure Australia based on political or unscientific favouritism. In contrast to such fears, Infrastructure Australia, in all its public pronouncements has been adamant that it would carefully evaluate the costs and benefits of various proposals.

The following are indicative estimates:

New Metro West

Leighton Contractors’ estimates:

<i>“Base” Patronage Assumptions</i>	<i>Capital Cost</i>	<i>Government Contribution</i>
	<i>2007</i>	<i>2007</i>
	<i>\$m</i>	<i>\$m</i>
Metro West	2600	630
Add St Marys to Westmead	750	750
<i>Total</i>	3350	1380

<i>“Low” Patronage Assumptions</i>	<i>Capital Cost</i>	<i>Government Contribution</i>
	<i>2007</i>	<i>2007</i>
	<i>\$m</i>	<i>\$m</i>
Metro West	2600	1520
Add St Marys to Westmead	750	750
Add Construction Contingency of 20%	670	670
Add finance contingency of 10%	335	335

Total under low patronage + 30% contingency 4355 3275

Leighton Contractors argues that the relevant provision of new Metro West as a PPP is \$3350m, rounded to, say, \$3.5b. The base case Government subsidy proposed is now \$1.4b. Savings are possible. Leasing of rolling stock, rather than outright purchase of vehicles, reduce the immediate capital cost. If rolling stock were outright purchased, then Leighton Contractors estimate that this would cost around \$600m; but the core proposition is to lease such requirements.

With a new service that opens choice to rail users, new fares could be introduced, such as:

Journey	Current Fare	Metro Supplement	Rounded Total
Penrith to Parramatta	\$4.60	Nil	\$4.60
Penrith to City	\$7.20	\$4.00	\$11.00
Blacktown to City	\$5.60	\$4.00	\$9.50
Seven Hills to City	\$5.60	\$4.00	\$9.50
Parramatta to City	\$4.60	\$4.00	\$8.50
Olympic Park to City	\$5.20	\$4.00	\$9.00
Potential fares along the new Metro West			

Those calculated were based on the WFR assumptions; thus, the new Metro West potential revenue could be:

If 22.8m journeys @ \$9.50 = \$216.6m/pa (low forecast)

If 42.0m journeys @ \$9.50 = \$399.00m/pa (medium forecast)

If 53.5m journeys @ \$9.50 = \$508.25m/pa (base forecast)

If 72.0m journeys @ \$9.50 = \$589.00m/pa (high forecast)

This assumes no fare concessions or discounts. Clearly, all these estimates should be carefully evaluated. With Federal Government support for new West Metro, fare costs can be limited.

Note that with respect to the new Metro West, modelled on WFR, under a PPP scenario, Leighton would be prepared to underwrite the design and construction risk of the tunnel and rail systems.

Rouse Hill Transit

Provision of bus transitway along NW heavy rail route from Rouse Hill say \$524m + contingency = \$700m

Transitway	\$0.7b (based on recent transitways; Leighton estimate)
<i>Total:</i>	<i>\$0.7b</i>

Car Parks

Very preliminary estimates have been made as follows:

Three 1,000 car bay parking stations with each bay of 30m ² at Penrith, Blacktown and Seven Hills @ \$25k/bay	\$75m
Land Acquisition costs	\$30m
<i>Total:</i>	<i>\$0.105b</i>

The above represents estimates of the costs of some of the options available.

The combined total (based on the base case for the new Metro West, estimate for Rouse Hill Transit and the rest) is around \$2.2b.

The Western Fast Rail consortium proposes that the \$20m study of western Sydney rail options – funded by the federal Government - include WFR/new Metro West. Given that the NSW Premier has announced his preferred metro it should also be evaluated. With an appropriate brief, these schemes should be investigated and evaluated. The Federal Government could look to put in further funds (if required) to develop the preferred solution to bring to market.

Leighton Contractors suggests that the Federal government indicate funding support for the preferred solution of say \$1.4b – the subsidy advocated by Leighton as required for the new Metro West. Leighton Contractors is willing to put together a consortium to provide funding for the balance of the project – at least another \$2b. The author knows of no other example in Australia of the private sector being prepared to invest such money, at risk, in heavy rail.

It would be a pity if dollars potentially invested by the Federal government were not driven further through the private sector taking on risk and assisting to fund solutions. The problems of the Sydney public transport are greater than what the Federal or State Governments can afford to assume alone.

S. Conclusion and Next Steps

Doing something is well overdue. Meeting the needs of "far western Sydney", as the rest of Sydney calls the suburbs where most people live, is a matter of priority and choice. The "Moving On" report comments that "Current State and Federal Government planning and decision-making frameworks for transport in NSW hinder the transition to a sustainable public transport system. Frameworks focus on short-term planning governed by election cycles, without guiding principles or sufficient investment to permit long-term commitments". In contrast, this paper outlines a solution to the Government's current dilemmas. We suggest that this includes:-

- From Rouse Hill and Hills district, feeder bus rapid transit services along the M2 and to Epping;
- From Emu Plains to Parramatta, a high speed metro service;
- From Parramatta to the City, a high speed metro service;
- New CBD corridor, including new platforms at "City West Metro", connected to Town Hall, as well as at Wynyard/Barangaroo;

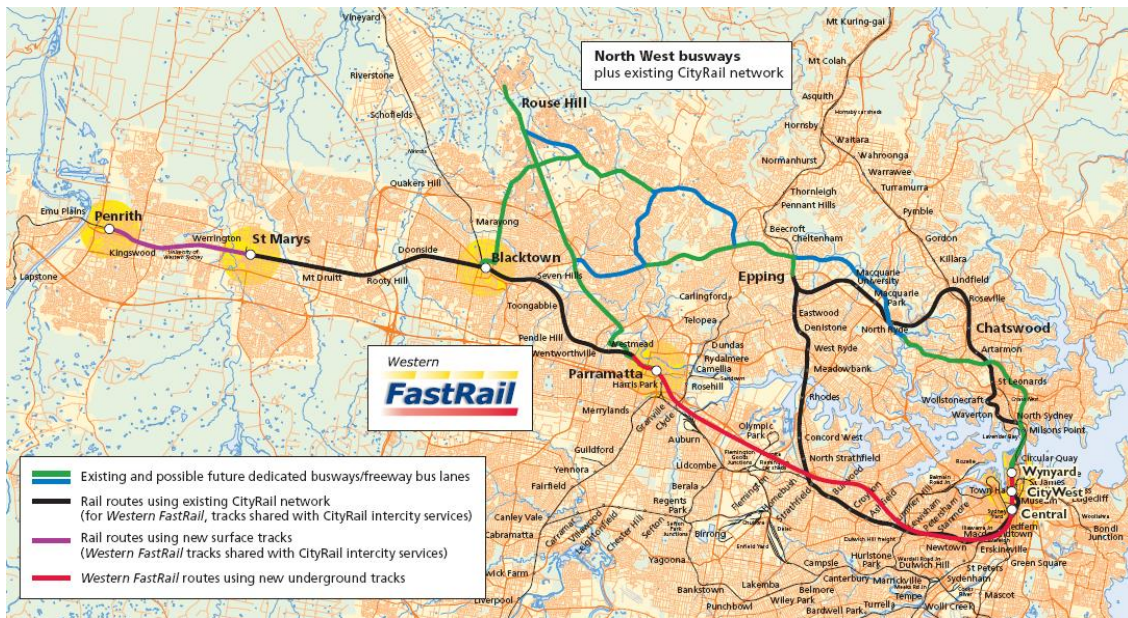
- New park and ride car parks – potentially at Penrith, Blacktown and Seven Hills, etc.;
- From Blue Mountains, option to connect to a high speed metro service;
- Better connections and throughput from south west Sydney; and,
- Ensuring that commuters are not any worse off.

Thus there is an urgent imperative for serious consideration of the proposals put forward in this paper. The package provides a series of steps that could be taken very quickly to start getting some improvements on the board. A long-term framework for Sydney's transport needs to be developed and presented publicly (with, say, 2050 in mind). The model that seems most sensible is one involving heavy rail/fast trains for the main long distant corridors integrated with a metro for more densely populated areas integrated and with (local and some longer-distance) bus networks. In practice, the bus networks will be crucial to the success providing flexibility and solutions at the local level and across regions (rather than just arterial routes). It is the rail infrastructure where a longer-term strategy can arguably help most. The main corridors/nodes could be articulated even though the timing and many of the details would be able to be adjusted over time. Such a framework would allow a better appreciation of how individual projects make sense from a broader perspective (e.g., without this, it will always be difficult to justify the first metro line even if it is in a more sensible location than the NW Rail line) and provide some scope to define property rights etc in a way that could help funding/financing.

The Federal government is committed to assessing and considering funding for significant western Sydney public transport options. The proposed CBD metro and the new Metro West, largely based on WFR, should be considered as part of such research. The focus should be ensuring each major, proposed project is properly evaluated by government and thereafter, if appropriate, become installed in the Sydney infrastructure plan. Then will begin the EIS and community consultation process.

There is a golden opportunity to now thoroughly review the feasibility of transformative solutions, such as WFR or new Metro West, amongst others. If the Federal and NSW governments fail to meet their own tests of assessing projects for value for money, then they fail western Sydney. It's that simple.

The map below highlights a potential solution.



Map showing FastRail and network of northwest busways

* Track between St Marys and Parramatta to be augmented as noted