Submission No 8

CRITICAL TRANSPORT INFRASTRUCTURE SUPPORTING THE WESTERN SYDNEY INTERNATIONAL AIRPORT AND WESTERN SYDNEY AEROTROPOLIS

Organisation: Transportation Associates

Date Received: 11 March 2024



Alison Buskens,
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Legislative Assembly Committee on Transport and Infrastructure
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Dear Ms Buskens,

Submission by Transportation Associates on Critical transport infrastructure supporting the Western Sydney International Airport and Western Sydney Aerotropolis

I am pleased to offer a submission to the Committee for their consideration and would be happy to meet with them to discuss it if that is of interest.

Relevant Experience

By way of establishing my provenance to comment on such matter, I note a few assignments from a much longer list:

- Western Sydney Airport Rail Links Peter was a member of the Business Adviser team led by Ernst & Young for the
 Commonwealth Department of Transport and Regional Services responsible for developing the concepts and
 business case for a Western Sydney Airport at Badgerys Creek. Peter developed discussions papers and concepts
 for linking the airport by rail for negotiations with the NSW Government.
- Sydney Aviation Capacity Study Suitable Sites Project Director for direction of a multidisciplinary study for the Commonwealth Department of Infrastructure and Transport to examine suitable sites for Maximum (Two parallel runways) and Type 3 airports (single runway) airports within five specified localities in and around Sydney.
- **NSW Regional Fast Trains** Peter acted as Project Director and one of a number of a Lead Consultants on investigating ways to speed up three regional rail corridors Newcastle, Wollongong, and Canberra for Transport for New South Wales. In association with Lead Consultant AECOM.
- East Coast Very High Speed Train Phase 1 of the Scoping Study. Peter was the Project Director and leader of an Arup-TMG team appointed by the Commonwealth Department of Transport and Regional Services to undertake a broad ranging study of the possibilities of a high speed train between Melbourne, Sydney and Brisbane involving considerations of regional development, the national interest, technology, international high speed rail systems; corridor and route selection; environment; systems, transit times, capital and operating costs, patronage, finance and economics.
- Airport Rail Link, Sydney. Appointed as Independent Adviser, Peter directed a "value for money" assessment of this \$650 million project as a part of a mediation between the NSW Government and the private sector promoters. This assessment was critical to a decision to proceed to deliver the project via the involvement of the private sector rather than to deliver the project via traditional Governmental means. Subsequently, on behalf of State Rail of NSW he directed a similar assessment of the final development agreement to determine whether the recommendations of the first report had been addressed and whether the final allocation of risk was fair.
- Sydney West Airport Rail Link. Project Director responsible for the environmental planning, route assessment, preliminary design and costing of a 16 kilometre rail link from Leppington to an airport in Western Sydney at Badgerys Creek.

Publications on this matter

I have authored several papers on this matter and made many presentations, some of which can be found on my website:

http://www.transportationassociates.com.au/files/Rail%20links%20and%20Sydney's%20Airportsv9%20Updated%2018 3 2020.pdf

I have also written many "Letters to the Editor" of major newspapers some of which have been published, A selection can be found in the annexure to this submission. These provide a summary of my views.

The most important of my writings on the matter, in which I outline more comprehensively my views can be found at:



https://centreforaviation.com/analysis/reports/finding-a-way-to-western-sydney-airport---by-rail-595187

My views on the Critical transport infrastructure supporting the Western Sydney International Airport and Western Sydney Aerotropolis

In the above paper, I argued that the current project is not the optimal one for either supporting the new airport or the aerotropolis.

Of course, this is now rather problematic as despite presenting these views to government and officials, which were ignored, the metro from St Mary's to the Airport and Aerotropolis is well under construction. I, and dare I say it, many other leading transport planners think that it the wrong project and may well become an "orphan." Certainly, it is absorbing a huge amount of scarce capital which, in my opinion, could have been put to a far more productive project which would bind the three major centres of greater metropolitan Sydney together much more effectively.

The space provision made for accommodating rail through the new airport¹ is arguably the most valuable real estate in NSW but I do not believe it currently is being used optimally to support both the Commonwealth's objective to make the airport successful nor the State's objectives in creating a new major employment zone.

Nor is it clear that this space provision is going to be used to accommodate proposed regional fast and very fast trains which would link the aerotropolis and new airport to regional centres such as the Southern Highlands, thereby facilitating urban development of those regions to take pressure off Metro Sydney.

Accordingly, it is timely that the Committee look into what is going on in this matter and, as I would hope, correct its direction.

I would be pleased to assist the Committee in its deliberations.

Yours sincerely

Transportation Associates Pty Ltd



Peter Thornton Principal

www.transportationassociates.com.au

¹ For which I claim some credit



Letters to the Editor by Peter Thornton of Transportation Associates on Airport Rail Links

D-day for Metro West expansion SMH- 26/10/2023

Ironically adding more stations to Sydney's \$25 billion Metro West rail line would make it more like a real metro than the regional railway it currently is. But because of its infrastructure configuration, it must be an all stops service, and more stations will add travel time. This is especially important because 70% of its passengers will be standing so it will offer a lesser quality of service than the existing double decker services where 70% are seated. And it will destroy any prospect that, if extended to Western Sydney Airport, it will be an effective airport railway, which needs a ~35-minute service via Parramatta to the Sydney CBD to be competitive.

Metro Station Derails Deals AFR 24/8/2021.

On its face, a metro station in the CBD heart at Hunter Street sounds like very good news for commuters from the west. But an earlier announcement said "The NSW Government will also safeguard the ability to extend Sydney Metro where one option could be to the new Western Sydney Aerotropolis." Infrastructure Australia has already pointed out the shortcomings of a metro link running south from St Mary's to the Aerotropolis and my own analysis suggests that barely anyone within a 10 - 15 km radius will use that line to access either the new Airport or the Aerotropolis, given the abundance of free flowing roads and space for revenue generating carparking. This makes it essential that a new metro linking the CBD, Parramatta and Western Sydney Airport delivers a highly competitive service. My estimate, based on the performance of the existing metro and what is proposed, is about 55 minutes, while the global average for airport rail links is about 30-35 minutes. Such a time can be achieved if the proposed railway is configured like the Hong Kong Airport Railway, with fast and stopping services overlaid. But this requires some additional track infrastructure and a CBD terminal which is highly accessible for pick up and drop off for airport passengers with luggage. What is being exhibited does not appear to deliver a project that can also be successful as an Airport rail link. As with the existing Sydney airport rail link, we will end up with a second-rate compromise.

Workers left waiting for bus links to new Sydney Airport SMH 22/8/2023.

Ironically adding more stations to Sydney's \$25 billion Metro West rail line would make it more like a real metro than the regional railway it currently is. But because of its infrastructure configuration, it must be an all stops service, and more stations will add travel time. This is especially important because 70% of its passengers will be standing so it will offer a lesser quality of service than the existing double decker services where 70% are seated. And it will destroy any prospect that, if extended to Western Sydney Airport, it will be an effective airport railway, which needs a ~35-minute service via Parramatta to the Sydney CBD to be competitive.

'Disruptive for passengers': Metro project to cost an extra \$1 billion SMH 1/8/2023.

The Bankstown line conversion to metro is just one of several questionable issues associated with the building of a new rail system in Sydney. Of course, the first thing is that what is being built is not a metro in the accepted railway industry sense of the word but a duplicate but single decker mostly standing regional rail system. In the case of the conversion of the Bankstown line, I have yet to hear reasonable explanations of why)1 the funds are not being used instead to insert new rail capacity into suburbs that now lack it and 2) how the patrons of the nine stations to the west of Bankstown are to be served by rail, given the incompatibilities between metro and double decker systems. Then there is the orphan metro to Sydney West Airport, \$11 billion worth of project where people will probably drive and which could have been used to build a fast link to Parramatta thereby linking two of the three cities, much trumpeted by the late (unlamented?) Greater Cities Commission. And finally, the lack of foresight to make the Sydney West Metro into a dual-purpose fast airport railway overlaid on an urban metro, as per the peerless Hong Kong Airport line, with, inter alia, a downtown CBD terminus and seamless connection to the Parramatta to Western Sydney Airport line.

Lines too different to share trains SMH 28/5/2023.

It just shows it never pays to go on holidays in case you miss something – in my case I nearly missed the revelation that we are about to construct three metro lines which use completely different rolling stock gauges and control systems. It is bad enough that the former government chose to preference building the orphan Sydney West Airport Metro instead of prioritising extending the Sydney West Metro straight to the new airport but to then compound that error by using entirely different technology is frankly gobsmacking. When upgrading signalling technologies over the Sydney rail system in recent times, great care was taken to ensure that, while componentry could be supplied by several technology companies, it was

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all interchangeable. For these three metros, we have a case of different companies locking themselves long term onto different metro lines, meaning that the economies in maintaining and replacing componentry that comes from common systems and rolling stock across a metro network as big as Sydney's is lost, not to mention the more specialised work forces that are needed. The irony is that a 25 kVAC system is what most high-speed rail systems use — but Sydney West metro is not being planned to permit enable joint running of them in parallel with a metro. So, the ability to provide a truly effective airport railway with possible extensions to the Southern Highlands and beyond has been lost. I think it may well be time for new leadership and advisors at Sydney Metro.

T3 line, from efficient to inferior SMH 8/4/2023

In addition to all the delays and inconveniences while the line is converted to a metro, commuters on the Bankstown line can "look forward" to trains that are 30% seated and 70% standing compared to their current service of 70% seated and 30% standing. I suspect they will not see this as an improvement.

"New airport will push airfares down, says CEO" AFR Special Report 31/3/2023.

The AFR reports that a Western Sydney Airport spokeswoman has said "The train journey from Penrith should take up to 25 minutes and up to 40 minutes from Parramatta". The train journey west to Penrith and east to Parramatta is to be via an interchange at St Mary's which adds "friction" or added time delay into the journeys. Insofar as Penrith and further west is concerned, I believe that very few people will want to use rail as road-based modes – i.e., car with plenty of parking at the airport and dedicated airport coaches operating on upgraded and relatively uncongested roads – will offer a more convenient, diverse, and faster service. Regarding access to Parramatta, a rail time of 40 minutes is not competitive - albeit possibly more reliable - with road modes which offer much greater diffusion of pickup and set down locations. The sad thing is that the NSW Government to date has insisted on prioritising the north south link to St Mary's rather than a high-performance link direct to the Parramatta and Sydney CBDs, which would be the natural markets for an airport rail link. My own research shows that travel times of around 30 – 35 minutes from the CBD via Parramatta to the airport are needed to make rail really competitive and this could have been achieved by using Hong Kong or Oslo rail links as models.

"High-tech city of the future fit for 22nd century cleared for take-off" Sun Herald 8/1/2023.

It is bad enough that this new "High-tech city" has been dubbed Bradfield. Great engineer though he was he had nothing much to do with Western Sydney or aviation (though his son Dr Bill Bradfield did) and has plenty of places and infrastructure named in his honour. The chance has been missed to honour one of at least four female technocrats and/or aviators, such as Florence Taylor, who had a far better claim for recognition than does Bradfield. But it is worse that this new Macquarie Park or maybe Canberra is to be linked to the rail network via a massively expensive standalone bit of metro to St Marys instead of directly connecting via the new airport to Parramatta and the Sydney CBD. It is astonishing that Ms Hill whose Greater Sydney Commission promoted the three-city concept - Western Parklands City, Central River City and Eastern Harbour City has tolerated this. Already Dr John Kasarda, originator of the aerotropolis concept, has said Bradfield will be "dead in the water" without such a fast rail link.

"Construction on four new metro lines could begin this year" SMH Sunday 12 February 2023

The problem with NSW regarding Western Sydney Airport is that it has been in a kind of long-term denial that the Badgerys Creek site would ever host an airport, with the land use zoning map simply showing the site as "Special Purposes" for years. So effective rail-based land transport access has not exactly been top of mind, although I did lead a study back in ~1995. NSW is now building a metro rail link to St Marys that many professionals think is fairly useless, so it is good news about the direct link to Parramatta and hence, via the under-construction Sydney Metro West, to the Sydney CBD. The problem is though that there is no evidence to show that the transit time that will be achieved is low enough – say 35 minutes – to be a mode competitive airport railway. And nor is there any evidence I have seen that the CBD station will be suitable as a terminal for an airport service. Think Hong Kong if you want a benchmark for a superior airport railway. And "\$260 million on final business cases for the four new lines, covering 100 kilometres of track" – that seems way over the top to me!

"Perrottet demands help to pay for airport links" SMH 6 October 2022 and "Airport plan at risk over funding" SMH 5 October 2022

The master plan for Western Sydney Airport made it clear that a rail link would not be required for airport purposes for several decades or until passenger movements grew to around 30 million p.a. With the airport sitting at least 16 kms away

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from any of the array of six or seven major population centres, unlimited carparking space and a major upgraded road system it was also clear that road-based transport would be the best way to access the airport till that time.

Driven by many of the voices mentioned in your article, and against the advice of many transport professionals, the Governments, State and Federal acceded to building a rail link, at cost now said to be \$11 billion. It was obviously to "blind Freddy" that a rail link could only ever effectively link to one of those centres. The same applies to the aerotropolis.

And instead of choosing to directly link to the most important of those centres, Parramatta, the so-called Central River City and then onto the Sydney CBD, the error has been compounded by building at vast expense a standalone piece of metro railway to, and no disrespect intended, the lesser centre of St Marys.

I once remarked that Government had the right to listen to the best advice and then choose to ignore it. I did not think they would take me seriously.

"'Expensive feast': At \$15 million a day, Sydney's mega rail projects hit costly speed bumps" SMH AUGUST 5, 2022

Unfortunately, Les Wielinga, when head of TFNSW clearly fell for the biggest furphy every perpetrated upon Sydney commuters by believing the promotional line TfNSW consistently put out that metro trains can "move 40,000 an hour compared with about 24,000 an hour for the existing double-deck railway line." They can only uplift >40,000 per hour when running at 2-minute headways, with 12 car trains and with 68% of passengers standing. And they are not doing that on the metro lines built to date – only about 17,000. The existing double deckers can uplift over 22,000 passengers at 3-minute headways and with 77% of passenger SEATED! Twelve car double deckers can uplift more than 40,000 running at 2-minute headways – as they do in Paris. And dwell times are a problem at no more than about 5 stations out of several hundred. Given the route lengths are not metro at all but regional commuter, seated capacity is important.

There are plenty of good reasons why Sydney should build some single decker railways, but their core justification should not be based on "fake news." Unfortunately, they still are being.

Parramatta pivotal in grand plan for fast rail network SMH 12/5/2022

They say all good things come to those who wait and that is certainly the case with big infrastructure – just look at Western Sydney (of course it should be Parramatta International) Airport. For 30 years I, and other professionals in and out of Government, have been advising that if we want Parramatta to be a real city with jobs numbers like that of the Sydney CBD then it needs to be the focus of high-capacity transport systems from all around the compass – not just a stop on the western line. A helicopter view shows how Parramatta stands at the crossroads of both north-south rail and east-west rail corridors – the centroid of Sydney's population was recently at Ermington just east of Parramatta and is inexorably moving westwards. Unfortunately, despite such professional advice, politicians are the ultimate decision makers and always know best which is why projects such as Epping to Parramatta have not proceeded and instead of providing a direct link from Parramatta to Western Sydney (Parramatta International) Airport, we are getting an \$11 billion orphan metro to nowhere (apologies to St Marys). And 250 km/h trains? Ministers of the Crown told us they were old technology 20 years ago. If they had only listened, we would have had a sub-2-hour service to Canberra for the past 15 years.

"Airport Metro doesn't add up, warns report" SMH March 12, 2020

It comes as no surprise to me, as a consultant in transportation and having led the planning and engineering team in the joint Commonwealth – State study which proved Badgerys Creek as the best site metropolitan Sydney had available for another airport, as well as participating in the following business case studies, that the proposed airport metro running south from St Mary's does not stack up in IA's economic evaluation terms. It was always considered that rail access to the airport would not be needed till well into the 2030s, based on access to the airport alone. However, the proposed metro is, like the railway providing access to Sydney airport, a railway which incidentally provides airport access while attempting to serve other urban and employment access needs as well. Therein lies the problem – hybridizing purpose can lead to dual inefficiencies. My own research indicates almost no one within a 10-20 km radius will use rail to access the airport - roads and parking will be too convenient - and I doubt they will do so for proposed employment centres either. The Greater Sydney Commission has sold the Government on the concept of the three cities and yet, instead of investing scarce capital into a fast rapid transit link between the three foci of that strategy – the CBD, Parramatta and the Airport/Aerotropolis - and capable of extension to the Southern Highland and beyond, Government has chosen spent our money on a disconnected piece of railway which cannot deliver competitive travel times to the places which people who might want to use rail will really want to go.



"Badgerys Creek approval sets back high - speed rail" AFR 2/6/2019.

The view that development of an airport at Badgerys Creek has set (intercapital) high - speed rail back 40 years is a rather glass half empty one. Having led studies for the Commonwealth on both East Coast Very High Speed Rail and on Badgerys Creek Airport, including land side access, I believe that airport can be the catalyst for achieving the first sectors of an East Coast HSR system. As has been well established by the studies I and others have led, intercapital HSR in the Australian context in one big hit is simply uneconomic compared to air travel. What is not uneconomic is to dramatically improve the travel times in regional rail corridors that can link regional centres of population to state capitals. The Commonwealth and States are currently looking into this.

The airport masterplan for Western Sydney Airport (WSA) specifically provides for four tracks of rail to traverse the site. The crucial issue is how to use that provision. Already there are proposals to extend Sydney Metro which will occupy one pair of tracks. The key issue here is whether the service that operates on those tracks will deliver travel times that are fast enough to/from the Sydney CBD to help make WSA competitive. If an overlay of fast airport and stopping suburban services – like the Hong Kong Airport/Tung Chung line – is provided, it may do. The question then is what to do with the second pair. One logical approach is to use them as a part of regional fast rail network: Canberra- Goulburn – Southern Highlands – WSA – Parramatta (and/or CBD) – Central Coast – Newcastle.

Way back in 2001, I wrote that Australia would never get anywhere on this topic without long-term bipartisan political commitment – curiously at the last Federal election, we started to see some with the Coalition, Labor and the Greens all promising some form of High Speed Rail Authority. This is to be encouraged, if only to ensure that not a single dollar of taxpayer money is spent on any form of high speed rail project that cannot be a part of in the long term – even if it is 40 years off - a single, fully integrated, and interoperable system over the East Coast of Australia.

And more!

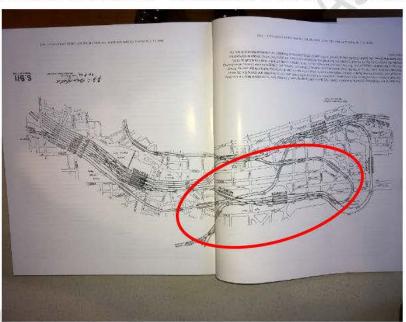


The Bradfield proposals

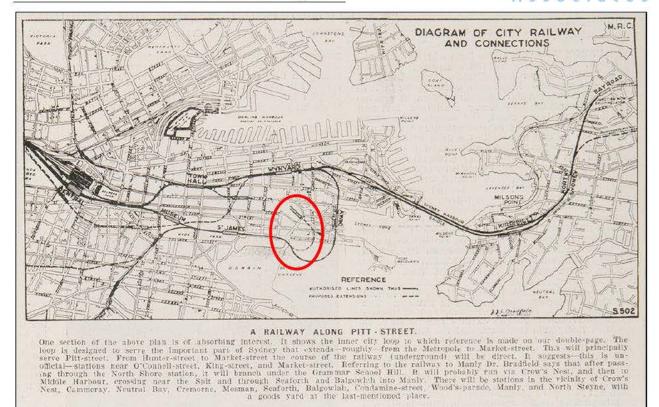
There are those that say that the planning design and construction of the City Underground are in fact a greater work of Bradfield's than the Harbour bridge but in reality, they are all part and parcel of the overall transport developments for Sydney at that time. And of course to the victor go the spoils (or credit) — the fact is that, as Sir Isaac Newton said "if I have seen further than others it is because I have stood on the shoulders of giants", many schemes and proposals preceded Bradfield¹ but, as in life generally, timing is everything and Bradfield was in the right place, at the right time and with the authority to get something done — which he did.

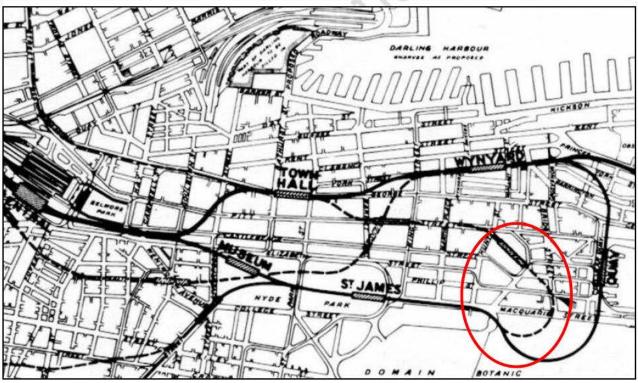
The proposal for railways in the CBD and the works of Dr Bradfield are nicely written up in "The Unreasonable Man" by Richard Raxworthy (pub Hale and Ironmonger 1989), and which covers some of the history leading up to Bradfield's schemes for Sydney's railways. You would love to see the proposals he and his predecessors had for redevelopment of the Rocks and the railway across Circular Quay. The plan for a railway across the head of the Quay dates at least 50 years before it was actually built.

The following figures shows the proposals – I have circled in red the St James part of the plan.



¹ A quick summary can be found at https://www.visitsydneyaustralia.com.au/history-railways-plan.html



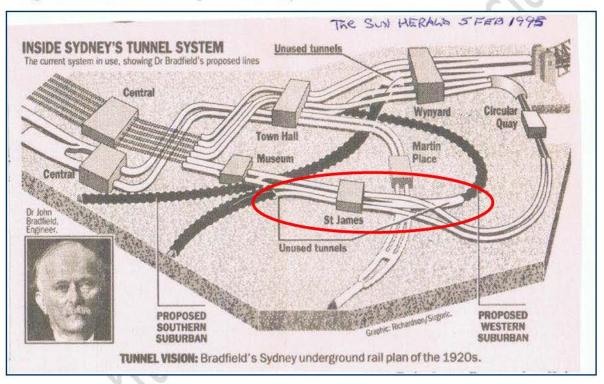


As you can see from these, Bradfield provided for four tracks running through St James - one pair are the tracks of the City Inner and Outer which of course are in place and link to Circular Quay and are operating. The other pair were to form part of line which northwards from St James looped back and provided stations in the CBD before connecting to Town Hall. At Town Hall, the provisions made for this line have now been taken over by the Eastern Suburbs line. To the south the line was intended to run under Oxford St and to the southeast. I suppose it could be argued that functionally this has been replaced by the SE Light Rail.



The following figure shows this in a little closer detail and in particular the approximate extent of the tunnels which were built north and south of St James. It is that provision which I and my colleagues have endeavoured to find use for in past studies. Prior to the City Circle being completed trains were stopped and turned around at St James.

"The north-bound siding tunnel intended for the Gladesville line drops quite sharply along its 250-metre length. At its end, it is very much lower than the City Inner railway and stops directly under the Mitchell Library where there is a rock face and a small pilot tunnel at roof level. At the Quay end of the pilot tunnel is another double line tunnel, with a concrete arched roof, but sandstone walls. This tunnel stretches away in a left-hand curve towards Bridge Street. It passes under the City Inner Line and starts a tight arc which would ultimately have led to Town Hall but avoiding Wynyard. Construction ceased after sufficient tunnel had been built to clear the City Inner Line, the end being around where it would go under Macquarie Street."



Source: Sun Herald 5 Feb 1995

² https://www.visitsydneyaustralia.com.au/lost-rail-citycircle.html



This photo is of the construction of St James Station looking north up Macquarie St and as can be seen necessitated the devastation of Hyde Park but happily with the effluxion of time it has been totally restored. The other photo is of the interior of St James showing where the additional two tracks were intended to go.³





Sydney CBD Metro

This figure following shows the outline alignment of Sydney Metro West coming into the CBD from the west into the vicinity of Hunter Street. It looks very similar to what had been proposed earlier on the abandoned CBD metro project (you'll recall that there was proposal to build a bit of metro out to Balmain that got all the way to the assessment of final bids before it got canned). I rather suspect that the work done for that project is being extensively recycled – which is ok to an extent. As you can see the terminus of this route is in the vicinity of Hunter Street – there isn't much detail as yet on just how that is to work. St James Station is just above the words "SYDNEY CBD"

³ Source: https://www.visitsydneyaustralia.com.au/history-railways-city.html

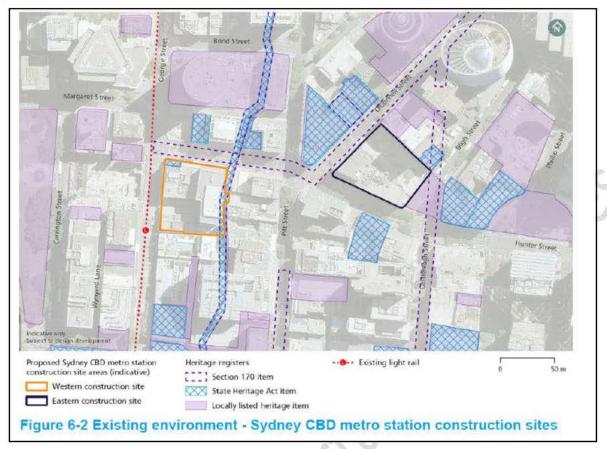


TfNSW Scoping Report Major civil construction work between The Bays and Sydney CBD Request for Secretary's Environmental Assessment Requirements May 2021

The following figures show the construction site provisions for the Hunter St station as well as the indicative provision for the turnback facility needed to terminate and turn trains around as for example happened at Bondi Junction.

As can be seen these have an overlap with the northern tunnel Bradfield built leading north out of St James. I do not know whether or not the metro planners have given any thought at all into making use of those tunnels and extending the metro to St James, which effectively has turnback infrastructure already in place. It would also provide another point of access into the CBD as well as the opportunity to easily interchange onto the Sydney Metropolitan rail system. In terms of onward travel, the circular road system around Hyde Park also provides much more convenient road access than would a Hunter St location. It also would at some further point permit extension to the southeast as Bradfield had intended or some modern version of that.

It may be that the metro planners considered the northern loop into St James was of too tight horizontal curvature or the station could not in some way be retrofitted to allow metro operation. I do not know the answers to these questions. It would be interesting to find out.



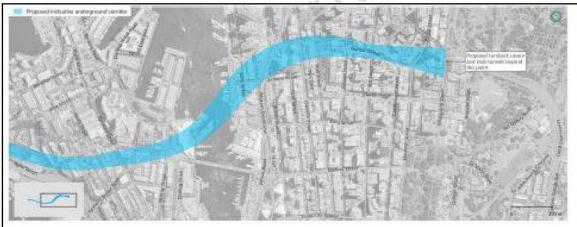


Figure 3-4 Proposed indicative underground corridor alignment from The Bays to Sydney CBD

St James Tunnels Revitalisation Project

In about October 2018, tenders were called for proposal for adaptive reuse ofc the tunnels at St James and set out the following objectives.

"While respecting and enhancing the heritage aspects of St James Station, Sydney Trains is seeking innovative solutions from the private sector to deliver a world-class adaptive re-use project which creates a new experience for Sydney.

Sydney Trains' core objectives for the Project, include:



- a) Redefining the customer experience at St James Station through enhanced connectivity and patron amenity;
- b) Leveraging private sector innovation to design, fund and deliver a world-class adaptive re-use project which creates an iconic new experience for Sydney and the community;
- c) Preserving and showcasing the unique heritage attributes of the tunnel network and platform spaces;
- d) Optimising the value for money return to the State, including minimisation of both the State's risk position and funding contribution throughout project delivery and the lease term;"



The location of St James at the northern end of Hyde Park provides reasonable ready pedestrian access to many locations that travellers would wish to access, interchanging opportunities for other rail locations and if able to be incorporated into a rework of the park, kiss and ride facilities for taxis and cars and maybe busses to other locations.

Summary

Clearly use of the platforms and unused tunnels at St James for such adaptive reuse purposes would totally preclude any use for operating railway purposes and, in particular, at a terminus for Sydney Metro West. So again, before either the metro or the revitalisation project proceeds, and here again, I don't know where they have got too, it would be nice to know that St James was properly evaluated for its potential to provide that additional railway infrastructure as it was intended, before like so much else of NSW we place it into private hands and lock it way to decades.