Submission No 1

INQUIRY INTO WESTERN SYDNEY SCIENCE PARK AND AEROTROPOLIS DEVELOPMENTS

Organisation: EcoTransit Sydney

Date Received: 5 July 2024

EcoTransit Sydney
www.EcoTransit.org.au

5 July 2024

Abigail Boyd MLC
Chair
Public Accountability and Works Committee
PAWC@parliament.nsw.gov.au

EcoTransit submission for NSW Parliament Inquiry into Western Sydney Science Park and Aerotropolis developments

Dear Legislative Council Committee for Public Accountability and Works Committee,

EcoTransit Sydney thanks the Legislative Council Committee for Public Accountability and Works for the opportunity to participate in the Inquiry into the Western Sydney Science Park and Aerotropolis developments.

As one of Sydney's longstanding public and active transport advocacy groups, we bring to the attention of the Inquiry the following key areas of attention for the consideration of the Committee regarding transport supporting Western Sydney Airport and the Aerotropolis:

- The highest priority of extending the Sydney Trains Network connections especially the South West Rail Link from Leppington to Western Sydney Airport (International Airport Terminal).
- The need for rail on Western Sydney Airport line to have capacity for full 8 carriage train services.
- The need for a standardised single-deck rail fleet as part of introduction of integrated Tram-Trains.
- The lack of information justifying Sydney Metro for Western Sydney Airport from St Marys and from Glenfield arising from the non-publication of the business case.

Commuters from South West Sydney (such as Fairfield, Liverpool, and Campbelltown) are in relatively close geographic proximity of the Western Sydney Airport yet have to travel indirectly via St Marys for rail services to reach the Aerotropolis precinct. The lack of any direct Sydney Trains from Leppington to Western Sydney Airport will encourage motor vehicle dependency in Western and South West Sydney.

Extending the Sydney Trains Network from Leppington to Western Sydney Airport (which also enables direct rail connections to Sydney Airport, Central Station, and other Sydney Trains stations) and the introduction of Tram-Trams in Western Sydney (providing additional direct rail connections between Parramatta/Bankstown/Liverpool and the Western Sydney Airport/Aerotropolis) is urgently needed to reduce motor vehicle dependency in Western and South West Sydney.

EcoTransit would like to request the opportunity to give evidence at an Inquiry hearing to provide more information about our transport proposals for Western Sydney Airport and the Aerotropolis.

Yours Sincerely,

Roydon Ng and **Matthew Doherty**
On behalf of **EcoTransit Sydney**

EcoTransit Sydney

Advocating for better public and active transport in NSW

www.EcoTransit.org.au

Submission for NSW Parliament Inquiry into Western Sydney Science Park and Aerotropolis developments

July 2024

Roydon Ng and Matthew Doherty

This is a joint submission of EcoTransit Sydney (ETS) and the "Fix Liverpool Transport" campaign of the Restore T2 Inner West Line (Liverpool via Regents Park) community action group. For more information about the Fix Liverpool Transport campaign, please visit www.liverpooltransport.info

Contents

EcoTransit holds the view that the business case for Sydney Metro – Western Sydney Airport line project Stage 1 (from St Marys to Western Sydney Airport) and Stage 2 (from Glenfield to Aerotropolis) is NOT justified.
EcoTransit supports rail for Western Sydney Airport and Aerotropolis to be delivered through an expansion of the Sydney Trains Network with capacity upgrades achievable for a fraction of the cost of Sydney Metro projects.

What is EcoTransit?

EcoTransit is transport that supports a sustainable economy and environment. The less resources used by the transport sector, the more efficient our economy is, and the less damage is done to the environment.

Public transport, walking and cycling fit these criteria. Urban freeway development that entrenches prolific car use does not support **EcoTransit** based economies and cities.

EcoTransit is a public transport advocacy group operating out of Sydney, but with a focus on all regional and rural parts of NSW that need better public transport. EcoTransit is a not-for-profit organisation made up of volunteers dedicated to the promotion of EcoTransit development.

EcoTransit advocates improving the local environment of towns, suburbs, and cities in NSW, by shifting transport from invasive modes like the private motor car that produce high levels of air, noise, and water pollution to the less polluting public transport modes.

EcoTransit is dedicated to the preservation of NSW's natural environment and heritage areas.

EcoTransit members are transport planning consultants, academics, trainspotters, bus drivers, commuters, cyclists, engineers, pedestrians, and combinations of all of the above.

EcoTransit has most recently submitted and has given evidence at the NSW Legislative Council Inquiry into the Current and future public transport needs in Western Sydney (Portfolio Committee 6 – Transport and the Arts) in 2023.

The **EcoTransit** submission for the Inquiry into Current and future public transport needs in Western Sydney and additional information tendered to the Inquiry is published at:
https://www.parliament.nsw.gov.au/lcdocs/submissions/82000/0048%20EcoTransit%20Sydney.pdf
https://www.parliament.nsw.gov.au/lcdocs/other/18819/Additional%20information%20to%20the%20committee,%20EcoTransit,%20tendered%20by%20Mr%20Colin%20Schroeder.pdf

The Legislative Council Committee on Public Accountability and Works is invited to visit the **EcoTransit** website (www.ecotransit.org.au) for further details and information about our public transport and active transport proposals, advocacy, and position papers.

Extend the South West Rail Link from Leppington to Western Sydney Airport

EcoTransit supports the Australian and NSW Government commitment to provide rail access to the Western Sydney International (Nancy-Bird Walton) Airport in Badgerys Creek on its opening day in 2026. The Western Parkland City is an important growth centre, and its development is hindered by a lack of holistic public transport connections with Greater Sydney.

EcoTransit supports the extension of the existing South West Rail Link (from Leppington) to Western Sydney International (Nancy-Bird Walton) Airport as part of the Sydney Trains Network (heavy rail) as the highest priority, and least cost-intensive (fiscally and environmentally), option for providing public transport into the Western Parkland City.

EcoTransit supports future expansion of heavy rail in the Western Parkland City from Western Sydney International (Nancy-Bird Walton) Airport to destinations including St Marys, Penrith, Parramatta, Narellan, and the South Coast via Maldon-Dombarton.

Transport for NSW – South West Rail Link Extension brochure (2017)[1]

EcoTransit notes the longstanding design intention of the South West Rail Link (from Leppington) as being future-proofed for an extension to Western Sydney International (Nancy-Bird Walton) Airport and for operations at Glenfield to allow direct connections with Sydney Airport (Kingsford Smith International Airport).

It should be noted that, as part of the *Rail Clearways Project*, the quadruplicated lines between Revesby and Turrella allow for trips between Glenfield and Wolli Creek of as little as 21 minutes on the existing heavy rail line *in peak hour*.

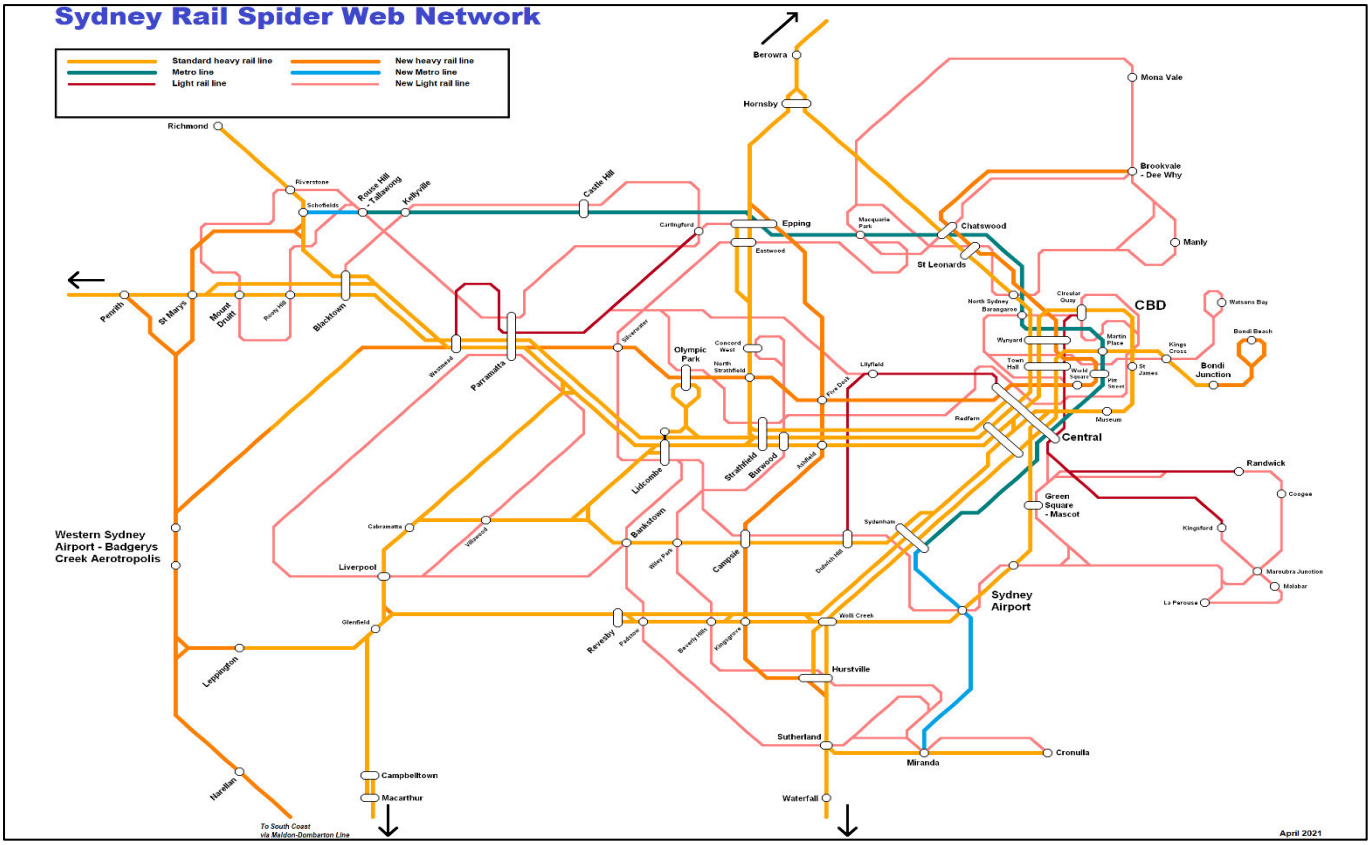
Converting the South West Rail Link into Sydney Metro is a downgrade to Sydney's rail network.

[1] https://www.transport.nsw.gov.au/sites/default/files/media/documents/2017/swrl-extension-brochure.pdf

EcoTransit notes the Transport for NSW North South Rail Line and South West Rail Link Extension project FAQ (June 2020)[2] notes that: "The South West Rail Link Extension will lengthen the existing passenger rail line from Leppington Station to North Bringelly so it connects with the North-South Rail Line. This will provide a direct link to the Western Sydney Aerotropolis and surrounding business area".

EcoTransit notes that the Sydney Metro – Western Sydney Airport line (Stage 1) has been subject to problematic design processes including issues which have been raised at the NSW Legislative Council Inquiry into Acquisition of land in relation to major transport projects (2021)[3], in addition to the Infrastructure Australia evaluation of the project's Business Case which has been found the benefits of the line to be "overestimated"[4], and a growing number of transport officials warning about the project being delayed due to budgetary issues[5].

EcoTransit is concerned about the proposed conversion of the entire South West Rail Link into Sydney Metro – Western Sydney Airport line (Stage 2) including from Glenfield to Leppington, and also believes that calls for future Metro conversion of Glenfield to Liverpool (and link to Bankstown) are meritless attempts to justify the Sydney Metro Southwest project which has been deemed by the NSW Legislative Council Inquiry into Sydenham to Bankstown line conversion (2019)[6] as lacking critical justification.



EcoTransit's proposed Sydney Rail Spider Web Network (April 2021). Map by Maurice G. EcoTransit supports extension of Sydney Metro Northwest to Schofields and proposes a diversion of Sydney Metro between Sydenham and Bankstown for a new corridor from Sydenham to Miranda.

[2] https://www.transport.nsw.gov.au/system/files/media/documents/2021/North%20South%20Rail%20Line%20FAQs.pdf
[3] https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiry-details.aspx?pk=2698
[4] https://www.infrastructureaustralia.gov.au/sites/default/files/2021-03/SMWSA%20Evaluation%20Summary.pdf
[5] https://www.smh.com.au/national/nsw/promised-transport-links-to-new-sydney-airport-delayed-due-to-funding-gap-20220926-p5bl4e.html
[6] https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiry-details.aspx?pk=2551

As referred to earlier, Sydney Trains is already providing express services on the T8 Airport and South Line (via East Hills) that a Metro service would not significantly enhance. Only about 10km of new track needs to be built to connect from Leppington to Western Sydney Airport at Badgerys Creek.

The Sydney Trains Network with double-deck (heavy rail) trains could then deliver passengers from Western Sydney Airport to Sydney Airport in less than 1 hour, even on a stopping train, running every 15 minutes or more.

Current Sydney Trains fleet of Oscar, Millennium, and Waratah design double-deck carriages could be used for the service to Western Sydney Airport, without having to commission more expensive Sydney Metro units from overseas. Both ends of each double-deck carriage could be easily, and cheaply modified for bulky travellers' luggage.

EcoTransit is concerned about the continued downgrading of the Sydney Trains Network and believes the most cost-effective opportunity to provide (heavy) rail access to Western Sydney Airport is through an extension of the existing South West Rail Link from Leppington — Rossmore – Bringelly – Western Sydney Airport (Bradfield) – Aerotropolis (Bradfield).

EcoTransit is concerned about the lack of commitment from all levels of government to extending the South West Rail Link (heavy rail) and believes without an urgent joint commitment to expanding the Sydney Trains Network, that the Western Sydney Airport and Western Parkland City will succumb to traffic congestion and be forced to rely on road transport (e.g. private vehicles) to Liverpool.

Extending the South West Rail Link from Leppington to the Western Sydney Airport (Bradfield) would cost approximately $3-4 billion dollars including up to 5 stations west of Leppington (e.g. Rossmore, Bringelly, Aerotropolis South, Aerotropolis Core, Western Sydney Airport Terminal). This calculation is based on $1.8 billion cost of the Glenfield to Leppington extension in 2015, the 2022 cost for the Leppington to Western Sydney Airport extension is estimated at around $3 billion dollars.

Recommendation: Western Sydney Airport station and (both) Aerotropolis stations should be redesigned for 4 rail tracks (2 Sydney Metro from St Marys & 2 Sydney Trains to Leppington).

The proposed SMART Rapid Bus corridor[7] from Liverpool to Western Sydney Airport via Fifteenth Avenue is no more than an expensive Bus T-Way, and not an adequate mass transit option for Western Sydney Airport. This would not be the most desirable option for public transport users of the new Western Sydney Airport or Aerotropolis to connect with Liverpool.

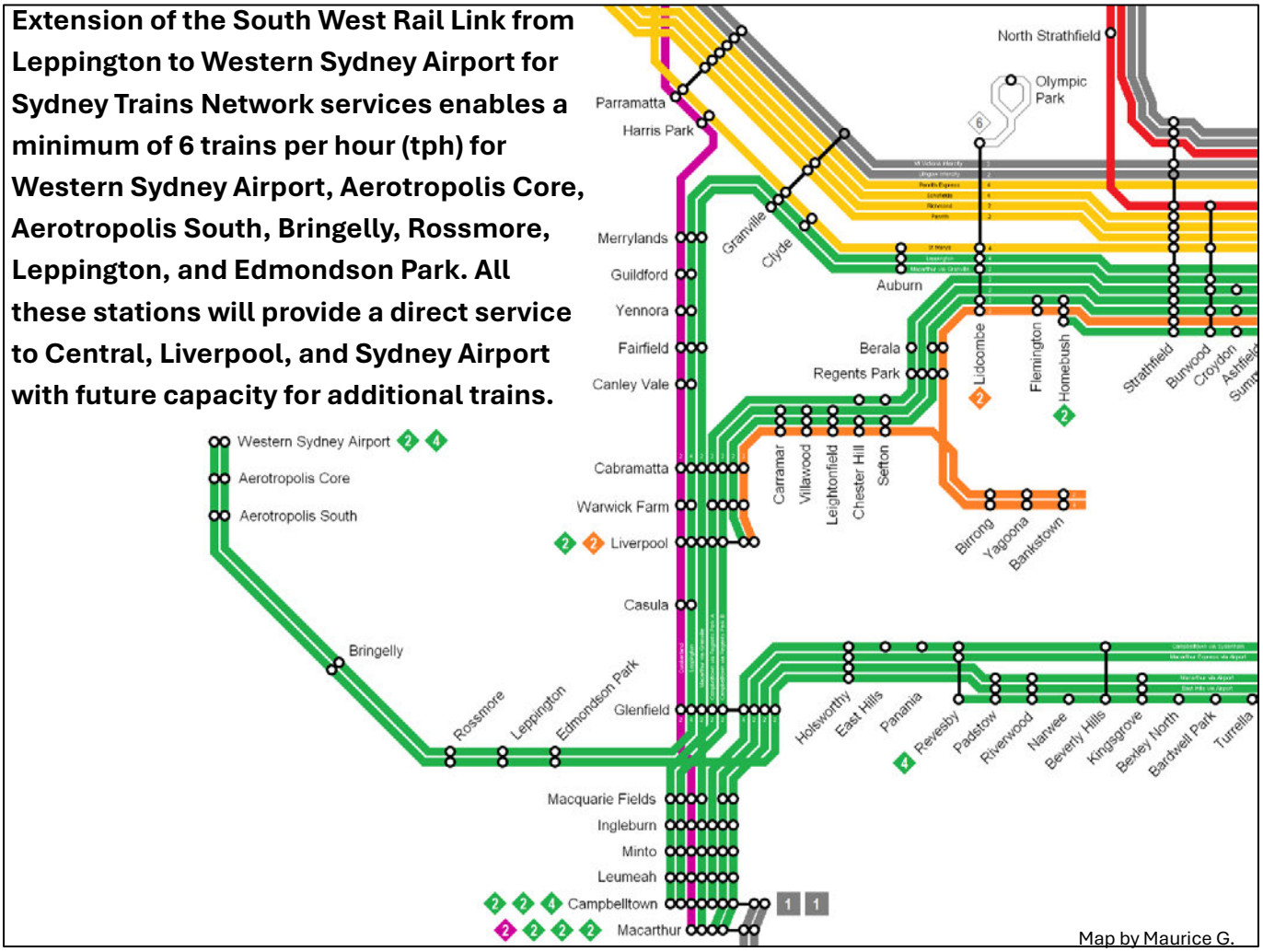
EcoTransit also supports improvements for Liverpool area commuters including express trains to City Circle via Granville to be restored (including additional limited stops pattern bypassing lower patronage stations), and signalling upgrades across the Sydney Trains Network to further increase capacity.

The T2 Inner West Line should be restored as a permanent City to Liverpool via Regents Park service, T5 Cumberland Line should be restored to include Campbelltown to Parramatta/Richmond services with alternate stopping patterns, and a Y-Link constructed approaching Glenfield for Liverpool to City via East Hills services (utilising some of the area already designated for the Moorebank intermodal facility).

[7] https://www.liverpool.nsw.gov.au/development/major-projects/fifteenth-avenue-smart-transit-fast-corridor

Proposed Sydney Trains Network to Western Sydney Airport

Extension of the South West Rail Link from Leppington to Western Sydney Airport for Sydney Trains Network services enables a minimum of 6 trains per hour (tph) for Western Sydney Airport, Aerotropolis Core, Aerotropolis South, Bringelly, Rossmore, Leppington, and Edmondson Park. All these stations will provide a direct service to Central, Liverpool, and Sydney Airport with future capacity for additional trains.

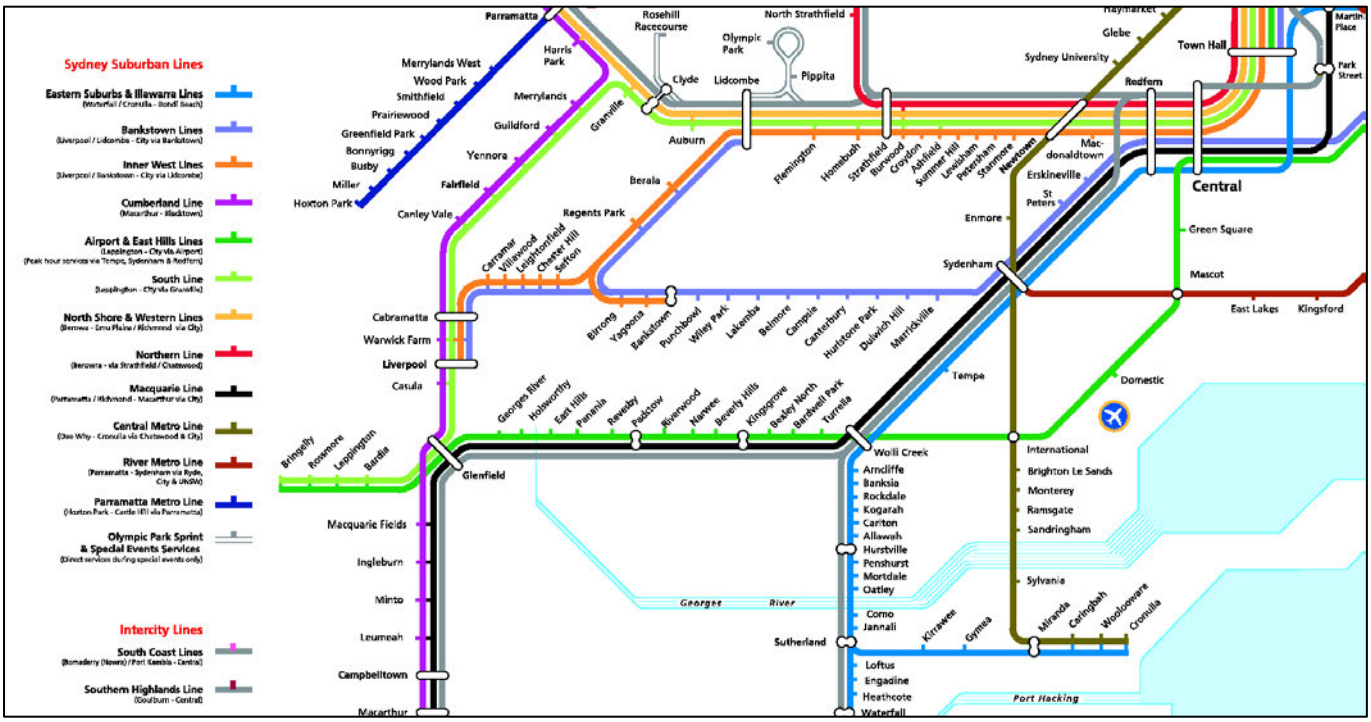


Proposed South West Sydney Map of Sydney Trains in AM Peak. City Circle via Town Hall on 16tph and City Circle via Museum on 14tph, with capacity for additional services on T2, T3, T8 for future growth.

Sydney Trains lines (and stopping patterns for South West Sydney/number of Trains Per Hour):

- T1 Western Line (including express trains re-instated for Lidcombe and Granville)
- T5 Cumberland Line (Macarthur to Richmond)
- T3 Bankstown Line (Liverpool to Bankstown)
- T3 Bankstown Line (Bankstown to City via Regents Park)
- **T2 Leppington Line (Western Sydney Airport to City via Granville) at least 4tph**
- T2 South Line (Macarthur to City via Granville)
- T2 South Line (Campbelltown to City via Regents Park A & B)
- T2 Inner West Line (Liverpool to City via Regents Park)
- T8 Airport Line (Campbelltown to City via Sydenham)
- T8 Airport Line (Macarthur Express to City via Airport)
- T8 Airport Line (Macarthur to City via Airport)
- **T8 Airport Line (Western Sydney Airport to City via Sydney Airport stations) at least 2tph**
- T8 Airport Line (Revesby to City via Airport)

Recommendation: Western Sydney Airport to have Sydney Trains to City via Granville/East Hills.



Christie Report (2001) Chapter 5. Beyond 2010 (Figure 5.9)

EcoTransit notes that the South West Rail Link was not only always designed to extend beyond the west of Leppington but also to be integrated with the wider Sydney Trains Network.

The "Long Term Strategic Plan for Rail" (2001) aka. Christie Report[8] written by Ron Christie, Coordinator General for Rail has recommended that the South West Rail Link have direct Sydney Trains services to City Circle via Liverpool and Granville, and also City Circle via East Hills and Sydney Airport.

Transport for NSW animation (2014) for South West Rail Link showing an indicator board for a direct train to Central via Sydney Airport (T8 Line) on the Sydney Trains Network

[8] http://exigent.aptnsw.org.au/christie/christie.pdf

Better options for Rail West of Bankstown and Liverpool

EcoTransit supports the Sydney Trains Network and expresses disappointment at the Commonwealth Government and NSW Government proposals for the expansion of rail in South Western Sydney.

The NSW Legislative Council Inquiry into Sydenham to Bankstown line conversion (2019-20) found that the business case for Sydney Metro City & Southwest has not been justified[9], yet Transport for NSW remains in favour of a conversion of the line from Glenfield to Leppington into Sydney Metro as part of an extension of Metro Southwest from Bankstown to Western Sydney Airport via Liverpool/Glenfield.

It is extremely disappointing that both the Commonwealth Government and NSW Government are continually ignoring the warnings of 4 former Sydney rail executives (John Brew, Ron Christie, Bob O'Loughlin, and Dick Day) that converting Sydenham to Bankstown into Sydney Metro would cause gridlock among the entire Sydney Trains Network[10].

As a witness at the NSW Legislative Council Inquiry into Sydenham to Bankstown line conversion (2019-20), **EcoTransit** presented evidence regarding the ability to increase capacity and frequency on the existing Sydney Trains Network (running heavy rail double-deck trains) through signalling upgrades (at a fraction of the cost to Sydney Metro).

Transport for NSW's plan to extend Metro Southwest from Bankstown to Western Sydney Airport is contrary to the Transport for NSW Greater Liverpool to Bankstown Needs Study (2022)[11] and expert research[12] indicating that buses would serve disadvantaged communities better than Metro[13] (especially in new corridor via Bankstown Airport).

EcoTransit opposes the wasteful government spending on the conversion of the existing Sydney Trains Network including between Liverpool and Leppington via Glenfield into Sydney Metro, as the most cost-effective connection to Western Sydney Airport is an extension of heavy rail for double-deck trains.

EcoTransit supports the NSW Labor proposal for rapid buses in the Greater Liverpool area instead of extending Metro Southwest from Bankstown to Glenfield, but **EcoTransit** cannot support any proposal to extend Metro from Bankstown to Regents Park via Yagoona/Birrong[14].

The solution to Yagoona and Birrong Station being without a direct train to Central Station (once Metro Southwest opens to Bankstown in 2025) is to restore the Bankstown to City Circle via Regents Park service on the T2 Inner West Line and the completion of a project (abandoned in 2014 in favour of WestConnex)[15] for 2 additional Sydney Trains tracks between Lidcombe and Homebush Station (which ultimately delivers enhanced network wide operational benefits).

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[9] https://www.parliament.nsw.gov.au/lcdocs/inquiries/2551/Report%20No%2011_PC%206_Sydenham-Bankstown%20line%20conversion.pdf

[10] https://www.smh.com.au/national/nsw/gridlocked-and-unworkable-dire-warning-for-sydneys-trains-from-former-top-execs-20171213-h03omz.html

[11] https://restoreinnerwestline.org.au/wp-content/uploads/2022/11/Greater-Liverpool-to-Bankstown-Needs-Study.pdf

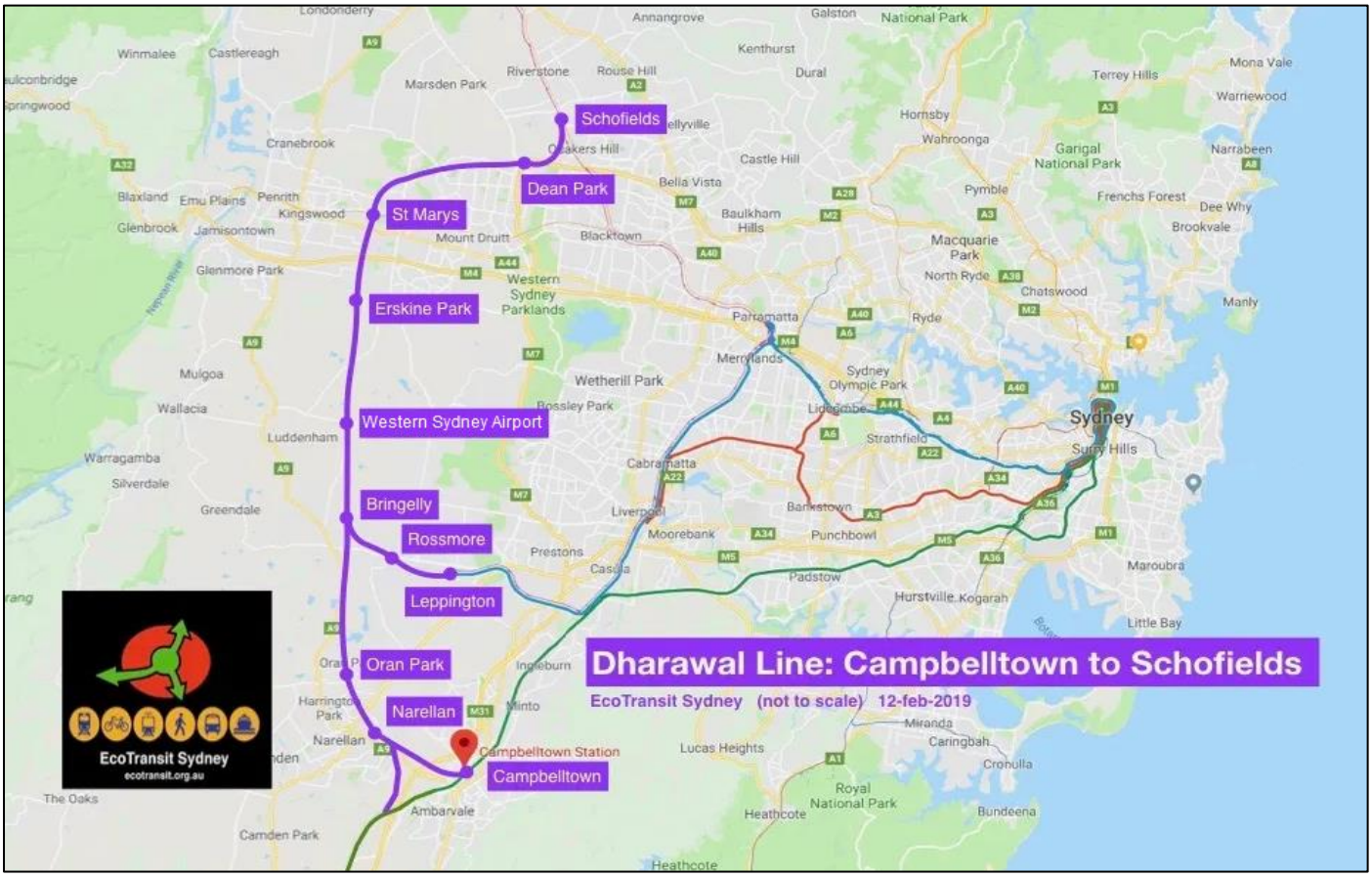
[12] https://ses.library.usyd.edu.au/handle/2123/27096

[13] https://www.theguardian.com/australia-news/2023/feb/03/more-buses-in-underprivileged-areas-better-bang-for-buck-than-new-transport-projects-australian-research-finds

[14] https://www.youtube.com/shorts/tS9tiuflx5E

[15] https://restoreinnerwestline.org.au/western-line-upgrade-abandoned-to-increase-westconnex-tolls/

The "Dharawal Line" (Schofields to Campbelltown via Western Sydney Airport)



EcoTransit notes the lack of a strong business or operations case for introducing Sydney Metro generally, especially at the expense of upgrades and expansions to the Sydney Trains Network.

Construct the new Western Sydney Airport line (**EcoTransit's proposed "Dharawal Line"**) as a Sydney Trains heavy-rail link for double-deck passenger services and freight trains from Schofields – St Marys – Western Sydney Airport – Leppington and Campbelltown.

With **EcoTransit's proposed "Dharawal Line"** and Sydney Trains timetabling with Leppington to T8 Airport Line via East Hills services, Western Sydney Airport passengers will have a fast direct rail link (with storage for baggage and larger items), without changing trains, to Sydney International and Domestic Airport, and Central Station in under 1 hour.

Construction of the "Dharawal Line" to Sydney Trains (heavy rail) standards also enables such rail infrastructure to serve as a Western Sydney Freight Rail Bypass to the South Coast (via completion of the Maldon – Dombarton rail link) enabling the removal of freight services east of St Marys that share capacity with existing suburban Sydney Trains passenger services.

Recommendation: The Inquiry investigates the rationale for the Western Sydney Airport line's selection for Sydney Metro instead of construction to Sydney Trains & freight network standards.

Sydney Trains Network Expansion better than Sydney Metro

Metro rail is not suited to long distances or lines with sparsely located stations (beyond 800m apart) where passengers get on and off frequently. It is unfortunately too late to stop the false metro the government has built in the North West, but **EcoTransit** believes that no more existing rail lines, currently using Sydney's famous double-deck trains, are converted (and thus downgraded) into Metro.

It would be useful to have another look at Bradfield's original plans in light of the massive expansion of the Sydney metropolitan, rail development and options in recent years. **EcoTransit** is concerned that Public Transport design might be decided by which way an area votes in state or federal elections. What follows obviously could not be built overnight but without a comprehensive plan, nothing will happen.

The various heavy rail and light rail proposals will need to be prioritised and constructed accordingly. However, without all these proposals being built within the next 15 to 20 years Sydney will be severely disadvantaged economically and the population's mobility will be increasingly curtailed with the necessity to dramatically reduce greenhouse gases.

Naturally, many people will say these proposals are unaffordable. However, if prioritised and completed over many years this is not necessarily true. **EcoTransit** would suggest that the government should establish and sell dedicated public transport treasury bonds to finance these projects.

Options to Improve Heavy Rail Routes for Western and South West Sydney

- Provide a triangle at Glenfield so that trains no longer have to terminate at Revesby, East Hills, or Liverpool. Instead, they would complete a circular route in both directions.

- Extend the T2 Leppington Line through to Western Sydney Airport and onto St Marys including a triangular junction with the T1 Western Line.

- Extend the line from Western Sydney Airport to St Marys then Schofields to connect with the T1 Richmond Line, at Schofields (to also meet with a future extension of Sydney Metro Northwest from Tallawong).

  Consideration should be given to a triangular junction at Schofields so that trains could alternatively travel onto Richmond or Central.

- The T1 Richmond Line should be duplicated to achieve wider network benefits, and a level crossing removal project introduced as patronage demand increases over the coming decades.

- A triangular junction at Leppington would provide a new line to Narellan and Camden and re-join the Main Southern Line again with a triangular junction) just south of Macarthur.

  This would allow freight trains from the Blue Mountains and the west to avoid the suburban lines east of St Marys to access a completed Maldon-Dombarton line and use Port Kembla as a port, also south to Bomaderry.

- The Main Western Line (T1) from St Marys to Penrith should be quadruplicated to allow more frequent services, and to provide backup capacity in the corridor for Blue Mountains trains.

Local residents support the expansion of Sydney Trains Network

Research undertaken by the "Fix Liverpool Transport" community campaign[16] in February and March 2024 finds that a majority of residents from existing South West Rail Link stations prefer an extension of the Sydney Trains Network (from Leppington to Western Sydney Airport) as opposed to Sydney Metro from Glenfield to Western Sydney Airport.

The "Fix Liverpool Transport" community campaign engaged with a combined total of 1,200 households in an 800m radius around Leppington and Edmondson Park railway stations. An invitation was extended for residents to share their views on future rail services towards Western Sydney Airport.

From the 265 survey respondents who provided their names and contact details, the key results are:

- An overwhelming majority of South West Rail Link commuters travel to Central Station.
- All commuters support a direct train from the South West Rail Link to Western Sydney Airport.
- Excluding Central Station, a majority of South West Rail Link commuters indicated that the first priority for Western Sydney Airport rail connections was with Sydney Airport and the second priority was to Liverpool Station.
- Parramatta was ranked fourth and Strathfield was ranked fifth in the preferred important direct train connections needed from Western Sydney Airport via South West Rail Link.

While many commuters currently do interchange at Glenfield between T5/T2 Line and T8 Line services to Central, these results as a sample survey of existing South West Rail Link residents demonstrate that preference is for a single-seat train journey towards Sydney CBD.

Preliminary findings from local research and engagement would also suggest that a new Leppington interchange (similar to Bankstown) between existing Sydney Trains and future Sydney Metro to Western Sydney Airport would not be supported. A Leppington metro/train interchange would result in airline passengers travelling between Western Sydney Airport and Sydney Airport to have to up to 4 separate trains (Western Sydney Airport to Aerotropolis [metro], Aerotropolis to Leppington [metro], Leppington to Glenfield [train], Glenfield to Sydney Airport [train]).

Most residents also questioned the need to be replacing existing Sydney Trains on the South West Rail Link (Glenfield to Leppington) with new Sydney Metro as current service frequencies and routes were regarded as largely adequate with the option to travel directly to City Circle via Liverpool and Granville, or interchange at Glenfield for an express train to City Circle via Sydney Airport.

From such findings affirming the long-standing general community sentiment in support of extending the South West Rail Link to Western Sydney Airport Terminal, both the Commonwealth Government and NSW Government is urged to properly examine the feasibility of expansion of the Sydney Trains Network to Western Sydney Airport from Leppington.

Recommendation: The business case for Sydney Metro – Western Sydney Airport line Stage 1 & 2 (Glenfield to Western Sydney Airport) be published in full (and is to include a cost/benefit analysis of expansion of the existing Sydney Trains Network from Leppington to Western Sydney Airport in comparison with Sydney Metro from St Marys and Glenfield to Western Sydney Airport).

[16] https://liverpooltransport.info/

Sydney Trains' higher capacity than Sydney Metro for WSA

EcoTransit draws attention to the significantly lower capacity of Sydney Metro carriages compared to Sydney Trains carriages generally and especially for the Western Sydney Airport line. Transport economist Neil Douglas, who has conducted research[17] for the NSW Government, puts the practical capacity at 1,400 for double-deckers (Sydney Trains) and 1,120 for single-deckers (Sydney Metro)[18].

The Sydney Metro – Western Sydney Airport line Environmental Impact Statement (October 2020) notes that "The project would initially operate up to three carriages per train with a service frequency of up to 12 trains per hour in the peak" and "the design for the ultimate service caters for up to four carriages per train and a frequency of 20 trains per hour"[19].

EcoTransit notes that all Sydney Trains services on the T2 Inner West & Leppington Line, and T8 Airport & South Line are 8 carriage services with current capacity of 20 trains per hour.

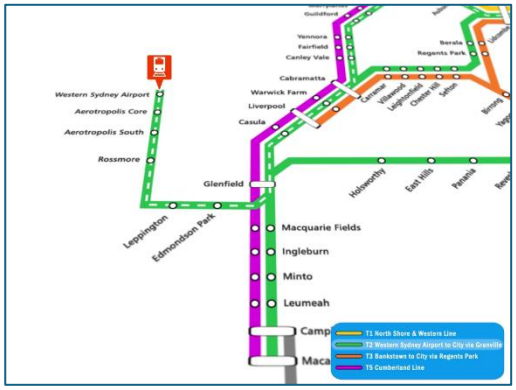
Therefore, even if Sydney Metro – Western Sydney Airport line were to operate at maximum capacity (4 Metro carriages x 20 trains per hour), were the project be designed as completely Sydney Trains standards (8 Train carriages x 20 trains per hour), overall rail capacity of Sydney Trains would be at least double that of Sydney Metro for Western Sydney Airport.

Double-deck v single-deck train capacity, peak load per hour		
	Existing signalling	**Enhanced signalling**
Double-deck	20 trains, 28,000 passengers	24 trains, 33,600 passengers
Single-deck	22 trains, 25,000 passengers	26 trains, 29,200 passengers
Source: Douglas Economics		

Recommendation: All Sydney Metro – Western Sydney Airport line stations be constructed to full eight carriage lengths for future proofing (e.g. conversion into Sydney Trains or Tram-Trains).

South West Rail Link Extension Maps (Sydney Trains Network)

T2 Western Sydney Airport to City Circle via Liverpool and Granville



T8 Western Sydney Airport to City Circle via East Hills and Sydney Airport

[17] https://web.archive.org/web/20140423013548/http://images.smh.com.au/file/2013/09/23/4770519/trains.pdf
[18] https://www.abc.net.au/news/2014-04-11/barry-ofarrell-sydney-trains-claim-doubtful/5371446
[19] https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSI-10051%2120201019T004445.472%20GMT

Future of T5 Cumberland Line & Merrylands/Harris Park Y-Link

Internal Transport for NSW documents reveal preliminary planning has commenced to convert the existing T5 Cumberland Line into Sydney Metro and for a future extension of T5 metro from Glenfield to Merrylands and then beyond to Epping via new rail tunnels under Parramatta.

New T5 Cumberland Line: Western Sydney Airport (Bradfield/Aerotropolis) to Epping via Glenfield and Parramatta. Completed by 2056 or 2061 as part of the NSW Future Transport Strategy.

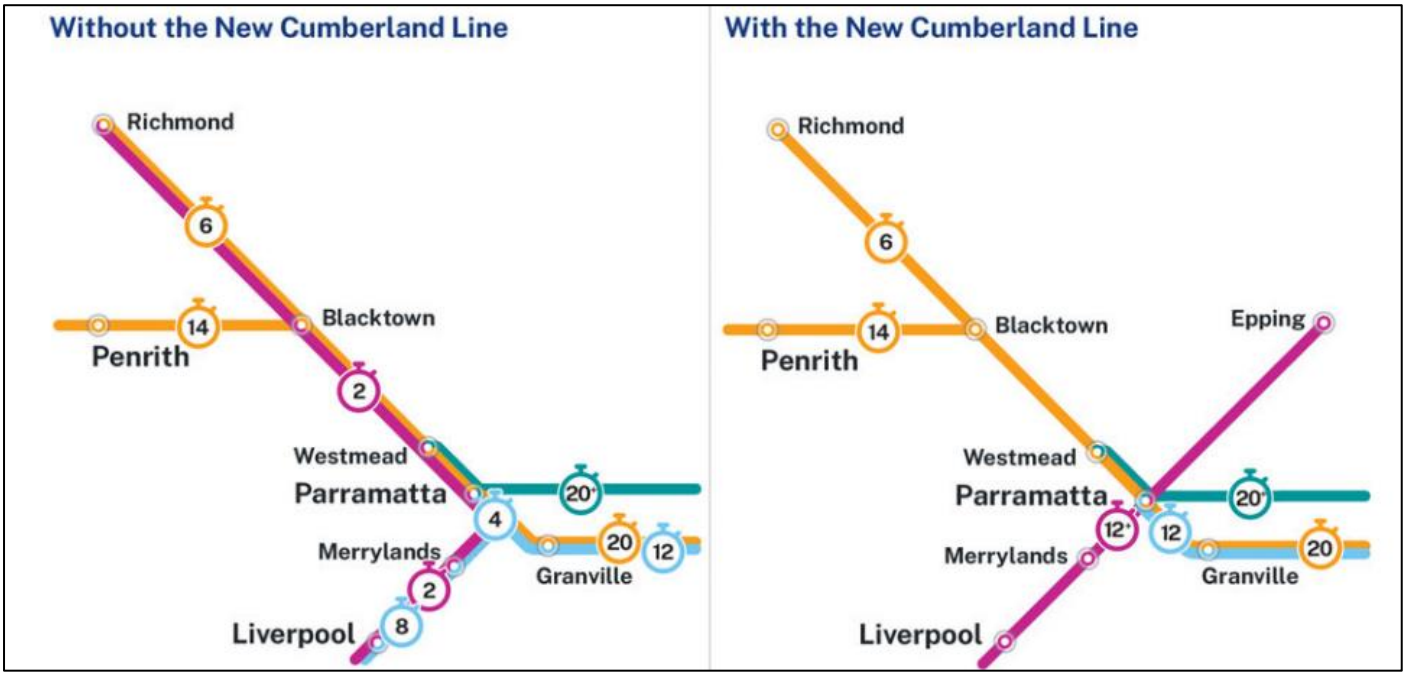
- T5 Metro Stage 1: Conversion of Glenfield to Leppington into Sydney Metro, and extension of South West Rail Link from Leppington to Western Sydney Airport as Sydney Metro WSA Line – Stage 2.

  Timing subject to the current business case (co-funded by NSW and Commonwealth Government) to extend the Sydney Metro – Western Sydney Airport Line from the Western Sydney Aerotropolis to Glenfield via Leppington.

- T5 Metro Stage 2: Conversion of Glenfield to Merrylands into Sydney Metro. Completed by 2036?

- T5 Metro Stage 3: New Sydney Metro Tunnels from Merrylands to Parramatta Metro Station (future Parramatta Transport Hub). Completed by 2041?

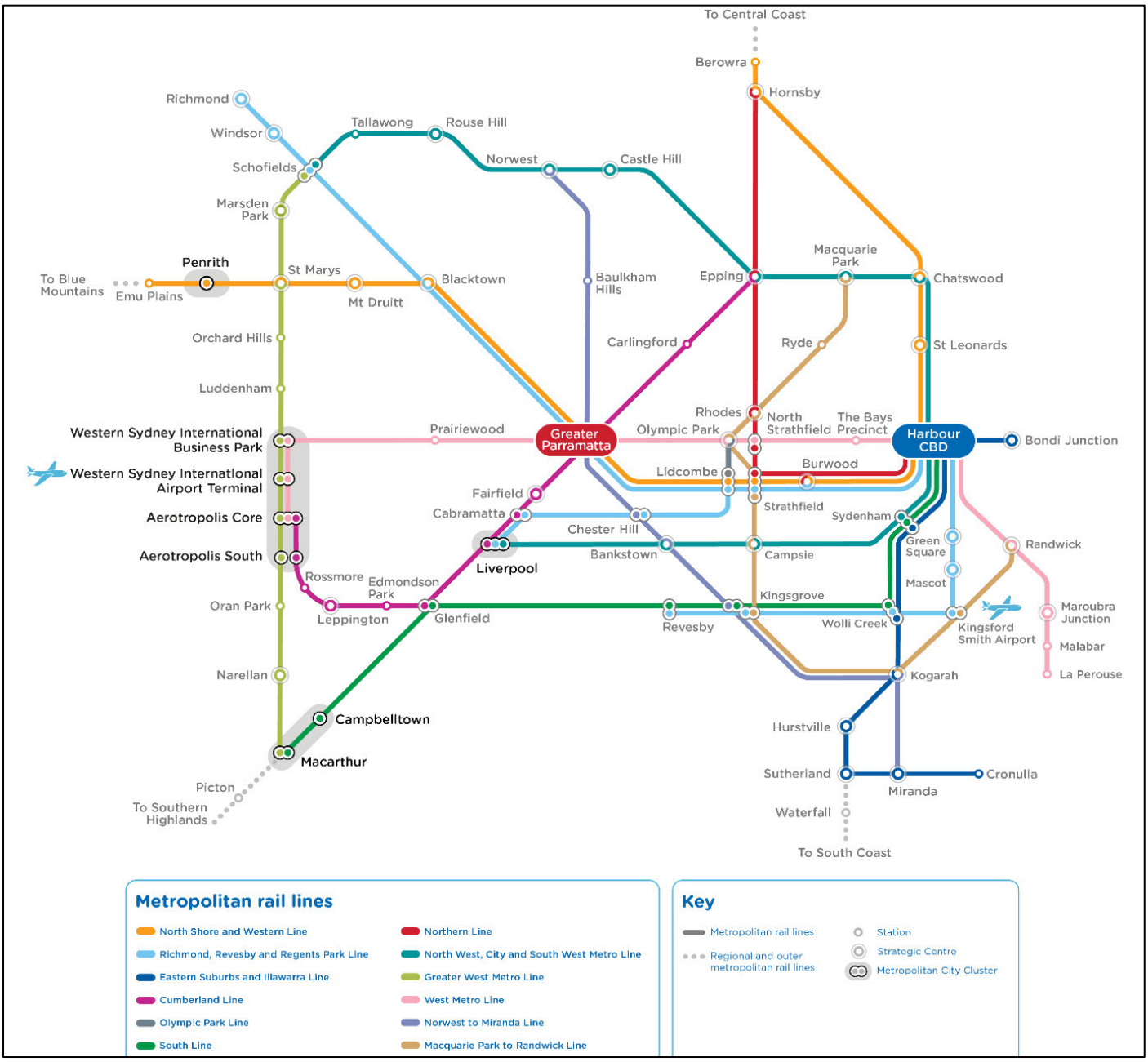
- T5 Metro Stage 4: Parramatta to Epping with a new Sydney Metro station potentially at Rydalmere and/or Carlingford. Completed by 2056.



Route outline of new Cumberland Line. Transport for NSW Greater Liverpool Area Needs Study (2022)[20]

EcoTransit is disappointed that the T6 Carlingford Line was replaced with Light Rail instead of being duplicated as part of the Parramatta to Epping/Chatswood Rail Link.

[20] https://restoreinnerwestline.org.au/wp-content/uploads/2022/11/Greater-Liverpool-to-Bankstown-Needs-Study.pdf



NSW Future Transport Strategy 2056 – Indicative Sydney Rail Network (released November 2020) Note that the T5 Cumberland Line (metro from Glenfield does NOT service Western Sydney Airport Terminal but terminates at Aerotropolis (which is 1 station south of the Airport Terminal).

EcoTransit has previously made submissions to the NSW Government and expressed disappointment at the decision to convert the Epping to Chatswood Rail Link into Sydney Metro along with the decision to construct the North West Rail Link as Sydney Metro (instead of to Sydney Trains standards).

EcoTransit is a supporter of a Second Harbour Rail Crossing and believes that 2 additional Sydney Trains tracks across Sydney Harbour (Bridge) would have increased capacity by 50% across the entire Sydney Trains Network[21].

[21] https://ecotransit.org.au/wp/policy-priorities/priority-projects/two-more-tracks/

Impacts of new T5 Cumberland Line and Metro conversion

- The South West Rail Link was designed on the Sydney Trains Network to be (and should be) extended beyond Leppington as Sydney Trains heavy rail with baggage capacity (e.g. Oscar carriages) to Western Sydney Airport and is advantageous due to its short distance.

- The South West Rail Link has the capacity for direct Sydney Trains Network connections through Glenfield to Liverpool, Parramatta, Blacktown, Richmond, Granville, Strathfield, Redfern, East Hills, Wolli Creek, Sydney Domestic Airport, Sydney International Airport, Central, and City Circle.

- The New Cumberland Line will have 12 trains per hour between Western Sydney Airport and Epping which is 2 more than currently provided by a combination of the T2 Leppington Line (City via Granville) and T5 Cumberland Line.

  Capacity exists on the current Sydney Trains Network to increase T5 Cumberland Line services by 2 trains per hour to Leppington south of Parramatta or a further point west such as Blacktown or Schofields.

  Increasing the level of service on the existing T5 Cumberland Line and maintaining T2 Leppington Line services allows for greater travel options and flexibility on the Sydney Trains Network in contrast to converting the line into Sydney Metro.

- Converting the T5 Cumberland Line into Sydney Metro replaces a functional rail link and will have minimal journey time savings (if any) to Glenfield, Liverpool, Parramatta (as the number of intermediary stations remains the same minus Harris Park), Sydney Domestic Airport, Sydney International Airport, Central, and City Circle.

  Given the substantial cost and impacts of converting the T5 Cumberland Line into Sydney Metro including the overall loss of direct connections on the Sydney Trains Network, a significant number of commuters will have increased journey times due to the need to interchange at Parramatta to reach the current destinations on the Sydney Trains Network.

  The Sydney Trains Network timetable should enable direct trains from Central/Sydney Domestic Airport to Glenfield (currently 39 minutes) and then all stations to Western Sydney Airport via Leppington (approximately 10 minutes). The entire journey to Western Sydney Airport would be achievable in approximately 50 – 55 minutes utilising existing the Kingsgrove to Revesby Quadruplication.

  Approximately a third of New Cumberland Line commuters are forecasted to interchange at Parramatta with the majority travelling to Sydney CBD (Hunter Street) using Sydney Metro West.

  The current T5 Cumberland Line from Leppington to Parramatta is approximately 45 minutes (or New Cumberland Line potentially 40 minutes with Sydney Metro and minus Harris Park Station). Sydney Metro West from Parramatta to Sydney CBD (Hunter Street) is approximately 20 minutes.

  Sydney Metro (New Cumberland Line and Sydney Metro West) will not reduce journey times to Central or City Circle for commuters from Leppington, Edmondson Park, Glenfield, Liverpool, Fairfield, and other stations on the current T5 Cumberland Line.

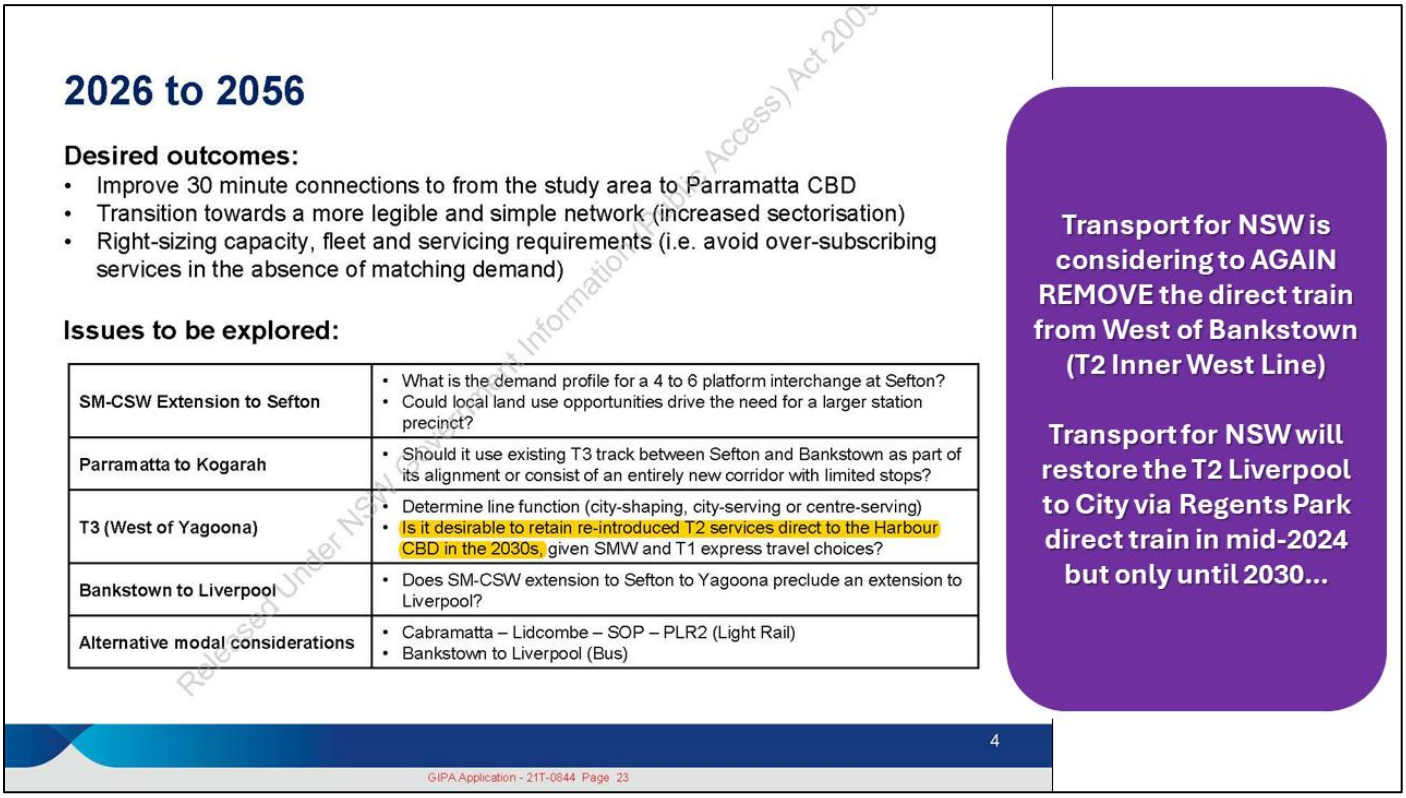
- The New Cumberland Line as Sydney Metro to Epping (after the initial conversion of Glenfield to Leppington with Metro extension to Western Sydney Airport) will remove the capacity for Sydney Trains heavy rail running between Merrylands and Glenfield.

  Trains relying on the Old Main South Line (via Granville) and New Main South Line (via Regents Park) will be rerouted to operate on the T8 Airport and East Lines to Central, which will severely limit flexibility on the Sydney Trains Network especially during trackwork and special events.

- The New Cumberland Line as Sydney Metro to Epping (after the initial conversion of Glenfield to Leppington with Metro extension to Western Sydney Airport) will remove the current T2 Leppington Line from the Sydney Trains Network leaving only the T2 Inner West Line terminating at Parramatta.

- The New Cumberland Line as Sydney Metro to Epping (after the initial conversion of Glenfield to Leppington with Metro extension to Western Sydney Airport) will remove the T2 Liverpool via Regents Park line (to be restored in 2024) from the Sydney Trains Network as Cabramatta, Warwick Farm, and Liverpool will only be serviced by Sydney Metro.

  Regarding the T2 Line (from City via Granville or Regents Park), a Cabramatta turnback for Sydney Trains has been ruled out by Transport for NSW in 2020. Transport for NSW also has current plans to consider the removal of the re-instated T2 Inner West Line: City Circle to Liverpool via Regents Park service in 2030.



2026 to 2056

Desired outcomes:

- Improve 30 minute connections to from the study area to Parramatta CBD
- Transition towards a more legible and simple network (increased sectorisation)
- Right-sizing capacity, fleet and servicing requirements (i.e. avoid over-subscribing services in the absence of matching demand)

Issues to be explored:

SM-CSW Extension to Sefton	• What is the demand profile for a 4 to 6 platform interchange at Sefton? • Could local land use opportunities drive the need for a larger station precinct?
Parramatta to Kogarah	• Should it use existing T3 track between Sefton and Bankstown as part of its alignment or consist of an entirely new corridor with limited stops?
T3 (West of Yagoona)	• Determine line function (city-shaping, city-serving or centre-serving) • Is it desirable to retain re-introduced T2 services direct to the Harbour CBD in the 2030s, given SMW and T1 express travel choices?
Bankstown to Liverpool	• Does SM-CSW extension to Sefton to Yagoona preclude an extension to Liverpool?
Alternative modal considerations	• Cabramatta – Lidcombe – SOP – PLR2 (Light Rail) • Bankstown to Liverpool (Bus)

Transport for NSW is considering to AGAIN REMOVE the direct train from West of Bankstown (T2 Inner West Line)

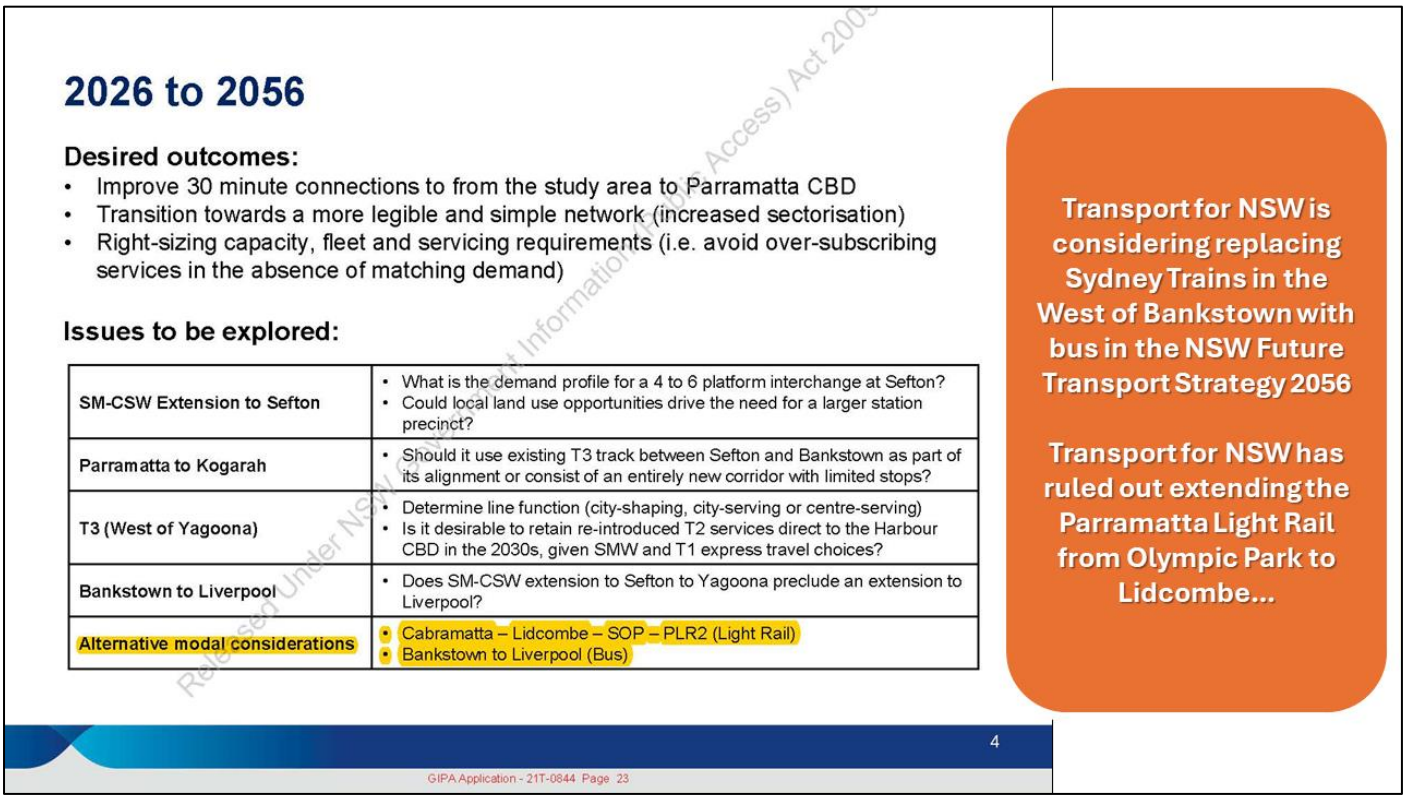
Transport for NSW will restore the T2 Liverpool to City via Regents Park direct train in mid-2024 but only until 2030...

4

2026 to 2056 Issues to be explored:

"Is it desirable to retain re-introduced T2 services direct to Harbour CBD in the 2030s...?"

Source: Transport for NSW (GIPA 21T-0844)



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Alternative modal considerations	• Cabramatta – Lidcombe – SOP – PLR2 (Light Rail) • Bankstown to Liverpool (Bus)

Transport for NSW is considering replacing Sydney Trains in the West of Bankstown with bus in the NSW Future Transport Strategy 2056

Transport for NSW has ruled out extending the Parramatta Light Rail from Olympic Park to Lidcombe...

4

2026 to 2056 Issues to be explored:
Alternative modal considerations. Bankstown to Liverpool bus.
Source: Transport for NSW (GIPA 21T-0844)

Additionally, T3 Liverpool to Bankstown line services will be removed in 2024 when Sydney Metro Southwest (Sydenham to Bankstown) opens. Therefore, the no Sydney Trains trains will operate between Cabramatta and Sefton/Bankstown as well as Lidcombe via Regents Park. As Transport for NSW has ruled out (in 2023) extending Parramatta Light Rail from Olympic Park to Lidcombe, the train stations in the West of Bankstown will be replaced by bus stops.

Transport for NSW is currently planning for rapid buses as part of the Greater Liverpool Area Needs Study (2022)[22].

- Merrylands, Guildford, Yennora, Fairfield, Canley Vale, Cabramatta, Warwick Farm, Casula, Edmondson Park, and Leppington will lose direct trains to stations such as Harris Park, Blacktown, Richmond, Granville, Lidcombe, Strathfield, Redfern, Central, City Circle and be forced to interchange at Parramatta Metro Station (separate to current Parramatta Station on the Sydney Trains Network).

  Current T5 Cumberland Line commuters from Richmond and Blacktown will also have to interchange at Parramatta for the New Cumberland Line towards Leppington.

- The Cumberland Line Y-Link between Merrylands to Harris Park will be disconnected with Sydney Metro entering into new tunnels north of Merrylands Station to Parramatta Metro Station bypassing Harris Park.

[22] https://restoreinnerwestline.org.au/wp-content/uploads/2022/11/Greater-Liverpool-to-Bankstown-Needs-Study.pdf

- The New Cumberland Line as Sydney Metro to Epping may impede Parramatta from being part of Fast Rail to Newcastle and the Central Coast. The smaller Sydney Metro sized tunnels are not compatible with Sydney Trains or NSW TrainLink heavy rail services which eliminate a connection at Epping with the T9 Northern Line / Newcastle and Central Coast Line (Main North Line).

  The current T5 Cumberland Line should remain on its current route to Schofields and Richmond.

  The future East West Rail Link (Westmead to Western Sydney Airport / Metro West Extension) should be replaced with heavy rail from Western Sydney Airport to Parramatta, then continuing to Epping with a connection with the T9 Northern Line / Newcastle and Central Coast Line (Main North Line).

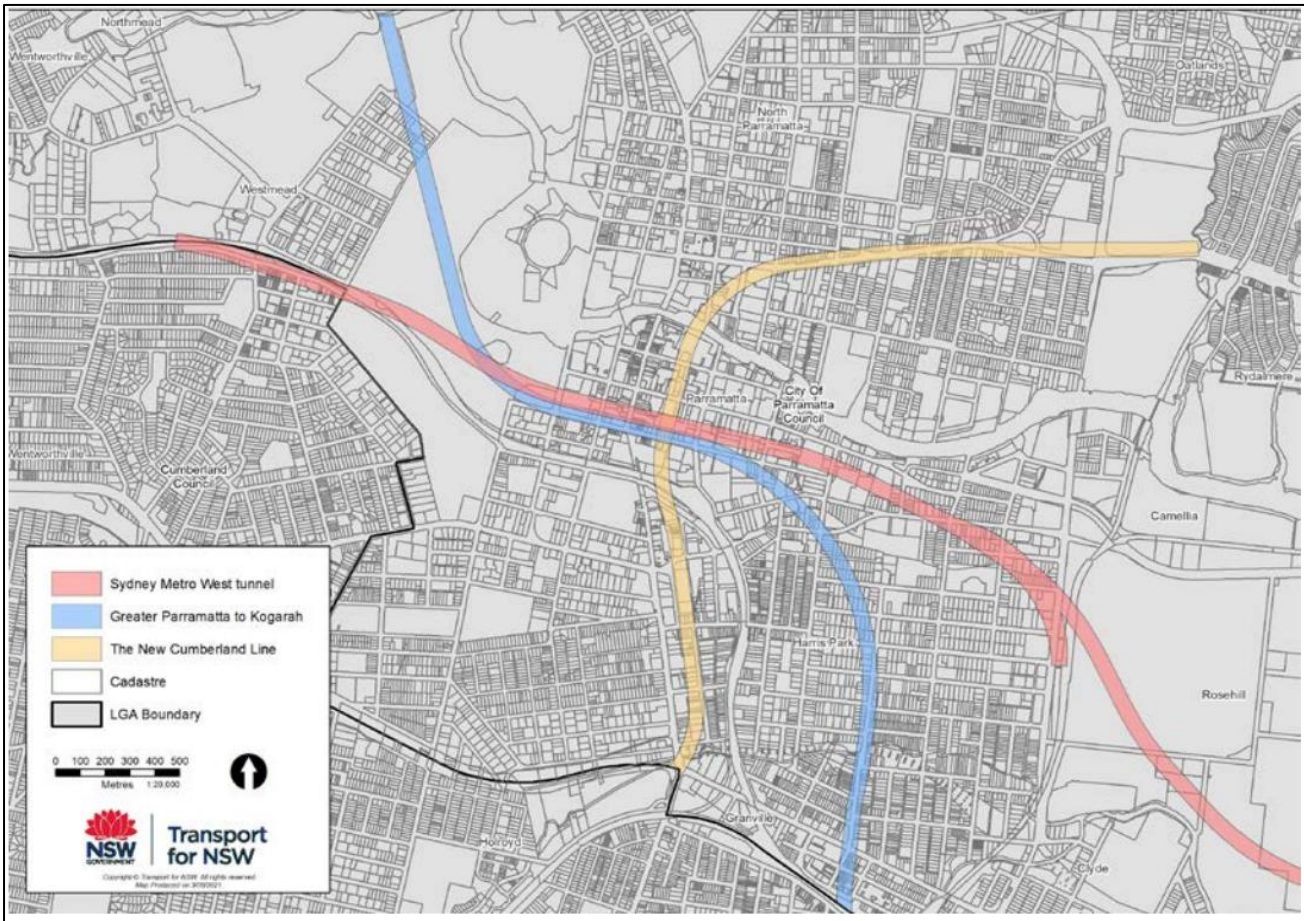


Figure 3 Preferred corridors for Greater Parramatta to Kogarah and The New Cumberland Line within Greater Parramatta

[23]*The new T5 Cumberland Line (metro) would leave the existing rail corridor near Crescent Street, Holroyd to proceed in new tunnel (bypassing the Y-Link and Harris Park) to Parramatta then Epping.*
Extract of Ministerial Briefing for Minister for Transport and Roads Andrew Constance (2021)[24]

Recommendation: An Independent Review of the NSW Future Transport Strategy to increase and optimise capacity on the Sydney Trains Network.

[23] https://restoreinnerwestline.org.au/wp-content/uploads/2022/11/Attachment-A-Greater-Parramatta-Future-Transport-Hubs-Proposed-Tunnel-Alignments.pdf
[24] https://restoreinnerwestline.org.au/wp-content/uploads/2022/11/Interim-corridor-protection-for-two-new-north-south-lines-through-Greater-Parramatta-Briefing-for-Minister-for-Transport-and-Roads-24-September-2021.pdf

Sydney Metro WSA Stage 2 does NOT connect to Airport Terminal

Planning for a metro extension linking Glenfield to the Western Sydney Aerotropolis underway

21.06.2022

Work will start immediately on a business case to extend the Sydney Metro – Western Sydney Airport Line from the Western Sydney Aerotropolis to Glenfield, via Leppington.

The extension will provide an additional transport option for one of Sydney's fastest-growing regions and connect the area to the new Western Sydney International (Nancy-Bird Walton) Airport.

The business case is the first step in bringing metro services to more communities in Greater Western Sydney. It will provide the design, economic assessment, and cost estimation to inform an investment decision for the construction of the extension.

As part of the Future Transport Strategy 2056, a metro line between the Western Sydney Aerotropolis and Leppington was identified as an initiative for investigation. In June 2020, Transport for NSW protected transport corridors in the Western Parkland City to enable this connection.

The extension will continue the 23-kilometre Western Airport Line linking St Marys to the Aerotropolis. Work on the first stage has commenced, with tunnelling to start by 2023.

The Final Business Case is expected to be completed in 2024 and its contents will determine how the extension will proceed.

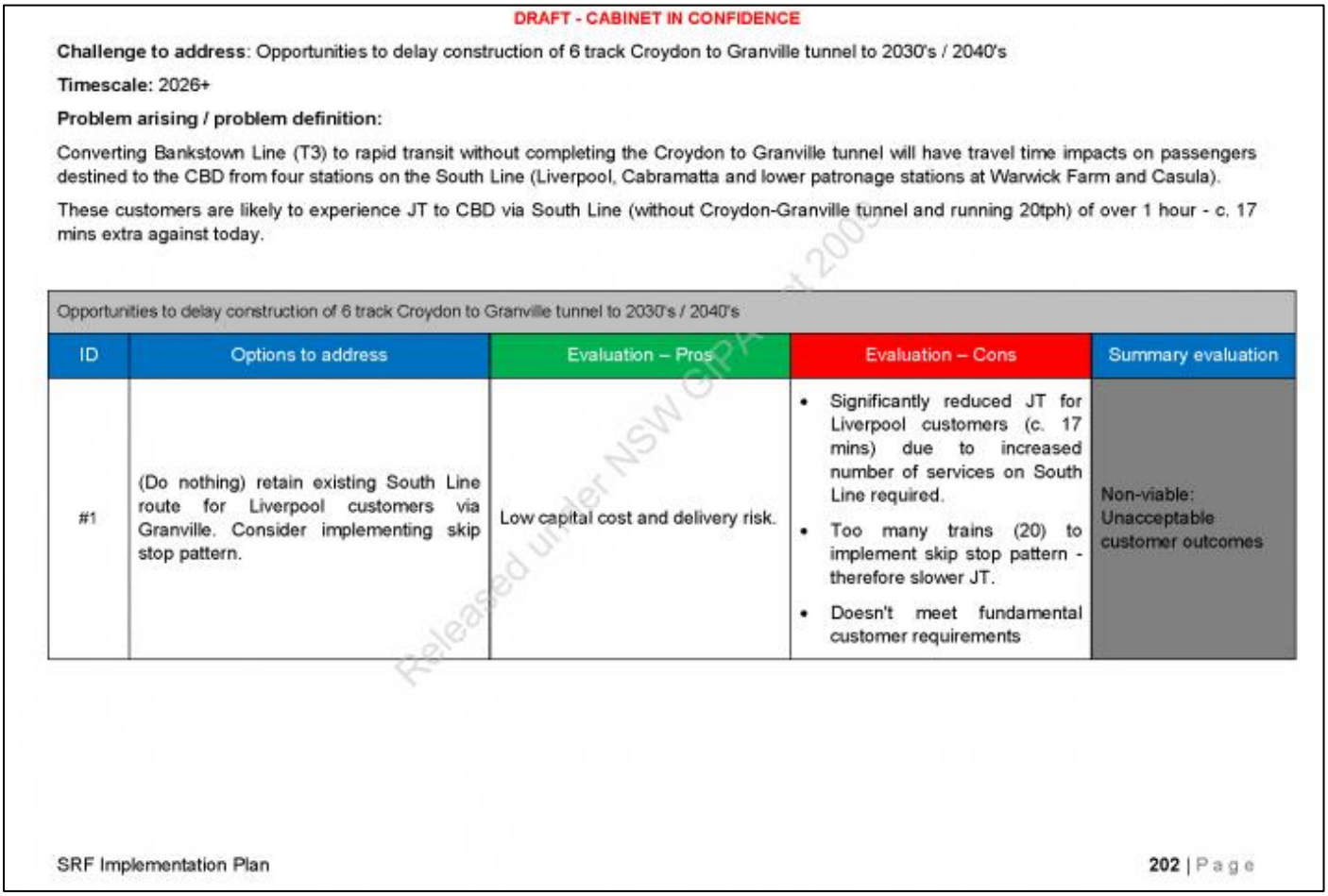
Sydney Metro – Western Sydney Airport project is jointly funded by the Australian and NSW governments.

A closer reading of the Sydney Metro announcement[25] for metro from Glenfield reveals that Stage 2 of the Western Sydney Airport line will not connect to the actual International Airport Terminal, but only to Aerotropolis (which is 1 station south of the Western Sydney Airport Terminal).

Under the current proposal by the Commonwealth Government and NSW Government in the NSW Future Transport Strategy 2056, passengers travelling from Western Sydney International Airport Terminal would need to interchange at Aerotropolis Station and again at Glenfield Station to reach existing Sydney Trains Network stations (such as Central, Sydney Airport, Liverpool, Strathfield, Parramatta, Revesby).

[25] https://www.sydneymetro.info/article/planning-metro-extension-linking-glenfield-western-sydney-aerotropolis-underway

Cancellation Croydon to Granville new rail tunnel impacting South West Sydney commuters



DRAFT - CABINET IN CONFIDENCE

Challenge to address: Opportunities to delay construction of 6 track Croydon to Granville tunnel to 2030's / 2040's

Timescale: 2026+

Problem arising / problem definition:

Converting Bankstown Line (T3) to rapid transit without completing the Croydon to Granville tunnel will have travel time impacts on passengers destined to the CBD from four stations on the South Line (Liverpool, Cabramatta and lower patronage stations at Warwick Farm and Casula).

These customers are likely to experience JT to CBD via South Line (without Croydon-Granville tunnel and running 20tph) of over 1 hour - c. 17 mins extra against today.

Opportunities to delay construction of 6 track Croydon to Granville tunnel to 2030's / 2040's

ID	Options to address	Evaluation – Pros	Evaluation – Cons	Summary evaluation
#1	(Do nothing) retain existing South Line route for Liverpool customers via Granville. Consider implementing skip stop pattern.	Low capital cost and delivery risk.	• Significantly reduced JT for Liverpool customers (c. 17 mins) due to increased number of services on South Line required. • Too many trains (20) to implement skip stop pattern - therefore slower JT. • Doesn't meet fundamental customer requirements	Non-viable: Unacceptable customer outcomes

SRF Implementation Plan 202 | Page

Internal Transport for NSW planning documents such as the "Sydney's Rail Future Implementation Plan – SRF" (2013) highlight the need to improve Sydney Trains services' journey times in South West Sydney.

It is noted that conversion of the T3 Bankstown Line into rapid transit (Sydney Metro Southwest) will increase journey times for South West Sydney commuters by over 17 minutes to be in excess of 1 hour to Sydney CBD via T2 Granville.

Upgrading the rail corridor with additional tracks from Croydon to Granville is essential for Liverpool, Warwick Farm, Cabramatta, and Casula commuters. However, in 2014, the government redesigned Flemington station without allowing for the inclusion of additional tracks for even the smaller upgrade to sextuplicate the line between Homebush and Lidcombe.

Tolls were also re-introduced onto the M4 Motorway (WestConnex Stage 1) just months before the 2017 Sydney Trains timetable change which resulted in the loss of express trains from Liverpool to City on the T2 Leppington via Granville Line. Transport for NSW has ruled out building additional tracks from Croydon to Granville as construction of the Sydney Metro West project has commenced.

NSW Government investment in toll-roads and metro has been at the expense of optimising the Sydney Trains Network through signalling upgrades and new infrastructure to enhance capacity.

Tram-Trains for Western Sydney

EcoTransit advocates for the conversion of all single-deck rail rolling stock such as Sydney Light Rail and Sydney Metro into an Australian-made standardised tram-train. The new tram-trains will be compatible with the existing Sydney Light Rail, Parramatta Light Rail, Sydney Metro, and the Sydney Trains Network (all running on standard gauge of 1,435 mm (4 ft 8+1⁄2 in)).

EcoTransit has previously advocated for the construction of a new Western Line (similar to the current Sydney Metro West project) using Sydney Trains Network (heavy rail) standards, however, this proposal, to allow Blue Mountains, Richmond, Emu Plains/Penrith services on the T1 Western Line to divert east of Westmead into new tunnels to Parramatta and then as an express to Sydney CBD, has been ignored by successive NSW Governments.

The extension of Sydney Metro from Westmead to Western Sydney Airport (East-West Rail Link) does not provide Greater Western Sydney with fast and convenient environmentally sustainable transport which **EcoTransit** believes should be the criterion for Sydney's future transport system.

EcoTransit does support new rail from Parramatta/Westmead to Western Sydney Airport and proposes such to take place through the standardisation of all single-deck rail fleets (such as light rail and metro) into Australian made Tram-Trains and the extension of Parramatta Light Rail (as Tram-Trains) to Western Sydney International Airport Terminal, and eventually becoming the main form of regionalised public transport throughout the Western Sydney Aerotropolis/Western Sydney Parkland City (Bradfield).

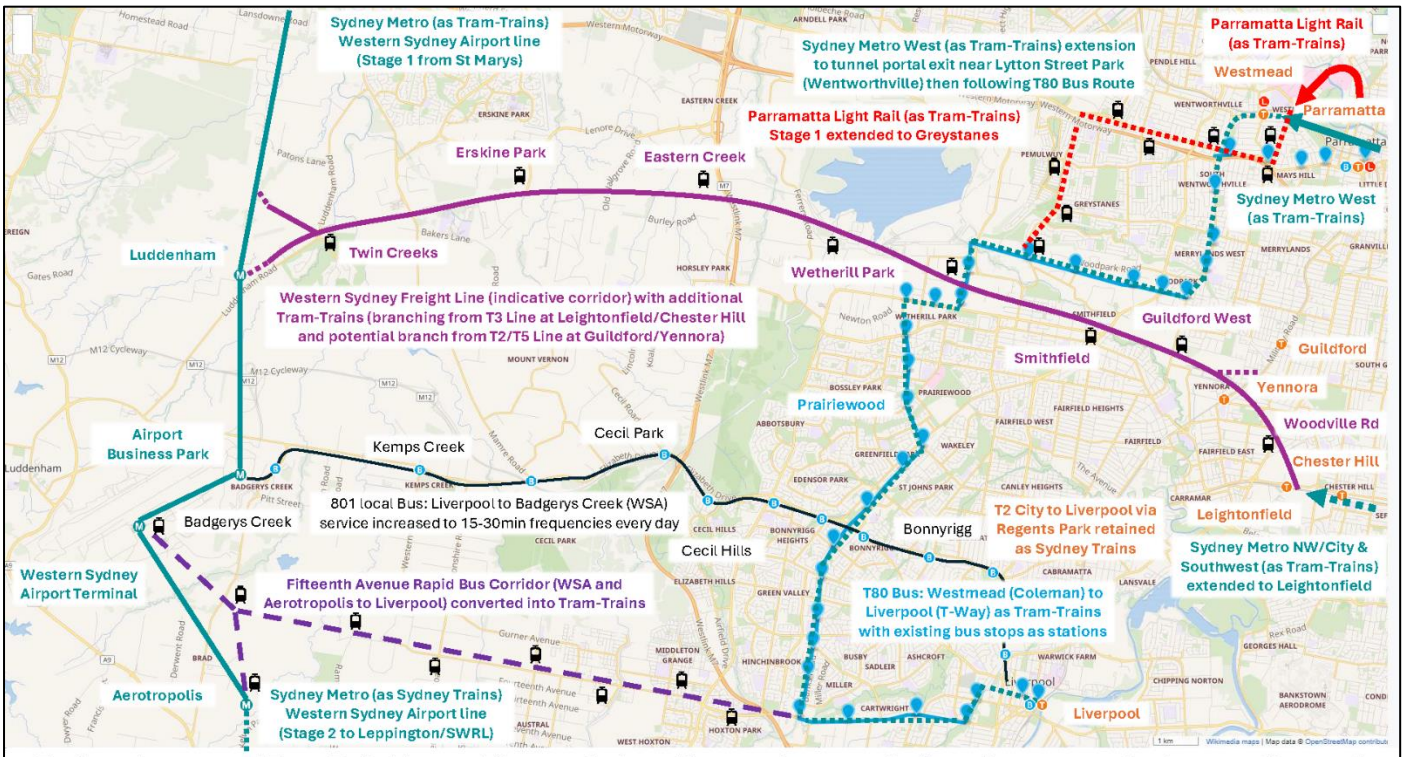
Tram-trains as in use around the world (including in Karlsrue in Germany and more recently Sheffield in the United Kingdom) are often at grade constructions with shared or dedicated on-street running without major tunnelling. Stations are located in semi-close proximity to each other with platforms capable of servicing 8 carriage tram-trains.

EcoTransit notes the extension of rail connections from Parramatta/Westmead to Western Sydney Airport would enhance public transport through the LGAs of Cumberland Council[26] and Fairfield Council[27], and the Local Strategic Planning Statement of both Councils supporting a new link to Western Sydney Airport is noted. Fairfield Council has also recognised the need for increased transport to Prairiewood and Cecil Park.

Cumberland Council has advocated for the extension of Parramatta Light Rail from Westmead Station to Wentworthville via Hawkesbury Road and the Great Western Highway median; as well as for the Western Sydney Freight Line intersecting with the T2 Leppington Line/T5 Cumberland Line near Yennora to include passenger services to Western Sydney Airport.

EcoTransit also notes the Parramatta to Liverpool T-Way (T80 Bus Route) was originally designed to be part of a Western Sydney Light Rail Network, hence **EcoTransit** would also support the introduction of tram-trains replacing the T80 Bus.

[26] https://www.fairfieldcity.nsw.gov.au/files/assets/public/v/1/documents/business/adopted-fairfield-city-local-strategic-planning-statment-2040-30.03.20.pdf
[27] https://www.fairfieldcity.nsw.gov.au/files/assets/public/v/1/documents/business/adopted-fairfield-city-local-strategic-planning-statment-2040-30.03.20.pdf



EcoTransit proposed Tram-Train Lines to Western Sydney Airport & Aerotropolis (from Parramatta, Bankstown, Liverpool)

Tram-Train stop locations are indicative. Tram-Train passenger/line and mode interchanges at: South Wentworthville, Greystanes/Woodpark, Wetherhill Park, Bonnyrigg, Miller/Hoxton Park

With all Sydney Metro lines, all Light Rail (e.g. Parramatta Light Rail), rapid bus corridors (e.g. T80 Bus between Parramatta/Westmead and Liverpool; proposed Fifteenth Avenue Smart Transit (FAST) link between Liverpool and Western Sydney Airport), and the proposed Western Sydney Freight Line converted/upgraded to support the operation of Tram-Trains (standard gauge compatible with Sydney Trains), significant new rail connections across Western Sydney can be achieved.

In conclusion, **EcoTransit** believes greater flexibility will come about in future rail planning if all single-deck stock in Sydney trams (light rail) is converted to an Australian tram-train design. These would be able to work in the Metro tunnels as single-deck trains and on tram lines along the surface (replacing and/or complementing buses) as well as on heavy rail tracks (Sydney Trains Network).

This will reduce the need for duplication in the future, as such tram-trains would enable the reversal of the estrangement of Sydney Metro lines/tunnels from the Sydney Trains and wider rail network and allow trams (light rail) to perform more than standalone and street-based operations.

EcoTransit's proposed Tram-Train Routes in Western and South West Sydney include:

- Parramatta to Western Sydney Airport (former Parramatta Light Rail) via Greystanes then T80 route then Western Sydney Freight Line and/or Fifteenth Avenue.
- Parramatta to Western Sydney Airport (former Metro West) via South Wentworthville on T80 route then Western Sydney Freight Line and/or Fifteenth Avenue.
- Bankstown to Western Sydney Airport via Western Sydney Freight Line.
- Liverpool to Western Sydney Airport and Aerotropolis via T80 route then Fifteenth Avenue.

Key Recommendations

1. Western Sydney Airport station and (both) Aerotropolis stations should be redesigned for 4 rail tracks (2 Sydney Metro from St Marys & 2 Sydney Trains to Leppington) as part of future-proofing the benefits of extending the South West Rail Link as Sydney Trains (heavy rail) and thus enhancing network operational flexibility.

2. Western Sydney Airport to have direct Sydney Trains services to City Circle via T2 Liverpool and Granville, and direct Sydney Trains services to City Circle via T8 East Hills and Sydney Airport.

3. The Inquiry into Critical transport infrastructure supporting the Western Sydney International Airport and Western Sydney Aerotropolis investigates the rationale for the Western Sydney Airport line's selection/conversion for Sydney Metro standards (Stage 1: St Marys to WSA and Stage 2: WSA to Glenfield) instead construction to Sydney Trains and freight network standards.

4. The business case for Sydney Metro – Western Sydney Airport line (Stage 1 & 2) be published in full (and include a cost/benefit analysis of the expansion of the existing Sydney Trains Network from Leppington to Western Sydney Airport in comparison with Sydney Metro from St Marys and Glenfield to Western Sydney Airport).

5. All Sydney Metro – Western Sydney Airport line stations (Stage 1 & 2) be constructed to full eight carriage lengths for future proofing (e.g. conversion into Sydney Trains and/or potential Tram-Trains).

6. An independent review of the NSW Future Transport Strategy (with public consultation) to increase capacity on the Sydney Trains Network, especially for the T2 Inner West (Parramatta), and Liverpool via Regents Park) and Leppington/WSA Line, T3 Bankstown Line (Lidcombe to Bankstown, and Liverpool to Bankstown), T5 Cumberland Line, and T8 Sydney Airport/WSA and South Line.

7. A feasibility study be undertaken into the conversion of all Sydney single-deck rail fleets and operations into Australian made tram-trains in lieu of new rail extensions from Parramatta, Bankstown, and Liverpool to Western Sydney Airport/Aerotropolis.

8. If Sydney Metro – Western Sydney Airport line Stage 2 from Glenfield is adopted, the line reaches the Western Sydney Airport Terminal (and does not terminate at a prior station such as Aerotropolis).

For more information about EcoTransit's vision for public transport, please visit:
www.EcoTransit.org.au

NSW Legislative Council Committee for Public Accountability and Works
Inquiry into Western Sydney Science Park and Aerotropolis developments

EcoTransit Sydney
Submission (Part 2)
5 July 2024

The Benefits of Extending the Sydney Trains' South West Rail Link from Leppington to Western Sydney Airport International Airport Terminal

As Sydney continues to grow, the need for effective and efficient transportation solutions becomes ever more critical. One of the key transportation projects currently near shovel-ready is the extension of the Sydney Trains' South West Rail Link (SWRL) from Leppington to the upcoming Western Sydney Airport International Terminal (WSA).

This proposed extension offers numerous advantages over the alternative plan of replacing the existing Sydney Trains line between Glenfield and Leppington with a Sydney Metro service. Here, we explore the multiple benefits of extending the SWRL to Western Sydney Airport International Terminal, with an emphasis on eco-transit principles, alongside economic, social, and logistical considerations.

Economic Benefits

Cost-Effectiveness: Extending the SWRL is highly a cost-effective solution compared to converting the existing 8-carriage heavy rail service to a 3-carriage Sydney Metro service. Converting the line would necessitate substantial infrastructure changes, such as modifying platforms, updating signalling systems, and acquiring new rolling stock. These modifications would require significant investment, potentially diverting funds from other essential infrastructure projects. By contrast, extending the current rail line from Leppington involves less disruptive and more financially prudent adjustments.

Boost to Local Economy: Extending the SWRL to WSA would provide direct rail access to a major employment hub, facilitating the movement of workers and boosting the local economy. Enhanced connectivity in Western Sydney encourages investment in the region and supports the growth of local businesses. Improved access to the airport can also stimulate developments in tourism and related industries, further driving economic growth.

Social Benefits

Enhanced Connectivity: The extension of the SWRL would significantly improve connectivity for residents of Western Sydney. Direct access to the WSA would provide residents with a convenient and efficient transportation option, reducing travel times and enhancing their overall quality of life. It would also link key regions such as Liverpool and other parts of South West Sydney fostering greater social cohesion and accessibility.

Equitable Transport Solutions: Maintaining and extending the heavy rail system ensures that the existing infrastructure remains accessible to all, including people with disabilities, the elderly, and those with prams or bicycles. Sydney Trains are designed with more spacious carriages and seating arrangements, making them more comfortable and accessible compared to the more compact metro services.

NSW Legislative Council Committee for Public Accountability and Works
Inquiry into Western Sydney Science Park and Aerotropolis developments

EcoTransit Sydney
Submission (Part 2)
5 July 2024

Environmental Benefits

Promotion of Eco-Transit: Extending the SWRL aligns perfectly with key eco-transit principles by encouraging the use of public transportation over private cars, thus reducing traffic congestion and lowering carbon emissions. Rail transport is one of the most environmentally friendly modes of transportation, and the SWRL extension would likely increase the public's reliance on sustainable transport options.

Reduced Carbon Footprint: The extension of the SWRL would promote a shift from car travel to rail travel, which is significantly more energy-efficient and environmentally friendly. Conversion of the SWRL into Sydney Metro will discourage uptake in rail as commuters seek to avoid the forced interchange at Glenfield Station. The extension of the SWRL supports the wider need to reduce greenhouse gas emissions and combat climate change. The increased use of rail transport over personal vehicles would lead to lower overall emissions, contributing to a cleaner and greener city.

Preservation of Green Spaces: By extending an existing rail line rather than converting it to Sydney Metro, the project also minimises environmental disruption. Using the current infrastructure reduces the need for extensive construction activities that can lead to habitat destruction and increased pollution. This approach supports the conservation of green spaces and reduces the ecological footprint of the project.

Logistical and Operational Benefits

Seamless Integration with Existing Network: Extending the SWRL would ensure seamless integration with the existing Sydney Trains network. Passengers would benefit from direct services to and from the new airport without needing to transfer between different rail systems. This direct connectivity is particularly beneficial for airport travellers, who often have luggage and require straightforward, hassle-free transit options.

Capacity and Frequency: While Sydney Metro has been promoted as having a higher frequency (which is only achievable due to a lag in Sydney Trains receiving digital signalling upgrades which would enable the same frequency), they do not match the capacity needs for longer distances or routes serving major transport hubs like airports. The SWRL extension can leverage the larger capacity of Sydney Trains, ensuring that the service can handle peak passenger loads, particularly during events or holiday travel periods.

Futureproofing: Extending the SWRL would be more adaptable to future needs and expansions. The traditional rail network offers greater flexibility for future extensions and modifications, ensuring that it can evolve alongside the city's growth and changing transportation demands. Future needs and expansions can also include interoperability of the line with freight and Tram-Trains. This adaptability can be crucial in a rapidly growing metropolitan area like Sydney.

Addressing Potential Concerns

Mitigating Disruptions: Some may argue that extending the SWRL could lead to disruptions during construction. However, such disruptions can be managed through careful planning and phased construction, minimising impacts on existing services. Moreover, the long-term benefits of enhanced connectivity and economic growth far outweigh the temporary inconveniences.

Balancing Investments: Critics of extending the SWRL may point to the high initial costs. However, when considering the lifecycle costs, including maintenance and operational efficiency, extending the SWRL proves to be a more sustainable investment. Additionally, the cost savings from avoiding a full metro conversion can be redirected towards other essential infrastructure projects, benefiting the broader community.

Conclusion

Extending the Sydney Trains' South West Rail Link from Leppington to Western Sydney Airport International Terminal presents a compelling case with multifaceted benefits. Emphasising eco-transit principles, this extension supports sustainable transportation, economic growth, and social equity. It also offers environmental sustainability and operational efficiency, aligning with the strategic goals of creating a well-connected, green, and inclusive transportation network for Sydney.

While replacing the existing Sydney Trains line with a Sydney Metro service may offer the impression of an upgrade, the extension of the SWRL provides a balanced and future-proof solution that supports the region's long-term development and meets the immediate needs of its residents. As Sydney prepares for the future, prioritising the extension of the SWRL to Western Sydney Airport International Terminal stands out as a strategic and beneficial choice.

Recommendations

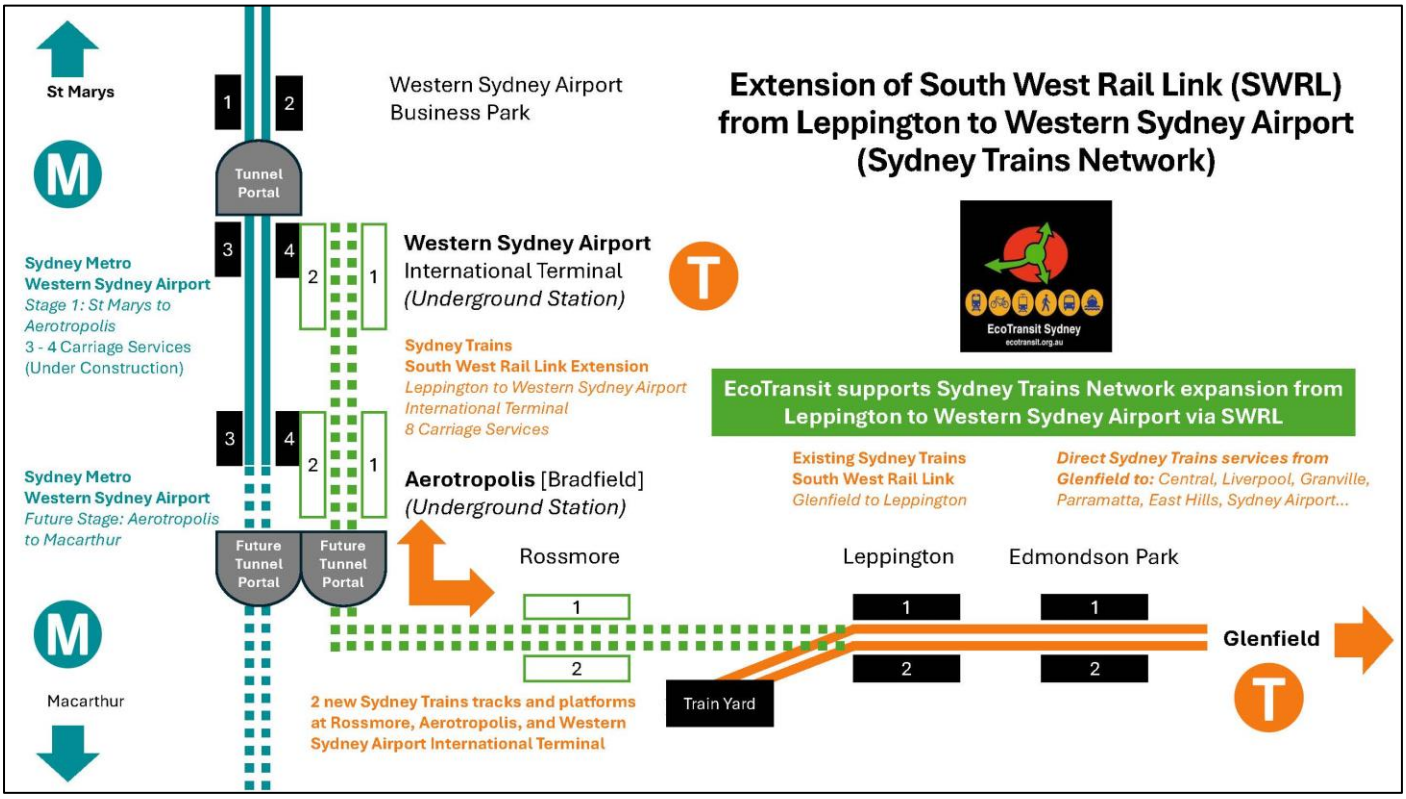
- Immediate suspension of construction of Sydney Metro – Western Sydney Airport line (Stage 1) for the Western Sydney Airport International Terminal Station, Aerotropolis Station, and the rail corridor in between both stations pending the outcome of this Inquiry into Critical Transport Infrastructure supporting the Western Sydney International Airport and Western Sydney Aerotropolis.

- Western Sydney Airport International Terminal station, Aerotropolis Station, and the rail corridor in between both stations be redesigned for 4 rail tracks (2 Sydney Metro from St Marys & 2 Sydney Trains to Leppington) as part of futureproofing the benefits of extending the South West Rail Link as Sydney Trains (heavy rail) and thus enhancing network operational flexibility.

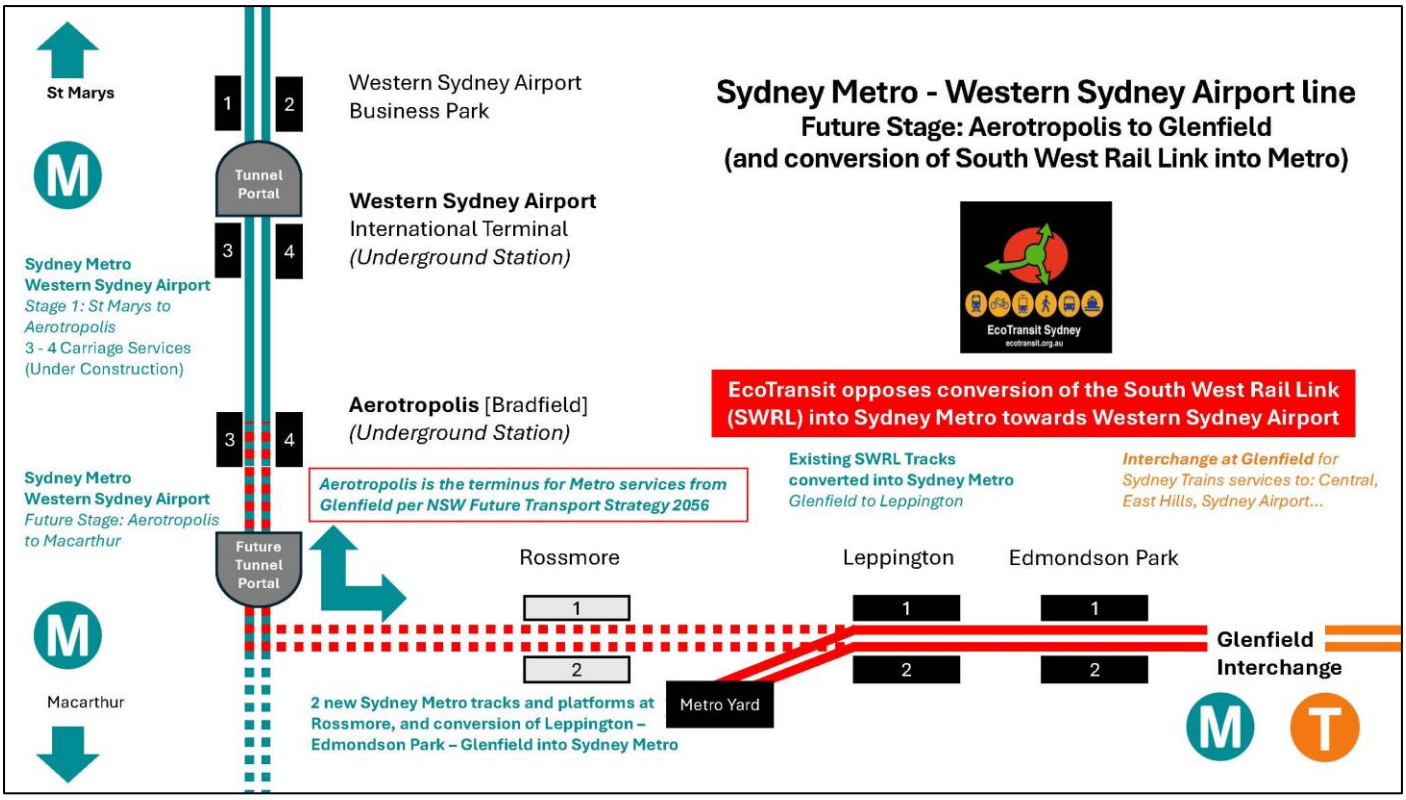
- Western Sydney Airport International Terminal to have direct Sydney Trains services to City Circle via T2 Liverpool and Granville, and direct Sydney Trains services to City Circle via T8 East Hills and Sydney Airport.

NSW Legislative Council Committee for Public Accountability and Works
Inquiry into Western Sydney Science Park and Aerotropolis developments

EcoTransit Sydney
Submission (Part 2)
5 July 2024



Refer to EcoTransit's submission for a proposed Sydney Trains service plan for Western Sydney Airport.



Transforming Sydney's Rail Network: New Australian-Made Tram-Trains

Sydney the vibrant capital of New South Wales, is on the cusp of a significant upgrade to its public transportation system. The introduction of new Australian-made Tram-Trains promises to revolutionise the city's rail network, enhancing efficiency, connectivity, and overall commuting experience.

These innovative vehicles, designed to operate seamlessly on both tram and train tracks, represent a leap forward in urban transport. They offer numerous benefits and pave the way for the standardisation of Sydney Metro and Sydney Light Rail into a unified, single-deck Tram-Train fleet.

Bridging the Gap Between Trams and Trains

One of the most significant advantages of Tram-Trains is their versatility. Traditional trams are typically confined to urban streets, while trains run on dedicated rail lines. Tram-Trains, however, are designed to operate on both types of infrastructure.

This dual capability means they can provide continuous, direct journeys from suburban areas into the city centres without requiring passengers to transfer between different modes of transport. This integration reduces travel time and increases convenience, making public transport a more attractive option for commuters.

Enhanced Connectivity and Accessibility

The introduction of Tram-Trains will significantly enhance connectivity across Sydney's diverse inner and outer suburban communities. These vehicles can serve areas currently underserved by the existing rail network, effectively extending the reach of public transportation. By linking suburban rail lines with inner-city tram networks, Tram-Trains create new, direct routes that can reduce congestion on major lines and provide faster, more efficient travel options.

Moreover, Tram-Trains can navigate tighter turns and steeper gradients compared to traditional trains, allowing them to serve areas with challenging topography. This flexibility ensures that more communities, including those in hilly or densely built regions, have access to reliable and efficient public transport.

Economic and Environmental Benefits

The production of these Tram-Trains in Australia is set to bring substantial economic benefits. Local manufacturing supports Australian jobs and stimulates the economy by investing in domestic industries. By producing these vehicles locally, Sydney can ensure a supply chain that is less dependent on international suppliers, fostering economic resilience and promoting technological innovation within the country.

From an environmental perspective, Tram-Trains offer significant advantages over private vehicles. By providing an efficient and attractive alternative to car travel, they can help reduce traffic congestion and lower greenhouse gas emissions.

Electric Tram-Trains, in particular, produce zero emissions at the point of use, contributing to cleaner air and a reduction in the city's overall carbon footprint. Additionally, their ability to operate on existing tracks means that less new infrastructure is required, minimising the environmental impact of expanding the network.

Improving the Commuter Experience

The commuter experience in Sydney is set to improve dramatically with the introduction of Tram-Trains. These modern vehicles are designed with passenger comfort and convenience in mind. Features such as low floors for easy boarding, spacious interiors, and advanced passenger information systems ensure a pleasant and efficient journey. The reduction in the need for transfers also means that commutes will be more straightforward and less stressful, encouraging more people to choose public transport over driving.

Standardising Sydney Metro and Sydney Light Rail

The potential for standardising the Sydney Metro and Sydney Light Rail fleets into a unified, single-deck Tram-Train system is a visionary step towards an integrated transport network. Standardisation can bring about numerous benefits:

1. **Operational Efficiency:** A unified fleet reduces maintenance complexity and operational costs. Maintenance crews can be trained to service a single type of vehicle, and spare parts inventory can be streamlined. This efficiency translates into cost savings and more reliable service.

2. **Passenger Convenience:** A standardised system ensures uniformity in service levels, vehicle design, and passenger experience. This consistency can make the system more user-friendly, as passengers will encounter the same type of vehicle and facilities across different routes. This predictability can enhance the overall travel experience and encourage more people to use public transport.

3. **Flexibility and Scalability:** A standardised fleet can easily be scaled to meet growing demand. New vehicles can be added without the need for extensive modifications to the existing infrastructure. This flexibility ensures that the transport network can adapt to population growth and changing travel patterns.

4. **Improved Planning and Development:** With a single type of vehicle in use, urban planners and developers can better design and integrate public transport into city layouts, optimising routes and station placements for maximum efficiency. This integration can lead to more cohesive urban development and better land use planning.

The transition to a unified Tram-Train fleet also presents an opportunity for technological upgrades. Features such as real-time tracking, automated controls, and advanced safety systems can be uniformly implemented across the network, enhancing overall service quality and reliability.

Supporting Australian Manufacturing and Innovation

Producing Tram-Trains in Australia is not only economically beneficial but also importantly supports local innovation. The development and production of Tram-Train vehicles can spur key advancements in transportation technology, positioning Australia as a new leader in the global industry. Investment in local manufacturing can also lead to the creation of a skilled workforce, boosting employment and fostering expertise in high-tech industries.

Furthermore, a domestically produced fleet ensures that Sydney's transportation infrastructure is tailored to local conditions and requirements. This customization can lead to better performance and longevity of the vehicles, as they are designed to meet the specific needs of the city's climate, geography, and passenger demographics.

Plans for the Tram-Train can include expanding the network to other cities and regions across Australia. There is also potential for exporting the technology to other countries facing similar urban transport challenges.

EcoTransit campaign for Australian made Tram-Trains

NSW has had enough of its Government buying public transport vehicles 'off-the-shelf' from overseas, which aren't fit for purpose! The costs of converting these foreign-built vehicles debunk the economic rationale of buying them 'cheaply' in the first place.

NSW now has THREE types of foreign-sourced passenger rail vehicles, and all have had problems upon arrival or soon after.

EcoTransit wants to uncomplicate this mess and is encouraging the government to switch away from both foreign-sourced automated metro carriages and standard light rail vehicles. We want an all-in-one, locally built, single-deck 'Tram-Train' vehicle to replace both of these to ensure equal functionality and greater compatibility with our existing rail networks.

Locally made Tram-Trains would not only work in our existing metro tunnels and our current light rail tracks – they are also able to provide long-term sustainable jobs and quality single-deck rail vehicles for passengers which are fit-for-purpose - first time, every time.

Please see EcoTransit's letter campaign for Locally Made Tram-Trains for more information.

Case Studies: Tram-Trains in Other Global Cities

To understand the potential impact of Tram-Trains in Sydney, it is useful to look at how similar systems have been implemented in other cities of comparable size. Several European cities have successfully integrated Tram-Trains into their public transportation networks, providing valuable insights.

LEFT: Tram-train running on a street-level tram track in Heilbronn, Germany

RIGHT: The same tram-train carriage operating on standard heavy rail tracks, with low-lying platforms.

Karlsruhe, Germany: Karlsruhe is often cited as a pioneering city in the use of Tram-Trains. The Karlsruhe model allows Tram-Trains to run on both city tram lines and regional railway tracks. This system has significantly improved connectivity between suburban and urban areas, reducing travel times and increasing the convenience of public transport. The success of the Karlsruhe model has inspired other cities to adopt similar systems.

Mulhouse, France: Mulhouse has implemented a Tram-Train system that connects the city centres with surrounding suburban areas. This integration has provided a seamless travel experience for commuters, encouraging more people to use public transport instead of private cars. The Tram-Trains in Mulhouse have been praised for their efficiency and reliability, contributing to reduced traffic congestion and lower emissions.

Sheffield, UK: In Sheffield, Tram-Trains connect the city centres with nearby towns, utilising both tram tracks and existing railway lines. This system has improved regional connectivity and provided an efficient alternative to car travel. The introduction of Tram-Trains in Sheffield has been part of a broader strategy to enhance public transport infrastructure and reduce the city's carbon footprint.

Vossloh car for Sheffield-Rotherham Tram-Train in Yorkshire (United Kingdom)

These case studies highlight the potential benefits of Tram-Trains in terms of improved connectivity, reduced travel times, and enhanced passenger convenience. They also demonstrate the environmental advantages of reducing reliance on private cars and lowering greenhouse gas emissions.

The new Australian Tram-Train

EcoTransit suggests consideration for the new Australian Tram-Train for Sydney to be modelled upon the Melbourne E-class tram, built in Victoria from 2013 to 2021 (with some imported components) by Bombardier/Alstom. Other options include Stadler which could be built locally with a large order and an ongoing demand for product.

Melbourne E class, Bombardier's "Flexity Swift" and similar car in Karlsruhe (Germany)

Stadler Citylink car for Szeged Tram-Train operation in Hungary

Two compulsory features for all Tram-Train services would be low floor (for accessibility) and pivoting trucks. Couplers are concealed by the lower-end fairing and bumper for safer street operation. Pending sufficient demand and an enabling tender process, companies such as Stadler could build Tram-Trains in Australia. There are also similar offerings from builders such as Skoda, CRRC, and CAF.

This type of Tram-Train (also available from other builders as well) would also be suitable for all of Sydney City and South East, Newcastle, and also Parramatta Light Rail lines. EcoTransit suggests that all Tram-Train and light rail lines utilise overhead wiring to improve operational reliability. Dependency

on APS "feeding via the ground" for power supply is comparatively unreliable and has high maintenance costs.

The Tram-Train rolling stock would have the smallest dynamic envelope being the Standard 2.65m wide Light Rail Vehicle enabling a high degree of interoperability (such as existing Light Rail, Sydney Trains or Sydney Metro). For compatibility with on-street running and operations at-grade right-of-way low floor cars are necessary, Sydney Metro stations would need to be rebuilt with low platforms.

Modifications to heavy rail platforms can include a low-level platform that can be added either opposite the high platform or at the end. Modifications to platforms at existing stations are a small cost to ensure Sydney's rail network is interoperable and futureproofed.

Were platform modifications to existing Sydney Trains and Sydney Metro lines be viewed as an inhibiting factor, EcoTransit proposes that all future single-deck fleets be constructed to the same Tram-Train specifications to ensure an end to the messy and disgraceful segregation of Sydney's rail network.

Australian-made Tram-Trains should be given a fair go!

Eco-Transit Benefits of Tram-Trains

Tram-Trains offer significant environmental benefits, making them a key component of eco-transit strategies. Here are some of the eco-transit benefits of Tram-Trains:

1. **Reduced Greenhouse Gas Emissions:** Tram-Trains, especially electric models, produce zero emissions at the point of use. By shifting commuters from cars to Tram-Trains, cities can significantly reduce their overall greenhouse gas emissions. This reduction is crucial for cities like Sydney, which are committed to meeting climate change targets and improving air quality.

2. **Energy Efficiency:** Tram-Trains are highly energy-efficient compared to other forms of transport. They can carry large numbers of passengers while consuming less energy per kilometre travelled. This efficiency is further enhanced when Tram-Trains use renewable energy sources, such as solar or wind power, to power their operations.

3. **Reduced Traffic Congestion:** By providing an attractive and efficient alternative to car travel, Tram-Trains can help reduce traffic congestion in urban areas. Fewer cars on the road lead to lower emissions, less noise pollution, and improved overall quality of life for city residents.

4. **Sustainable Urban Development:** The integration of Tram-Trains into urban planning encourages sustainable development practices. By promoting higher-density, transit-oriented development, cities can reduce urban sprawl, preserve green spaces, and create more liveable communities.

5. **Lower Infrastructure Costs:** Tram-Trains can operate on existing railway and tram tracks, reducing the need for extensive new infrastructure. This not only minimises environmental disruption but also lowers the financial costs associated with expanding the transport network.

Future-Proofing Sydney's Transport Network

Looking ahead, the flexibility and adaptability of Tram-Trains make them a future-proof solution for Sydney's evolving transportation needs. As the city continues to grow, the demand for efficient, reliable, and sustainable public transport will only increase. Tram-Trains provide a highly flexible and scalable solution that can be expanded and adapted as needed, ensuring that Sydney's rail network can meet the demands of the future.

The introduction of new Australian-made Tram-Trains is poised to bring a multitude of benefits to Sydney's rail network including in Western Sydney Parkland City. By bridging the gap between trams and trains, enhancing connectivity, and offering economic and environmental advantages, these innovative vehicles represent a forward-thinking approach to urban transportation.

As Sydney prepares to welcome this new addition to its transport system, residents can look forward to a more efficient, accessible, and enjoyable commuting experience.

EcoTransit's proposed Tram-Train Routes for Western Parkland City:

- Parramatta to Western Sydney Airport (former Parramatta Light Rail) via Greystanes then T80 route then Western Sydney Freight Line and/or Fifteenth Avenue.
- Parramatta to Western Sydney Airport (former Metro West) via South Wentworthville on T80 route then Western Sydney Freight Line and/or Fifteenth Avenue.
- Bankstown to Western Sydney Airport via Western Sydney Freight Line.
- Liverpool to Western Sydney Airport and Aerotropolis via T80 route then Fifteenth Avenue.

Refer to EcoTransit's submission for the proposed Tram-Train routes towards Western Sydney Airport.

Tram-Train from Parramatta to Epping via Carlingford

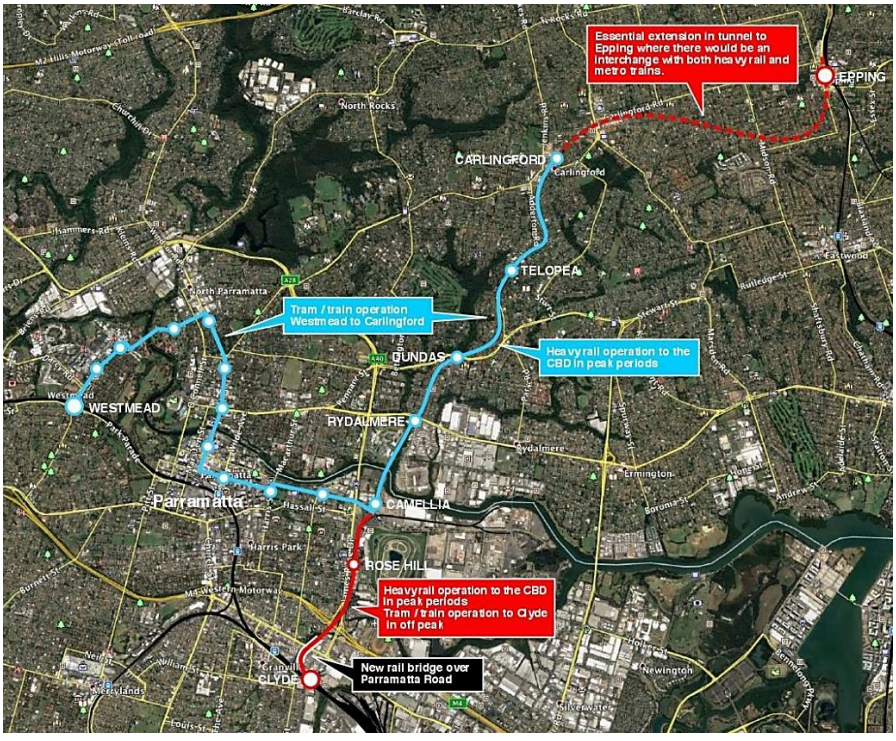
Carlingford Line: The former T6 Carlingford Line is being converted into Parramatta Light Rail (Stage 1) and involves removing the connection at Clyde, with services instead running through Parramatta to Westmead. Carlingford Line commuters travelling towards Sydney CBD will have to interchange at Parramatta Station (requiring a 200-300 metre walk from Light Rail stop). Then, after joining a city-bound train, they will travel past Clyde, resulting in a 20-30 minute increase in journey time. Such changes to the Carlingford Line will discourage public transport usage and increase dependency on cars once again increasing congestion and pollution.

EcoTransit proposes Tram-Trains as used in several European cities including Karlsruhe (Germany) and more recently Sheffield (United Kingdom). Tram-Trains can and do share heavy rail lines with passenger,

freight and even highspeed passenger trains; they also run on light rail/tram on-street operations through towns and cities. Our plan includes building a rail bridge over Parramatta Road to replace the existing level crossing; this can be achieved with a ruling gradient of 1 in 80 and there is sufficient space on the rail route. Tram-Trains would operate from Carlingford to Clyde, providing existing connections, and in the morning peak, there would be at least three heavy rail double-deck trains operating from Carlingford through to the city. In the afternoon peak, the same number of trains would operate from the city to Carlingford.

Tram-Trains in Karlsruhe (Germany) and Nantes (France)

The Tram-Trains would also operate the new line through Parramatta and to Westmead. EcoTransit also proposes that the line be extended from Carlingford to Epping, providing a connection with the heavy rail line and the North West Metro. This extension of Parramatta Light Rail (as Tram-Trains) would also remove the need for the New Cumberland Line (T5 bypassing the Y-Link and diverting into new tunnel from Merrylands to Parramatta to Carlingford to Epping).



Conclusion

The introduction of new Australian-made Tram-Trains will revolutionise Sydney's public transportation system. By bridging the gap between trams and trains, enhancing connectivity, and offering substantial economic and environmental benefits, these innovative vehicles represent a significant advancement in urban transport.

The potential standardisation of Sydney Metro and Sydney Light Rail into a single-deck Tram-Train fleet promises to further streamline operations, improve passenger experience, and future-proof the city's transport network.

By examining successful implementations of Tram-Trains in cities like Karlsruhe, Mulhouse, and Sheffield, Sydney can learn valuable lessons and anticipate the positive impacts of this transformation.

The eco-transit benefits of Tram-Trains, including reduced greenhouse gas emissions, energy efficiency, and sustainable urban development, align with Sydney's goals of creating a more sustainable and liveable city.

As Sydney embraces this transformative change, residents and visitors alike can anticipate a more efficient, accessible, and sustainable commuting experience. The integration of Tram-Trains into Sydney's transport network is not just an upgrade; it is a visionary step towards a modern, cohesive, and environmentally friendly urban mobility solution.

Recommendations

- A feasibility study be undertaken into the conversion of all Sydney single-deck rail fleets and operations into Australian-made Tram-Trains in lieu of new rail extensions especially in Western Sydney from Parramatta LGA, Cumberland LGA, Canterbury-Bankstown LGA, Liverpool LGA, and Western Parkland City (including Western Sydney Airport and Aerotropolis).

- All Sydney Metro – Western Sydney Airport line stations (Stage 1 & 2) be constructed to full eight carriage lengths for futureproofing (e.g. conversion into Sydney Trains and/or potential Tram-Trains).

- An independent review of the NSW Future Transport Strategy (with public consultation) to increase capacity on the Sydney Trains Network, especially for the T2 Inner West (Parramatta), and Liverpool via Regents Park) and Leppington/WSA Line, T3 Bankstown Line (Lidcombe to Bankstown, and Liverpool to Bankstown), T5 Cumberland Line, and T8 Sydney Airport/WSA and South Line.