



WESTERN SYDNEY TRANSPORT INFRASTRUCTURE PANEL

Independent Panel Report

APRIL 2023



Acknowledgement of Country

Aboriginal people have had a continuous connection with the Country encompassed by Western Sydney from time immemorial. They have cared for Country and lived in deep alignment with this important landscape, sharing and practicing culture while using it as a space for movement and trade.

We acknowledge that four groups have primary custodial care obligations for the area: Dharug/Darug, Dharawal/Tharawal, Gundungurra/Gundungara and Darkinjung. We also acknowledge others who have passed through this Country for trade and care purposes: Coastal Sydney people, Wiradjuri and Yuin.

Western Sydney is home to the highest number of Aboriginal people in any region in Australia. Diverse, strong and connected Aboriginal communities have established their families in this area over generations, even if their connection to Country exists elsewhere. This offers an important opportunity for the future of Western Sydney.

Ensuring that Aboriginal communities, their culture and obligations for Country are considered and promoted will be vital for the future of Western Sydney. A unique opportunity exists to establish a platform for two-way knowledge sharing, to elevate Country and to learn from cultural practices that will create a truly unique and vibrant place for all.

Fron and back cover image: Aerial of Campbelltown in Western Sydney. Source: Greater Sydney Commission

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Panel membership

During the 2022 Australian Government Election, a commitment was made to establish an expert panel to assess Western Sydney's transport infrastructure needs and report back to the Australian Government on transport infrastructure priorities for the Region.

Nine Panel members were appointed by the Federal Minister for Infrastructure, Transport, Regional Development, and Local Government, in consultation with the former NSW Minister for Infrastructure, Cities and Active Transport to provide expert advice. Members include:

- Independent Chair – Dr Sarah Hill
- Australian Government – Mr David Mackay, Deputy Secretary, Department of Infrastructure, Transport, Regional Development, Communications and the Arts
- NSW Government – Ms Fishburn, Deputy Secretary, Transport for NSW
- Local Government (Western Parkland City Councils) – Ms Lindy Deitz, General Manager, Campbelltown City Council
- Local Government (Blacktown City Council and the Hills Shire Council) – Mr. Kerry Robinson OAM, CEO, Blacktown City Council
- Western Sydney Community – Professor Andy Marks, Chair, Western Sydney Community Forum
- Western Sydney Community – Ms Sue Hunter Lawrence, President, North West Business Chamber
- Western Sydney Business – The Hon. David Borger, Executive Director, Business Western Sydney
- Academia – Dr Awais Piracha, Director Academic Programs – Geography and Urban Planning.

Use of this Report

This report sets out the findings and recommendations of the Western Sydney Transport Infrastructure Panel (The Panel). Consistent with the Panel's Terms of Reference, this report will be submitted to the Australian and NSW Governments for consideration. Any work of the Panel including its findings or recommendations is not intended to commit a government to the funding of transport infrastructure projects. The Australian Government may wish to release the findings of the Panel in part or in full.

Definitions

Business Case - a documented proposal to inform an investment and/or policy decision. It contains analyses of the costs, benefits, risks and assumptions associated with various investment and policy options linked to policy or program outcomes and informs future implementation, monitoring and evaluation.

Central River City - one of Greater Sydney's three cities as defined by *A Metropolis of Three Cities – Greater Sydney Region Plan*. The Central River City comprises six LGAs including: Canterbury-Bankstown, Cumberland, Parramatta, Georges River, The Hills and Blacktown.

Eastern Harbour City - one of Greater Sydney's three cities as defined by *A Metropolis of Three Cities – Greater Sydney Region Plan*. The Eastern Harbour City comprises 19 Local Government Areas (LGAs) including: Bayside, Burwood, Canada Bay, Hornsby, Hunters Hill, Inner West, Ku-ring-gai, Lane Cove, Mosman, North Sydney, Northern Beaches, Randwick, Ryde, Strathfield, Sydney, Sutherland, Willoughby, Woollahra, and Waverley.

Final Business Case (FBC) - a document that justifies project scope and investment as an appropriate and deliverable response to the established service need and which will maximise benefits at optimal cost. It provides decision makers with sufficient detail to determine whether there is an underlying need of strategic value that requires a capital solution and an analysis that outlines which option is most suitable for capital investment. The FBC document follows a Strategic Business Case (SBC) as part of the NSW Government capital planning and budget process.

Mass Transit - high-capacity public transport system, typically (but not limited to) metro-style elevated or tunnel-based rail, with vehicles operating on an exclusive right-of-way, not accessible by pedestrians or other vehicles.

Six Cities Region - The Six Cities Region is comprised of Lower Hunter and Greater Newcastle City, Central Coast City, Illawarra-Shoalhaven City, Western Parkland City, Central River City, Eastern Harbour City. The update to *A Metropolis of Three Cities – Greater Sydney Region Plan*, due in late 2023, is set to expand the remit of Greater Sydney's three cities, to the above six cities.

Strategic Business Case (SBC) - a document that provides decision makers with sufficient detail to make an initial determination on whether there is an underlying need of strategic value that requires a capital solution and an analysis that outlines a series of options and which option is most suitable for further development. It provides a preliminary justification for the program or project based on an initial assessment of business needs, strategic alignment and overall project benefit(s). The SBC document precedes the FBC as part of the NSW Government capital planning and budget.

Western Parkland City - one of Greater Sydney's three cities as defined by *A Metropolis of Three Cities – Greater Sydney Region Plan*. The Western Parkland City comprises eight LGAs including: the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly.

Western Sydney - for the purposes of this report, the Panel has used the definition of Western Sydney, outlined in its Terms of Reference as comprising ten Local Government Areas - those within the Western Parkland City (Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly), as well as the Hills Shire and Blacktown City Councils (Figure 2).¹

Western Sydney Aerotropolis (Aerotropolis) - an 11,200 hectare area surrounding the site of the Western Sydney International Airport at Badgery's Creek, located in the Liverpool and Penrith Local Government Areas (LGAs) with land use and economy centred on the airport and aviation orientated business and residential development. Set to become a thriving economic centre and innovation precinct in Western Sydney.

¹ The Panel notes the varying definitions of Western Sydney and that, in some cases, the definition is contested. It also wishes to stress that there are important interfaces across the transport network which extend beyond the Region including the Parramatta, Cumberland, Canterbury and Bankstown Local Government Areas and the Illawarra region.

Executive Summary

Western Sydney² is an economic powerhouse. It is culturally rich, geographically extensive and one of the fastest growing regions in Australia. Over the next 20 years Western Sydney will be home to more than 2.2 million³ people, with a population increase alone greater than the population of Canberra today.

Growth however is not Western Sydney's primary challenge, but rather the capacity for infrastructure and services to keep up with this change. In fact, the single greatest limitation to realising Western Sydney's potential today is transport infrastructure. As Western Sydney accommodates 50% of Greater Sydney's forecast population growth (8%⁴ of Australia's) over the next 20 years, it will require its fair share of investment in infrastructure and services to unlock the significant economic, community and productivity benefits it has to offer.

In this context, the Western Sydney Transport Infrastructure Panel (the Panel) was established in December 2022 with specific Terms of Reference to identify the strategic transport infrastructure priorities for Western Sydney (the Region) by Q2 2023.

Appointed by the Prime Minister, the Hon. Anthony Albanese, and the Minister for Infrastructure, Transport, Regional Development and Local Government, the Hon. Catherine King, the Panel of nine members was established to deliver on the Australian Government's 2022 election.

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² Study area as defined by the Panel's Terms of Reference to include Blacktown, Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Hills, Liverpool, Penrith and Wollondilly LGAs

³ NSW Department of Planning and Environment, 2022 CPA Population and Dwelling projections.

⁴ Australian Bureau of Statistics, Regional population, 2021, preliminary rebased estimated resident population, released July 2022.

1.1 Western Sydney today

Western Sydney is Australia's third largest economy and is expanding largely on account of the Region's significant population growth and critical role in the supply chain. As of 2021, Western Sydney was home to one in 15 Australians⁵, generated over 630,000⁶ jobs and contributed an estimated \$87 billion to Australia's Gross Domestic Product⁷.

Western Sydney is culturally rich, geographically extensive and one of the fastest growing regions in Australia.

Despite this significant economic contribution, **the pace of job generation within Western Sydney has traditionally lagged behind population growth.** In 2021 there were 0.4 jobs generated per resident in the Region compared to 0.7 jobs per resident in the Eastern Harbour City. This simple mismatch has increased the need to travel both within, and out of, the Region leading to a higher reliance on cars together with a greater cost of living and time burden on households to access their daily needs⁸. In fact, residents of the Western Parkland City spend three times longer travelling to education and childcare services, four and a half times longer travelling for shopping and four times longer travelling for recreation and social trips⁹ than residents within other parts of Greater Sydney.

These challenges are exacerbated by Greater Sydney's transport system being historically designed with an emphasis on moving people out of the Region, west to east for work, rather than efficiently within the Region. Furthermore, there are clear gaps in Western Sydney's transport infrastructure which in turn places greater pressure on existing transport and road networks. Lower levels of public transport accessibility, greater infrequency of train and bus services and their poorer integration across the Region results in half as many residents in Western Sydney (14%) catching public transport to work than in the Eastern Harbour City (32%)¹⁰.

Western Sydney continues to grow with capacity for an additional 250,000 dwellings in new greenfield areas, and 384,000 within the existing urban area as infill development¹¹.

Of concern is that only 15% of new housing completions are currently located within 800m of a train station, compared to 43% in Greater Sydney¹², leading to 90% of journeys being made by car¹³.

In addition, the road networks in parts of Western Sydney, especially in newer greenfield areas, are often not fit for purpose, with many consisting of rural, two-lane style roads. This adds to road congestion, reduces road safety, decreases travel reliability, and impedes the movement of both people and freight. Walking or cycling is also frequently hindered as a travel alternative owing to a lack of separated cycleways or in some cases footpaths, with these challenges exacerbated by the extreme weather conditions experienced in Western Sydney, heat in particular.

According to the Socio-Economic Index for Areas data (2016), 24% of Western Sydney residents lived in areas of NSW considered to be the most disadvantaged compared to only 3% of residents in the Eastern Harbour City¹⁴. However, it must also be noted that pockets of affluence and disadvantage exist side-by-side in Western Sydney, often within the same postcode. This disadvantage is intersectional in nature, with factors such as unemployment, exposure to extreme heat and poor health resulting in poor outcomes for struggling households, contributing to these visible divides.

In this regard, the Panel recognises that addressing socio-economic inequity across Western Sydney can only be undertaken by viewing a robust transport system as not just a planning exercise but as a critical enabler for access and liveability. Not considering social, economic and cultural factors alongside transport planning risks inadvertently perpetuating disadvantage on a generational scale.

Western Sydney has emerged as an economic hub within its own right, with a growing need for improved connectivity not only to the Region, but within the Region between its homes, and its centres of economic activity and services. Whilst significant investment has and is being made through delivery of a major airport and metro, intermodal and liveability projects, the Panel recognises more is needed to better connect and unlock Western Sydney's true potential as one of Australia's most liveable, productive and sustainable Regions.

1.2 Unlocking Western Sydney's future

The Panel has identified 36 strategic transport priorities to unlock Western Sydney's future and realise its potential as a connected and thriving Region that has the right infrastructure in place, at the right time so that it can keep pace with its growth.

The priorities have been informed by a strategic needs assessment and analysis of the gaps and opportunities of existing and planned transport infrastructure across Western Sydney. The Panel has focused its recommendations on passenger transport¹⁵ and grouped its priorities as follows:

- **Public Transport:** consisting of passenger rail (including Sydney Trains, NSW Trainlink and Sydney Metro networks) and buses¹⁶;
- **Active Transport:** infrastructure that encourages walking, cycling and use of micro-mobility transport modes such as footpaths, shared paths and cycleways;
- **Roads:** motorways and arterial roads (and interfaces with key local roads); and
- **Innovations:** new approaches to improve the efficiency and effectiveness of passenger transport planning, delivery and operations including digital enhancements.

The Panel's 36 recommendations cover three time horizons:

- **Immediate term** - for consideration as part of the 2023-24 Australian Government Budget;
- **Short term (2-5 years)** - for consideration in the next budget cycle and forward estimates; and
- **Medium term (6-10 years)** - to inform subsequent project delivery and enable forward planning and development.

5 1.75 million people according to the Australian Bureau of Statistics, Regional population, 2021, preliminary rebased estimated resident population, released July 2022.

6 Transport for New South Wales, 2022 Travel Zone Projections, Employment by travel zone.

7 REMPLAN Gross Value Added data, 2021; Australian Bureau of Statistics (ABS), Australian National Accounts, released December 2021

8 ABS Census of Population and Housing 2021

9 Transport for NSW 2022 Household Travel Survey data. Blacktown and The Hills LGAs, while not in the Western Parkland City have results which are statistically similar.

10 Transport for NSW, Current and committed public transport in three cities 2023

11 Greater Cities Commission, Dwelling Pipeline – existing urban area and infill, Existing / committed supply only, includes place strategies and precinct plans

12 Greater Cities Commission, Dwelling Completions near transport hubs 2023

13 ABS Census 2016

14 Note, 'most disadvantaged' refers to the bottom quintile of SAI1s

15 While the Panel notes there are important interfaces between freight and passenger transport infrastructure, it has considered priorities specifically relating to freight are beyond its Terms of Reference, and as such these have not been included within recommendations or deliberations.

16 While public transport in NSW includes light rail and ferries, as they do not exist in the Region, they have not been considered.



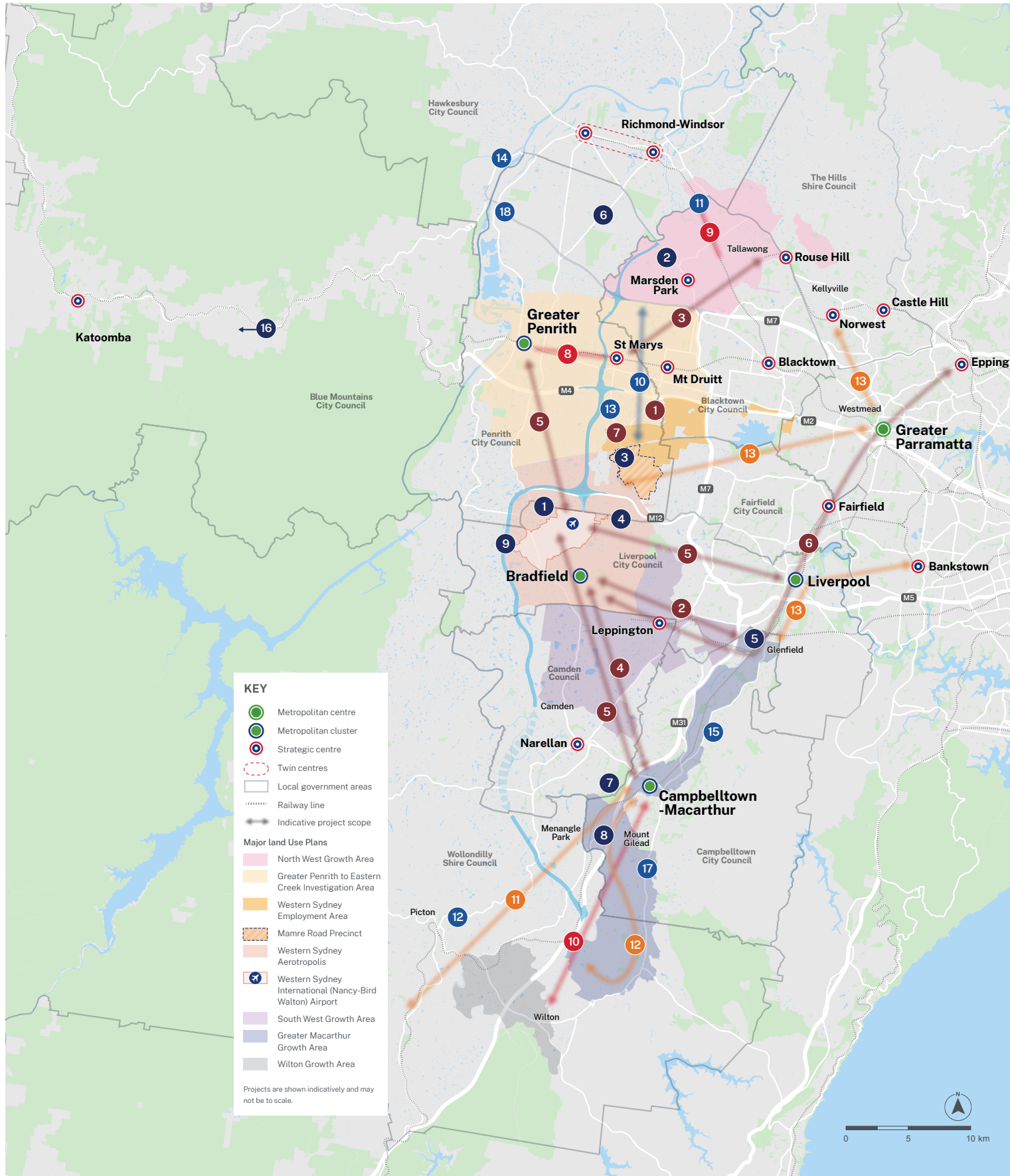
The recommended priorities are summarised in Table 1 below and visually presented in Figure 1.

Table 1 Strategic Transport Recommendations

Project		Timeframe (Year)			Recommendation
		1	2-5	6-10	
Public Transport (PT)					
High Priority	PT1: Western Parkland City and Blacktown (all modes) Strategic Business Case (SBC)	✓			Immediate/short-term: SBC development
	PT2: Mass Transit: Aerotropolis to Glenfield		✓		Short-term: commence/facilitate delivery
	PT3: Mass Transit: Tallawong to St Marys	✓			Immediate: planning including commencement of FBC (Final Business Case); Short-term: corridor preservation and bus rapid transit as interim use.
	PT4: Mass Transit: Aerotropolis to Campbelltown-Macarthur	✓			Immediate: planning (including commencement of FBC); Short-term: corridor preservation and bus rapid transit as interim use.
	PT5: Western Sydney Rapid Bus Network		✓		Short-term: delivery of baseline service between key centres and airport
	PT6: New Cumberland Line SBC	✓			Immediate/ short-term: SBC development
	PT7: Western Parkland City Zero Emissions Bus depot SBC		✓		Short-term: SBC development
Priority	PT8: Western Rail Corridors SBC (St Marys to Penrith and Richmond Line)		✓		Short-term: SBC development
	PT9: Schofields to Vineyard duplication SBC		✓		Short-term: SBC development
	PT10: Public Transport Upgrades between Campbelltown and Wilton (including investigation of rail electrification south of Macarthur)		✓		Short-term: SBC development
Policy Position	PT11: Faster Rail connection from Canberra to Sydney via Western Sydney		✓		Short-term: Planning to consider the appropriate location of stops in Western Sydney
	PT12: Greater Macarthur Transit Corridor*	N/A			Delivery to be led and funded by developers, as agreed per planning conditions for rezoning
	PT13: Future Mass Transit Links in Western Sydney (longer term investigation)	N/A			Further investigation of key links required prior to making a recommendation includes Bankstown to Liverpool / Glenfield; Westmead to Aerotropolis; Norwest to Parramatta
Active Transport (AT)					
High Priority	AT1: 15-minute cities pilot program for activations to support local infrastructure and enhanced access to active transport and neighbourhood centres	✓			Immediate: 3 pilot projects Short-term: SBC development and further deployment of projects
	AT2: Western City strategic cycleway network FBC		✓		Short-term: FBC development
Innovations (I)					
High Priority	I1: Digital Transport Efficiencies Program		✓		Short-term: FBC development
	I2: Better integration between land use and infrastructure planning (e.g. Place-based Infrastructure Compact program)	✓			Immediate / short-term: Ongoing annual funding
	I3: Urban Sustainability City Research Fund	✓			Immediate: Funding for initial tranche of work, with this to inform next steps

Project	Timeframe (Year)			Recommendation	
	Roads (R)	1	2-5		6-10
High Priority	R1: Western City Road Transport Network Development (Aerotropolis Roads Package)	✓			Immediate: FBC development Short-term: Delivery of priority projects Medium term: Delivery of full package
	R2: Richmond Road Corridor Upgrades		✓		Short-term: Delivery of priority upgrades, with corridor SBC to inform future stages
	R3: Mamre Rd (Stage 2) Erskine Park Drive to Elizabeth Drive		✓		Short-term: Delivery of upgrade, subject to FBC
	R4: Elizabeth Drive Upgrade (M7 to The Northern Road)		✓		Short-term: Completion of full upgrade post M12 delivery
	R5: Cambridge Avenue, Glenfield - duplication and connection to M31 Mwy (Part of Moorebank Intermodal Terminal Road Connections Upgrade)	✓			Immediate: FBC development Short-term: Delivery of early works, subject to FBC Medium-term: Delivery of full scope of works
	R6: Northern Road Upgrade FBC (Borrowdale to Londonderry)	✓			Immediate: FBC development Short-term: Delivery of upgrade, subject to FBC
	R7: Spring Farm Parkway (Stage 2) and east-west link road from Spring Farm Parkway to Appin Road	✓			Immediate: FBC development Short-term: Delivery of Stage 2, subject to FBC; investigation of east-west link road Medium-term: Delivery of east-west link road, subject to investigations
	R8: Menangle Road Upgrade	✓			Immediate: FBC development Short-term: Delivery of upgrade, subject to FBC (with provision for connection to Greater Macarthur Transit Corridor)
	R9: Outer Sydney Orbital Corridor Preservation			✓	Short-term: Early land acquisition to enable corridor preservation
	R16: Great Western Highway (GWH) Upgrade Program (targeted intersection upgrades)			✓	Short-term: Existing GWH Upgrade Program to consider targeted intersection upgrades at Lurline Street, Katoomba (underpass) and Macquarie Road, Springwood (bushfire evacuation)
Priority	R10: Werrington Arterial Stage 2 Investigation FBC (connectivity between North West Growth Area and Aerotropolis)		✓		Immediate: FBC development Short-term: Delivery of priority connection (St Marys) / corridor protection of corridor, subject to FBC Medium-term: Further upgrades towards the North West Growth Area as guided by FBC.
	R11: Garfield Road corridor including upgrades to Garfield Road East and Garfield Road Central		✓		Short-term: Delivery of upgrades to Garfield Road East and Central, subject to FBC underway.
	R12: Picton Road Upgrade / Bypass		✓		Short-term: Early works of Picton Bypass Medium-term: Completion of Picton Bypass / Upgrade of Picton Road
	R13: Southern Link Road (including link to Victoria Street, Wetherhill Park)		✓		Short-term: FBC development Medium-term: Next steps for investment subject to FBC
	R14: Hawkesbury-Nepean Valley Flood Evacuation Road Resilience Upgrade Program (post FBC)	✓			FBC to inform further advice, with priority recommended for projects which facilitate flood evacuation
	R15: Bridge Upgrade: Ben Lomond Road, Minto (planning work)		✓		Short-term: Planning work to inform future investment
	R17: Appin Road (investigation of future corridor upgrades)		✓		Short-term: Planning work to consider holistic corridor upgrade.
	R18: Castlereagh Connection (continued investigation to identify options for investment)		✓		Short-term: Planning work to identify options for investment.

Figure 1 Proposed Panel recommendations for transport infrastructure projects mapped in the Region¹⁷



Source 1 Transport for NSW, Western Sydney Transport Infrastructure Panel Report 2023

17 Shaded area refers to land outside the Study Area

Western Sydney Public Transport and Road Projects

Public Transport projects

High priority

- 1 PT1: Western Parkland City and Blacktown (all modes) Strategic Business Case (SBC)
- 2 PT2: Mass Transit: Aerotropolis to Glenfield
- 3 PT3: Mass Transit: Tallawong to St Marys
- 4 PT4: Mass Transit: Aerotropolis to Campbelltown-Macarthur
- 5 PT5: Western Sydney Rapid Bus Network
- 6 PT6 New Cumberland Line SBC
- 7 PT7: Western Parkland City Zero Emissions Bus depot SBC

Moderate priority

- 8 PT8: Western Rail Corridors SBC (St Marys to Penrith and Richmond Line)
- 9 PT9: Schofields to Vineyard duplication SBC
- 10 PT10: Public Transport Upgrades between Campbelltown and Wilton (including investigation of rail electrification south of Macarthur)

Policy position

- 11 PT11: Faster Rail connection from Canberra to Sydney via Western Sydney
- 12 PT12: Greater Macarthur Transit Corridor*
- 13 PT13: Future Mass Transit Links in Western Sydney (longer term investigation)

Road projects

High priority

- 1 R1: Western City Road Transport Network Development (Aerotropolis Roads Package)
- 2 R2: Richmond Road Corridor Upgrades
- 3 R3: Mamre Rd (Stage 2) Erskine Park Drive to Elizabeth Drive
- 4 R4: Elizabeth Drive Upgrade (M7 to The Northern Road)
- 5 R5: Cambridge Avenue, Glenfield -duplication and connection to M31 Mwy (Part of Moorebank Intermodal Terminal Road Connections Upgrade)
- 6 R6: Northern Road Upgrade FBC (Borrowdale to Londonderry)
- 7 R7: Spring Farm Parkway (Stage 2) and east-west link road from Spring Farm Parkway to Appin Road
- 8 R8: Menangle Road Upgrade
- 9 R9: Outer Sydney Orbital Corridor Preservation
- 16 R16: Great Western Highway (GWH) Upgrade Program (targeted intersection upgrades)

Moderate priority

- 10 R10: Werrington Arterial Stage 2 Investigation FBC (connectivity between North West Growth Area and Aerotropolis)
- 11 R11: Garfield Road corridor including upgrades to Garfield Road East and Garfield Road Central
- 12 R12: Picton Road Upgrade / Bypass
- 13 R13: Southern Link Road (including link to Victoria Street, Wetherhill Park)
- 14 R14: Hawkesbury-Nepean Valley Flood Evacuation Road Resilience Upgrade Program (post FBC)
- 15 R15: Bridge Upgrade: Ben Lomond Road, Minto (planning work)
- 17 R17: Appin Road (investigation of future corridor upgrades)
- 18 R18: Castlereagh Connection (continued investigation to identify options for investment)

1.3 Complementary priorities for consideration

The Panel notes that transport infrastructure cannot operate in isolation. Accordingly, it has identified seven additional priority matters for Western Sydney.

Whilst outside the Terms of Reference, the Panel recommends consideration of these matters alongside the 36 strategic transport priorities listed in Table 1, given their ability to enhance the effectiveness and efficiencies of current and future transport infrastructure in Western Sydney.

- **Multi utility corridors** – the co-location of utilities and telecommunications alongside road and rail corridors as they are built, to avoid the cost and disruption to businesses and the community of road works when utilities or services require expansion, upgrades or repairs. These corridors also present opportunities for green links and cycle and pedestrian links for Western Sydney residents.
- **Funding for corridor preservation, early land acquisition and interim corridor use** – to reduce longer term costs and increase certainty of delivery of strategic transport infrastructure investments (such as the Outer Sydney Orbital and full north-south rail link from Tallawong to Campbelltown-Macarthur).
- **Interface between passenger and freight transport** – a review of freight infrastructure in Western Sydney, its connections across Greater Sydney and its interface with the broader passenger transport network to enhance economic activity and transport infrastructure efficiencies.
- **Alignment between land use and infrastructure decision making** – land rezoning to occur concurrently (and not ahead of) investment decisions for transport, utilities and community infrastructure to ensure new residents are serviced and supported in a timely way. Additionally, amending infrastructure contribution mechanisms to increase capacity to secure funding or make better use of existing funding to enable earlier infrastructure delivery.
- **Water, wastewater and recycled water infrastructure** – greater visibility and alignment with serviceability plans before rezoning is undertaken to facilitate better sequencing between infrastructure provision and development.
- **Market capacity pressures** – consideration of market capacity pressures and the associated inflationary effects, driven by the increasingly complex risk environment for project delivery.
- **Better business case processes** – consideration of opportunities to streamline these processes, particularly with smaller-scale / low-risk projects, by avoiding duplication in Strategic and Final Business Cases.

Context

This section of the report outlines the remit of the Panel and key considerations in framing its deliberations and forming its recommendations. In December 2022, the Prime Minister, the Hon. Anthony Albanese, and Minister for Infrastructure, Transport, Regional Development and Local Government, the Hon. Catherine King, requested the appointment of an independent expert panel to advise the Australian Government on transport infrastructure priorities in Western Sydney.

This followed an election commitment recognising the importance of Western Sydney as a significant economic driver and the value in appointing an independent panel to undertake a strategic assessment of the needs and opportunities for transport investment in the Region.

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2.1 Remit of the Panel

The Panel of nine independent experts, representing three levels of Government, the business sector, academia and the community, was asked to:

- undertake a strategic needs assessment of transport infrastructure;
- identify current gaps in, and opportunities for, major transport infrastructure; and
- prioritise recommendations that will provide substantial and sustained benefit to Western Sydney's communities (full Terms of Reference at Appendix 1).

Owing to the time critical nature of the task, the Panel worked to provide advice in two phases:

- Immediate recommendations for consideration ahead of the 2023-24 Budget that were provided to the Hon. Catherine King MP in mid-March 2023; and
- A more detailed analysis and priorities for infrastructure over the short and medium term including the contextual and evidence base for these (this report).
- Having completed these tasks, the Panel has identified the potential for a subsequent program of stakeholder engagement to canvass broader community and industry views on the short and medium-term recommendations.

Given the Terms of Reference, the Panel agreed to the definition of transport infrastructure as infrastructure that facilitates passenger transport including roads, public transport and active transport (such as walking and cycling). In focusing on passenger transport, the Panel notes the important interfaces between freight and passenger transport infrastructure and suggests a similar exercise for freight transport infrastructure in Western Sydney.

2.2 Defining Western Sydney

Defining the geographic extent of Western Sydney was a point of notable debate and contention for the Panel. The Panel recognised there were varying definitions of Western Sydney, and that the Region was often described as including the local government areas of Canterbury-Bankstown, Cumberland, and Parramatta.

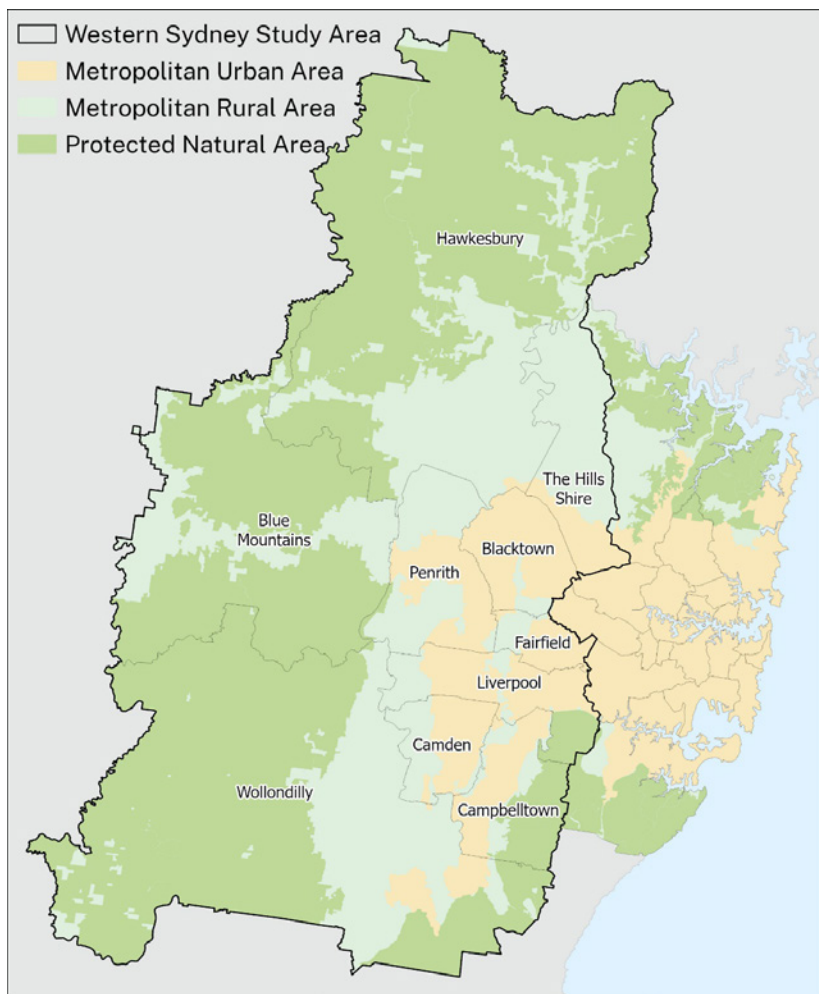
Furthermore, a number of panel members identified that there are comparative levels of disadvantage in the additional areas identified above that were excluded from the definition of Western Sydney provided in the Panel's Terms of Reference. Given the Panel's focus on addressing socio-economic inequity, the case was made to include these areas in the definition of Western Sydney.

The Panel also agreed that there are important interfaces across the transport network which extend beyond the Region as defined in the Terms of Reference. The influence of areas adjacent to, but outside the defined Region, such as Parramatta and the Illawarra Region have been noted with respect to wider transport connections and patterns.

Notwithstanding the above, for the purposes of this report, the Panel has used the definition of Western Sydney as expressed in the Terms of Reference, shown graphically in Figure 2 below.

This definition comprises ten Local Government Areas (LGAs) including the Blacktown City Council and Hills Shire, and the eight Western Parkland City councils of the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly.

Figure 2 Western Sydney Transport Infrastructure Panel Study Area as it relates to the Greater Sydney Metropolitan, Rural and Protected natural areas



Source 2 Greater Sydney Commission, Metropolitan Urban Areas, Metropolitan Rural Area and Protected Natural Areas 2018. Study Area defined as the Local Government Areas specified for inclusion in the Terms of Reference

2.3 Considerations of the Panel

In undertaking its strategic needs assessment and gap analysis of transport infrastructure in Western Sydney as required by the Terms of Reference, the Panel considered, and was informed by, an extensive range of information (detailed in Appendix 3) that helped solidify and form the recommendations. This included a number of key strategies and plans such as:

- *A Metropolis of Three Cities – Greater Sydney Region Plan*, 2018, Greater Cities Commission;
- *Western City District Plan*, 2018, Greater Cities Commission;
- *Western Parkland City Blueprint*, 2022, Western Parkland City Authority;
- *NSW State Infrastructure Strategy*, 2022, Infrastructure NSW;
- *Future Transport Strategy*, 2022, Transport for NSW; and
- *Infrastructure Priority List*, 2022, Infrastructure Australia.

The Panel also considered priorities and supporting material provided to it by each of the 10 local councils. Presentations, detailed in Appendix 3, were received from a number of stakeholders. These provided the Panel with considerable intelligence formation including statistical, qualitative and quantitative information. In addition, the Panel was informed by its members' individual and organisational strategic and operational expertise, and extensive knowledge of the Region.

Well established transport project assessment criteria used by agencies including Infrastructure Australia, Infrastructure NSW, and Transport for NSW helped to frame the Panel's discussions.

These criteria include:

- Transport safety and efficiency¹⁸;
- Supporting and enhancing productivity through jobs and economic development¹⁹;
- Supporting housing supply and diversity²⁰;
- Improving access to services (including the 30 minute-city) and reducing congestion²¹;
- Addressing societal inequity, impact and benefits, including the need to better support local communities and their quality of life;
- Addressing Sustainability and resilience of the environment²²; and
- The potential efficiency and effectiveness benefits of innovation²³.

In addition to the above, a Liveability, Sustainability and Productivity lens was also applied to the Panel's deliberations. This lens seeks to ensure matters including redressing socio-economic inequity, network resilience (especially with regard to supporting movement in emergencies such as fire and floods), and connecting growth areas to employment were considered and addressed.

With the above in mind, the Panel agreed to focus on infrastructure projects that:

- are major and transformative, being of priority to the Australian and NSW Governments, and having significant benefits for the community;
- will enhance the liveability, sustainability and productivity of Western Sydney; and
- will improve the safety, health and accessibility of existing and planned communities.

18 Transport for NSW, Future Transport Strategy, 2022.

19 Western Parkland City Authority, Western Parkland City Blueprint, 2022; Greater Cities Commission, A Metropolis of Three Cities – Greater Sydney Region Plan, 2018 (jobs and skills for the city).

20 Western Parkland City Authority, Western Parkland City Blueprint, 2022; Greater Cities Commission, A Metropolis of Three Cities – Greater Sydney Region Plan, 2018 (greater housing supply, housing is more diverse and affordable).

21 Transport for NSW, Future Transport Strategy, 2022 (improved connectivity); Western Parkland City Authority, Western Parkland City Blueprint, 2022 (delivering a connected city).

22 Infrastructure Australia, Assessment Framework 2021; Transport for NSW, Future Transport Strategy, 2022 (equitable access); Western Parkland City Authority, Western Parkland City Blueprint, 2022 (delivering a green city, delivering a connected city); Greater Cities Commission, A Metropolis of Three Cities – Greater Sydney Region Plan, 2018 (a resilient city).

23 Infrastructure NSW, State Infrastructure Strategy, 2022; Transport for NSW, Future Transport Strategy, 2022 (multi-modal mobility); Western Parkland City Authority, Western Parkland City Blueprint, 2022 (foster innovation, grow city strengths and specialized services).

2.4 Observations of the Panel

The Panel made a number of observations that framed its discussions, with those considered more important provided for context:

- The Panel notes the critical inter-relationship of urban planning and transport infrastructure. It recognises the need to optimise urban outcomes through leveraging existing and planned infrastructure, to avoid inefficient sprawl and additional costs.
- The Panel also notes the important inter-relationship between freight and passenger infrastructure given that it often uses the same networks (around 80%-90% of freight is carried by road²⁴). The Panel would welcome an opportunity to undertake a similar exercise for freight transport infrastructure in Western Sydney.
- In making its recommendations, the Panel has not considered any political matters, nor has it been bound by fiscal constraints. Notwithstanding, the Panel appreciates the tight fiscal constraints faced by the Australian and NSW Governments.
- The Panel appreciates that a number of identified priorities are already being considered or investigated by the NSW Government as part of its broader infrastructure planning program. By including these as priorities, the Panel seeks to affirm the importance of progressing them.
- The Panel accepts that any investment will typically require co-funding by the Australian and NSW Governments, and a partnered approach between the two levels of Government. This may extend to local government and the private sector in some instances.
- Finally, the Panel recognises the significant investment and project delivery taking place in NSW and the reduced capacity of the market to undertake additional projects at this point in time. In light of the above, priority in some cases has been given to recommending SBCs and FBCs be undertaken. The Panel considers that this would facilitate a pipeline of 'shovel-ready' critical projects that can be sequenced respective to market conditions and fiscal constraints.

2.5 Acknowledgements

The Panel has been well assisted by the team from the Australian Government's Department of Infrastructure, Transport, Regional Development, Communications and the Arts and would like to thank the team for their co-ordination. The Panel has also been very well assisted by Transport for NSW and the Western Parkland City Authority and extends its thanks to their respective teams for their timely provision of evidence to inform the Panel's work.

The Panel would like to acknowledge and thank the numerous Commonwealth, State, and Local Government Authorities that have presented to the Panel and / or provided submissions to assist the Panel's considerations including:

- Blacktown City Council;
- Blue Mountains City Council;
- Camden Council;
- Campbelltown City Council;
- Fairfield City Council;
- The Hills Shire Council;
- Hawkesbury City Council;
- Penrith City Council;
- Wollondilly Shire Council.
- Greater Cities Commission;
- Infrastructure Australia;
- Infrastructure NSW;
- Liverpool City Council;
- Sydney Metro;
- Transport for NSW;
- Western Parkland City Authority; and
- Western Sydney Airport Corporation.

The Panel would also like to thank agencies and organisations which have presented and provided data. A list of presentations and data sources can be found at Appendix 2.

²⁴ Transport for NSW, Freight and Ports Plan, 2018

Western Sydney Strategic Needs Assessment

The Panel finds that Western Sydney will play a key strategic role in not only Greater Sydney's future, but Australia's. This section of the report responds to the Terms of Reference by assessing the strategic value, and in turn needs of Western Sydney as it grows in scale and contribution. This section also explores the important role of government and private investment in infrastructure in catalysing this change.

03

3.1 Western Sydney's strategic role and needs

Western Sydney is home to one in 15

Australians²⁵ and is set to grow significantly over the next 20 years with the population forecast to increase to over 2.2 million by 2041. This represents a 51% share of Greater Sydney's population growth, 34% of NSW's growth and 8% of Australia's growth in the next 20 years²⁶.

Western Sydney extends over more than

80% of the Greater Sydney area, representing 51% of all land designated for urban use in Greater Sydney²⁷. Covering a geographic area of 8,710 square kilometres, the Region comprises urban (12%), rural (30%) and protected natural areas (58%)²⁸.

Western Sydney is one of the most flood and

bushfire prone regions in Australia. It is more exposed to extreme heat than any other parts of Greater Sydney, experiencing around 37 days of temperatures at or above 35 degrees Celsius in 2018-19 compared to six days of temperatures at or above 35 degrees Celsius in the Eastern Harbour City²⁹. This creates notable challenges for transport and related infrastructure, including operating public transport services during extreme weather, and maintaining the network's resilience and integrity during natural disasters such as floods and bushfires³⁰.

There is significant residential and employment land supply available in Western Sydney, however much of this land is not yet serviced.

Substantial greenfield areas and capacity for infill development exists across the Region. In 2021, over 4,000ha of land was rezoned for employment purposes in the Aerotropolis, equating to 20% of all employment land in Greater Sydney³¹. However, whilst this land has been rezoned as employment land, it requires significant investment in services such as delivery of roads, water infrastructure and utilities to enable development to take place.

The pressure on serviced employment land is highlighted by its extreme scarcity (only 70 hectares being available for immediate development as at April 2023³²) and unprecedented take-up of zoned employment land with industrial vacancy rates at historic lows since 2019. Demand has been boosted by a new appetite for onshore manufacturing and supply in response to supply chain weaknesses resulting from global events including the COVID-19 pandemic.

With respect to capacity for new residential dwellings, it is estimated that the Region has capacity for an additional 250,000 dwellings in new greenfield areas, and 384,000 within the existing urban area as infill development³³.

Western Sydney's dwellings will increase by

43% to 2041. The Region had close to 600,000 dwellings in 2021, comprising 31% of all dwellings in Greater Sydney. This is forecast to increase to approximately 850,000 dwellings by 2041, representing a 43%³⁴ increase. Within the Region, Blacktown, followed by the Hills Shire and Camden LGAs, are projected to experience the strongest demand for housing in this period. Of note, 54% of new housing in Western Sydney is on greenfield lots compared to the 23% Greater Sydney average, with substantial capacity for infill in currently developed areas. This latent greenfield supply that is forecast for development by 2041 reiterates the need for timely servicing of infrastructure.

Western Sydney has a significant and skilled

migrant community. The 2021 census data finds that 38% of Western Sydney residents were born outside of Australia, and of these residents 64% were born in the Middle East or Asia (MEA)³⁵. These migrants are almost twice as likely to have attained a university or post graduate degree at 38% when compared to the Greater Sydney average of 21%. Also of note, a higher proportion are engaged in managerial and professional employment and are greater users of public transport making up over 60% of public transport users in Western Sydney³⁶.

Due to the concentration of professional and managerial jobs in the north and east of Greater Sydney, many MEA migrants travel to the global economic corridor, that spans from Macquarie Park, through North Sydney and Sydney CBD to Sydney Airport. Investment in the development of strategic centres including Blacktown, Campbelltown, Liverpool, Penrith, and Bradfield City Centre will offer further employment opportunities within the Region.

Western Sydney experiences a proportionately greater level of socio-economic inequity than that of Greater Sydney

as measured by the Index of Relative Socio-economic Advantage and Disadvantage (Figure 3). While this figure excludes Blacktown City Council and The Hills Shire there is still a disproportionate amount of disadvantage in the study area compared to the Eastern Harbour City. It is important to note that pockets of affluence and disadvantage exist side-by-side in Western Sydney (Figure 4), often within the same postcode. This disadvantage is intersectional in nature, with factors such as unemployment and poor health resulting in poor outcomes for struggling households, contributing to these visible divides.

In 2016, 24% of Western Sydney residents lived in areas of NSW considered to be the most disadvantaged compared to only 3% of residents in the Eastern Harbour City. Job disparity is a further factor of disadvantage in the area. There are also comparative levels of disadvantage in a number of LGAs excluded from the scope of this report including Parramatta, Cumberland and Canterbury Bankstown.

25 Australian Bureau of Statistics, Regional population, 2021, preliminary rebased estimated resident population, released July 20

26 NSW Department of Planning and Environment, 2022 CPA Population and Dwelling projections.

27 Greater Sydney Commission, 2018. Metropolitan urban area, Metropolitan rural area, and Protected natural area spatial data.

28 Greater Sydney Commission, 2018. Metropolitan urban area, Metropolitan rural area, and Protected natural area spatial data.

29 Greater Cities Commission, 2020, The Pulse of Greater Sydney, Measuring What Matters in the Metropolis

30 Greater Cities Commission, 2018, Greater Sydney Regional Plan

31 Western Parkland City Authority, Western Parkland City Blueprint, 2022

32 Colliers Research, Western Sydney Industrial Development Update, April 2023

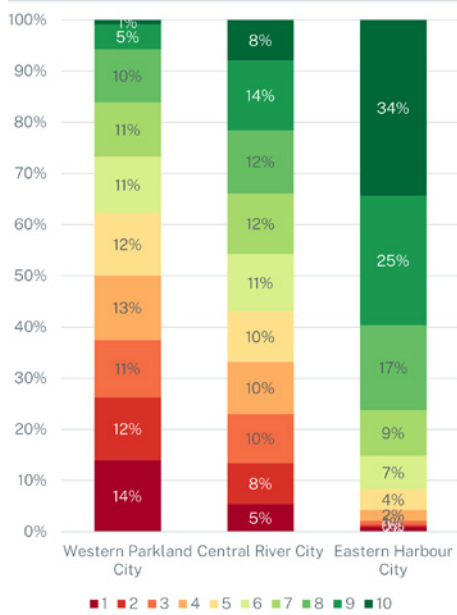
33 Greater Cities Commission, Dwelling Pipeline – existing urban area and infill (Existing / committed supply only, includes place strategies and precinct plans) 2023

34 Transport for NSW, Travel Zone Projections Employment 2022

35 ABS Data from 2021 Census (downloaded using the TableBuilder census tool)

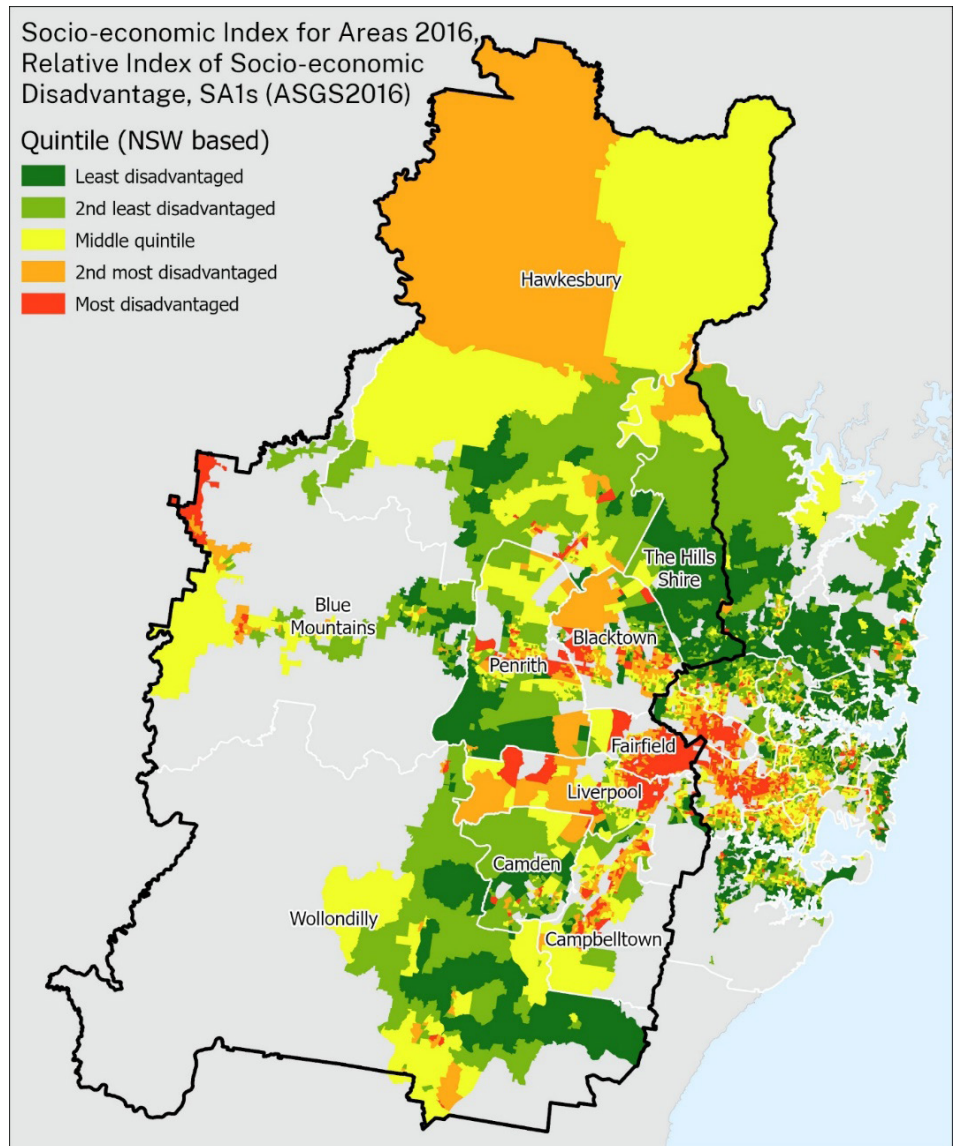
36 ABS Data from 2021 Census (downloaded using the TableBuilder census tool)

Figure 3 Shares of City residents and their Socio-Economic Index for Areas (SEIFA) decile



Source 3 ABS, SEIFA 2022

Figure 4 Socio Economic index for areas in Western Sydney



Source 4 ABS Socio-economic Index for Areas 2016, Relative Index of Socio-economic Disadvantage by SA1s 2016

Western Sydney is an economic powerhouse, contributing an estimated \$87 billion to Australia's Gross Domestic Product in 2021³⁷. It is one of the fastest growing regions in Australia, with an economy driven by a large manufacturing and industrial sector, population growth and a number of catalyst infrastructure and urban developments.

Five industry sectors have high specialisation and/or significant growth potential in the area, as identified by the Centre for Economic and Regional Development. These include manufacturing, circular economy, freight and logistics, agribusiness and construction. Aerospace and defence industries also have strong potential as part of the broader advanced manufacturing sector, driven in part by access to a skilled workforce and land values in the Region.

Employment growth in Western Sydney is growing at a faster rate (1.7%) than Greater Sydney (0.8%)³⁸ with all local government areas expected to experience significant employment growth (Figure 5). Liverpool, Blacktown and the Hills account for the greatest share of this employment growth, with the Liverpool LGA accounting for the largest share of projected employment growth during this period at 33.5%. Much of this growth forecast is to occur in southern and central Western Sydney largely around the Western Sydney International Airport and wider Aerotropolis as outlined in Figure 6b.

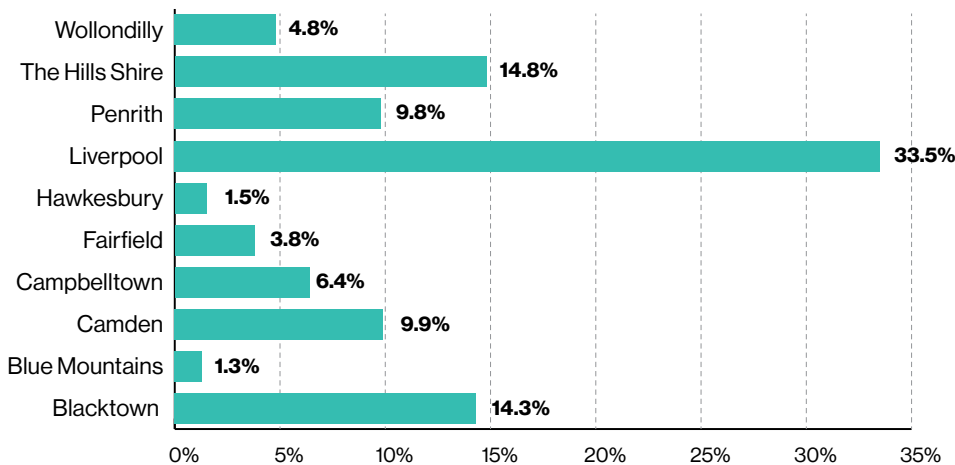
Jobs in Western Sydney are expected to grow by 41% from 2021 to 2041³⁹. As of 2021, there were approximately 630,000 jobs in Western Sydney with this projected to grow to close to 880,000 jobs by 2041. Notwithstanding the notable forecast job growth in Western Sydney, the Panel notes the substantial geographic distances within the Region separating job dense areas from areas of high population growth. For example, significant population growth is occurring in areas such as Wollondilly Shire Council to the south and the Hills Shire to the north, a distance of approximately 100km or up to two hours by car (Figure 6a and 6b).

This highlights the importance of delivering appropriate transport infrastructure that enables north-south connectivity between the growing communities and jobs, particularly given some of the significant distances to be travelled. For example, Marsden Park in the North West Growth Area is more than 30km by road to the Western Sydney International Airport, while Spring Farm near Camden is close to 65km from the Northwest employment hub in the Hills Shire.

The strategic needs assessment demonstrates that Western Sydney has significant potential with a growing population, an expanding industry and associated employment opportunities, and substantial land supply. Alongside this however there are great challenges including its sheer size, vulnerability to heat, fires and floods, and an overall socio-economic disadvantage. Well considered and planned investment in transport infrastructure provides the basis for Western Sydney to both successfully address its challenges and reach its potential.

The Panel recognises that significant investment by the Australian and NSW Governments in infrastructure has commenced with several catalytic infrastructure projects planned and underway as summarised in the next section of the report.

Figure 5 Western Sydney LGA forecast average annual employment growth shares 2021-2041



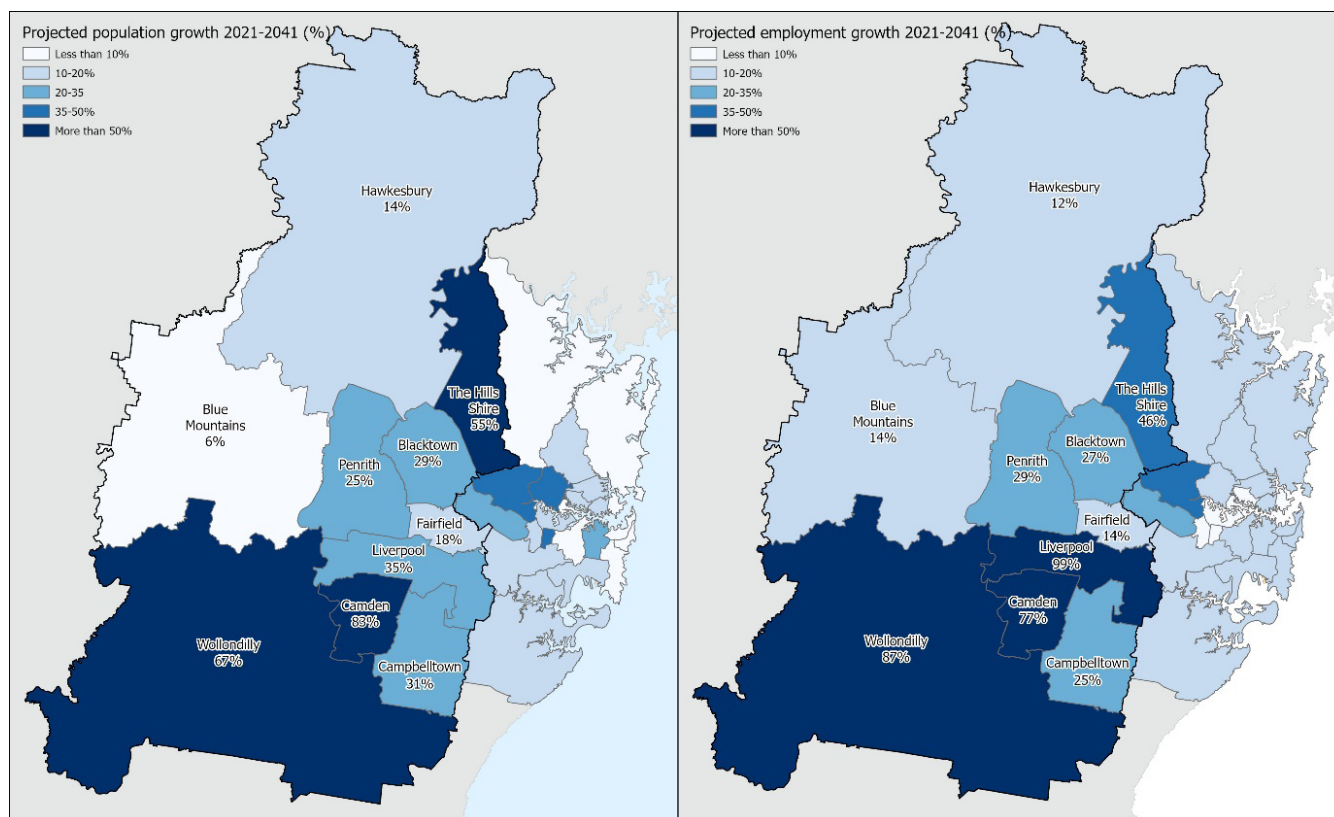
Source 5 Transport for NSW, Travel zone projections, Employment 2022

³⁷ REMPLAN Gross Value Added data, 2021; Australian Bureau of Statistics (ABS), Australian National Accounts, released December 2022

³⁸ Transport for NSW, Travel zone projections, Employment 2022

³⁹ Transport for NSW, Population to Employment ratio by city TYP22 2021

Figure 6a and 6b Projected population growth and employment growth from 2021 - 2041



Source 6 Transport for NSW, Travel Zone projections of population and employment 2022, Geography travel zones 2016

3.2 Strategic infrastructure investment in Western Sydney

Over the last ten years there has been a shift in policy and investment seeking to rebalance the provision of infrastructure across Greater Sydney to improve connectivity to, and importantly within, Western Sydney.

A *Metropolis of Three Cities* - Greater Sydney Region Plan (2018), developed by the Greater Sydney Commission (now Greater Cities Commission) in 2018, established a vision of three cities across Greater Sydney so that residents can live within 30 minutes of their jobs, education, health facilities, essential services and places for leisure and wellbeing.

The Plan provides the foundation for more effective and efficient planning of city-shaping infrastructure. The three-city vision moves away from the historical radial focus from the Eastern Harbour City towards connectivity within and between each of the three cities, seeking to rebalance Greater Sydney by ensuring housing, jobs, infrastructure and services are within easier reach of residents.

While inroads have been made with respect to more coordinated planning and policy development, profound inequity persists between the 'Three Cities'. These disparities are most evident in health, education and employment access and outcomes. Initial challenges in public health communication to areas of the 'Central River' and 'Western Parkland' cities demonstrated those inequities. For the 'Three Cities' framework to be fully effective, an accelerated redistribution and targeting of additional resources may be necessary. This should be based on evidence of areas and issues of highest need, and responsive to distinct areas of cultural and socioeconomic diversity. Fairer transport connections - as primary mechanisms for social infrastructure access - are pivotal in this regard.

The Western Sydney City Deal was signed by three levels of government in 2018 in recognition of the Region's economic potential and unique and diverse community. The City Deal comprises 38 deliverables aimed at improving connectivity, increasing jobs, upskilling residents and improving housing in the Region.

Funding from the City Deal will deliver part of a new North South Rail Line (Sydney Metro - Western Sydney Airport), which will support the Aerotropolis and industry precincts with the aim of generating an additional 200,000 new jobs across Western Sydney. It is also delivering a \$210 million Liveability Program, delivered by the eight local councils in the Western Parkland City to provide improved community facilities and urban amenity, and enhancing liveability to support and complement new housing supply.

To further support the region, the March 2022 Australian Government Budget committed over \$700 million towards transport infrastructure projects in the Region, including \$77.5 million Business Case funding for the Sydney Metro - Western Sydney Airport Stage 2 (Aerotropolis to Leppington/Glenfield), \$15 million for Western City Road Transport Network planning in the Aerotropolis, \$232.5 million for Mulgoa Road Stage 2, and \$95.6 million for the Picton Bypass and Picton Road planning.

This is part of a broader range of public and private sector investment in the Region to help address it's needs. A snapshot of this is provided below with the following eight projects .



Western Sydney International (Nancy Bird-Walton) Airport

\$5.3 billion committed by the Australian Government in the Western Sydney International Airport, a game-changing economic anchor at the centre of Western Sydney.



Reimagining Campbelltown City Centre Masterplan

Campbelltown City Council has developed a vision to optimise the City's diverse industry base, enhancing economic resilience and creating new opportunities. This includes the development of a Masterplan for the Community and Justice Precinct in Campbelltown in partnership with the three levels of government.



Blacktown CBD urban regeneration

Walker Corporation will invest over \$2 billion in a project to revitalise Blacktown CBD, bringing high-tech jobs of the future to Blacktown, delivering 4,500 jobs and contributing \$920 million in value per annum to the City's economy.



Sydney Metro – Western Sydney Airport

\$11 billion invested by the Australian and NSW Governments in Sydney Metro - Western Sydney Airport will create Western Sydney's first north south rail line connecting St Marys to Bradfield City Centre via the new airport by 2026.



Sydney Metro – Northwest

\$7.3 billion invested by the NSW Government in Sydney Metro Northwest. Operations commenced in 2019 providing services to 13 stations, up to every four minutes during peak periods, to the north-western suburbs of Sydney, including Blacktown and The Hills LGAs.



Moorebank Intermodal Terminal

Over \$500 million invested by the Australian Government on the Moorebank Intermodal Terminal, located in Australia's largest, strategically located freight logistic hub. Capable of servicing modern 1,800 metre trains, each with the potential to remove over 100 B Double trucks per train trip.



Western Sydney Infrastructure Plan

Over \$4 billion invested by the Australian and NSW Governments in the Western Sydney Infrastructure Plan to support road-connectivity in the area.



Bradfield City Centre

\$1.1 billion investment by the NSW Government to catalyse the Bradfield City Centre as an initial precinct in the Aerotropolis generating over 17,000 jobs.

Western Sydney is seeing a significant amount of catalytic investment by the Australian and NSW Governments, all of which will contribute to the rebalancing of Western Sydney. Despite this, further investment is required to meet both the actual and predicted growth, and challenges faced by the Region. The next section analyses the gaps both in and out of the Region, and within the Region, providing a picture of its transport infrastructure deficiencies and opportunities.

Gap analysis and opportunities

The Panel's analysis of Western Sydney's needs, together with the current and planned investment in the Region, has identified that despite a record amount of strategic infrastructure investment by the Australian and NSW Governments, there remain significant gaps in connectivity and service provision.

This section of the report responds to the Terms of Reference by assessing the existing and likely future gaps in transport infrastructure provision within Western Sydney. Consideration is given to the historical transport infrastructure context and the resulting transport inequity between Eastern and Western Sydney, followed by an analysis of infrastructure within the Region.

04

4.1 Transport infrastructure inequity between Eastern and Western Sydney

Western Sydney's poor connectivity is largely a result of historical planning and investment that saw infrastructure built to enable east-west connectivity to the detriment of north-south road and public transport travel.

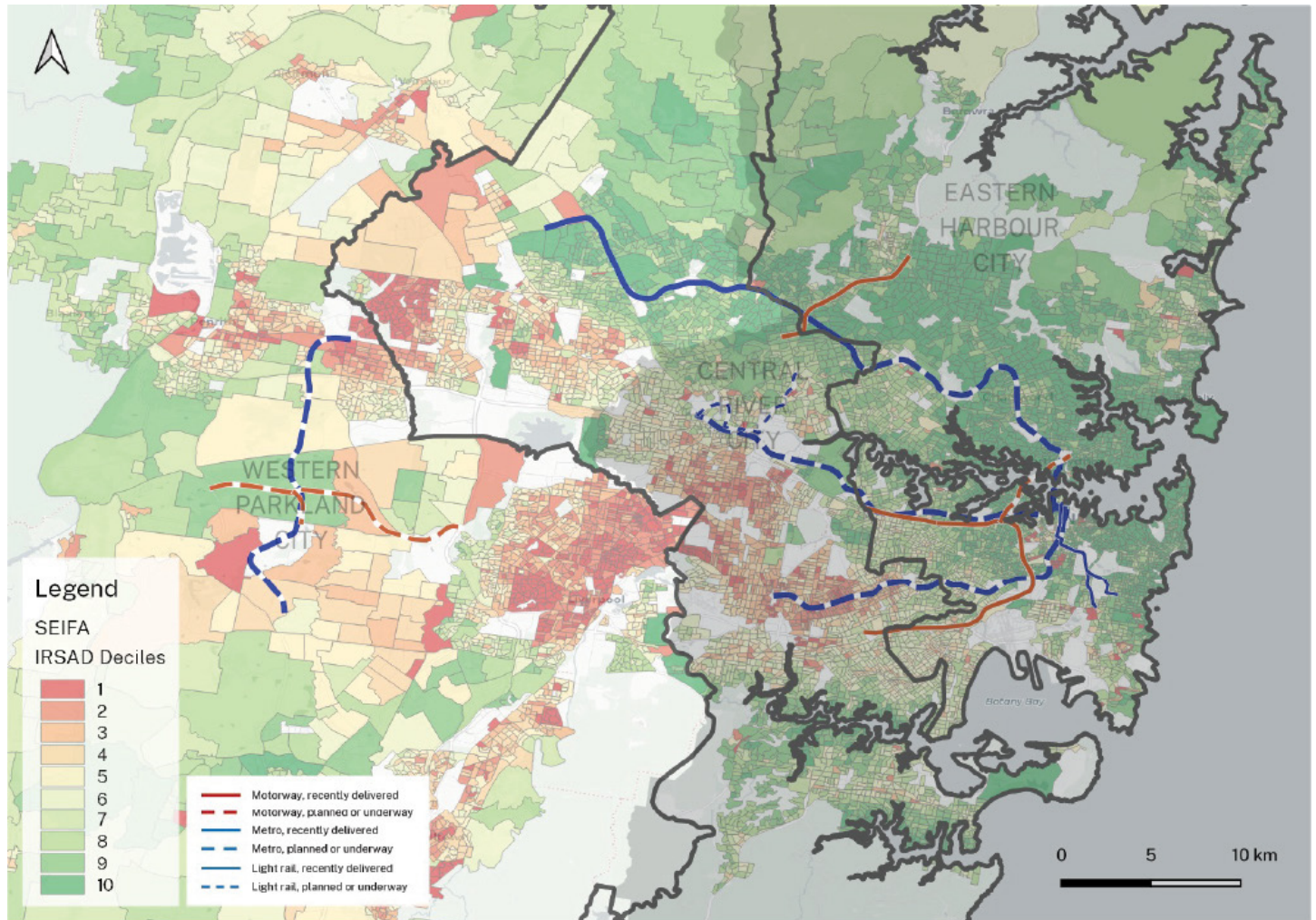
Since the turn of the 20th century, government planning strategies and investment in transport infrastructure have supported a sprawl pattern of growth from the Eastern Harbour City as Greater Sydney's key employment hub.

Consequently, infrastructure investment and city development has largely occurred in a radial pattern along transport networks. This has led to an imbalance in transport infrastructure in Western Sydney, including insufficient north-south connections to service both current and future anticipated travel demand.

Western Sydney is projected to accommodate over 30% of NSW's population growth to 2026⁴⁰ yet it only accounts for 10.4% of the State's infrastructure spend over this same period⁴¹

Despite the notable transport infrastructure investment in recent years and in keeping with *A Metropolis of Three Cities - Greater Sydney Region Plan (2018)* (discussed in Section 3.2), the imbalance in transport infrastructure between Eastern and Western Sydney persists. Figure 7 below spatially highlights this imbalance, with the majority of projects within Eastern Sydney and a significant proportion located in middle to higher socio-economic areas (colour coded green and yellow as measured by the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD)).

Figure 7 Transport infrastructure projects recently completed or underway overlaid on spatial distribution of socio-economic index



Source 7 ABS, Socio-Economic Indexes for Areas (SEIFA) 2016
Note: Area outside the of study area is shaded

40 NSW Department of Planning and Environment. 2022 CPA Population and Dwelling projections.

41 Analysis by Transport for NSW – 2023. Note – in many cases, investment in eastern Sydney e.g., Sydney Metro West will benefit Western Sydney (through congestion relief on the T1 Western Line in the case of Sydney Metro West), though strictly not within the geographic area.

This disparity of investment is exacerbated by the existing lower levels of public transport accessibility and availability in Western Sydney compared to Greater Sydney. Figure 8 graphically demonstrates this point showing the decrease in public transport accessibility as one moves further west.

The inequity in transport infrastructure highlights the need for further investment in Western Sydney to ensure a connected and balanced transport network across Greater Sydney. For instance, the delivery of Sydney Metro Northwest, as well as Sydney Metro - Western Sydney Airport provides the foundation for a

future orbital rail loop around Greater Sydney. However, investment is required to deliver the missing links between Tallawong to St Marys, the Aerotropolis to Leppington, as well as to Campbelltown-Macarthur.

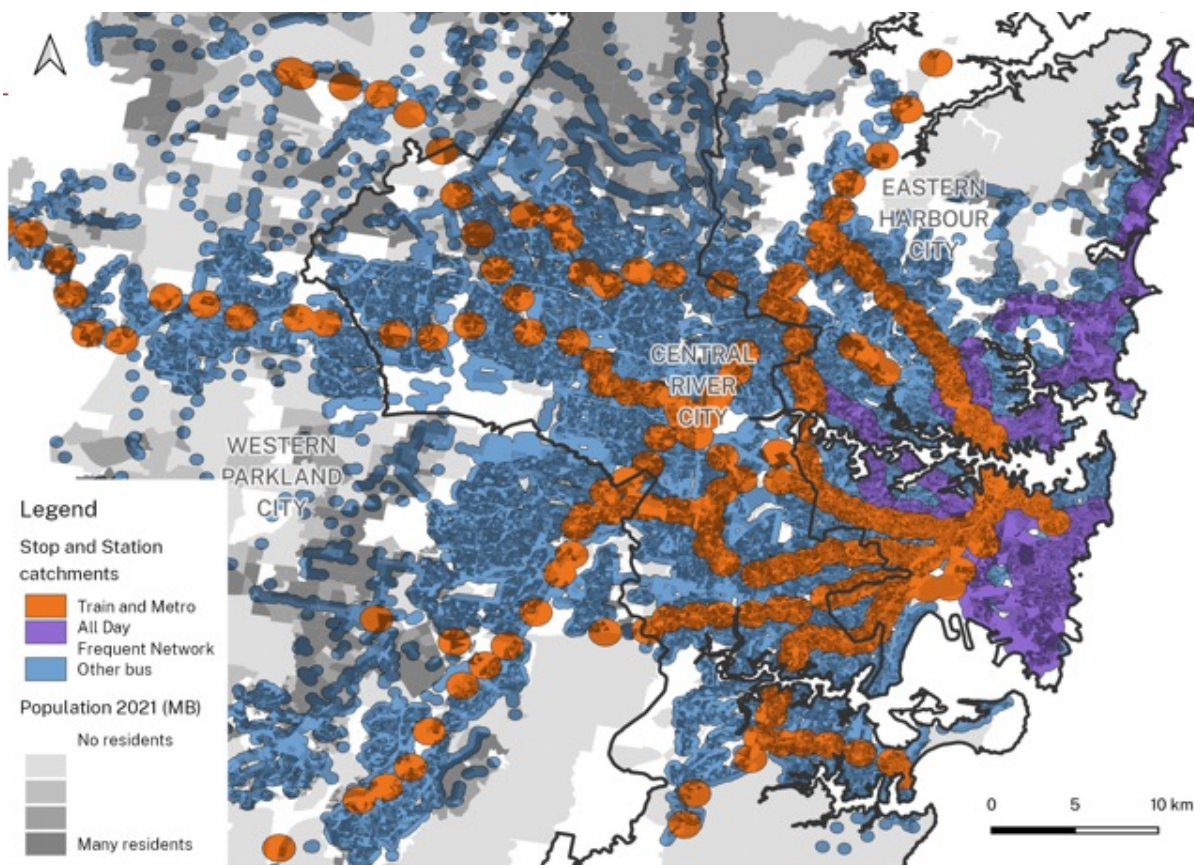
Similarly, investment in WestConnex in Eastern Sydney and the M12 Motorway in Western Sydney will allow for a motorway grade link across Greater Sydney between the Eastern Harbour City (including Port Botany) and the Western Sydney International Airport.

4.2 Transport infrastructure inequity within Western Sydney

With development in greenfield areas set to double Western Sydney's urban area, the 2018 *Western Parkland City Blueprint* (the Blueprint) highlights the scale of growth expected in the Region and the gaps and opportunities in infrastructure and services.

With a 72 km long north to south development front, the Blueprint highlights that growth in the extensive greenfield areas around the Bradfield

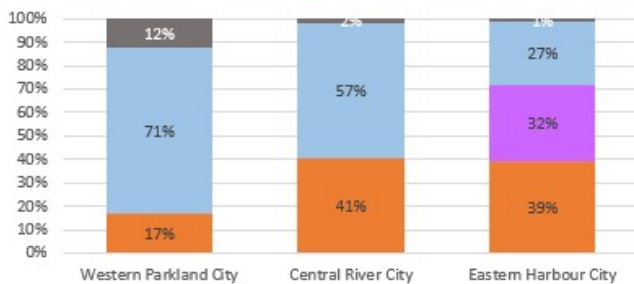
Figure 8 Accessibility to public transport: Catchment for bus and rail



Stop and station catchments

Sources: GTFS Oct. 2022 and Census 2021

Catchments: Rail: 1000m, All day frequent network 800m, local bus 400m



Catchment per City and per mode

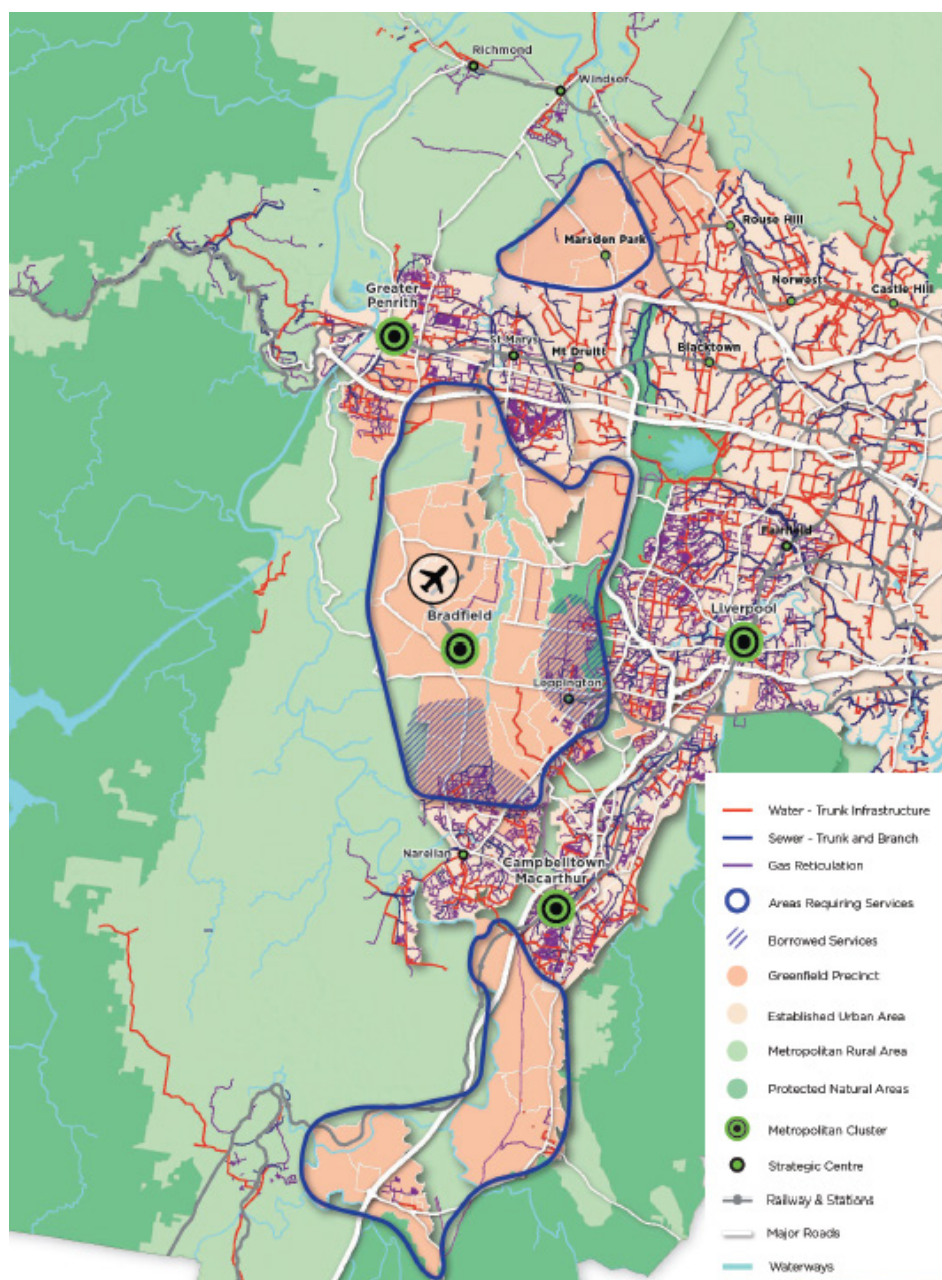
Source 8 Transport for NSW, General Transit Feed Specification (GTFS) October 2022; ABS Census 2021

City Centre and in the Camden, Campbelltown and Wollondilly LGAs will transform the Western Parkland City and surrounds. For the purposes of this Report, the figure has been extended to also include the significant growth areas occurring in Blacktown and The Hills LGAs.

Figure 9 illustrates the scale of this development front, the largest ever experienced in Australia. It also highlights that there is a **distinct lack of roads, rail and utilities infrastructure where the most significant new residential and employment related development is planned to occur (areas circled in blue), compared to other locations in Western Sydney, let alone Greater Sydney.**

This reinforces the need for a diverse range of transport infrastructure to facilitate better connectivity within the Region, as well as better connections to Eastern Harbour and Central River Cities, the Illawarra and Central Coast. Investment in new connections will be vital for linking the strategic and regional centres within, and to Western Sydney, to cater for commuting workers, airport passengers, freight services and to meet the everyday needs of its residents.

Figure 9 72km Growth front across Western Sydney



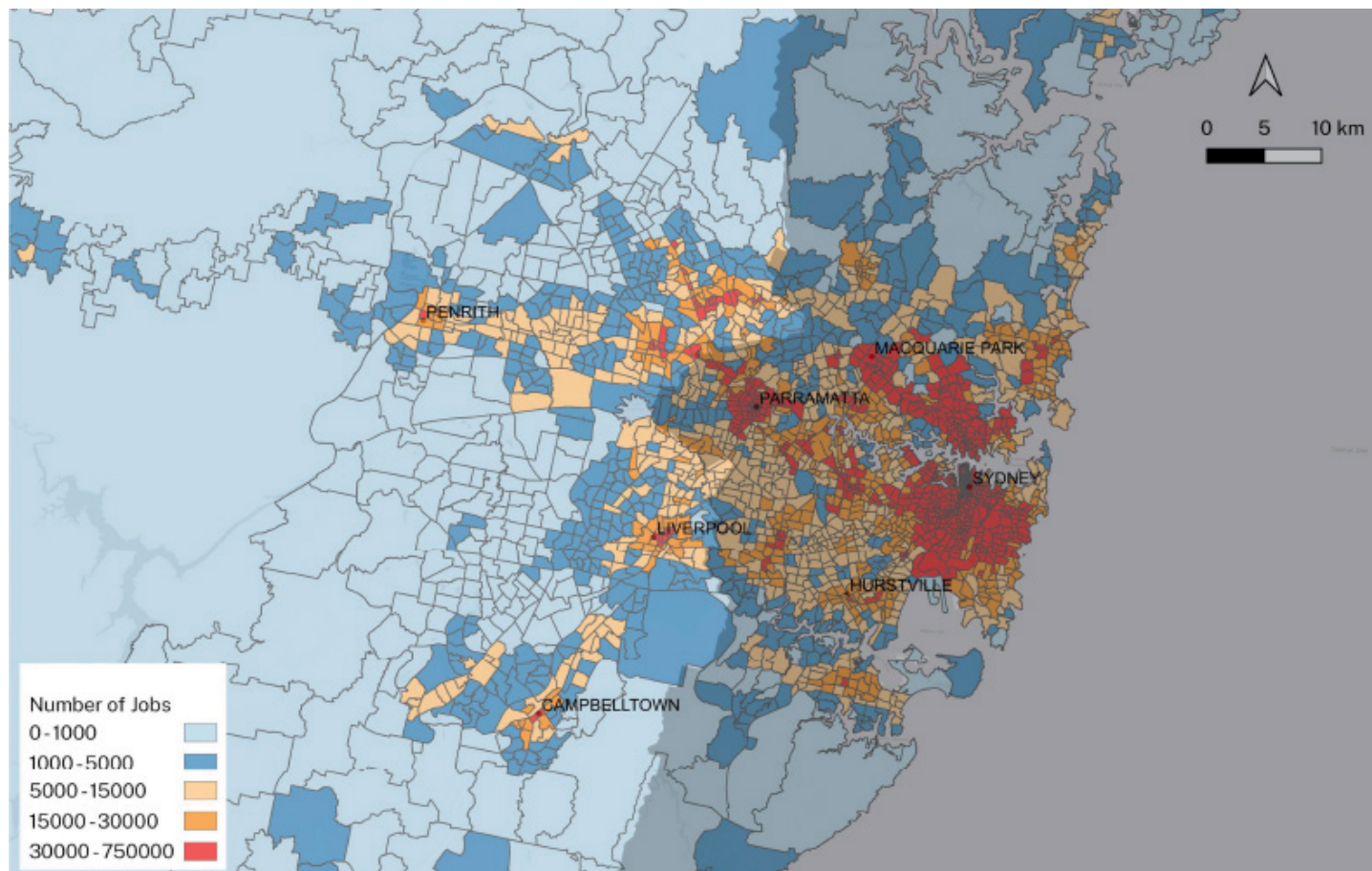
Source 9 Western Parkland City Authority, Blueprint 2022 as amended to cover Western Sydney

Western Sydney is less connected and more reliant on cars compared to Greater Sydney⁴² with 90% of journeys made by car. It suffers both a poor distribution of, and lack of transport infrastructure. Analysis of car ownership in 2021 indicates that 57% of households in the Region had access to two or more cars⁴³, with cars being the predominant means of transport.

This level of reliance on cars to access employment, education and leisure opportunities compounds transport disadvantage⁴⁴ further suggesting that existing public transport infrastructure is not fit for purpose.

30-minute access to job hubs by public transport is substantially lower in Western Sydney. Figure 10 illustrates the concentration of jobs accessible by public transport within 30 minutes in Greater Sydney. A clear majority of these jobs are located in Eastern and Central Sydney, necessitating the use of cars for people to access jobs within Western Sydney.

Figure 10 Number of jobs accessible by public transport within 30 minutes across Greater Sydney⁴⁵



Source 10 Transport for NSW, *Travel zone projections, Employment 2022*

Note: Area outside the of study area is shaded

42 Transport for NSW, Future Transport Strategy
 43 Australian Bureau of Statistics, Census of Population and Housing 2021
 44 Transport for NSW, Population to Employment ratio by city TYP22 2021
 45 Shaded area refers to land outside the Study Area

Western Sydney has a lower measure of 30-minute public transport accessibility.

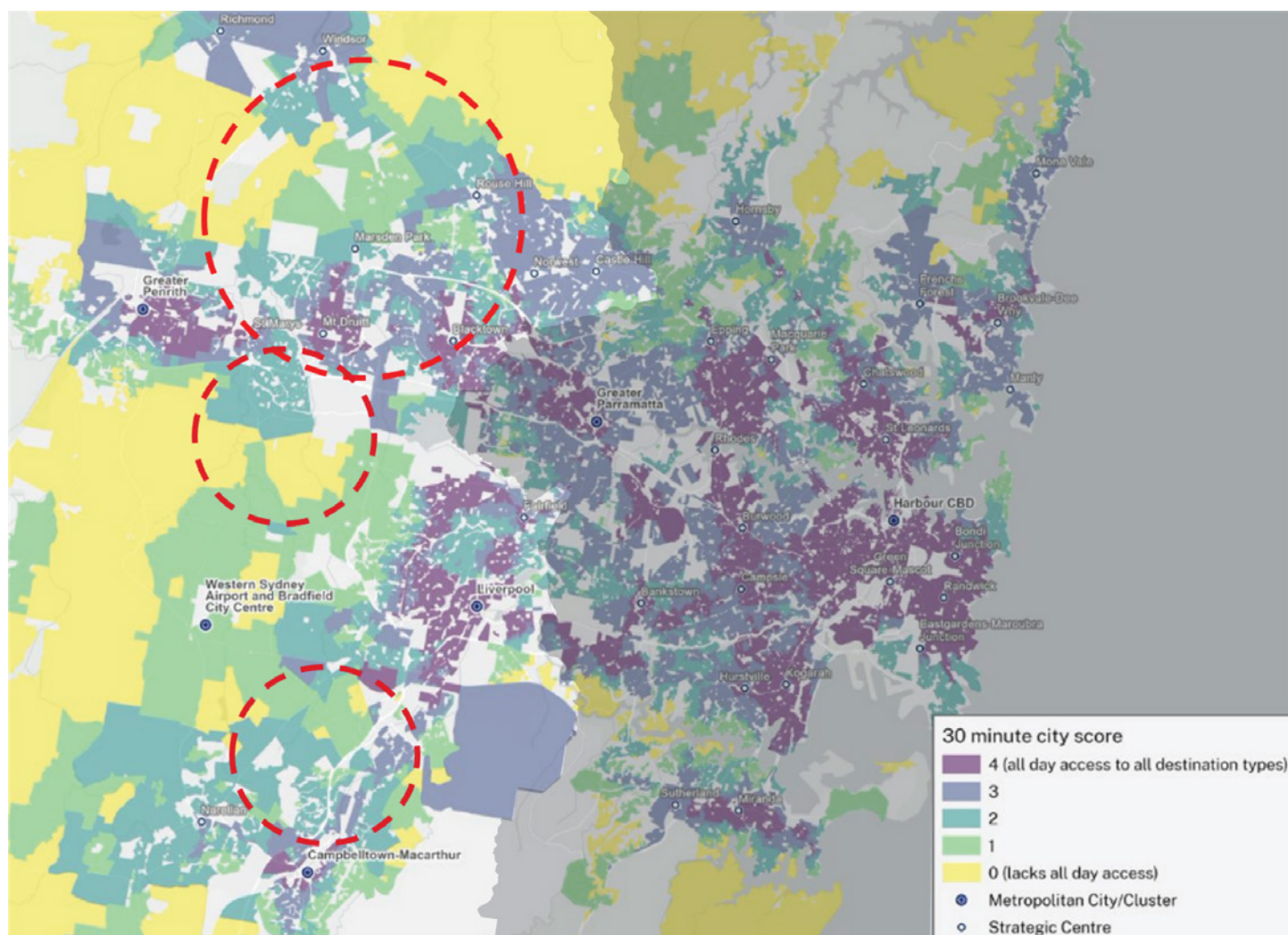
In the Western Parkland City, 16% of residents do not have 30-minute public transport access to key destinations including major health precincts, tertiary education institutions, CBDs and strategic centres, and significant cultural and leisure facilities compared to only 2% of residents in the Eastern Harbour City⁴⁶.

There is an overall public transport deficit within Western Sydney.

The Region suffers a lower level of connectivity translating into longer travel times, increased congestion, and higher carbon emissions. There are less train stations and bus services, and no all-day frequent bus routes (operating every 10 minutes or better, seven days a week) compared with 16 of these services in the Eastern Harbour City. As a consequence,

only 14% of Western Sydney residents use public transport compared to 32% in the Eastern Sydney⁴⁷. The areas circled in red in Figure 11 highlight the areas in the Region with the poorest public transport accessibility including the North West Growth Area and the South West Growth Area, which are heavily reliant on buses for public transport.

Figure 11 30-minute city score for access to tertiary education institutions, major hospitals, major open space, metropolitan and/ or strategic centres (departing weekday March 2021, minimum half day access (7am-7pm))



Source 11 Transport for NSW, 2023

Note: Area outside the of study area is shaded

Only 15% of dwellings are within 800m or walking distance of a train station compared to 43% in Greater Sydney. A further 12% of residents in the Region have no walking access to any form of public transport.

Provision of public transport in the Region is heavily dependent on bus services, however these are generally infrequent across the Region, particularly during off-peak periods.

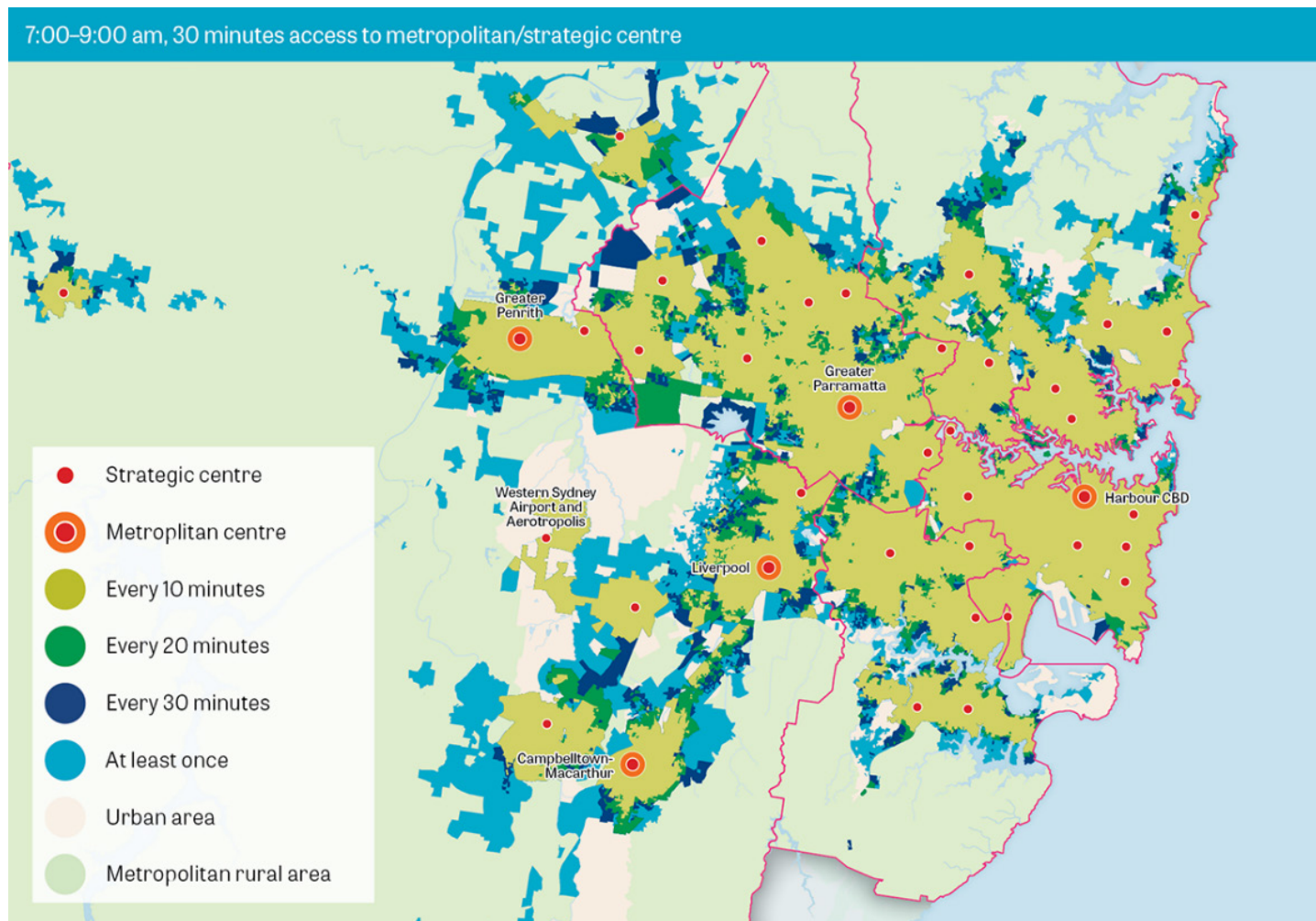
Figure 12 details the frequency of public transport services to metropolitan and strategic centres within 30 minutes in the AM peak and highlights the lack of frequent services for those areas not serviced by rail.

46 Four categories of 'key destinations' are considered to be major health precincts; tertiary education institutions; CBDs and strategic centres, and significant cultural and leisure destinations.

These are used to calculate a 30-minute city score which assesses public transport accessibility to this range of destinations.

47 Transport for NSW, Population to Employment ratio by city TYP22 2021

Figure 12 7am - 9am 30-Minute access to metropolitan/ strategic centre



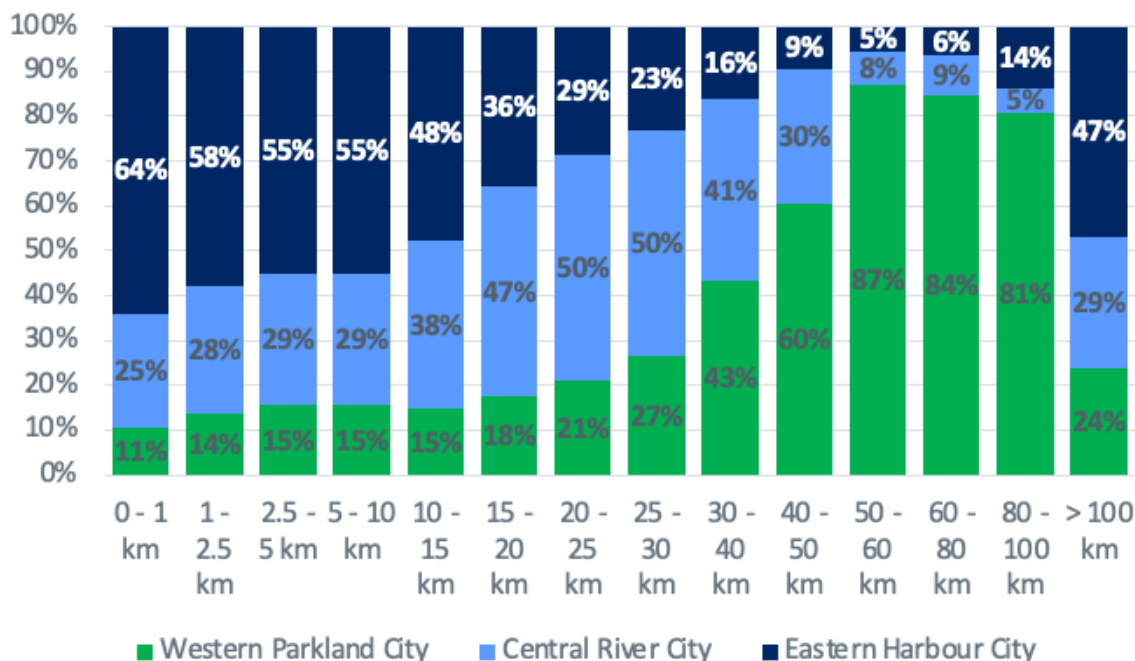
Source 12 Greater Cities Commission, Pulse of Greater Sydney 2020

A greater proportion of Western Sydney residents travel further (more than 30km) to work than other parts of Greater Sydney⁴⁸

illustrated in Figure 13. This is in stark contrast to Eastern Sydney where a large percentage of residents travel less than 10 km to work. Considering the longer distances to be travelled for work, it is understandable that cars are the predominant means of transport in Western Sydney. This reliance on cars and its associated issues, including road congestion and higher costs for households, will continue and worsen if investment in transport connections is not prioritised.

48 While Blacktown and The Hills are not included within the Western Parkland City (included within Central River City), travel data for these LGAs is more closely aligned with the average distance travelled for Western Parkland City residents.

Figure 13 Distance travelled to work via car for residents in the Western Parkland, Central River and Eastern Harbour Cities



Source 13 ABS, Census 2016

North-south travel demand in Western Sydney will exceed that of east-west by 2056. Transport for NSW modelling suggests that the anticipated number of north-south movements will substantially increase over the coming decades. This growing demand in north-south travel patterns is also recognised in *A Metropolis of Three Cities - Greater Sydney Region Plan (2018)*. This plan suggests addressing this demand through the delivery of a north-south rail corridor spine, to catalyse a Western Economic Corridor in the Region and enable more jobs, and enhance business and trade.

In summary, the Panel considers that further significant investment is needed to transform the area's historical rural and outer suburban transport network to meet the Region's current and future needs. Whilst transport plans identify infrastructure projects required to meet the needs of the Region, many are unfunded or require further investigation. The next sections of the Gap Analysis detail each of the transport modes and identify the gaps and opportunities for each particular mode.

4.3 Gap analysis of Public Transport infrastructure by mode

Public transport comprises a variety of modes including rail, metro rail, fast rail (planned) and buses. This section of the report analyses each of these modes with a view to demonstrating the gaps and opportunities for investment required to meet the needs of the Region.

In undertaking the analysis, the Panel has identified the need for a wide-ranging review, and development of a **multi-modal plan** for public transport in Western Sydney. This would leverage recent investments to the network, such as better connections to Sydney Metro Northwest and enhanced service frequency on the T1 Western Line. It would also identify opportunities for improvements and infrastructure requirements to support an enhanced network. Given the limited timeframe for the Panel to undertake its work, it has not been able to consider these matters in detail.

The Panel understands that Transport for NSW could undertake this work through the **Western Parkland City and Blacktown (all modes) SBC** which it anticipates would detail recommendations for the staging of multi-modal public transport and other transport mode infrastructure across Western Sydney, in particular supporting areas which have experienced recent growth. It would also identify opportunities for service improvements to support an enhanced network. While this is currently unfunded, the panel considers it essential to informing the next steps for enhancements to the transport network and has recommended it as a high priority.

4.3.1 Rail

Greater Sydney's suburban railway network is Australia's busiest with close to 380 million passenger journeys in 2018-19, representing around 50% of all rail journeys made in Australia⁴⁹. While the network covers a large geographic area, many parts of Western Sydney are not well serviced due mainly due to its dispersed geography, relatively low population densities, and transport infrastructure investment traditionally favouring roads. Only 26 of Greater Sydney's 178 rail stations are located west of Blacktown. Figure 14 illustrates Greater Sydney's rail network.

49 BITRE, Total Australian rail journeys, 2018-2019

Figure 14 Greater Sydney Rail Network



Source 14 Transport for NSW, 2023

Within Western Sydney, future demand is expected to be greatest on the T1 Western & Richmond Line between Blacktown and the Sydney CBD, and the T8 Airport & South line from Revesby through Sydney (Kingsford Smith) Airport to the Sydney CBD. Significant future north-south travel demand is also anticipated, stemming from employment growth within Western Sydney, driven in part by the Western Sydney International Airport and the Aerotropolis, and development of metropolitan centres including Blacktown, Campbelltown, Liverpool and Penrith.

The Region's significant forecast growth will contribute to a doubling in the number of trips on Greater Sydney's rail network during the one-hour morning peak by 2056 (based on 2016 patronage).

Without investment in new rail lines or enhancements to the existing network, morning peak hour demand will negatively impact rail transport performance in Greater Sydney with flow-on impacts to other times of the day.

The investment in Sydney Metro - Western Sydney Airport between St Marys, the Western Sydney International Airport and Bradfield City Centre is a first step in delivering this key north-south transport spine in Western Sydney, however extension of the line both north and south is needed to support greater movement between key residential growth areas and jobs.

T1 Western Line

The T1 Western Line provides a key connection from the Blue Mountains, Penrith, St Marys and surrounding areas to eastern major centres. Prior to Covid-19, it was one of the most congested passenger suburban lines in the network, with services on average exceeding reliable operating capacity in the AM Peak.

The NSW Government's investment in the *More Trains More Services Program* has delivered increased services, now with a train up to every three minutes to Sydney CBD in peak times (including Blue Mountains services), providing much needed additional capacity. Despite this recent investment and the decrease in demand from COVID-19 due to flexible working arrangements, it is predicted that by 2036 demand will be greater than levels experienced in 2020.

This increase in passenger volume will be driven by population growth in key areas along the line, including the Greater Penrith to Eastern Creek Investigation Area, forecast to grow by around 135,000 people by 2056⁵⁰. The North West Growth Area, primarily serviced by the T1 Richmond Line, will contribute to passenger volumes east of Blacktown where this line joins the T1 Western Line.

Transport for NSW has identified a potential program for future upgrades, titled the **Western Rail Corridors SBC**. This would review the network with a view to potentially quadrupling the Western Line between St Marys and Penrith, as well as implementing signalling improvements for increased service frequency. This is currently unfunded for further investigation, despite the projected increase in passengers post 2026 when the Sydney Metro - Western Sydney Airport link between St Marys and Bradfield City Centre (via the Western Sydney International Airport) is commissioned. The Panel supports funding the above SBC to meet the forecast increase in demand.

Future rail investment should also consider the separation of freight transport to maximise operational efficiency. While beyond the Panel's scope, it notes that investment in a standalone Western Sydney Freight Line would shift freight off the T1 Western Line allowing for improvement in off-peak frequency of passenger services. This is in addition to potentially reducing road freight (with more carried by rail), allowing for improvements to suburban amenity for areas that experience significant road-freight traffic such as those in Fairfield LGA.

T1 Richmond Line

The T1 Richmond Line branches from the T1 Western Line at Blacktown to service a key part of the North West Growth Area. This area has experienced substantial growth over the last few years and expects an additional 81,000 residents (a 55% increase) in the next 20 years, with the area between Vineyard and Schofields accommodating 92% of this growth.

The line between Schofields and Richmond, home to seven of Greater Sydney's nine remaining level crossings, consists of a single track constraining any additional services north of Schofields (currently at two trains per hour in peak and off-peak). In 2019 these services, amongst the busiest on the rail network, were regularly operating at or beyond their capacity in peak periods.

The unfunded **Western Rail Corridors SBC** could consider options for targeted duplication of sections of the line and removal of level crossings to allow for increased service frequency throughout the day. A further unfunded SBC identified by Transport for NSW to consider duplication of the line between Schofield to Vineyard (**Schofields to Vineyard duplication SBC**) could assess options to address the above and provide increased capacity.

Initial investigations for a future link between Sydney Metro Northwest at Tallawong through to Sydney Metro - Western Sydney Airport at St Marys have identified a potential interchange with the T1 Richmond Line at Schofields, with further investigations and delivery of this link unfunded.

T5 Cumberland Line

The T5 Cumberland Line connects Schofields and Leppington stations, with occasional services from Schofields to Richmond. This line allows direct services to operate from the southwest at Leppington to Parramatta and Blacktown. It provides a north-south connection in Western Sydney via Parramatta. Services on this line are limited to operating every 30 minutes, impacting access to Liverpool and Parramatta jobs and education hubs for lower socio-economic areas such as Cabramatta and Fairfield.

Transport for NSW has commenced early investigations for a **New Cumberland Line** to deliver an additional ten services per hour and improve connectivity and equitable access to employment for the Cumberland-Fairfield-Liverpool corridor. Funding is required to advance detailed planning and further investigation of options for delivery.

The Panel considers improvements to the T5 Cumberland Line an opportunity to enhance connectivity and access to employment and other services across Western Sydney, and as such has proposed this as a high priority recommendation.

T3 Bankstown Line

The T3 Bankstown Line currently connects Bankstown and Liverpool with Lidcombe. Transport for NSW is investigating Bankstown connectivity with Liverpool and Lidcombe following the introduction of Sydney Metro City and Southwest services due to commence in 2025.

T8 Airport & South Line / Southern Highlands Line

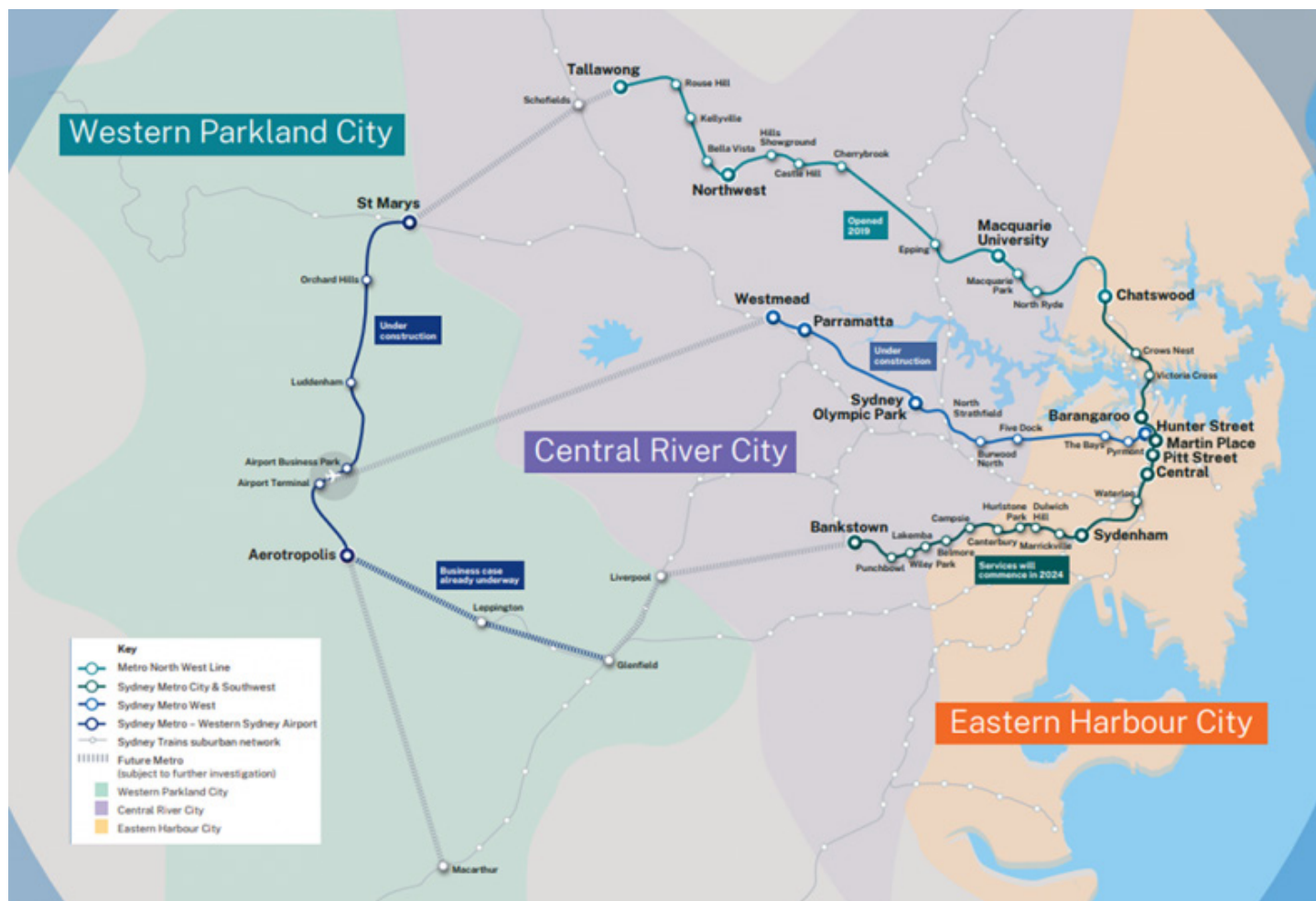
The T8 Airport and South Line provides the primary public transport connection from Macarthur to Sydney CBD via Campbelltown, Glenfield and Sydney Airport.

The Southern Highlands Line on the intercity network services the area south of Macarthur, through the growth areas of Menangle Park and Douglas Park, providing rail access to the Greater Macarthur Growth Area. Passenger rail services through this area are currently diesel, with a much smaller train and less frequent and reliable services than traditional suburban services.

As housing in Greater Macarthur and Wilton increases, investment in enhanced public transport will be required. While currently unfunded, further planning and development work needs to be undertaken to consider public transport enhancements in these areas including rail electrification south of Macarthur. Accordingly, the Panel considers funding for these investigations a priority to inform future capital investment. This will also need to consider interfaces with freight services given this line is shared with the primary freight rail line to Melbourne.

50 Transport for NSW, Western Sydney Rail Needs Scoping Study 2018

Figure 15 Current and Future Sydney Metro network



Source 15 Sydney Metro, 2023

4.3.2 Metro Rail

The Sydney Metro program is Australia's largest public transport project and represents the most recent significant investment in Greater Sydney's public transport system, consisting of around \$60 billion worth of capital investment by 2030. Committed investment will deliver a network of four metro lines, 46 stations and 113km of new metro rail across Greater Sydney.

Figure 15 illustrates the Sydney Metro network across Greater Sydney, including lines in operation, delivery and in planning.

Western Sydney is home to part of Sydney's first operating driverless metro rail line – Sydney Metro Northwest, opened in 2019 – with seven stations located within the Region (between Castle Hill and Tallawong).

Construction is underway for Sydney Metro - Western Sydney Airport, due to connect St Marys and the new Western Sydney International Airport and Bradfield City Centre by the end of 2026. A FBC is underway to consider the continuation of this line from Bradfield City Centre to Glenfield via Leppington. No funding has been committed to deliver this extension.

There has been no commitment to funding further Sydney Metro extensions in Western Sydney. This is notwithstanding initial planning⁵¹ having identified future links, including a north-south rail spine connecting Sydney Metro Northwest with the Western Sydney Airport line at St Marys in the north, and in the south between the Aerotropolis/Bradfield City Centre to Campbelltown/Macarthur. Failure to further invest in mass transit to support the Region will have adverse consequences for urban development, transport users, the community, sustainability and productivity.

While not within the Region, investment in Sydney Metro West (due to open in 2030) will improve reliability to the T1 Western Line by providing an alternative high-capacity rail connection for commuters east of Westmead and Parramatta to Sydney CBD. Figure 15 illustrates this line.

The Panel notes that the average distance between new Sydney Metro stations is significantly greater than that of the Sydney Trains rail network. Sydney Metro Northwest stations are on average around 3km apart (across a distance of 36km), with the average distance for Sydney Metro - Western Sydney Airport being nearly 4km (across a distance of 23km). The international average distance between stations on metro lines is 1.2km⁵².

While the Panel notes that stations represent a significant part of the cost of metro lines, it supports lesser distances between new stations, in line with the average distance between stations on the Sydney Trains network, ensuring equity for Western Sydney residents.

51 Transport for NSW, Western Sydney Rail Needs Scoping Study 2018
 52 International Association of Public Transport 2019

Sydney Metro - Northwest

Sydney Metro Northwest commenced operations in 2019, following a \$7.4 billion investment by the NSW Government to facilitate its delivery. It consists of a 36km new metro rail line connecting Tallawong (at its north-west terminus) to Chatswood (at its current southern terminus). Services run up to every four minutes in peak hour.

In 2024, services are planned to continue beyond Chatswood through the Sydney CBD and from 2025 beyond that towards Bankstown. Seven stations are located within the Region with Cherrybrook (located just outside the Region) the eighth new station. In 2024, services are planned to continue beyond Chatswood through the Sydney CBD and from 2025 beyond that towards Bankstown. A future extension west of Tallawong and south towards St Marys (subject to further investigation and investment), is discussed below as part of the 'full north-south rail link'.

Sydney Metro - Western Sydney Airport

The Australian and NSW Governments have committed \$11 billion to deliver Sydney Metro - Western Sydney Airport, a new 23km metro rail line from St Marys to the Western Sydney International Airport and Bradfield City Centre in the Aerotropolis. It will provide the beginning of a much-needed north-south rail link for Western Sydney, connecting residential areas with job hubs including the Aerotropolis. This metro line consists of six stations:

- St Marys – enabling access to the St Marys strategic centre and offering an interchange with the T1 Western Line, allowing travel west towards Penrith and east towards Parramatta and the Sydney CBD;
- Orchard Hills – servicing a future residential, commercial and mixed-use precinct;
- Luddenham – supporting the future research and knowledge-based employment and mixed-use precinct;
- Airport Business Park – supporting a major employment and services hub;
- Airport Terminal – providing connectivity for the Western Sydney International Airport; and
- Bradfield – providing important connectivity to the future Bradfield central business district, a future major transport interchange.

This new line will need to integrate with the wider public transport network to connect stations with bus services. This will maximise benefits for the community, support new industry in the area, and facilitate broader connectivity with the Western Sydney International Airport and Bradfield City Centre, and residential and commercial areas of Western Sydney.

Sydney Metro: Aerotropolis (Bradfield) to Glenfield

The Australian and NSW Governments have co-funded the development of a FBC to support a potential extension of the Sydney Metro - Western Sydney Airport line from its southern terminus at Bradfield City Centre in the Aerotropolis, eastwards towards Leppington and Glenfield. The FBC is considering a connection to Leppington and/or a potential conversion of the current heavy rail link between Leppington and Glenfield. Funding has not been committed for its delivery.

If delivered, it would provide for an interchange with the T5 Cumberland and T8 Airport and South Lines and could include several additional stations to service greenfield areas between Bradfield and Leppington to support the movement of people across the region and improve connections to employment. The FBC is considering a connection to Leppington and/or a potential conversion of the current heavy rail link between Leppington and Glenfield.

The Panel considers delivery of this extension a high priority. It will be vital in providing rapid and frequent public transport services from established and emerging centres, such as Liverpool and Campbelltown to the Western Sydney International Airport and the Aerotropolis. Without a rail connection between the Aerotropolis and south-west Sydney, Western Sydney residents will continue to rely on cars, increasing household costs and contributing to carbon emissions.

Sydney Metro: Tallawong to St Marys; and Bradfield (Aerotropolis) to Campbelltown-Macarthur (full north-south rail link)

The Panel considers that funding should be prioritised to facilitate planning and development of the full north-south rail link as soon as possible. This link is vital to unlocking access to jobs, services and opportunities for communities in the growing north-west and south-west.

Planning and development for these links should prioritise and deliver interim rapid transit solutions along these corridors, in addition to initial scoping and feasibility of the projects to inform subsequent investment decisions. The Panel wishes to stress the importance of the delivery of rail mass transit links and emphasise that bus rapid transit connections should be considered an interim measure.

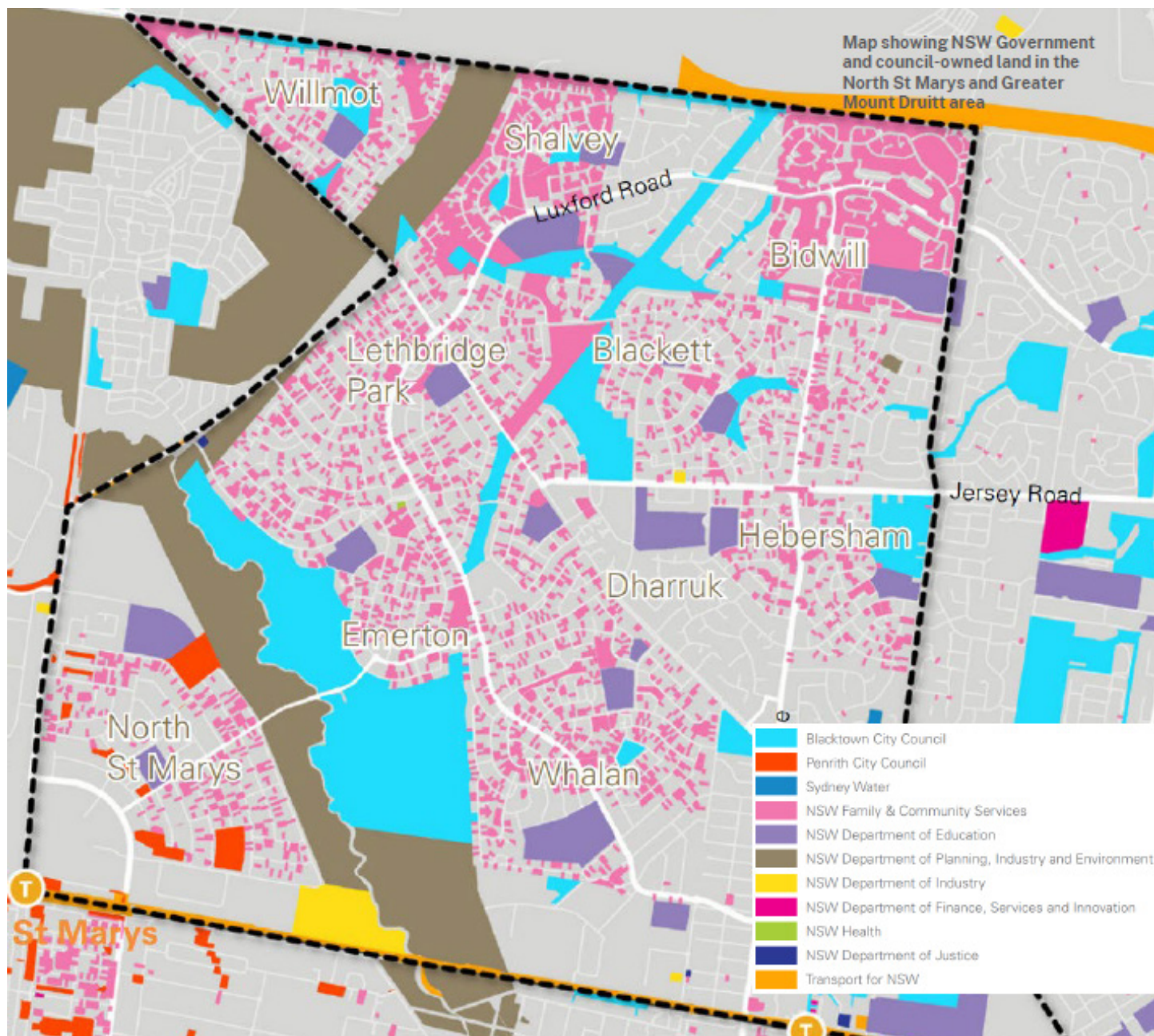
Sydney Metro Extension: Tallawong to St Marys

A new link between Tallawong and St Marys would form the northern part of the north-south rail spine for Western Sydney, intersecting with the T1 Richmond Line at Schofields before connecting to the Sydney Metro - Western Sydney Airport connection at St Marys.

Delivery of this link would provide the potential for enhanced economic opportunities at Marsden Park, development opportunities at the interchange with Schofields, as well as provide enhanced socio-economic opportunities for communities north of St Marys and across Greater Mount Druitt. Figure 16 illustrates the extent of government owned land in this area and potential opportunities for renewal. This area accommodates a significant number of social housing properties, with the average age of a home being 45 years in the most concentrated areas of Bidwill, Willmot and Tregear. Demand and waiting lists for social housing continue to increase.

This metro extension would provide opportunities to reimagine this area. Connecting these currently isolated areas to jobs and education south towards the Aerotropolis and east towards Sydney Metro Northwest presents a long-term opportunity to break cycles of disadvantage, particularly for youth and First Nations communities, while retaining a sense of pride and community in these suburbs. These outcomes would be supported by enhanced economic activity at Marsden Park.

Figure 16 Government land ownership in North St Marys and Greater Mount Druitt area



Source 16 Transport for NSW, 2023

Sydney Metro Extension: Bradfield (Aerotropolis) to Campbelltown-Macarthur

The Aerotropolis to Macarthur forms the southern component of the north-south rail link. If delivered, this would provide direct access to the Western Sydney International Airport and the Aerotropolis for growing communities in the South West Growth Area, Campbelltown and Greater Macarthur. A station at Campbelltown or Macarthur would provide an interchange for linking greenfield areas of Greater Macarthur, such as the Menangle Park and Gilead release areas, to public transport and provide these new communities with opportunities to access

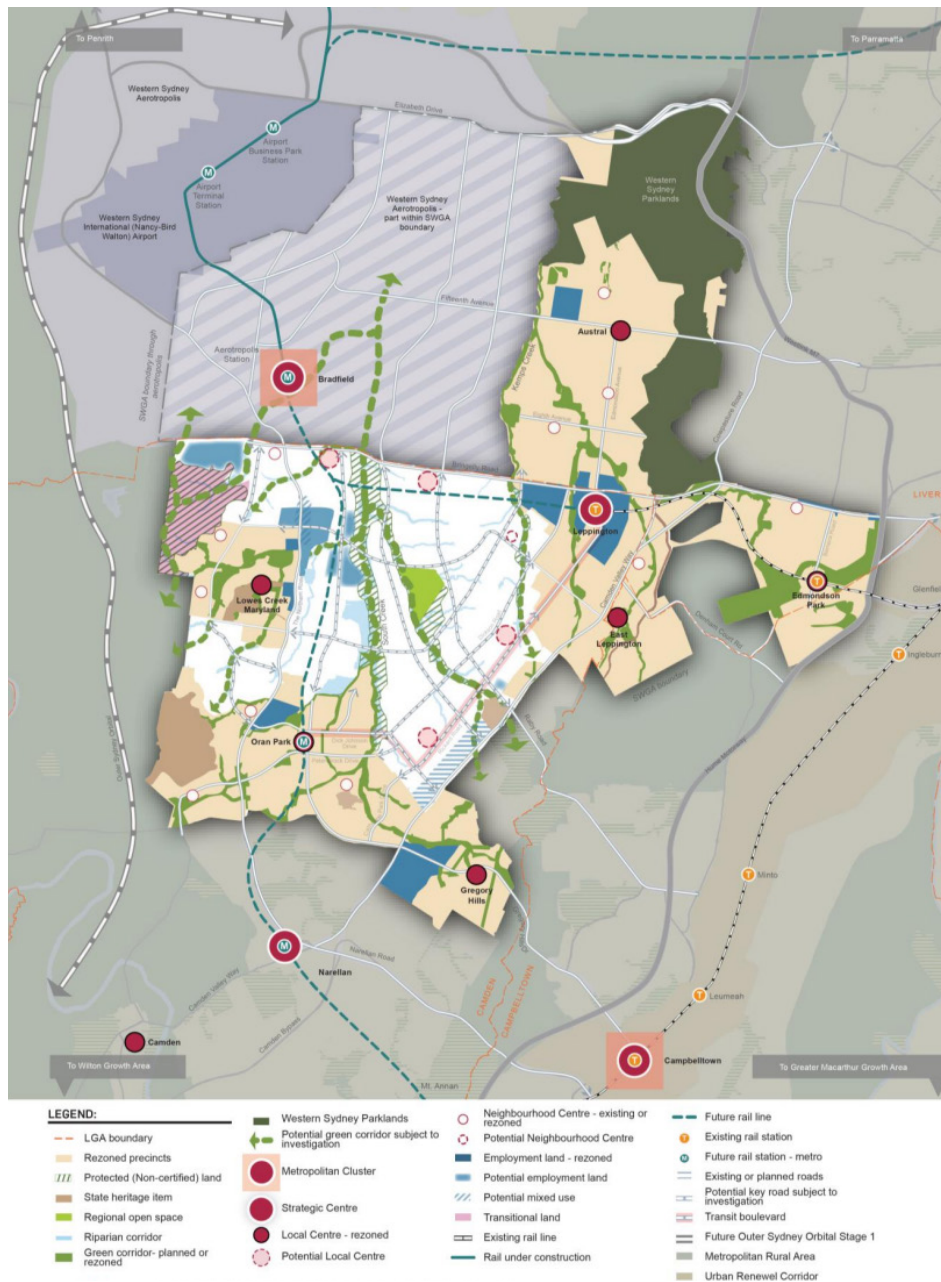
jobs towards the north in the Aerotropolis and Campbelltown. Similarly, a south travelling rail connection would provide growing communities in the South West Growth Area access to employment opportunities and health and education facilities in Campbelltown via a direct, reliable and frequent rail service.

Public transport connections in the broader area, including in Bringelly and Oran Park in the South West Growth Area, are poorly distributed and infrequent. The nearest train station from Oran Park is Leppington – over 13km away. Unsurprisingly, 95% of residents in Oran Park drive or are driven to work. The South West

Growth Area Structure Plan (Figure 17) illustrates the distance of Oran Park and other areas within the South West Growth Area to the nearest rail connections, and also indicates the potential alignment of a future north-south rail link.

The more recently rezoned precinct of Lowes Creek Merryland and planned release of Pondicherry (also illustrated in Figure 17), will further increase the need for improved public transport in addition to reducing pressure on Camden Valley Way and The Northern Road.

Figure 17 South West Growth Area Structure Plan



Source 17 Department of Planning and Environment, South West Growth Area Structure Plan 2022

Once all urban-capable land in the South West Growth Area is developed, it is estimated that it will comprise approximately 105,000 homes and house a projected population of approximately 170,000 people by 2041⁵³, greater than the current population of Cairns.

Within the broader Region, the two south-west LGAs of Camden and Wollondilly are expected to see the greatest percentage in population and dwelling growth over the next 20 years. Investment in this southern part of the north-south rail link will become increasingly important in providing a reliable and frequent public transport connection, helping reduce pressure on the road network through an uptake of public transport.

4.3.3 Fast Rail

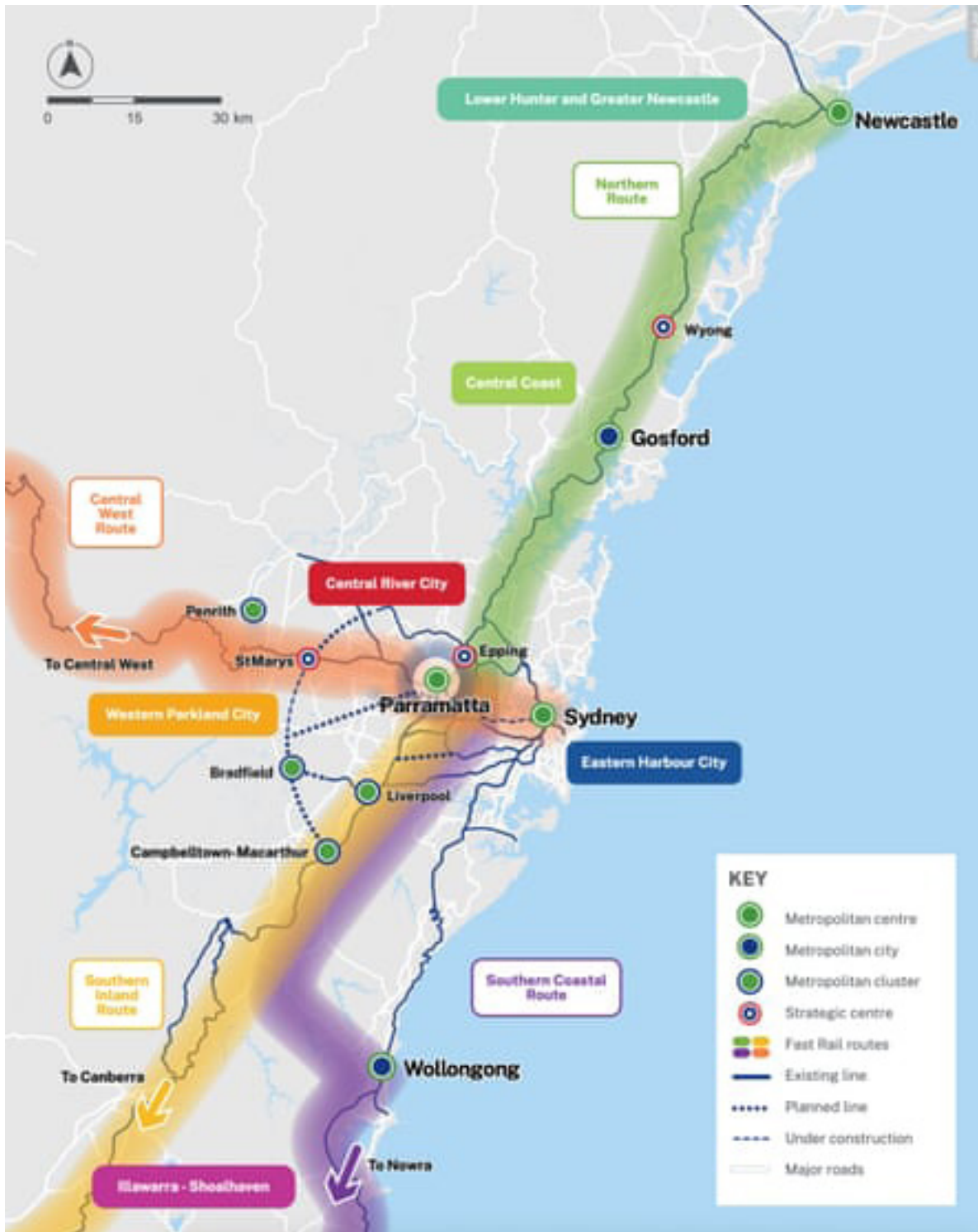
Fast Rail will be a key component of the State's integrated transport network. Key potential interchanges in Western Sydney between the new Fast Rail lines and Greater Sydney transport network will provide improved links between Western Sydney, the Six Cities and regional NSW.

Transport for NSW is developing a Fast Rail Strategy, a long-term blueprint for a future network. This transformational network will include dedicated lines with the reduction in travel times enabling improved connections between the Six Cities across Greater Sydney, Central Coast, Hunter, and the Illawarra regions, and connecting regional centres to cities and international gateways (Figure 18).

The Panel fully supports this and recommends at least one station in Western Sydney, to enable social and economic opportunities in Greater Sydney.

53 South-West Growth Area Structure Plan, December 2022, NSW Department of Planning and Environment

Figure 18 Potential Fast Rail Connections in NSW



Source 18 Transport for NSW, Future Transport Strategy 2022

4.3.4 Bus Services

The scale and relative low-density of Western Sydney mean that bus services play an important role in providing transport options for its residents, as well as providing a means of public transport for those areas not serviced by rail. Bus services in Western Sydney primarily consist of three types of service:

- Local – connecting to local centres and railway stations;
- Suburban – providing end-to-end access between centres; and
- Rapid – using bus priority infrastructure such as T-ways which connect major centres with high travel demand.

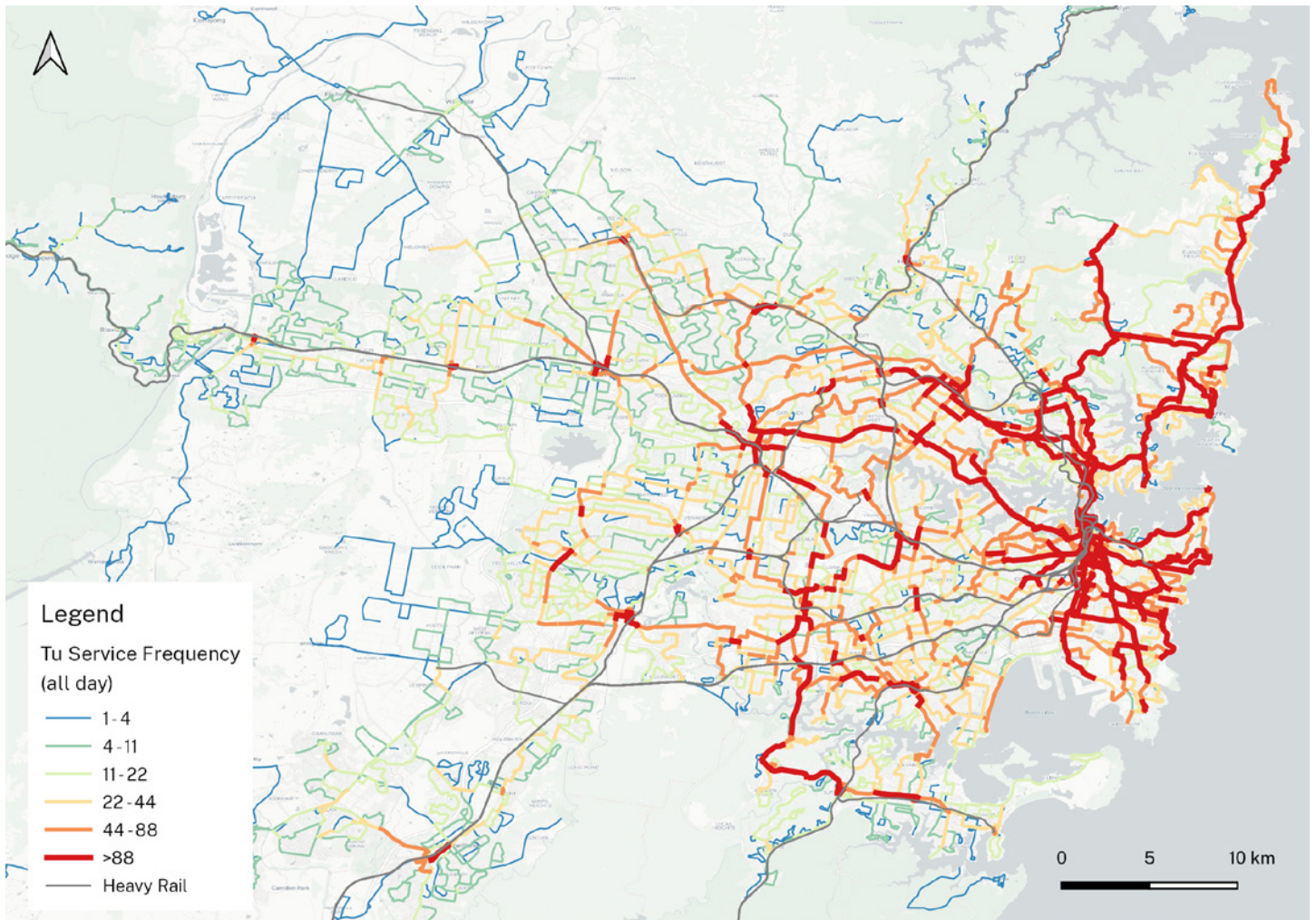
Most services across the Region are local and suburban services, other than the rapid services between Parramatta and Liverpool, and from the Hills area to Blacktown, Parramatta and the Eastern Harbour City.

Typically, rapid and suburban services run more frequently and for a longer span of hours per day than local services. For these reasons, these services generally experience higher patronage.

An effective bus network requires not only a fleet and bus stops, but also a series of depots to service, maintain and store fleets, and lay-over facilities to facilitate bus parking and driver amenities between services. It also requires suitably designed roads. In a number of greenfield areas, such as Oran Park, buses are the only means of public transport and have key bus route roads that are too narrow to accommodate them.

Overall, bus service frequency across the Region is poor. Figure 19⁵⁴ illustrates all-day weekday bus frequency across Greater Sydney highlighting the material difference in frequency between Eastern and Western Sydney. In those areas serviced by rail, a reasonable level of bus service frequency to facilitate interchanges between bus and train is only available at major centre stations such as Blacktown, Liverpool, and Campbelltown. This demonstrates that in areas not serviced by rail, such as Marsden Park in the north-west, St Clair and Jordan Springs in Greater Penrith and Narellan in the south-west, bus services do not compensate for the deficiency in rail services. There is little evidence of frequent bus 'feeder-services' to facilitate rail access for the areas not serviced by rail.

Figure 19 All-day weekday bus service frequency across Greater Sydney

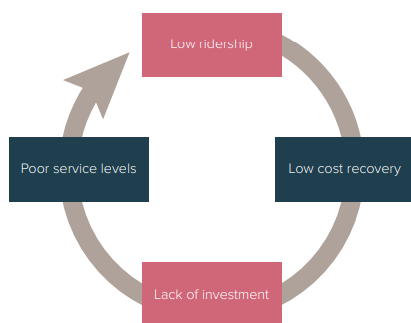


Source 19 Transport for NSW, *General Transit Feed Specification (GTFS)*, 2021

54 Note: Lines within 30 meters have been summed. 88 services a day equates to 6 services per hour in 3 hour AM and PM peaks, and 4 services per hour for remaining 13 hours, resulting in services between 5am and 1am.

The size and relative low-density environment of the Region means that many services are prone to what Infrastructure Australia refers to as a 'self-defeating cycle of poor performance and service levels'⁵⁵ where existing services are poorly patronised and therefore receive no new investment, leading to continued poor service levels and patronage. This is a significant issue where buses, particularly local services, are the only form of public transport. Figure 20 illustrates this cycle.

Figure 20 Self-defeating cycle of poor bus performance and service levels



Source 20 Infrastructure Australia, *Outer Urban Public Transport: Improving accessibility in lower-density areas 2018*

This issue is compounded in developing greenfield areas where the natural response to poor public transport service levels is to drive. This embeds car dependence such that even when communities grow to a size and density that might support increased numbers and frequency of public transport services, cars remain the preferred method of transport.

Additionally, delivery of transport infrastructure projects that are led and funded by developers in areas with fragmented landholdings, can result in failure to deliver complete corridors for public transport at a time when these patterns of behaviour are being established. An example of this is the Greater Macarthur Transit Corridor.

The Region is expected to experience significant growth in the number of bus trips in coming years, with the number of trips expected to almost double by 2036⁵⁶.

To date, enhancements to bus services in the Region have been facilitated through re-deploying resources from Eastern Sydney. This is an unsustainable solution and investment is required to improve and extend current service offerings.

Figure 21a illustrates current average volume to capacity of bus services across Greater Sydney in 2019. Figure 21b illustrates a forecast of this by 2036 – with significantly more routes experiencing capacity constraints and overcrowding in 2036, particularly in Western Sydney.

⁵⁵ Infrastructure Australia, *Outer Urban Public Transport – Improving accessibility in lower density areas*, October 2018 - https://www.infrastructureaustralia.gov.au/sites/default/files/2019-07/outer-urban-public-transport_web_fa_low_res.pdf

⁵⁶ Transport for NSW, 2021 NCL project run - reflects the 3.5 hour AM peak as modelled by PTPM.

Figure 21a 2019 average volume / capacity

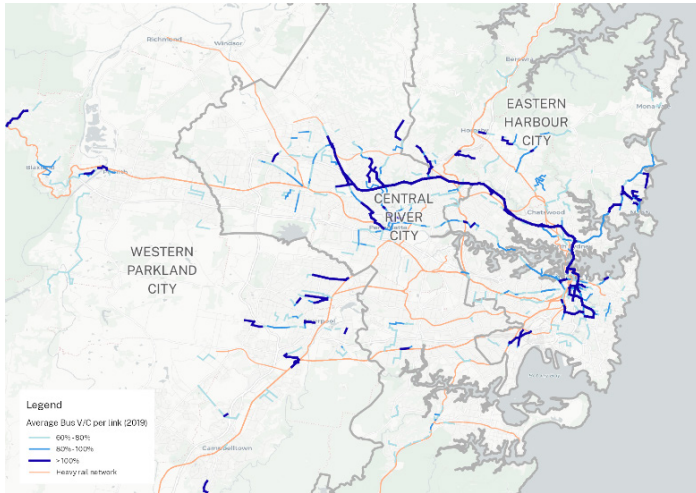
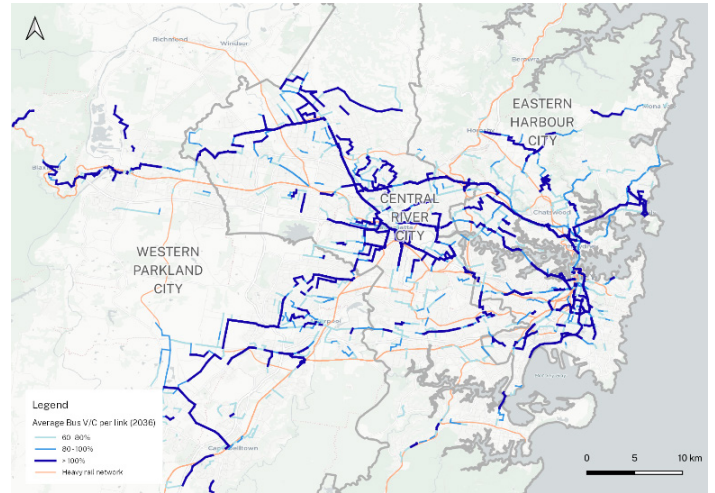


Figure 21b 2036 average volume / capacity



Source 21 Transport for NSW, PTPM5 base case network using pre-covid assumptions and without service investment 2019

Future investment in buses represents one of the most cost-effective opportunities for improving public transport access and usage, particularly in areas not serviced by rail. Studies undertaken by Transport for NSW have demonstrated that bus service improvements can result in significant increases to bus patronage, and in turn a reduction in private vehicle kilometres travelled. In a study conducted in Greater Liverpool to Bankstown, the improved frequency, speed and connectivity of bus services was shown to not only increase patronage but reduce private vehicle kilometres while encouraging growth in employment.

Further investment in new buses and depots will be essential to meeting future demand. This will be made more challenging by the need to transition NSW's public transport bus fleet (comprising over 8,000 diesel and natural gas buses) to zero emissions technology. The first transition will begin in 2023 and involve 1,200 new electric buses across Greater Sydney, however this will simply replace the existing fleet rather than expand it.

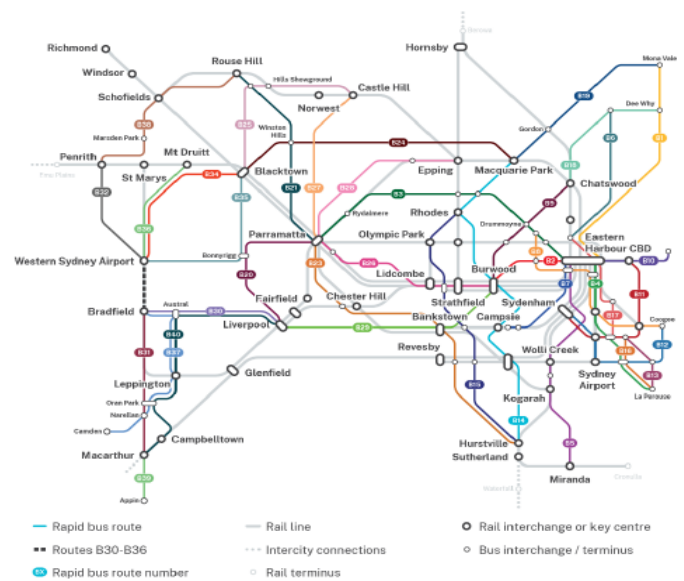
The Panel notes that Transport for NSW has identified a **Western Parkland City Zero Emissions Buses Depot SBC**. While this is unfunded, it would look at either adding more bus depots to support population growth or bring forward the conversion of existing bus depots to support Zero Emission Bus operations.

Bus Rapid Transit

Transport for NSW's Future Transport Strategy proposes a series of rapid bus connections across Greater Sydney by 2056-2061 as outlined in Figure 22, with this intended to support the estimated significant increase in bus demand by 2056.

Figure 22 2056 - 2061 Rapid bus network

2056-2061 Rapid bus network



Source 22 Transport for NSW, Future Transport Strategy Vision 'Improved connectivity' 2022

Despite the proposed connections, it is noted that plans to commence delivery of a rapid bus network are unfunded. Further, there has been no investment in rapid bus services in the South West Growth Area and in Greater Macarthur, despite structure plans identifying these corridors for expansion.

Given the rural-standard road network which many of the planned rapid bus services would be expected to operate on, significant road investment to accommodate these services will be required – particularly to enable a fast, high-capacity service separated from general traffic.

Investment to establish a baseline rapid bus network in the Region is needed as soon as possible, not only to achieve the network envisioned for 2056-2061, but to service planned and committed connections between centres such as Liverpool, Penrith, and Campbelltown and the Western Sydney International Airport by the commencement of airport operations in 2026. This is particularly critical given that there is currently no funding for any bus services to service the airport upon opening. It will also be essential for providing connectivity between some of these key centres ahead of future investment in mass transit links being planned and delivered (e.g. extension of Sydney Metro - Western Sydney Airport to Campbelltown-Macarthur).

Accordingly, the panel recommends investment in the **Western Sydney Rapid Bus Network** as a high priority, to facilitate delivery of these new services and associated infrastructure.

4.4 Gap analysis of Active Transport

Despite recent improvements, active transport infrastructure in many areas of Western Sydney remains lacking, with pedestrian footways inadequate and of inconsistent quality, and the limited bicycle network fragmented. As a consequence, the active transport mode share in Western Sydney is low in comparison to Greater Sydney.

Responsibility for active transport infrastructure is shared with State and Local Government. Transport for NSW has responsibility for regional and strategic links, while local councils are responsible for access links including green space opportunities and most creek corridors. It is important to note that the quality of the streetscape and outcome of local access can be significantly affected by the design of regional and strategic links.

Areas with higher walkability are often associated with older, established centres in Western Sydney. Newer areas developed since the 1970s often have an urban structure that is more car dependent, with fewer options to walk to local centres. This is compounded by streets that do not prioritise pedestrians, have fewer or no footpaths, and less street tree canopy.

The structure of street networks has a major impact on pedestrian access areas, with a grid plan providing the highest access in built up environment. Many suburban areas in Western Sydney, particularly those developed since the 1970's, feature cul-de-sacs and indirect connections, and consequently have significantly less walking catchments.

Figure 23a illustrates the significantly greater foot access in Burwood, an established area over a century old in Sydney's inner-west. Figure 23b illustrates the much smaller foot access of a more recently developed areas of Crestwood in Western Sydney's Baulkham Hills due to the predominance of cul-de-sacs and indirect connections. Street structure is also a key factor in car dependence in Western Sydney, making local trips less accessible or attractive on foot, and presenting barriers to public transport access.

Older areas such as Burwood also have thriving high streets, enjoyed by many more established areas in Eastern Sydney. Greenfield car-dependent development in Western Sydney since the 1970's has resulted in fewer high streets when compared to Greater Sydney⁵⁷ (Figure 24). High streets can be important to communities as centres for neighbourhood life where people can come together to eat and drink and work.

High streets create spaces for people, prioritising pedestrians, attracting visitors and contributing to social and cultural identity. While older more traditional centres contain high streets, these are noticeably lacking in newer communities, many of which are designed with town centres accessible by car.

The Panel wishes to highlight the opportunity for new and existing communities to benefit from planning for new high streets to improve productivity, liveability and sustainability, and accordingly recommends a series of initiatives to assist in addressing these. This includes a **15-minute Neighbourhood Program SBC** which, if funded, would establish a program of interventions to increase liveability and expand 15-minute accessibility by active transport for both new and existing centres.

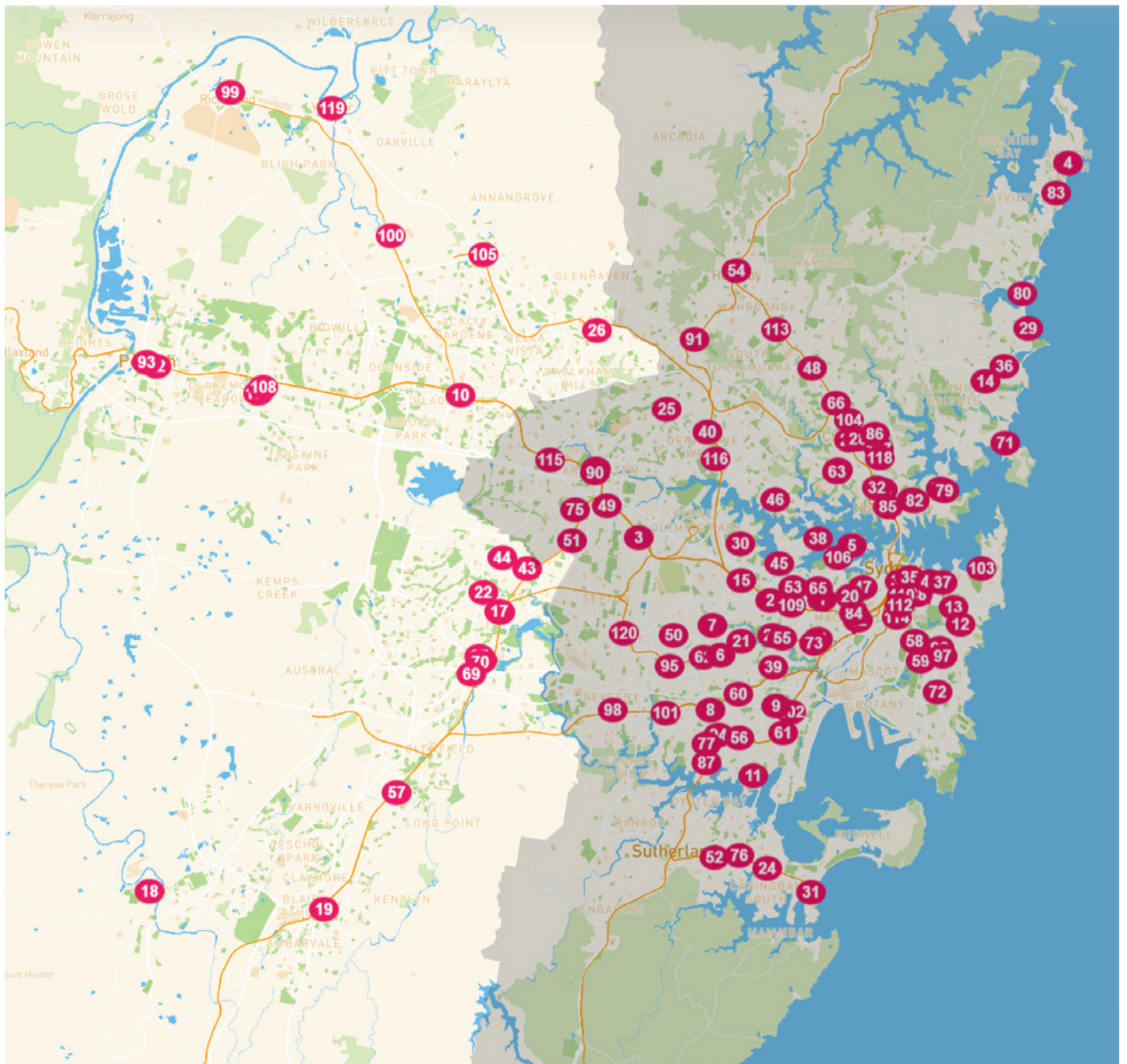
Figure 23a (Burwood) and 23b (Crestwood) – Street topology influence on walkable catchments



Source 23 Transport for NSW, Remix. Catchments are generated using walking only (no public transport services) 2022

57 Committee For Sydney, 2021, Mapping Sydney's High Streets

Figure 24 Spatial Distribution of High Streets in Sydney⁵⁸



Source 24 Committee for Sydney, *Mapping Sydney's High Streets 2021*

Note: Area outside the of study area is shaded

⁵⁸ Note: A full listing of each high street referenced can be found here: <https://sydney.org.au/wp-content/uploads/2021/11/Committee-for-Sydney-Mapping-Sydneys-High-Streets-November-2021.pdf>

Cycleways in Western Sydney are also limited compared to Eastern Sydney. Investment in cycleways and shared paths would facilitate cycling as an alternative mode of travel. In support of improving the condition and reach of cycleways in Western Sydney, the Panel recommends funding to enable Transport for NSW to progress development of the **Western City Strategic Cycleway Network FBC**.

Funding for this FBC would enable scoping and development of 26 strategic cycleway corridors in the Western Parkland City comprising approximately 295km of network, with potential to expand this to the broader Western Sydney. Corridors would connect key centres and major points of interest, providing connections within and between the four metropolitan clusters that make up the Western Parklands City as well as towards Central River City, ensuring a connected network across Greater Sydney. Investment in these cycling connections would encourage a greater number of people to travel by bicycle, noting that around 70% of people in NSW agree they would cycle if they had access to separate cycling lanes⁵⁹.

4.5 Gap analysis of Roads

Unlike the analysis of public and active transport, the analysis of roads considers the gaps from a place-based perspective across the three sub-regions of the north-west (including the Hawkesbury Nepean Valley), central (Aerotropolis and surrounds) and south-west.

Roads in Western Sydney play an important role in not only facilitating passenger and freight travel, but provide the foundation for bus network operations, and movement of pedestrians and cyclists.

In Western Sydney, the condition of the road network varies across the Region. While established metropolitan centres such as Penrith, Campbelltown, Blacktown and Liverpool have a reasonably mature network, much of the wider Region consists of narrow, single-lane, rural roads with limited capacity and significant safety issues. Many roads have no footpaths or have footpaths that have not been constructed as part of a network and therefore do not link well, if at all. There are very few bus stops with hardstand, shelters, or benches, and minimal provision for active transport or safe crossing points. Figure 25 provides an example of this type of road and lack of supporting bus / active transport infrastructure, prevalent across many parts of the Region.

Figure 25 Example of typical rural-style road servicing a residential area in Cranebrook with no footpath, safe crossing point or bus shelters



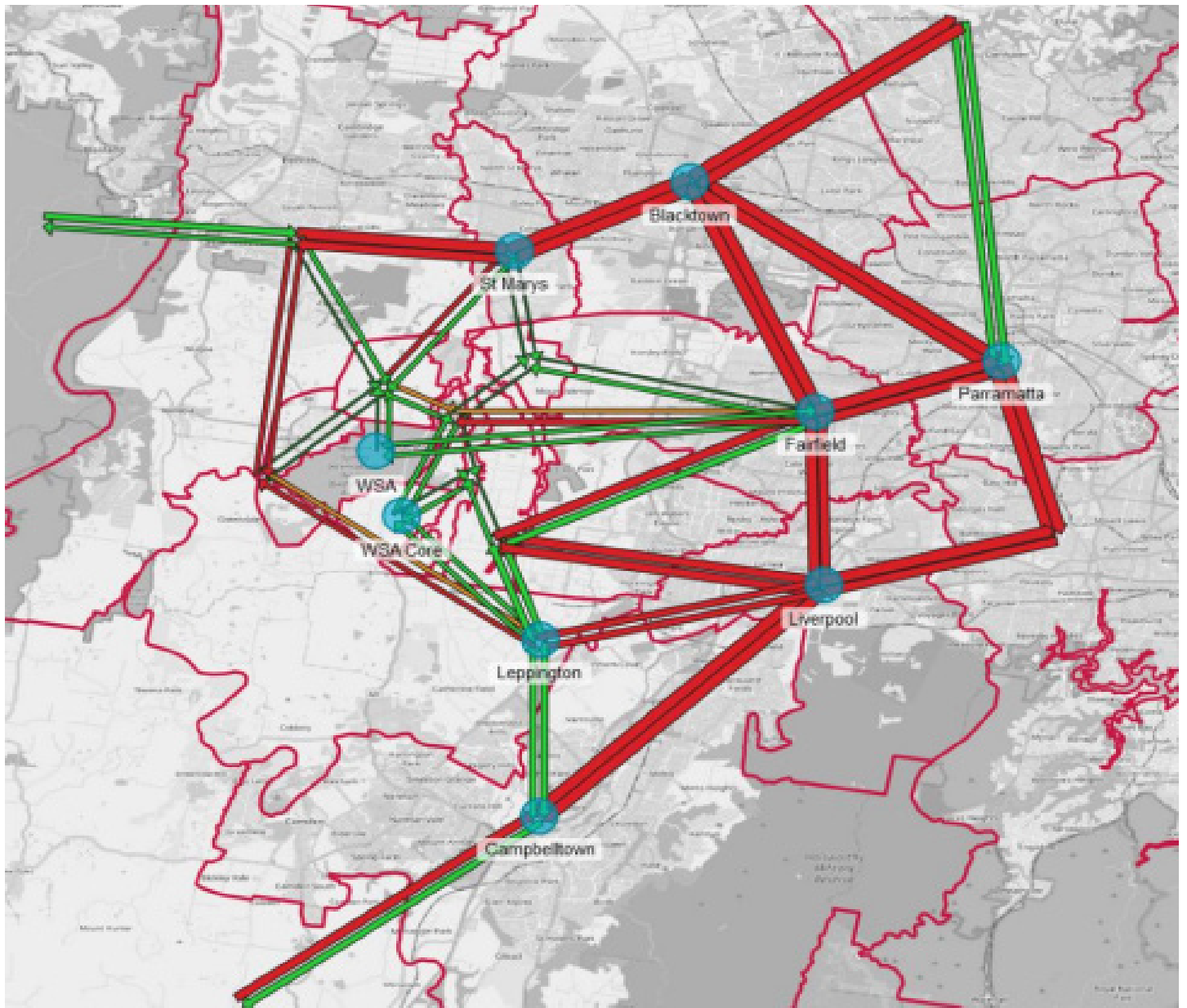
Source 25 Google Maps 2023, accessed April 2023

⁵⁹ Transport for NSW 2013, Sydney's Cycling Future: Cycling for everyday transport, Transport for NSW, p 7, available via: www.transport.nsw.gov.au/sites/default/files/media/documents/2017/sydneys-cycling-future-web.pdf.

Overall, strong road-based trip growth is expected across most of Western Sydney, concentrated around new greenfield developments in the north-west, the Western Sydney International Airport and the Aerotropolis, and greenfield urban development in the south-west. An increase in travel demand is also anticipated between the Eastern Harbour City and the Western Sydney Airport.

A broader road capacity assessment undertaken as part of the Aerotropolis Planning Package found that without significant road investment, both passenger and freight demand will exceed capacity between Metropolitan Centres, Clusters and Strategic Centres (Figure 26).

Figure 26 Road network capacity assessment to 2056

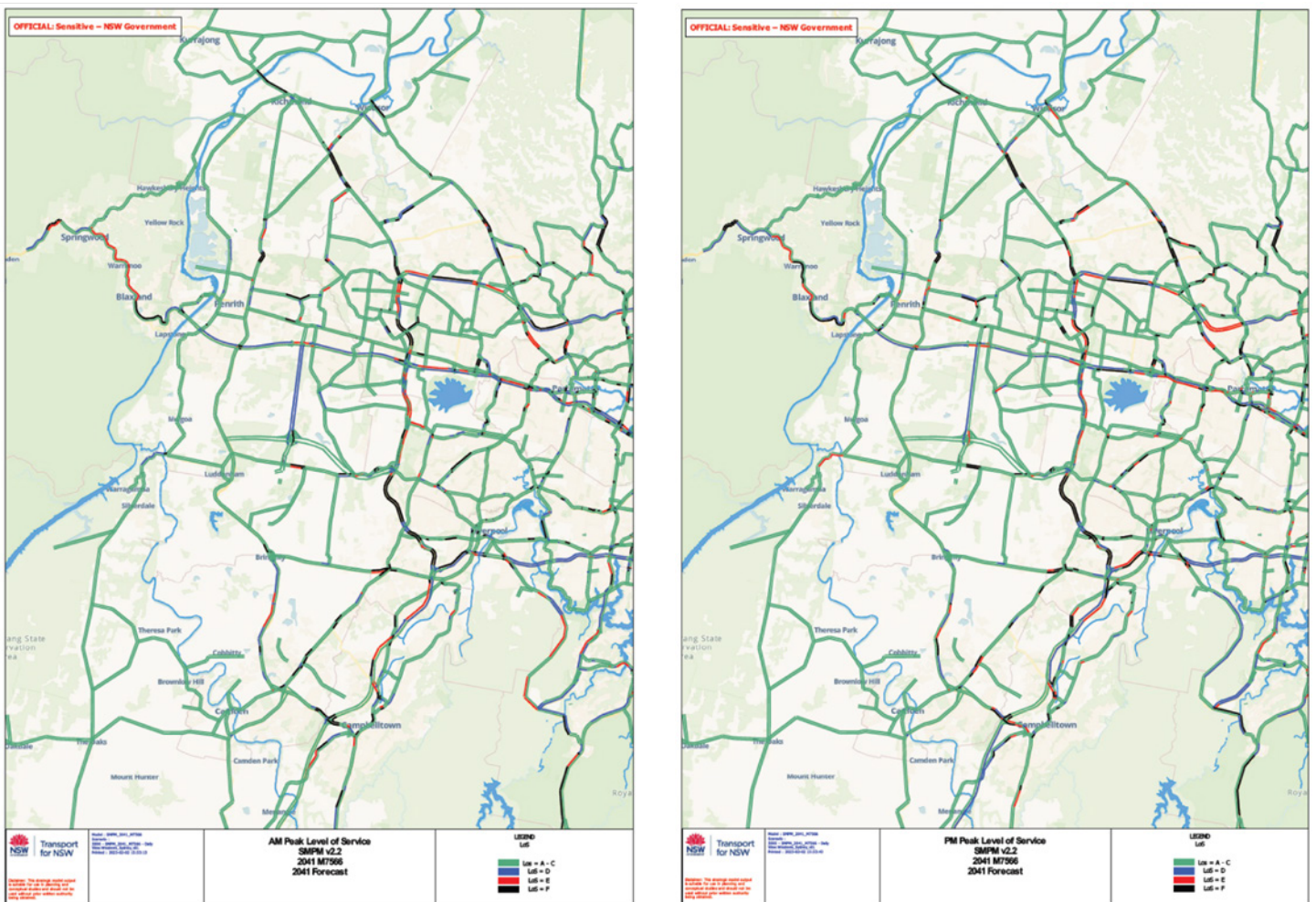


Source 26 Western Sydney Planning Partnership, Western Sydney Aerotropolis Transport Planning and Modelling Stage 2 Report 2020

- ▬ Precinct boundaries
- ▬ Over-capacity (> 100%)
- ▬ Close to capacity (80% - 100%)
- ▬ Under-capacity (< 80%)
- ▬ Traffic volume indicated arrow width

Transport for NSW has undertaken significant transport modelling to illustrate road network performance into the future⁶⁰. Figure 27a illustrates the anticipated road network performance in 2041 and level of service of key routes in the AM peak. Figure 27b illustrates this in the PM peak. Together, they illustrate the level of service standards of key arterial roads in Western Sydney during peak hours. Further analysis of these is provided in the place-specific roads focused gap analysis.

Figure 27a and 27b Level of service of key roads in 2041 using the Strategic Travel Model and the Sydney Motorway Model



Source 27 Transport for NSW, Sydney Motorway Planning Model 2023

⁶⁰ The level of service of key roads in the network is determined using the Strategic Travel Model (STM) and the Sydney Motorway Model (SMPM), which uses the STM outputs to detail motorways modelling in Sydney. The STM is a multi-modal modelling tool to inform evidence-based policy development and decision-making in strategic, metropolitan scale land use and transport scenario modelling projects. For specific projects, the STM results should be used as a starting point to produce estimates of overall demand in response to alternative land use and / or transport supply scenarios. However, due to its limitations as a strategic modelling tool, the STM may need to be supplemented with more detailed analyses for project evaluation purposes.

4.5.1 North-west / Hawkesbury Nepean Valley

Rapid population growth in the north-west and Hawkesbury Nepean Valley has exceeded projections, with transport investment failing to keep pace with growth. This has placed pressure on the existing road network particularly during peak times. Unless there is investment in key road corridors, further congestion is highly likely as the area continues to grow. It is important to note that a number of arterial roads in the area also perform a vital flood evacuation role.

Since 2016, this area remains one of the top three fastest-growing areas, as measured by new housing completions, in Australia. Riverstone – Marsden Park was the SA2 with the highest number of dwelling completions nationally between 2016 to 2019, with 9,261 dwellings completed during this time⁶¹. Based on dwellings under construction and those approved, the population in the North West Growth Area is projected to double by 2026. Blacktown City Council, which covers much of the area, is forecast to have almost twice as many houses by 2041, with its population exceeding that of Tasmania by 2036.

While the area has benefited from recent significant transport investment including Sydney Metro Northwest and major road upgrades such as Schofields Road, Windsor Road and Old Windsor Road, road infrastructure investment has largely failed to keep pace with development, with travel demand out-stripping network improvements.

While parts of this area are urbanised with established communities and mature road networks, such as Greater Penrith, the wider road network in this area is under considerable strain. Areas to the north and south of Greater Penrith have experienced, or are anticipated to experience, significant growth and land-use change. They are however currently reliant in many cases on a road network suitable for a rural community with far fewer residents, with few amenities including footpaths and adequate bus stops.

Many of the key arterial roads have higher than average accidents than equivalent Sydney metropolitan roads. Richmond and Garfield Roads (pictured above) have experienced the highest number of accidents, with these occurring at known congested intersections. Modelling undertaken by Transport for NSW indicates that sections of key road corridors are already at or are nearing capacity – particularly on the north-south corridors of Richmond and Windsor Roads. Commensurate with population growth, road travel demand is forecast to increase, with an associated worsening in congestion. Increasing congestion and growth in many cases is compounded by motorists seeking to avoid tolls on the M2, M7 and NorthConnex motorways, putting pressure on local roads which mirror and interface with these motorways.

In addition to connecting the employment and service hubs of Blacktown and Penrith, investment in north-south links is required to connect new housing in the north-west to new jobs and opportunities in the Aerotropolis. The Outer Sydney Orbital will play a key role in accommodating this travel, however given it is unlikely to be delivered for 20 years or so, the Panel considers corridor preservation a priority to protect this key strategic road link. The Panel encourages the acquisition of land in the short term to ensure the corridor is preserved for future use. In the medium term, as an interim measure, north-south links such as extension of the Werrington Arterial would assist in creating this additional connection.

The Panel recognises the importance of the following key roads and the need for urgent investment in them.

- **Richmond Road (and Windsor Road) corridors**
Essential for enhancing north-south connectivity and providing road congestion relief, and a key flood evacuation route for the Hawkesbury Nepean Valley.
- **Northern Road Upgrade (Borrowdale to Londonderry)**
To assist in relieving congestion from the growing area of Jordan Springs, provide a further flood-evacuation route, enhance north-south connectivity to connect housing with jobs, and leverage the existing investment in The Northern Road upgrade further south.
- **Continued investment in North West Growth Corridor roads including Bandon and Garfield Roads**
Upgrades to Garfield Road would provide enhanced east-west connectivity (currently limited) between Richmond Road, Marsden Park to Windsor Road, Vineyard, and provide greater road safety through the removal of the level crossing at Riverstone. Future planning and investment in North West Growth Corridor roads needs to consider additional traffic potentially generated from toll-road avoidance.

61 Australian Bureau of Statistics, 2020 – Small Area Dwelling Completions - <https://www.abs.gov.au/articles/small-area-dwelling-completions#highest-growth-areas-australia>

4.5.2 The Aerotropolis and surrounds

In the last ten years, there has been significant investment in upgrading roads in Western Sydney, particularly through the Western Sydney Infrastructure Plan (the Plan). This has provided over \$4 billion of investment to improve road safety and capacity ahead of future traffic demand including in the Aerotropolis, Western Sydney Employment Area, and wider surrounds. While investment to date has been significant, it simply lays the foundation for a program of future road investment, critical to achieving economic and socio-economic outcomes for Western Sydney.

The Plan provides the framework for a future road network in the Aerotropolis and surrounds, including connecting the Western Sydney International Airport to Greater Sydney. Further investment is needed to deliver the full road network for this area to deliver on its potential as the economic powerhouse of Western Sydney.

Initial investment in these upgraded and new roads will support the M7 and M31 as the primary north-south link east of the Western Sydney International Airport, providing a motorway grade connection from Marsden Park to Campbelltown and beyond towards Canberra and Melbourne. The M7 is due to be upgraded from two to three lanes in each direction between the M2 in the north to the M31 in the south by 2026.

Despite recent investment in roads in this area, more is required. Distances between key north-south roads are substantial. For example, the distance between The Northern Road and the M7 is 15km – further than the distance between Sydney CBD and Sydney Olympic Park. Current upgrades to roads provide the baseline, with further investment required to upgrade the remaining road network, which largely consists of narrow, single-lane, winding rural roads with limited capacity and significant safety issues.

Current roads are unsuitable for the increasing traffic volumes resulting from the construction of the Western Sydney International Airport, development and growth of new neighbourhoods, and the associated transition to urbanised areas. Without further investment the road network will be unable to support intensified land use and become increasingly congested, leading to declining safety, reliability, and accessibility – exacerbated by the increasing number of heavy vehicles in the area.

With the above in mind, the Panel has identified the following road corridors and packages as high priorities for investment:

- **Aerotropolis Roads Package (Western City Road Transport Network Development)** – This includes the Eastern Ring Road, Luddenham Road, Fifteenth Avenue (West), Devonshire Road, Badgerys Creek Road, with upgrades to the semi-rural/peri-urban roads. This would facilitate transformation and unlock the economic development potential of the Aerotropolis. A number of these roads are likely to be critical for facilitating rapid-bus connectivity to the Western Sydney International Airport. The Panel notes the potential for a package such as this to be delivered as a second tranche of the Western Sydney Infrastructure Package.
- **Mamre Road (Stage 2) between Erskine Park Road to Elizabeth Drive** – This follows Mamre Road Stage 1 between the M4 Motorway and Erskine Park Drive, and would deliver an upgraded four-lane north-south connection between the M4 and Elizabeth Drive, unlocking the potential of the Mamre Road Employment Precinct (850 hectares with potential to provide around 17,000 jobs). It is important to note that there are currently a high number of State Significant Development Applications in train with the potential for these to be delayed should Mamre Road not be upgraded in the short-term.
- **Elizabeth Drive (between The Northern Road and M7 Motorway)** – Upgrading Elizabeth Drive is a high priority, with urgent safety upgrades needed (increasing from two to four lanes) to facilitate potential development of employment land north of the Western Sydney International Airport.
- **Outer Sydney Orbital - Corridor Preservation** – The Panel notes the Outer Sydney Orbital is a longer-term priority. It will be an essential motorway and freight rail transport connection between the Hills district and Macarthur – and a future bypass of Greater Sydney, providing regional and interstate links. The Panel considers it of strategic significance at both a state and national level and notes the considerable costs in acquiring land for this corridor. It therefore recommends short-term corridor preservation and acquisition to ensure significant cost savings when developing the Outer Sydney Orbital.

4.5.3 South-west

The south-west experiences many of the same issues and constraints as the north-west with road transport infrastructure lagging behind growth, particularly in its growth areas including the South West Growth Area, Greater Macarthur and Wilton. The Camden LGA has the fastest growing population in Australia⁶². The SA2 area of Cobbity-Leppington (located in the Camden LGA) is also one of the top three areas with the greatest number of new housing completions in Australia⁶³. Issues with public transport access and frequency in many of these areas mean they are heavily vehicle-dependent and reliant on the road network.

While many parts of the south-west such as Campbelltown-Macarthur are urbanised and established, the road network that services the broader area and connects greenfield areas to established centres and jobs is now in need of upgrades given its original design to suit rural land-use. Further, key arterial roads in this area funnel traffic into these urban centres, creating challenges for increasing density.

The area is the gateway to Greater Sydney from Melbourne and Canberra, and the link between the Illawarra-Shoalhaven and Greater Sydney. The strategic connectivity of this area makes it attractive as a freight and logistics hub with passenger traffic often competing with high levels of freight traffic. This places strain on key routes such as the M31 Hume Motorway, which in addition to being a key freight artery between Sydney and Melbourne, is the primary road connecting communities in Wilton to jobs and services in Greater Sydney. The M31 Hume Motorway is one of Greater Sydney's most congested roads, with the daily cost of congestion estimated to be more than \$71,000 (2016)⁶⁴. Without further investment in alternative roads, congestion will worsen, with the cost of congestion on this corridor estimated to more than double by 2036.

The key corridors of Appin and Picton Roads are similarly vital, providing access to jobs and services in the Illawarra-Shoalhaven region. These corridors experience significant volumes of passenger and heavy vehicles. Combined with the difficult topography of the Illawarra escarpment, significant delays are common, resulting in longer travel times and high accident rates. These corridors will become increasingly important given their role in connecting the Western Sydney International Airport and the Aerotropolis to the Illawarra-Shoalhaven region.

62 ABS, Regional population 2020-2021, 2022

63 Australian Bureau of Statistics, 2020 – Small Area Dwelling Completions - <https://www.abs.gov.au/articles/small-area-dwelling-completions#highest-growth-areas-australia>

64 Infrastructure Australia, Urban Transport Crowding and Congestion, 2019

To ensure both the Illawarra and Shoalhaven region and Greater Macarthur and Wilton are adequately connected, additional investment will be required in strengthening east/ west connections across the M31 Hume Motorway. Initial investment in corridors such as the Spring Farm Parkway will contribute to providing one of these links, as would a future connection to the Outer Sydney Orbital (Stage 2) between the M31 Hume Motorway and Appin Road. Delivery of these connections however will likely place additional pressure on the currently congested M31 Motorway.

There are several roads in this area which will constrain development and negatively affect liveability and productivity. These are considered high priorities for investment and include:

- **Spring Farm Parkway (Stage 2) and connection to future link road** – This will connect the Camden Bypass to the M31 Hume Motorway and Menangle Road. A full connection is required between Appin Road, and hence planning for a subsequent Link Road or Spring Farm Parkway Stage 3 should be prioritised. This is considered a priority given the longer-term timeframe of the Outer Sydney Orbital which will provide a similar motorway grade connection further south.
- **Cambridge Avenue, Glenfield** – Full duplication and connection to the M31 Hume Motorway would provide a future freight link between the Moorebank Intermodal Terminal and the M31 Hume Motorway. In its current condition, it not only is unable to handle heavy vehicles and is impacted by flood affectation in relatively minor rainfall events but is constraining state supported residential development in Glenfield.
- **Menangle Road Upgrade** – The capacity and condition of Menangle Road and connecting roads in the Greater Macarthur Growth Area mean that upgrades will be essential to avoid constraining future development. This will also be critical for enabling bus transport access including connections to the Greater Macarthur Transit corridor.
- **Improved connections to key employment precincts** – The M31 Hume Motorway and the T8 Airport and South Rail Line create a barrier to east-west connectivity in this area. This presents a challenge for both passenger and freight transport – exacerbated by bridges across these corridors which have insufficient weight limits to service their surrounding areas. An example is the Ben Lomond Road Bridge in Minto which has restricted lanes and load carrying capacity (40t), requiring heavy vehicles to detour 6.5km. Similar pressures are experienced across the employment areas of South West Sydney.

Overall, based on the gap analysis, the Panel concludes that significant further investment is needed to transform the Region to meet current and future needs. Whilst a number of transport plans identify infrastructure projects needed to meet the needs of the Region, many are unfunded or require further investigation. A comprehensive list of the Panel's priorities is detailed in the next section of this report.

Strategic transport priorities

The Panel considered a wide range of inputs to inform both its strategic needs assessment and gap and opportunities deliberations. As outlined in Section 3 of this Report, Western Sydney has significant potential to be an even more substantial economic powerhouse in Australia if its growth can be appropriately supported and harnessed. There remain however considerable gaps in infrastructure and service provision that require investment to ensure it can be a connected and thriving Region.

5.1 Panel recommendations

The Panel has identified strategic transport priorities to address Western Sydney's growing needs as outlined in Table 2 below, across three time-horizons:

- **Immediate term** - for consideration as part of the 2023-24 Australian Government Budget;
- **Short term (2-5 years)** - for consideration in the next budget cycle and within the forward estimates; and
- **Medium term (6-10 years)** - to inform subsequent project delivery and enable forward planning and development.

05

Table 2 Recommendation on infrastructure priority across public transport, active transport, innovations and roads

Project		Recommendation
Public transport		
High Priority	PT1: Western Parkland City and Blacktown (all modes) SBC	Immediate Recommendation: Prioritise funding for SBC development, to facilitate development of a robust evidence base to inform a network review and inform future investment for enhancements. 2-5 Years / 6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made
	PT2: Mass Transit: Aerotropolis to Glenfield	2-5 Years / 6-10 Years Recommendation: Prioritise funding to commence and facilitate delivery by 2031
	PT3: Mass Transit: Tallawong to St Marys; Rapid bus as interim measure	Immediate Recommendation: Prioritise funding for planning and development work, including Final Business Case (FBC) development for a mass transit link between Tallawong and St Marys. 2-5 Years Recommendation: Prioritise funding for early property acquisition / hardship requests and early works, including interim use of corridor for bus rapid transit. 6-10 Years Recommendation: Prioritise funding for commencement of works
	PT4: Mass Transit: Aerotropolis to Campbelltown-Macarthur; Rapid bus as an interim measure	Immediate Recommendation: Prioritise funding for planning and development work, including FBC development for a mass transit link between the Aerotropolis (Bradfield) and Campbelltown/ Macarthur. 2-5 Years Recommendation: Prioritise funding for early property acquisition / hardship requests and early works, including interim use of corridor for bus rapid transit. 6-10 Years Recommendation: Prioritise funding for commencement of works
	PT5: Western Sydney Rapid Bus*	2-5 Years Recommendation: Delivery of a baseline rapid-bus service between key metropolitan centres and the Western Sydney International Airport and Aerotropolis. 6-10 Years Recommendation: Delivery of an enhanced and high-frequency rapid-bus service between key metropolitan centres and the Western Sydney International Airport and Aerotropolis.
	PT6: New Cumberland Line SBC	Immediate Recommendation: Prioritise funding for Strategic Business Case (SBC) development to identify investment opportunities for an enhanced Cumberland Line. 2-5 / 6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.
	PT7: Western Parkland City Zero Emissions Bus depot SBC*	2-5 Years Recommendation: Prioritise funding for SBC 6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.
Priority	PT8: Western Rail Corridors SBC (St Marys to Penrith and Richmond Line)	2-5 Years Recommendation: Prioritise funding for SBC 6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.
	PT9: Schofields to Vineyard duplication SBC	2-5 Years Recommendation: Prioritise funding for SBC 6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.
	PT10: Public Transport Upgrades between Campbelltown and Wilton. Investigate rail electrification south of Macarthur	2-5 Years Recommendation: Prioritise funding for SBC 6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.
Policy Position	PT11: Faster Rail connection from Canberra to Sydney via Western Sydney	2-5 Years Recommendation: Planning to consider prioritisation of the appropriate location of stops in Western Sydney. 6-10 Years Recommendation: Greater understanding of planning work / likely recommendations needed prior to further recommendations being made.
	PT12: Greater Macarthur Transit Corridor	The Panel notes the criticality of this transit corridor in providing this growth area with public transport access, and strongly advocates for its delivery to be funded by developers, as agreed per planning conditions for rezoning.
	PT13: Future Mass Transit Links in Western Sydney*	The Panel considers the need for further studies / investigation to identify next steps / what more is needed and when / most appropriate mode, to inform a future recommendation.

Project		Recommendation
Active Transport		
High Priority	A1: 15-minute cities pilot program for activations to support local infrastructure and enhanced access to active transport and neighbourhood centres	<p>Immediate Recommendation: The Panel recommends a contribution of funding towards developing and piloting a program with around 3 pilot projects across Western Sydney to implement changes that focus on short term interventions to improve 15-minute neighbourhoods and walkability</p> <p>2-5 Years Recommendation: Pending successful development of program and deployment of pilot projects, sustained program roll-out, including development of SBC to support this.</p> <p>6-10 Years Recommendation: Pending successful development of program and deployment of pilot projects, sustained program roll-out.</p>
	A2: Western City strategic cycleway network FBC	<p>2-5 Years Recommendation: Prioritise funding for FBC. Completion of FBC is required before further specific recommendations can be made, however prioritisation of delivery should consider issues in Western Sydney which have the greatest social need / health impacts / lowest areas of active transport usage.</p>
Innovations		
High Priority	I1: Digital Transport Efficiencies Program*	<p>2-5 Years Recommendation: Prioritise funding for FBC. Completion of FBC is required before further specific recommendations can be made, however delivery should prioritise multi-lingual digital interfaces, and emergency management use.</p> <p>6-10 Years Recommendation: Completion of FBC is required before further specific recommendations can be made.</p>
	I2: Better integration between land use and infrastructure planning (e.g. Place-based Infrastructure Compact program)	<p>Immediate Recommendation: Prioritise funding to continue and expand land-use and infrastructure coordination initiatives.</p> <p>2-5 Years Recommendation: Ongoing annual funding for the Place Infrastructure Compact program or its evolution, with provision for points of review / evaluation to consider program effectiveness and opportunities for enhancement.</p>
	I3: Urban Sustainability City Research Fund	<p>Immediate Recommendation: Prioritise funding for research and investigation in urban sustainability for Western Sydney, building on the existing research program being led by the Western Parkland City Authority.</p> <p>2-5 Years Recommendation: Initial tranche of work should provide the basis for a forward program and identify opportunities for targeted further research and intervention. Ongoing annual funding is recommended to support this.</p>

Project	Recommendation	
Roads		
High Priority	R1: Western City Road Transport Network Development (Aerotropolis Roads Package)	<p>Immediate Recommendation: Prioritise funding to progress development of a FBC for the Western City Road Transport Network, covering Badgerys Creek Road; Eastern Ring Road; Luddenham Road; Fifteenth Avenue; Devonshire Road; Metro Link Road; and Pitt St.</p> <p>2-5 Years Recommendation: Subject to completion and recommendations of FBC, funding to <i>commence delivery of priority roads</i>, as identified in FBC.</p> <p>6-10 Years Recommendation: Funding to <i>complete delivery of all roads</i> within this package.</p>
	R2: Richmond Road (and Windsor Road)	<p>2-5 Years Recommendation: Funding to complete delivery of Richmond Road upgrades (M7 to Townson Road initially). Corridor SBC to inform future funding decisions.</p>
	R3: Mamre Rd (Stage 2)	<p>2-5 Years Recommendation: Subject to completion of FBC, funding to deliver upgrade.</p>
	R4: Elizabeth Drive Upgrade	<p>2-5 Years Recommendation: Funding to complete development and enabling works / commence full upgrade post completion of M12 motorway (2026); undertake full upgrade.</p>
	R5: Cambridge Avenue, Glenfield*	<p>Immediate Recommendation: Prioritise funding to undertake a FBC for the duplication and extension of Cambridge Avenue from Moorebank Avenue westward to the Hume Motorway (M31).</p> <p>2-5 Years Recommendation: Subject to completion of FBC, funding to deliver early works including junction treatment at M31</p> <p>6-10 Years Recommendation: Completion of full duplication / scope of works.</p>
	R6: Northern Road Upgrade FBC (Borrowdale to Londonderry)	<p>Immediate Recommendation: Prioritise funding to progress a FBC for the Northern Road (Borrowdale to Londonderry) upgrade (NB: Association with Hawkesbury-Nepean Valley Flood Evacuation Road Resilience Upgrade Program).</p> <p>2-5 Years Recommendation: Subject to completion of FBC, funding to deliver upgrade</p>
	R7: Spring Farm Parkway (Stage 2) and link road to Appin Road (east-west link)	<p>Immediate Recommendation: Prioritise funding to progress planning from SBC to FBC for Spring Farm Parkway Stage 2</p> <p>2-5 Years Recommendation: Funding to progress investigation of link road; commencement of works for Spring Farm Parkway Stage 2.</p> <p>6-10 Years Recommendation: Delivery of Link Road between Appin Road to Spring Farm Parkway.</p>
	R8: Menangle Road	<p>Immediate Recommendation: Prioritise funding to progress planning from SBC to FBC.</p> <p>2-5 Years Recommendation: Subject to completion of FBC, funding to deliver upgrade.</p>
	R9: Outer Sydney Orbital Motorway & Freight Line Corridor Preservation*	<p>2-5 Years Recommendation: Funding for early land acquisition to enable preservation of the corridor, and consideration of Stage 2 as an early connection between M31 Hume Motorway and Appin Road</p>
	R16: Great Western Highway Upgrade Program (targeted intersection upgrades)	<p>2-5 year Recommendation: Existing program to consider intersection upgrades at:</p> <ul style="list-style-type: none"> - Lurline Street underpass – connecting Great Western Highway to Katoomba (second entrance point) - Macquarie Road / Great Western Highway intersection upgrade, Springwood (bushfire evacuation)

Project		Recommendation
Priority	R10: Werrington Arterial Stage 2 Investigation FBC (connectivity between North-West Growth Area and Aerotropolis)	Immediate Recommendation: Prioritise funding to progress planning SBC to FBC. To include interrelationship with M9/Outer Sydney Orbital Corridor. 2-5 year Recommendation: Subject to completion of FBC, funding to commence delivery of priority connection (the 2.2km "missing link" between Dunheved Road and Gipps Street at Werrington; and corridor protection / acquisition of preferred corridor. 6-10 Years Recommendation: Further upgrade of northern section towards North-West Growth Area, per prioritisation consideration in FBC.
	R11: Garfield Road corridor including upgrades to Garfield Road East and Garfield Road Central (North West Growth Corridor – Planning and Early Works)	2-5 year Recommendation: Delivery of Garfield Road East (Piccadilly St to Windsor Road) and Garfield Road Central.
	R12: Picton Road Upgrade / Bypass*	2-5 Years Recommendation: Funding for early works of Picton Bypass 6-10 Years Recommendation: Completion of Picton Bypass; Upgrade of Picton Road
	R13: Southern Link Road (including link to Victoria Street)	2-5 Years Recommendation: Funding to finalise FBC, with the FBC to consider extension of Victoria Street, Wetherhill Park. 6-10 Years Recommendation: Finalisation of FBC to inform next steps.
	R14: Hawkesbury-Nepean Valley Flood Evacuation Road Resilience Upgrade Program*	The Panel notes the importance of this package of these flood evacuation projects, and that a FBC is underway to inform further scoping and prioritisation of these. While the Panel recommends that projects which facilitate flood evacuation are prioritised, given that the FBC is still underway, the Panel does not have sufficient information to make a recommendation.
	R15: Bridge Upgrade: Ben Lomond Road, Minto	2-5 Years Recommendation: Funding for planning work to consider upgrade options.
	R17: Appin Road	2-5 Years Recommendation: Funding to progress further investigation to consider holistic corridor upgrades.
	R18: Castlereagh Connection	2-5 Years Recommendation: Funding to enable further investigation to progress to identify options for investment.

* Denotes proposals (or related proposals) on Infrastructure Australia Priority List

5.2 Complementary priorities for consideration

The Panel has identified seven additional priorities that complement the strategic transport infrastructure priorities listed in Table 2. Whilst the additional priorities are outside the Terms of Reference, the Panel recommends these matters be considered alongside the priority transport infrastructure recommendations as they complement infrastructure planning and delivery and have wider benefit to Western Sydney in supporting growth and achieving equity for its residents.

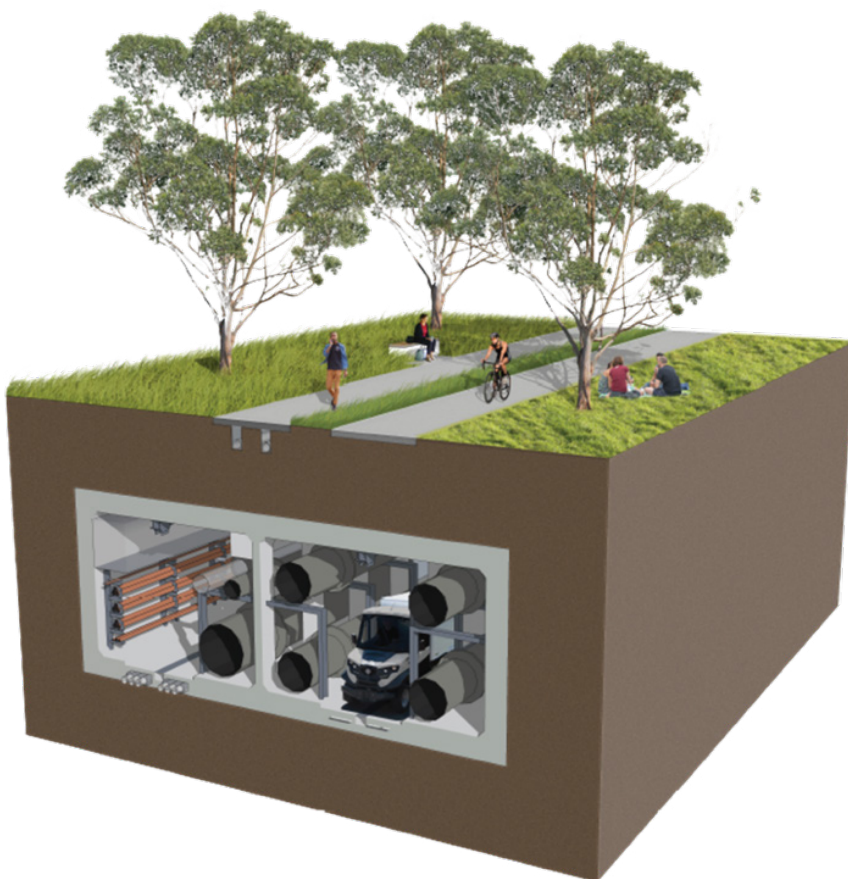
These additional priorities are captured broadly below, noting that further detailed work is required by the Australian and/or NSW governments to investigate or progress these.

Multi Utility Corridors

Western Sydney is delivering a network of multi utility corridors in the Aerotropolis, focusing on opening up new housing and job precincts alongside the Western Sydney International Airport. This contemporary infrastructure delivery approach can be replicated in high growth greenfield areas of Western Sydney, and other parts of NSW and Australia.

Multi utility corridors provide an opportunity in new communities to deliver streamlined transport and utility infrastructure and create public spaces for local communities with greening, walking, and cycling facilities. Improving the way in which we deliver utilities has multiple benefits including more efficient design and delivery of electricity, gas, water and telecommunications infrastructure, the potential for multi-use underground corridors alongside roads, and incorporating dual purpose functionality such as usable recreational space.

Figure 28 Example of a Multi Utility Corridor



Source 28 Western Parkland City Authority, Aerotropolis Multi Utility Corridor Network (indicative image only) 2023

Funding for corridor preservation, early land acquisition and interim corridor use

There will be a need to acquire a significant amount of land for transport corridors planned for Western Sydney. The Panel notes the two planned primary north-south transport corridors, namely the Outer Sydney Orbital and the North-South mass transit link from Tallawong to Campbelltown-Macarthur. Both of these long-term projects (up to 20 years) are of strategic importance to the future liveability and productivity of Western Sydney.

Long-term planning can lower the cost of new infrastructure and minimise the social costs of acquiring homes and businesses, and disruption to existing communities. It can also help to reduce the prospect of corridors being 'built-out' or not delivered as a result of prohibitive costs.

Modelling undertaken by Infrastructure Australia suggests that potential savings in project costs from protection and early acquisition of the Outer Sydney Orbital corridor would be greater than \$3.5 billion (2016, 7% real discount rate) than if land were to be acquired at the time of project construction (estimated 2035 in this example). When looking at both corridors at today's cost, these savings could exceed \$5 billion.

Given the constrained fiscal environment for both the Australian and NSW Governments, and significant cost of delivering these long-term projects, the Panel recommends funding for early land acquisition is prioritised, both to minimise future costs and potentially be used for interim links such as rapid bus roads. An interim approach of implementing a zoning layer to signal future corridor preservation could be a first step in the immediate term prior to land acquisition.

Interface between passenger and freight transport

A transport network which facilitates efficient freight transportation in Western Sydney will be critical to the Region's success and NSW's economic prosperity overall. The Region will play an increasingly important role in handling the State's freight task, amplified by the commencement of operations at the Western Sydney International Airport and the Moorebank Intermodal Terminal, as well as the significant pipeline of investment in freight and logistics development in the Western Sydney Employment Area and the Aerotropolis.

Freight volumes moving through Greater Sydney are expected to increase by about 50% by 2036 (based on 2016 levels). It is anticipated that the Region will accommodate a significant portion of this growth. As such, it will be vital that its road and rail networks are able to accommodate the increased demand for freight transport.

Holistic planning will be key to ensuring that anticipated increases in freight and passenger transport movements can be appropriately managed, especially where they share the same road and rail transport infrastructure.

Approximately 80% of freight is transported by road in Greater Sydney. Given that passenger and freight traffic use the same road networks, increasing congestion and delays will impact freight transport. Planning and investment in key corridors in the south-west for instance, which alleviate congestion and reliance on the M31 Hume Motorway as the primary freight corridor between Sydney and Melbourne, should consider balancing both freight and passenger transport to ensure liveability, productivity and sustainability of the Region.

Notwithstanding the majority of freight transport is transported by road, planning and investment in rail also needs to consider the interface between freight and passenger transport, especially as the majority of rail corridors in Greater Sydney are shared. As population and rail patronage continues to grow, competition for access to the shared rail network will increase. Managing this interface will be critical to ensuring the effective transport of both passengers and freight, particularly given the legislative requirement prioritising passenger transport movement on rail networks in NSW.

Alignment between land use and infrastructure decision making

The Panel acknowledges the need to better align urban planning and transport infrastructure. Greater alignment between land use and infrastructure investment is needed to ensure that government can make informed rezoning decisions and fully understand the cost and extent of infrastructure investment required to support these areas. Decisions regarding where to direct future population growth need to consider existing and planned public transport links and how these can be best used to support the new communities.

There are examples where greenfield rezoning of new housing and employment areas has been undertaken without adequate servicing by infrastructure. At the same time there are existing areas with capacity to increase densities and located close to train or bus services or existing sewerage and water infrastructure.

Additionally, the Panel recognises the need to improve infrastructure contributions mechanisms to increase the capacity to capture funding or make better use of existing funding to enable earlier infrastructure delivery. Developer contributions for trunk infrastructure could be sought retrospectively, with infrastructure delivered early to ensure immediate service provision for communities in greenfield developments. This would see the sharing of new or upgraded infrastructure cost with developers for broader community benefit. Improvements to infrastructure contribution mechanisms would also support the delivery of better coordinated and timely infrastructure, supporting growth and development.

A Place-based Infrastructure Compact model (a collaborative planning model about creating great places by planning for the right infrastructure and services, in the right places, at the right time) can assist in land use and infrastructure investment decisions and provide greater certainty for the community and industry. Piloted in Western Sydney as part of the Western Sydney City Deal, greater use of this model could better inform cost and timing requirements of infrastructure delivery. Accordingly, the Panel has included this program as an innovative strategic transport infrastructure priority in Table 2.

Water, wastewater and recycled water infrastructure

A key limitation to development in parts of Western Sydney is the availability and capacity of water infrastructure. Water infrastructure is critical to the functioning of a resilient community. This includes the distribution of potable water, water and sewerage treatment, storage facilities, the production of recycled water and stormwater management.

Integrated water systems have important environmental, social and cultural benefits, well beyond their function as essential services for urban development. These systems improve the public realm, provide urban cooling, maintain the health of natural water systems and create places for recreation that can be enjoyed by the community.

Forward planning of integrated water systems ensure communities are more liveable, safe and resilient. Noting the significant costs and lead times in extending and upgrading water, wastewater, recycled water and stormwater infrastructure, forward planning before rezoning land would enable more orderly sequencing of development of new housing and job precincts.

It is critical that due consideration is given to land use and water planning in Western Sydney. This is required to effectively adapt to, and mitigate, flood risks and more frequent and extreme weather events, such as the recent major weather events in Western Sydney which had, and continue to have, significant social, environmental and economic impacts.

Market Capacity Pressures

The Panel is aware of market capacity pressures and associated inflationary effects being faced by Government. Analysis undertaken by Infrastructure Australia demonstrates that the market is arguably at capacity. This is widely recognised as driven by supply-chain disruption caused by the COVID-19 pandemic, volatile demand, and the war in the Ukraine. On-shore labour and resource shortages are also impacting market capacity with the demand-to-supply ratio for labour in NSW being 2:1. In many cases, this has resulted in project time and cost slippages⁶⁵.

Supply issues, together with the combined national infrastructure pipeline value of \$647 billion over five years to 2025-26, are contributing to market capacity pressures. Of note is that major public infrastructure projects comprise \$237 billion of the total value, with 63% of this attributable to transport infrastructure projects.

The culmination of current market conditions mean that projects are being delivered in a significantly different environment from that originally planned, with delays almost inevitable.

The evidence for the above observations is a comparison of the reported total investment for major public infrastructure projects during 2021-22 (\$44.6 billion) with this year's total investment for the same period and same set of project types (\$43.3 billion). This provides early signs that not all projects are being delivered to schedule with some projects taking longer to complete than originally planned.

Better Business Cases

The Panel acknowledges the time and resource constraints associated with project planning and development and notes that strategic and final business cases must be undertaken for capital projects, regardless of their size or complexity. The Panel believes there are opportunities to streamline these processes where there is already a clear case for investment. This includes where projects have already been identified in Infrastructure Contribution schedules to support development of new areas but still require the same detailed case for investment as other projects.

While the Panel understands that capital project delivery is subject to investment policies such as the NSW Government's Infrastructure Investor Assurance Framework, it considers that opportunities for project development efficiencies should be explored.

The Panel appreciates the value of programs such as the Place-based Infrastructure Compact and considers there are opportunities to leverage this through greater adoption of place-based business cases. In this instance, a series of prioritised projects could be packaged within a program business case, achieving efficiencies through not requiring individual business cases.

In summary, the Panel recommends the above additional matters be considered by Government alongside the priority transport infrastructure recommendations. They not only complement infrastructure planning and delivery, but in many cases are essential to the successful and effective delivery of transport infrastructure, contributing to the liveability, sustainability and productivity of Western Sydney and ensuring equity for its residents.

⁶⁵ Infrastructure Australia, November 2022, Infrastructure Market Capacity 2022 Report

Appendices

Appendix 1 – Terms of Reference

During the 2022 Australian Government Election, a commitment was made to establish an expert panel to assess Western Sydney's transport infrastructure needs and report back to the Australian Government by Q2 2023 ahead of the 2023-24 Australian Government Budget.

Role of the Panel

The Western Sydney Transport Infrastructure Panel (the Panel) will:

- undertake a strategic needs assessment of transport infrastructure in Western Sydney (see definition below), considering any existing land transport strategies, blueprints and other relevant studies, and consult with major stakeholders where appropriate;
- develop an independent view of the strategic transport priorities that will support the growth of Western Sydney as a destination for living, recreation and business;
- provide recommendations to the Australian and NSW Governments on identified gaps, and opportunities for major transport infrastructure in Western Sydney, suggested approaches to resolving identified gaps in order to produce a prioritised, sequenced view of the region's transport needs;
- provide these recommendations by Q2 2023 ahead of the 2023-24 Commonwealth Budget; and
- provide interim updates to the Australian Government, as requested.

The work of the Panel is not intended to:

- replace existing State or Local Government transport plans;
- commit Governments to funding land transport infrastructure projects; and
- identify strategic needs outside the Western Sydney area even when they may provide some benefit to Western Sydney.

The Australian Government may wish to release the findings in part or in full.

Panel members will be required to sign Conflict of Interest and Confidentiality declarations prior to commencing the role. No information received in the course of participating in the panel can be used for purposes outside the context of the panel.

With the exception of the Chair, panel members will not have authority to speak publicly on behalf of the Panel.

Western Sydney Area Boundary

For the purposes of the Panel, Western Sydney encompasses the following local government areas:

- The Western Parkland City, defined by the NSW Government as comprising the eight councils of the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly;
- The Hills Shire Council; and
- Blacktown City Council.

Membership

Panel membership will include a Chair, one representative from the Australian Government, NSW Government, business sector, academia and two representatives each from Local Government and the Western Sydney community.

The Australian Government Minister for Infrastructure, Transport, Regional Development, and Local Government, together with the NSW Minister for Infrastructure, Cities and Active Transport, will consider nominations for panel membership.

The Australian Government Minister will retain sole responsibility over the establishment and membership of the panel.

The role of a Panel member may not be delegated.

Panel members will not be remunerated for their participation on the Panel, however, out-of-pocket expenses may be reimbursed.

Role of the Secretariat

The Department of Infrastructure, Transport, Regional Development, Communications and the Arts will provide secretariat support, including the publication of the findings.

Appendix 2 – Presentations and documents shared with the Panel

Date	Presenter	Presentation
2 February 2023	Greater Cities Commission – Stephanie Barker	An overview of the City Plans and the Six Region Shapers underpinned by implementation and governance. Information on population, housing and employment forecasts for Western Sydney, and the opportunities and challenges to address these.
2 February 2023	Western Parkland City Authority (WPCA) – Ann Maree Caruthers	An overview of the WPCA Blueprint, which will be used to help to inform the investment decisions the WPCA will make in the years to come. Overview of the Place Based Infrastructure Compact, which informs the coordination and delivery of new employment and housing supply and is the evidence base for prioritisation of investment to activate precincts and growth areas.
9 February 2023	Transport for NSW (TfNSW) – Simon Hunter	An overview of how TfNSW is implementing key recommendations from the State Infrastructure Strategy in Western Sydney. Lists the current and committed projects and total NSW Government investment in Western Sydney. Transport infrastructure access needs and considerations for the transport network are also included in the presentation.
16 February 2023	Infrastructure NSW – Said Hirsh and Maree Abood	Overview of the 2022 State Infrastructure Strategy, including guiding principles, long term challenges and opportunities in addressing the 57 recommendations. Land use planning in the Hawkesbury-Nepean Valley and overview of the Flood Risk Management Strategy.
23 February 2023	Department of Infrastructure, Transport Regional Development, Communications and the Arts – Robyn Legg	Overview of the role of the Commonwealth vs State regarding infrastructure investment in Western Sydney. Interactions between the Infrastructure Investment Pipeline and the Expert Panel's findings.
2 March 2023	Infrastructure Australia – David Tucker	Infrastructure Australia priority list and assessment framework used when assessing project proposals.
9 March 2023	The Hills Shire – David Reynolds	The Hills major transport infrastructure projects - including rail, bus and road.
9 March 2023	Transport for NSW – Peter Regan, Rebecca McPhee and Melissa Coram	Sydney Metro Projects in Western Sydney
16 March 2023	Transport for NSW – Dush Sharma	Highlights on the National Policy Agenda, including the five key workstreams – rail reform, infrastructure/market capacity, decarbonisation, heavy vehicle productivity and road safety.
16 March 2023	Department of Planning and Environment, NSW – Catherine Van Laeren	Current and future projects in Western Sydney Data that underlies planning in Western Sydney
23 March 2023	Western Sydney Airport Co – Simon Hickey and Scott MacKillop	Overview of the critical ground transport surrounding the Western Sydney International Airport, including short- and long-term road and public transport projects.

2.1 Other documents shared with Panel members

Date	Document
19 December 2022	Western Parkland City Authority, Blueprint 2022
19 December 2022	Greater Cities Commission, Western Sydney Place-based Infrastructure Compact
13 February 2023	Western Parkland City Councils (The Parks) input on transport infrastructure priorities
13 February 2023	Blacktown City Council transport infrastructure priorities
13 February 2023	The Hills Shire transport infrastructure priorities
13 February 2023	Draft stakeholder map
13 February 2023	Register of data received
16 February 2023	Infrastructure Australia Paper #7 in Infrastructure Australia's Reform Series
20 February 2023	Presentation from NSW Ports
21 February 2023	Consolidated list of transport infrastructure priorities (TfNSW and Councils)
1 March 2023	Australian Government funded projects in Greater Sydney
1 March 2023	Map of NSW Urban Projects
1 March 2023	National Partnership Agreement on Land Transport Infrastructure (as outlined by Robyn Legg, DITRDCA) on 23 February
1 March 2023	Notes on Administration for Land Transport Infrastructure Projects 2019 – 2024
9 March 2023	WestInvest List
9 March 2023	Submission provided by David Borger based on consultation with UDIA NSW and the Property Council, and two other documents UDIA provided for background information.
9 March 2023	Community Insights from BaptistCare
4 April 2023	Future Horizons Benchmarking Report: Transport Only Details Excerpts, April 2023

Appendix 3 – Detailed Recommendations List on infrastructure priority across public transport, active transport, innovations and roads

Public Transport, Active Transport and Innovations

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
Public transport								
High	PT1 Western Parkland City and Blacktown (all modes) SBC	A multi-modal plan (considering road, rail and active transport) to stage infrastructure and services to support public transport provision in growth precincts across Western Sydney. This will consider multimodal movement of passengers and goods.	Prioritise funding for SBC development, to facilitate development of a robust evidence base to inform a network review and inform future investment for enhancements. Recommended funding contribution: \$15m [Estimated full cost of SBC: \$15m]	1-5 Years Recommendation: Completion of SBC is required before further recommendations can be made 6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made	The Panel recognises that a holistic, coordinated, detailed review of public transport across all modes in the study area is needed and supports progressing this SBC as a high priority. The SBC will guide future investigation / investment which should be considered as a priority, with its role essential to forming a sufficient evidence base to propose an informed sequencing of future Public Transport priorities.	✓✓✓	✓✓	✓✓
High	PT2 Mass Transit: Western Sydney Aerotropolis to Glenfield	Bradfield to Glenfield (extension of SW Rail Link)	N/A	1-5 Years Recommendation: Prioritise funding to commence and facilitate delivery by 2031 6-10 Years Recommendation: Prioritise funding to commence and facilitate delivery by 2031	The panel notes a FBC is underway for this line, and therefore sustained progress towards delivery should be maintained and prioritised. Delivery should commence sequentially with completion of main works (around 2025) for Sydney Metro Western Sydney Airport.	✓✓✓	✓✓✓	✓✓
High	PT3 Mass Transit: Tallawong to St Marys; Rapid bus as interim measure	Connect Sydney Metro Northwest to Sydney Metro WSA. Prioritisation of land acquisition in the first instance and rapid bus as an interim measure. Note: Rapid bus could include interim upgrades e.g. Daniels Road bus-only (Rapid-Bus Route) link between Luxford Road and Hollinsworth Road across the Castlereagh Freeway corridor. A direct, quick link from Marsden Park to trains at Mt Druitt Station, as well as St Marys Station (proposed by Blacktown CC) Consistent with IA Priority List Proposal - Corridor preservation for Western Sydney Airport rail connections - Early Stage Proposal (Stage 1)	Prioritise funding for planning and development work, including Final Business Case (FBC) development for a mass transit link between Tallawong and St Marys. Recommended funding contribution: \$30m Estimated full cost: \$40m (excluding early land acquisition)	1-5 Years Recommendation: Prioritise funding for early property acquisition / hardship requests and early works, including interim use of corridor for bus rapid transit. 6-10 Years Recommendation: Prioritise funding for commencement of works	The Panel notes that full delivery of this north-south link is vital for unlocking access to the jobs, services and opportunities for communities in the growing North-West and South-West, set to be created by the Western Sydney Airport and associated investment and development, including in Bradfield and the wider Aerotropolis. The planning and development work for these links should prioritise and deliver interim rapid transit solutions along these corridors, in addition to initial scoping and feasibility of the projects to inform subsequent investment decisions. The Panel stresses that interim bus rapid transit connections should only be considered as an interim measure only, as the full delivery of mass transit links is critical to the success of Western Sydney.	✓✓✓	✓✓✓	✓✓
High	PT4 Mass Transit: Western Sydney Aerotropolis to Campbelltown-Macarthur; Rapid bus as an interim measure	Connection from Bradfield to Campbelltown/Macarthur. Prioritisation of land acquisition in the first instance and rapid bus as an interim measure. Consistent with IA Priority List Proposal - Corridor preservation for Western Sydney Airport rail connections - Early Stage Proposal (Stage 1)	Prioritise funding for planning and development work, including FBC development for a mass transit link between the Western Sydney Aerotropolis (Bradfield) and Campbelltown/ Macarthur. Recommended funding contribution: \$30m Estimated full cost: \$40m (excluding early land acquisition)	1-5 Years Recommendation: Prioritise funding for early property acquisition / hardship requests and early works, including interim use of corridor for bus rapid transit. 6-10 Years Recommendation: Prioritise funding for commencement of works		✓✓✓	✓✓✓	✓✓

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
High	PT5 Western Sydney Rapid Bus	<p>To connect Western Sydney International Airport and the Aerotropolis to Penrith, Liverpool, Campbelltown prior to airport operations in 2026 (and potentially Parramatta - Fairfield)</p> <p>Rapid bus services will be vital to facilitating connectivity to Western Sydney and the Western Sydney Airport.</p> <p>Consistent with IA Priority List Proposal - Western Sydney Airport public transport connections - Early Stage Proposal (Stage 1)</p>	N/A	<p>1-5 Years Recommendation: Delivery of a baseline rapid-bus service between key metropolitan centres and the Western Sydney International Airport and Aerotropolis.</p> <p>6-10 Years Recommendation: Delivery of an enhanced and high-frequency rapid-bus service between key metropolitan centres and the Western Sydney International Airport and Aerotropolis.</p>	<p>The Panel recognises the complexity and significant cost of delivering a Rapid Bus network in Western Sydney. Notwithstanding, it understands that provision of bus services to the Western Sydney International Airport by day-1 of airport operations is at significant risk without this significant investment.</p> <p>It recognises the importance of a rapid-bus network, in particular to fulfil the gaps of the north-south rail link between St Marys and Tallawong, and Bradfield to Campbelltown/ Macarthur, as an interim measure until these priority metro lines are built in the medium to longer term. These links are vital to connectivity between housing, equity, employment and opportunity / access in the region.</p> <p>The Panel notes the synergies in planning and delivering these particular Rapid Bus and Metro links, and accordingly recommends that priority be given to acquiring land for these corridors, and interim use as rapid bus corridors, ahead of full metro delivery and operations. It stresses that rapid bus services should be implemented as an interim and short-term measure and not preclude / be at the expense of a final metro rail solution.</p>	✓✓✓	✓	✓✓
High	PT6 New Cumberland Line SBC	<p>The New Cumberland Line is a transformative investment program that will improve connectivity and equitable access to employment for the Cumberland-Fairfield-Liverpool corridor including a direct connection to Parramatta CBD and Epping. The extension to Epping/Macquarie Park will support access to jobs and education for these disadvantaged communities.</p> <p>A rolling program of investments would upgrade the corridor to a 'Next Generation' service i.e. provide a significant uplift in service to an existing corridor, which is currently underperforming. The increase in frequencies is achieved through simplifying the network and introducing a more tech enabled single deck fleet (still with drivers).</p>	<p>Prioritise funding for Strategic Business Case (SBC) development to identify investment opportunities for an enhanced Cumberland Line (spanning from Schofields in the north, to Leppington in the south, via Parramatta).</p> <p>Recommended funding contribution: \$10m</p> <p>Estimated full cost of SBC: \$10m</p>	<p>1-5 Years Recommendation: Completion of SBC is required before further recommendations can be made.</p> <p>6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.</p>	<p>The Panel notes that this project has the potential to have a transformative effect on Western Sydney by enhancing connectivity, and in turn access to jobs and opportunities, while reducing reliance on private vehicles. The Panel also notes the significance of the youth unemployment rate in parts of Western Sydney covered by the Cumberland line, and the opportunity for assisting to address this through public transport enhancements such as this.</p> <p>The Panel notes the increased frequency of the New Cumberland Line would provide a better outcome for customers travelling between the new airport/Bradfield and Liverpool/Parramatta as the interchange penalty at Glenfield will be reduced. It will also improve access to Parramatta for customers from Campbelltown who currently have a poor interchange at Glenfield with only two trains per hour from Glenfield to Parramatta.</p>	✓✓✓	✓✓✓	✓✓

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
High	PT7 Western Parkland City Zero Emissions Bus depot SBC	<p>Investigate whether the best outcome for the Western Parkland City is to add more bus depots to support population growth or bring forward the conversion of existing bus depots to support ZEB operations.</p> <p>This would consider the Western Parkland City's share of TfNSW's public bus fleet which currently consists of approximately 8,300 diesel-powered vehicles. With the transition of Sydney's trains to green energy in late 2021, buses account for 78% of TfNSW's total emissions, and approximately 3% of NSW's total CO2 emissions.</p> <p>Consistent with IA Priority List Proposal - NSW zero emissions buses - Early Stage Proposal (Stage 1)</p>	N/A	<p>1-5 Years Recommendation: Prioritise funding for SBC</p> <p>6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.</p>	<p>The Panel notes that reducing greenhouse gas emissions is a policy commitment at the state, federal and international level. Transitioning the bus fleet to electric vehicles aligns with the Commonwealth Government's Paris Agreement commitments, and would contribute to NSW's Climate Change policy framework, and the NSW Department of Planning and Environment's Net Zero Plan.</p> <p>The Panel notes that this project should not just be confined to the WPC, but address the wider study area.</p>	✓✓	✓	✓✓✓
Moderate	PT8 Western Rail Corridors SBC (St Marys to Penrith and Richmond Line)	<p>Quadruplication of western line between St Marys and Penrith.</p> <p>Targeted duplication of sections of the line between Vineyard and Richmond to allow increased frequency across the day.</p> <p>Removal of some level crossings on the Richmond line This project to include digital systems along these corridors and other supporting infrastructure. Ensuring an efficient interchange between the T1 Western Line services and Sydney Metro – Western Sydney Airport would be a key part of this work.</p>	N/A	<p>1-5 Years Recommendation: Prioritise funding for SBC</p> <p>6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.</p>	<p>The Panel notes that passenger volumes on the T1 line are significant in peak periods, and anticipated growth is likely to place further pressure on this rail corridor.</p> <p>The Panel notes the benefits of upgrades to the Richmond Line, including that this would fulfil a 2009 priority of infrastructure in the North-west growth area, and result in avoided private vehicle trips to Schofields to catch a frequent train. It would enhance access to one of the most rapidly up-skilling areas in Greater Sydney.</p>	✓✓✓	✓✓✓	✓✓
Moderate	PT9 Schofields to Vineyard duplication SBC	<p>Duplication of the Richmond line between Schofields and Vineyard to allow increased frequency from Schofields to Vineyard.</p>	N/A	<p>1-5 Years Recommendation: Prioritise funding for SBC</p> <p>6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.</p>	<p>The Panel notes the line between Schofields and Richmond consists of a single track, constraining additional service frequency north of Schofields (currently a minimum of two trains per hour / 30 min frequency). Duplication of the line would also remove a congested level crossing at Garfield Rd. Note also flood evacuation benefits.</p> <p>The Panel notes that a recently approved SEPP at Riverstone for an employment precinct would create around 30,000 new jobs, which would have an inferior service rail frequency in the absence of duplication.</p>	✓✓✓	✓✓✓	✓✓

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
Moderate	PT10 Public Transport Upgrades between Campbelltown and Wilton / Including investigate rail electrification south of Macarthur	SBC would consider a range of options, including: 1. Electrification of southern Highlands Rail Line / extension of Rail Line to Wilton / part of southern fast rail corridor (cost at least \$4bn) 2. Rapid bus connection between Campbelltown and Wilton.	N/A	1-5 Years Recommendation: Prioritise funding for SBC 6-10 Years Recommendation: Completion of SBC is required before further recommendations can be made.	The Panel notes an SBC could consider a multi-modal view of the growth area's transport needs, including staged delivery of public transport infrastructure and services in the short and medium term. The Panel recommends that this consider broader regional connectivity. The Panel notes the current service limitations of the diesel passenger rail service south of Macarthur, and complexities of electrification given the line's interfaces with the freight rail network.	✓✓✓	✓	✓✓
Policy Position	PT11 Faster Rail connection from Canberra to Sydney via Western Sydney	Provision for scoping of a fast rail route through outer south-western Sydney, extending current explorations of a Newcastle and Central Coast route, to assess a potential route intersecting Parramatta, Bradfield, Campbelltown, Bowral then Canberra.	N/A	1-5 Years Recommendation: Planning to consider prioritisation of stops in Western Sydney. 6-10 Years Recommendation: Greater understanding of planning work / likely recommendations needed prior to further recommendations being made.	The Panel notes that planning is underway for faster rail, and strongly advocates for multiple stops in Western Sydney, including benefits of better connections between south-west Sydney and Parramatta.	✓✓✓	✓✓	✓✓
Policy Position	PT12 Greater Macarthur Transit Corridor	Transit corridor as articulated in the Greater Macarthur Structure Plan, providing public transport connection with Campbelltown-Macarthur north-south to Gilead, Appin and connect to rail at Douglas Park.	N/A	The Panel notes the criticality of this transit corridor in providing this growth area with public transport access, and strongly advocates for its delivery to be funded by developers, but delivered early, as agreed per planning conditions for re-zoning. Further, the Panel notes that planning and delivery needs to consider the wider network impacts and function – in this instance the interface with Menangle Road Upgrade (R9)	Refer recommendation.	-	-	-
Policy Position	PT13 Future Mass Transit Links in Western Sydney	Various Extensions, including: <ul style="list-style-type: none"> • Bankstown to Liverpool / Glenfield • Westmead to WSA • Norwest to Parramatta Consistent with IA Priority List Proposal - Corridor preservation for Western Sydney Airport rail connections - Early Stage Proposal (Stage 1)	N/A	The Panel considers the need for further studies / investigation to identify next steps / what more is needed and when / most appropriate mode, to inform a future recommendation.	The Panel notes the importance of these connections, which are part of a range of projects for which it does not have sufficient intelligence to make a recommendation on at this point.	-	-	-

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
Active Transport								
High	A1 15-minute cities pilot program for activations to support local infrastructure and enhanced access to active transport and neighbourhood centres	<p>A program to improve walkability, access to local services, and promote 15-minute neighbourhoods.</p> <p>This would facilitate the development and deployment of approx. 3 pilot projects across Western Sydney, consisting of short-term interventions to improve walkability, public realm, local infrastructure and promote a shift away from car dominated shopping centres.</p>	<p>The Panel recommends a contribution of funding towards developing and piloting a program with around 3 pilot projects across Western Sydney to implement changes that focus on short term interventions to improve 15-minute neighbourhoods and walkability.</p> <p>Recommended funding contribution: \$9m (\$3m per activation)</p> <p>Estimated full cost: \$10m (initial, including pilot program development)</p>	<p>1-5 Years Recommendation: Pending successful development of program and deployment of pilot projects, sustained program roll-out, including development of SBC to support this.</p> <p>[estimated cost \$10m for SBC; average \$3m per activation]</p> <p>6-10 Years Recommendation: Pending successful development of program and deployment of pilot projects, sustained program roll-out.</p>	<p>The Panel notes this would be one of a range of measures which seeks to address barriers to active transport, prevalent in Western Sydney where in many cases there is inconsistent footway quality; Fragmented bicycle network; Inappropriate urban structure that is more car dependent relative to walking.</p> <p>These interventions would include both provision of active transport infrastructure and changes to urban form and structure to increase 15-minute accessibility.</p>	✓✓✓	✓	✓✓
High	A2 Western City strategic cycleway network FBC	<p>26 strategic cycleway corridors have been identified for the Western Parkland City. These make up approximately 295 km of network. The corridors will connect key centres and major points of interest. Exact routes will be subject to detailed design and collaboration with councils and the community.</p> <p>The network has been developed to provide connections within and between the four metropolitan clusters that make up the WPC well as towards Central River City to ensure a connected network across Greater Sydney</p>	N/A	<p>1-5 Years Recommendation: Prioritise funding for FBC. Completion of FBC is required before further specific recommendations can be made, however prioritisation of delivery should consider issues in Western Sydney which have the greatest social need / health impacts / lowest areas of active transport usage.</p>	<p>The Panel considers given the scope of this project being solely on cycleways, and the planning /investigation work which has been undertaken, that this project should advance to FBC stage. The Panel notes the need for prioritisation to consider access to areas with the greatest social need.</p> <p>The Panel notes the following factors which supporting its recommendations for investment in active transport: Safety and a lack of suitable connections is a barrier to riding; Lack of physical activity in adults is a growing concern with approximately 60% of the adult population in the WPC overweight or obese; Increasing riding opportunities enables people to be more active;</p>	✓✓✓	✓	✓✓

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
Innovations								
High	I1 Digital Transport Efficiencies Program	<p>Investigate deployment of smart and digital technologies to enhance the connectedness, efficiency and resilience of the transport network.</p> <p>This would include options to roll out smart solutions in Western Sydney including: digital plumbing, connected street-furniture and multi-function poles, digital signage, live information and mobile apps; interactive pavement markings and dynamic kerb management; Integrated and secure data management and sharing combined with intelligent transport systems.</p> <p>Consistent with IA Priority List Proposal - Digital infrastructure to enable smart technologies in the Western Parkland City - Early Stage Proposal (Stage 1)</p>	N/A	<p>1-5 Years Recommendation: Prioritise funding for FBC. Completion of FBC is required before further specific recommendations can be made, however delivery should prioritise multi-lingual digital interfaces, and emergency management use.</p> <p>6-10 Years Recommendation: Completion of FBC is required before further specific recommendations can be made.</p>	The Panel notes the benefits of using digital technologies to enhance the transport network, at a relatively low cost for high benefit in many instances such as emergency management, as well as back-up network communication to facilitate continuity of services.	✓✓	✓✓	✓✓
High	I2 Better integration between land use and infrastructure planning (e.g. Place-based Infrastructure Compact program)	<p>Better alignment between infrastructure and land use planning is needed to ensure that land-use decisions are supported by coordinated infrastructure provision, ensuring new and growing communities are supported with infrastructure and services.</p> <p>The Place-based Infrastructure Compact (PIC) program (endorsed by three levels of government) led by the Western Parkland City Authority is a key example of this, and further funding would expand the reach of the program to the study area and better align infrastructure and land use planning through an annual program focussing on staging, sequencing and prioritisation of infrastructure investment, informed by a robust evidence base.</p>	<p>Prioritise funding to continue and expand land-use and infrastructure coordination initiatives.</p> <p>Recommended funding contribution \$4m</p> <p>Estimated full cost: \$4m annually</p>	<p>1-5 Years Recommendation: Ongoing annual funding for the PIC program or similar, with provision for points of review / evaluation to consider program effectiveness and opportunities for enhancement.</p>	<p>The Panel recommends the continuation of an integrated, multi-government program which strengthens and better aligns infrastructure and land use planning, coordination and delivery.</p> <p>This is considered essential for guiding informed and holistic place-focused infrastructure investment to ensure infrastructure and service needs of growing areas can be met, providing the foundations for liveable places and healthy communities to be created. This represents a shift away from incremental planning on a project-by-project basis, to establishing and coordinating delivery for long-term investment needs and options.</p> <p>Sustained Australian Government support would allow for the continuation of key programs such as the Western Sydney Place-based Infrastructure Compact, allowing for it to be enhanced and expanded to areas including The Hills and Blacktown LGAs. This would facilitate a more sophisticated understanding of forecast growth and infrastructure and service needs and staging across more of Western Sydney, particularly through the public facing information made available through the program.</p>	✓✓✓	✓✓	✓✓

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
High	I3 Urban Sustainability City Research Fund	<p>Research focused on Urban Sustainability, and its potential role in providing recommendations on delivering more sustainable communities.</p> <p>This would fund research to understand how Western Sydney can have a more sustainable and resilient transport system, better integration with digital systems, heat mitigation to encourage active transport take-up, and better suburb design which encourages walkability and high streets to flourish. A partnership between relevant agencies and entities including the NSW Western Parkland City Authority, Universities, and CSIRO is recommended to ensure that research is evolving with the region's growth.</p> <p>This would build on the initial concept that has been developed by the Western Parkland City Authority who are developing a City Research Program.</p>	<p>Prioritise funding for research and investigation in urban sustainability for Western Sydney.</p> <p>Recommended funding contribution: \$2m</p> <p>Estimated full cost: \$2m for initial tranche of work in 2023-24.</p>	<p>1-5 Years Recommendation: Initial tranche of work should provide the basis for a forward program and identify opportunities for targeted further research and intervention. Ongoing annual funding is recommended to support this.</p>	<p>Western Sydney experiences more days of extreme heat, is subject to significant flooding and has high reliance on cars to facilitate access to jobs and services than most other parts of Greater Sydney.</p> <p>The research fund would investigate how places and neighbourhoods could be better designed and/or retrofitted to promote better amenity and sustainability.</p> <p>Walkable retail and towns create opportunities for social interaction, exercise and wellbeing and increases the viability of public transport. A research fund provides the opportunity to utilise scientific expertise and cross government engagement to understand how we can deliver measurable improvements to a city's urban sustainability by improving walkability, liveability and high-quality places to live.</p>	✓✓✓	✓	✓✓✓

Roads

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
High	R1 Western City Road Transport Network Development	<p>Seven priority road corridors within the Aerotropolis to support the Western Sydney International Airport and connections to Sydney Metro Western Sydney Airport, including Eastern Ring Road, Luddenham Road, Fifteenth Avenue (West), Devonshire Road, Badgerys Creek Road, Bradfield Metro Link Road and Pitt Street (West).</p> <p>The FBC will prioritise the sequence of roads to be upgraded.</p> <p>The delivery of these roads prior to the opening of the airport is at-risk, and in many cases unlikely given the likely timeframe for developing the Final Business Case, investment decisions following this, land acquisition, procurement processes, and mobilisation of works to enable delivery.</p>	<p>Prioritise funding to progress development of a FBC for the Western City Road Transport Network, covering Badgerys Creek Road; Eastern Ring Road; Luddenham Road; Fifteenth Avenue; Devonshire Road; Metro Link Road; and Pitt St.</p> <p>Recommended funding contribution: \$35m</p> <p>Estimated full cost of FBC: \$70m</p>	<p>1-5 Years Recommendation: Subject to completion and recommendations of FBC, funding to commence delivery of priority roads, as identified in FBC.</p> <p>6-10 Years Recommendation: Funding to complete delivery of all roads within this package.</p>	<p>The Panel notes that this road network was largely designed to perform a semi-rural / peri-urban role, and given the significant transformation and development of the region, it will increasingly become unfit for its new purpose and preclude efficient movement of passenger and freight transport and potentially cause significant road safety issues.</p> <p>This package of roads is akin to the Western Sydney Infrastructure Plan, to set up the airport and surrounding area for success. With development underway, investment is critical to realise the full benefits, including providing access to the many thousands of new jobs set to be delivered in the precinct.</p>	✓✓	✓✓✓	✓
High	R2 Richmond Road (and Windsor Road)	<p>Support NW Growth Area (Marsden, Schofields and Colebee)</p> <ul style="list-style-type: none"> Richmond Road widen to 6 lanes from Westlink M7 to Townson Road, Marsden Park. Richmond Road widen to 6 lanes from Townson Road to Elara Boulevard Richmond Road widen to 6 lanes from Elara Boulevard to South Creek <p>Increase of road capacity can meet the future needs of the North West Priority Land Release Area.</p>		<p>1-5 Years Recommendation: Funding to complete delivery of Richmond Road upgrades (M7 to Townson Road initially). Corridor Strategic Business case to inform future funding decisions.</p>	<p>The Panel recommends continued funding of roads in the North-west Growth Area, and notes that transport infrastructure is potentially constraining future growth / re-zoning.</p> <p>Unlocking road congestion will have a direct correlation on improving economic opportunities to the Castle Hill, Norwest, Riverstone and Marsden Park Communities</p> <p>The Marsden Park North and Riverstone West residential release areas also require the upgrade of Richmond Road to 6-lanes at the proposed Bandon Road intersection. Richmond Road is a key flood evacuation route for the Hawkesbury/ Nepean which is to be raised by about five metres as part of the upgrade.</p> <p>The Panel notes that TfNSW is currently developing a Corridor Strategic Business Case for the full Richmond Road upgrade between the M7 and The Driftway (not funded for delivery). This will cover all the gaps in the corridor and capture those sections of Richmond Road that now have partial funding.</p>	✓✓✓	✓✓	✓✓

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
High	R3 Mamre Rd (Stage 2)	Upgrade Mamre Road (stage 2) (4 lanes on ultimate 6 lane alignment) between Erskine Park and Kemps Creek to support the Mamre Road precinct. Map .	N/A	1-5 Years Recommendation: Subject to completion of FBC, funding to deliver upgrade.	Urgent need for upgrade of this road to facilitate serviceability / approval of SSDAs. Also criticality of N/S function between M4 and airport. This area will be the largest industrial area in New South Wales and will attract 80% on the containerised freight from Port Botany.	✓	✓✓✓	
High	R4 Elizabeth Drive Upgrade	Upgrade of Elizabeth Drive to a four-lane road and include provision for a six-lane configuration. Potential to have this staged into development and enabling works to support safety improvements at critical sections between Devonshire Rd and Western Rd, Kemps Creek (\$220 million at P90) ahead of full upgrade - \$1bn+ Note: Does not include section east of M7, flagged by Fairfield council	N/A	1-5 Years Recommendation: Funding to complete development and enabling works / commence full upgrade post completion of M12 motorway (2026); undertake full upgrade.	Enabling works would allow for critical safety improvements – essential given the increasing number of vehicles (particularly heavy). The completion of the M12 motorway will facilitate an east-west link, permitting closure and the full upgrade to take place following this.	✓	✓✓✓	
High	R5 Cambridge Avenue, Glenfield	Cambridge Avenue is a 2-lane rural road. Duplication and extension of Cambridge Avenue from Moorebank Avenue westward to the Hume Motorway (M31) to improve access and capacity. Part of Moorebank Intermodal Terminal Road Access Strategy to address increasing traffic and freight movements in the Liverpool-Moorebank area over the next 10-20 years. Consistent with IA Priority List Proposal - Moorebank Intermodal Terminal road connections upgrade - Early Stage Proposal (Stage 1)	Prioritise funding to undertake a Final Business Case for the duplication and extension of Cambridge Avenue from Moorebank Avenue westward to the Hume Motorway (M31). Recommended funding contribution: \$15m Estimated full cost of FBC: \$15m	1-5 Years Recommendation: Subject to completion of FBC, funding to deliver early works including junction treatment at M31 6-10 Years Recommendation: Completion of full duplication / scope of works.	The Panel notes the importance of this upgrade for the broader south-west region and its role in not only unlocking urban renewal opportunities in Glenfield, but its role in enhancing access to the Moorebank Intermodal Terminal and addressing the long term population and employment growth in the Liverpool Moorebank sub region.	✓✓	✓✓✓	✓
High	R6 Northern Road Upgrade FBC (Borrowdale to Londonderry)	The Northern Road between Borrowdale and Londonderry has experienced significant growth with the establishment of Jordan Springs. Additionally two regional evacuation routes converge at this section of The Northern Road with the constraint corridor identified for an upgrade in the Hawkesbury Nepean Valley resilience package.	Prioritise funding to progress a Final Business Case for the Northern Road (Borrowdale to Londonderry) upgrade (NB: Association with Hawkesbury-Nepean Valley Flood Evacuation Road Resilience Upgrade Program). Recommended funding contribution \$10m Estimated full cost of FBC: \$12m	1-5 Years Recommendation: Subject to completion of FBC, funding to deliver upgrade	The Panel supports flood evacuation in the Hawkesbury Nepean Valley and broader network resilience. Given its complementary nature to these works and its broader role in supporting growth in the North-West, the Panel recommends a funding contribution to The Northern Road (Borrowdale to Londonderry) upgrade, which will duplicate the existing road from two lanes to four lanes. The Panel notes planning will consider the holistic needs of the HNV flood evacuation network and future connections to the Castlereagh Connection (in the event of funding for Castlereagh connection planning/development being made available).	✓✓	✓	✓✓

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
High	R7 Spring Farm Parkway (Stage 2) and link road to Appin Road (east-west link)	<p><u>Stage 2</u>: Delivery of Spring Farm Parkway an east-west arterial road, extending east from Camden Bypass, connecting to the M31 Hume Motorway.</p> <p>Further stage: <u>Link Road</u> East/West Connection from Appin Road to M31 South of Campbelltown (CCC priority).</p>	<p>Prioritise funding to progress planning from Strategic Business Case to Final Business Case for Spring Farm Parkway Stage 2</p> <p>Recommended funding contribution: \$15m</p> <p>Estimated full cost of FBC: \$15m</p>	<p>1-5 Years Recommendation: Funding to progress investigation of link road; commencement of works for Spring Farm Parkway Stage 2.</p> <p>6-10 Years Recommendation: Delivery of Link Road between Appin Road to Spring Farm Parkway.</p>	<p>The Panel supports completion of the key east-west link for residents of Macarthur between the suburbs of Menangle Park and Spring Farm, to support the Greater Macarthur Growth Area, and supplement Stage 1 (in delivery) which provides for a new interchange with the Hume Motorway. This is a key road which will provide infrastructure to support provision of future public transport in this area.</p> <p>The connection between Appin Road to Menangle Road would complete the necessary upgrades immediately south of Campbelltown City Centre to alleviate the existing pressure on the only east-west connection in the City Centre, Narellan Road.</p>	✓✓✓	✓	✓
High	R8 Menangle Road	<p><u>Upgrade Menangle Road</u>, (from Mount Gilead to Macarthur). Duplication and upgrade. The projects will help ease congestion and connect communities. It would include a 4-lane divided carriageway with investigation of 8 intersection upgrades.</p>	<p>Prioritise funding to progress planning from Strategic Business Case to Final Business Case.</p> <p>Recommended funding contribution: \$15m</p> <p>Estimated full cost of FBC: \$15m</p>	<p>1-5 Years Recommendation: Subject to completion of FBC, funding to deliver upgrade. Note the need to account for the interface with this project and the Greater Mac Transit corridor</p>	<p>The Panel notes that this 7.2km upgrade of Menangle Road between Tindall Street, Campbelltown and Cummins Road, Menangle Park is critical to supporting future residential growth in the region, and its current state as a 2-lane rural road.</p> <p>This project is needed to support the extensive greenfield development and allow for better traffic flow and safety if an evacuation is needed.</p>	✓✓✓	✓	✓✓
High	R9 Outer Sydney Orbital (Motorway & Freight Line) Corridor Preservation	<p>The Outer Sydney Orbital is a proposed corridor for the M9 motorway and freight rail line in Western Sydney. The motorway is proposed run parallel to The Northern Road.</p> <p>The corridor for the Outer Sydney Orbital Stage 1 from Richmond Road to the Hume Motorway was exhibited in 2018 and has been shown in all Western Parkland City planning documents since.</p> <p>Protecting the Outer Sydney Orbital corridor triggers the need to comply with the NSW Land Acquisition (Just Terms Compensation) Act, whereby requests for early acquisition need to be funded to address any hardships experienced by a landowner. Without funding to undertake this, the corridor cannot be protected.</p> <p>Consistent with IA Priority List Proposal - Corridor preservation for Outer Sydney Orbital road and rail/M9, and Castlereagh Connection</p>	N/A	<p>1-5 Years Recommendation: Funding for early land acquisition to enable preservation of the corridor, and consideration of Stage 2 as an early connection between M31 Hume Motorway and Appin Road.</p>	<p>The Panel notes the Outer Sydney Orbital will provide for a transport connection between the Hills district and Macarthur, and provide for a motorway and dedicated freight rail line to support employment and growth. Beyond this, it will provide for essential transport connections including a dedicated freight network to support the Six Cities vision. Given the role it is set to perform in future, it is of strategic significance at both a state and national level.</p> <p>The Panel notes that while the Outer Sydney Orbital isn't proposed to be delivered until the longer term, planning and immediate corridor preservation is critical, to potentially save prohibitively expensive land acquisition and compensation costs closer to delivery, at which time land may could be developed.</p>	✓✓✓	✓✓✓	✓✓

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
Moderate	R10 Werrington Arterial Stage 2 Investigation FBC (connectivity between North-West Growth Area and Western Sydney Aerotropolis)	An important north-south link through North West Sydney that bypasses St Marys town centre which is set to undergo significant land use and transport changes including rapid population and employment growth of the next 20 years.	Prioritise funding to progress planning from Strategic Business Case to Final Business case. To include interrelationship with M9/Outer Sydney Orbital Corridor. Recommended funding contribution \$10m Estimated full cost of FBC: \$12m	1-5 year Recommendation: Subject to completion of FBC, funding to commence delivery of priority connection (the 2.2km "missing link" between Dunheved Road and Gipps Street at Werrington; and corridor protection / acquisition of preferred corridor. 6-10 Years Recommendation: Further upgrade of northern section towards North-West Growth Area, per prioritisation consideration in FBC.	The Panel acknowledges the need for better connectivity between the North-West, and the M4 (and further south towards the Western Sydney Aerotropolis), noting that a key link between the M4 / Richmond Road would fulfill a key link between employment areas at St Marys and Marsden Park, and the Strategic Centre at Marsden Park. This recommendation is made on the understanding that delivery of the Outer Sydney Orbital / M9 would not be forthcoming for at least the next 20 years, and as such, this new road corridor could serve the connection in the meantime.	✓✓	✓✓	✓
Moderate	R11 Garfield Road Corridor / North West Growth Corridor – Planning and Early Works	Garfield Road East upgrade - 3.4 kilometres between Piccadilly Street, Riverstone and Windsor Road, Box Hill. Garfield Road Central upgrade and widening 0.8km from Denmark Road to Piccadilly Street Garfield Road West proposed 4km upgrade from Richmond Road, Marsden Park to Denmark Road, Riverstone. The project will help to finalise planning and undertake early works on the NW Growth Corridor to inform a future investment decision for construction. Roads considered include Bandon Road and Garfield Road.	N/A	1-5 year Recommendation: Delivery of Garfield Road East (Piccadilly St to Windsor Road) and Garfield Road Central.	Provide an additional road connection between Richmond Road, Marsden Park to Windsor Road, Vineyard. When built it will provide alternative access across the North West Growth Area, reduce traffic congestion in Riverstone town centre and support growth and increase jobs Marsden Park employment area in the North West growth area. Prioritising Garfield Road Central will also result in removal of a level crossing on the T1 Richmond Line. The Panel notes that future planning and investment in North West Growth Corridor roads needs to consider additional traffic potentially generated from toll-road avoidance.	✓✓✓	✓✓	
Moderate	R12 Picton Road Upgrade / Bypass	Bypass: Provide a new or improved connection between Picton Road and the Old Hume Highway to bypass the urban and commercial centre of Picton Upgrade: (connection between M31 and Wollongong): This includes: <ul style="list-style-type: none"> • Duplication of Picton Road • Interchange upgrade – Picton road / M31 Hume Motorway • Janderra Lane & Almond Street bridges over Picton Road Consistent with IA Priority List Proposal - Picton Road safety and capacity - Early Stage Proposal (Stage 1)	N/A	1-5 Years Recommendation: Funding for early works of Picton Bypass 6-10 Years Recommendation: Completion of Picton Bypass; Upgrade of Picton Road	Bypass is an alternative route for heavy vehicles travelling between M31 Hume Motorway & Picton/ Tahmoor employment areas. It will remove heavy vehicles and improve safety in Argyle Street, Picton while also increasing attractiveness and development potential for the area. It will further provide an alternative evacuation route and support future growth in the area. Upgrade project is needed to support safety and growth for the area.	✓✓	✓✓	

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
Moderate	R13 Southern Link Road , (including link to Victoria Street)	New road corridor between Mamre Road and Wallgrove Road located around 35 km to the west of Sydney and is approximately 7.5 km in length which includes four bridges.	N/A	1-5 Years Recommendation: Funding to finalise FBC, with the FBC to consider extension of Victoria Street, Wetherhill Park. 6-10 Years Recommendation: Finalisation of FBC to inform next steps.	The Panel notes that while this road is a priority for facilitating access to employment lands and industry. In addition, while not currently within the scope of planning work, the Panel recommends that the investigation consider the extension of Victoria Street in Wetherhill Park to connect with this project.	✓	✓✓✓	
Moderate	R14 Hawkesbury-Nepean Valley Flood Evacuation Road Resilience Upgrade Program	Suite of 110 projects across the existing evacuation routes developed to address inadequate resilience to the road network to flooding and facilitate the safe evacuation of residents from flood prone land in advance of inundation. Consistent with IA Priority List Proposal - Hawkesbury-Nepean Valley flood management - Potential Investment Options (Stage 2)	N/A	The Panel notes the importance of this package of these flood evacuation projects, and that a FBC is underway to inform further scoping and prioritisation of these. While the Panel recommends that projects which facilitate flood evacuation are prioritised, given that the FBC is still underway, the Panel does not have sufficient information to make recommendations relating to specific project investments.	The Panel notes that funding has been committed to progress a Final Business Case and planning and development works for a broader program of works including road shoulder widening, new culvert and bridge structures, road raising, pinch point upgrades and drainage improvements.	✓✓	✓	✓✓
Moderate	R15 Bridge Upgrade: Ben Lomond Road, Minto	Improve safety and congestion along Ben Lomond Road between Airds Road and Campbelltown Road due to the restrictive lanes and load carrying capacity of the bridge (40t)		1-5 Years Recommendation: Funding for planning work to consider upgrade options.	Traffic counts note average traffic volume of over 15,000 vehicles a day, with up to 8% being heavy vehicles. Heavy vehicles on the eastern side of the bridge (with access to a rail siding) are forced to detour some 6.5km to access the M31. There have been at least 30 accidents on the existing route to bypass the bridge, and 4 accidents resulting in 10 injuries, including one serious injury within 100m of the existing bridge.	✓✓	✓✓	
High	R16 Great Western Highway Upgrade Program – Inclusion of targeted intersection upgrades	Improve the connection between Central West NSW and Sydney, reduce congestion, improve resilience and freight productivity, and provide a safer and more reliable journey for thousands of residents, commuters, tourists and freight operators who travel in, around and through the Blue Mountains.	N/A	1-5 year Recommendation: Existing program to consider intersection upgrades at: <ul style="list-style-type: none"> Lurline Street underpass – connecting Great Western Highway to Katoomba (second entrance point) Macquarie Road / Great Western Highway intersection upgrade, Springwood (bushfire evacuation route) 	The Panel recommends that a number of key intersections, both within the present study area for the GWH upgrade, and outside of this are prioritised for further investigation and upgrade, particularly with respect to having a bushfire evacuation role (Macquarie Road / GWH Springwood).	✓✓	✓	✓✓

Priority	Project	Description	Tranche 1 Recommendation	Future years Recommendations	Rationale	Liveability	Productivity	Sustainability
Moderate	R17 Appin Road	<p>Appin Road Improvements: improve safety and support affordable housing in the Greater Macarthur Growth Area, including providing additional transport capacity / enable accelerated release of new lots for Mt Gilead priority precinct. To also consider future link to Link Rd / Spring Farm Parkway.</p> <p>Currently funded for safety improvements only.</p> <p>Note: Lend Lease is upgrading short section at their access otherwise no other Appin Road investigations</p>	N/A	1-5 Years Recommendation: Funding to progress further investigation to consider holistic corridor upgrades.	<p>The Panel notes the current rural condition of Appin road and the need for upgrades to cater for additional traffic e.g. release of new lots for Mt Gilead priority precinct.</p> <p>The panel notes the interface between this project and the 'Link Road' / Spring Farm Parkway connection and considers the need for the interface of these projects to be considered as part of planning and delivery.</p>	✓✓	✓	
Moderate	R18 Castlereagh Connection	<p>Finalise planning and preparatory works for the Castlereagh Connection project in the Hawkesbury region. The project will finalise planning and undertake early works on the Castlereagh Connection to inform a future investment decision for construction. The project is expected to commence in early 2023 and be completed by early 2027.</p> <p>Section 1 M7 Motorway to Outer Sydney Orbital – Blacktown LGA</p> <p>Section 2 Outer Sydney Orbital to the Northern Road – Penrith LGA</p> <p>Section 3 The Northern Road to Castlereagh Road – Penrith LGA</p> <p>Consistent with IA Priority List Proposal - Corridor preservation for Outer Sydney Orbital road and rail/M9, and Castlereagh Connection</p>	N/A	1-5 Years Recommendation: Funding to enable further investigation to progress to identify options for investment.	<p>The Panel notes additional funding is required to progress investigation of this project.</p> <p>Road infrastructure investment in the Castlereagh Connection will improve cross regional movement of people and freight, improve critical flood evacuation capacity, reduce congestion on east/west roads including the M4 Motorway, and connect to the Western Sydney Airport.</p> <p>The Castlereagh Motorway will connect to the M7 Motorway at a major interchange at Richmond Road for access to M7 and M4 Motorways. An interchange with Richmond Road will provide access to the broader network including Rooty Hill Road North for access to Marsden Park and the North West Growth area.</p>	✓✓	✓✓	✓✓

