Finding the InfraBalance

InfraBalance
Submission to Infrastructure Australia

Contents

Acknowledgement of Country

We respectfully acknowledge the Traditional Custodians of the lands on which we live and work. We honour their enduring connection to land, waters, and community, and pay our deepest respects to Elders past and present.

We recognise that these lands have long been places of gathering, storytelling, and stewardship. The wisdom, care, and resilience of First Nations peoples continue to guide us in understanding how to live in harmony with Country.

As we plan and develop infrastructure for Melbourne, we draw inspiration from Indigenous knowledge systems that have nurtured these environments for tens of thousands of years. We are committed to embedding this spirit of respect, balance, and responsibility into our work to support a resilient and sustainable future for all.

Forward

As a team, we would like to express our sincere gratitude to Huai Lim, our Mentor, for her invaluable guidance, insight, and encouragement throughout this program. Her thoughtful advice and steady support have been instrumental in shaping our approach in this report.

We would also like to thank our colleagues and professional mentors who nominated and supported us in participating in this program. It has been an enriching experience that has broadened our perspectives, challenged our thinking, and enhanced our professional growth.

Our thanks extend to Consult Australia for their coordination and leadership, as well as to the Judges from Infrastructure Australia for their time and consideration in reviewing our work.

Executive Summary

Melbourne's western growth corridors are experiencing rapid and sustained population and housing expansion, placing significant pressure on existing transport infrastructure. In this report we examine the relationship between housing growth and the adequacy of major transport infrastructure, assessing whether the pace of investment and delivery aligns with projected demand.

The report addresses three core objectives:

1. Identify and Quantify Key Areas of Housing Growth

The report reviews housing and population data from multiple sources, including ABS Census, Victoria in Future (VIF), and local council projections. Using a Compound Annual Growth Rate (CAGR) methodology, the study quantifies both current housing supply and projected growth across a 15-year horizon (2021–2036). Melton and Wyndham emerge as high-growth areas. Visualisations, including comparative maps and growth indices, illustrate spatial disparities and highlight priority zones for future development. The report also identifies limitations in data granularity and recommends integration of local planning datasets to improve forecasting accuracy.

2. Develop an Understanding of Current and Future Adequacy and Capacity of Transport Infrastructure

Central to this objective is the development of an idealised transport network model, a gravity-weighted spatial framework inspired by biological optimisation principles, specifically, the slime mould Physarum polycephalum. This model simulates how transport connections might naturally evolve if guided by population demand and spatial efficiency. Each Local Government Area (LGA) is treated as a node, with connections weighted by population size and geographic distance.

The model was implemented using Python libraries (NetworkX, NumPy, Matplotlib) and applied to both current and projected (2036) population scenarios. It produced visual network maps and a "Relative Change Map" that identifies emerging pressure zones: areas where transport demand is expected to intensify significantly. Key findings include the need for strengthened radial connections (e.g., Melton–CBD, Wyndham–CBD) and the emergence of orbital connectivity demands (e.g., Melton–Wyndham).

This model serves as a strategic benchmark against which existing infrastructure was assessed. It revealed that while some radial corridors are partially supported by current infrastructure, they are increasingly strained. Orbital connections, critical for intra-regional movement and economic resilience, remain largely unaddressed.

3. Identify and Quantify Transport Infrastructure Gaps and Priorities for Supporting Housing Growth

By comparing the idealised network with existing and planned infrastructure, the report identifies gaps in both road and rail systems. While federal investments such as the Melton Line Upgrade and Western Highway Upgrade address immediate needs, long-term projects like the Suburban Rail Loop West and full electrification of key rail lines lack committed funding and defined timelines. The analysis shows that infrastructure delivery is lagging behind population growth, with critical projects not expected until the 2030s–2040s, well after peak growth periods.

Visual tools developed in the report highlight infrastructure coverage and gaps, guiding prioritisation of future investments. The findings emphasise the need for integrated, data-driven planning that synchronises housing development with transport investment, ensuring equitable access, reduced congestion, and improved liveability across Melbourne's outer western suburbs.

Project team

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Susmita Kabir is a Senior Civil Engineer with over 7 years' experience in major infrastructure projects across Australia and New Zealand. At Jacobs, Susmita specialises in transport infrastructure, bringing a diverse skill set that spans both technical engineering, and project & design management. Susmita is committed to delivering value-for-money projects to the broader community, identifying with incentives which build towards an inclusive society.

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Jennifer Brochier is a Senior Structural Engineer with over 10 years' experience in the UK and Australia. At BG&E, she specialises in tertiary, health, and heritage projects, combining technical expertise with a strong client focus. Passionate about sustainability, she is committed to delivering efficient, resilient designs that balance innovation with practicality.

Tabassom Afshar, PhD RPEV CPEng NER

Senior Geotechnical Engineer - Arcadis

Tabassom is a Chartered Professional Engineer with a PhD in Geotechnical Engineering and over ten years of combined industry and research experience. She has worked on major civil infrastructure projects such as Suburban Rail Loop, Level Crossing Removal Projects and West Gate Tunnel Project in Victoria, Australia. She has a demonstrated history of detailed geotechnical and foundation designs while working in multidisciplinary teams.

Jess Haines-Holgate

Associate Strategic Consultant - Jacobs

Jess is passionate about the role infrastructure can play in social and economic transformation. As an Associate Strategic Consultant, she provides strategic guidance on the planning, design, and delivery of infrastructure to create spaces which are more accessible, liveable, and connected for all.

Introduction

Transport infrastructure must keep pace with the rapid expansion of our cities. Too often, new suburbs are developed before essential transport links, such as arterial road upgrades or public transport upgrades, are in place. These areas are commonly home to higher proportions of young families, recent migrants, and lower socio-economic communities, who are least equipped to absorb the costs of inadequate infrastructure. As a result, residents face longer and less reliable commute times, greater financial strain from the necessity of owning multiple cars, and increased travel times to access health and other essential services. The burden of delayed infrastructure delivery therefore falls disproportionately on those who can least afford it.

It is therefore essential to identify where housing growth is occurring and to quantify the adequacy of transport infrastructure in those areas. This can guide government in allocating funding to transport projects more effectively, ensuring that investment is directed to where it will deliver the greatest benefit.

Project scope

The scope of this project is to assess the alignment between housing growth and the capacity of major transport infrastructure in Melbourne's west. This involves answering the following three key questions:

1. Identify and quantify key areas of housing growth
2. Develop an understanding of current and future adequacy and capacity of transport infrastructure (major transport infrastructure including arterial roads and rail)
3. Identify and quantify transport infrastructure gaps and priorities for supporting housing growth.

This report focuses on major transport infrastructure including major arterial road network and passenger rail networks.

Geographical scope

Within Victoria, Melbourne's west is a key growth area due to a combination of rapid population growth, housing affordability, and significant infrastructure investment. The region is projected to absorb a large share of Victoria's future population growth, driven in part by overseas migration and demand from young families and first-home buyers seeking affordable housing options. Local Government Areas (LGA) such as Melton and Wyndham are experiencing substantial residential development, with some areas welcoming thousands of new residents annually.

Considering housing growth and transport infrastructure at this more localised level offers several key advantages over broader, state-based assessments. Localised analysis allows for a more accurate understanding of variations in growth patterns and infrastructure adequacy. This granularity supports more targeted and responsive planning, enabling decision-makers to prioritise infrastructure investments where they are most needed and ensure that growth is supported in a sustainable and equitable way.

Methodology

This project adopts a structured, three-step methodology to evaluate how well housing growth aligns with transport infrastructure in Melbourne's west. Central to this approach is the development of an idealised transport network designed to support and guide future urban development. An overview of the steps is provided below:

Step 1: Review population and housing growth data

Step 1 involves a comprehensive review of population and housing growth data across Victoria to understand future demand and identify high-growth areas over the next 10 years. This initial analysis provides a high-level snapshot of where population pressures are expected to intensify and where future development is likely to be concentrated.

This analysis highlighted Melbourne's west, particularly the local government areas of Melton, Tarneit, and Werribee, as a key priority for future housing and infrastructure planning.

Focusing on this geographic scope, the project then examines local government dwelling and population projections and compares them with the State Government's top-down forecasts. This comparison offers an independent perspective that can help federal funding bodies assess the reliability of state projections and inform more targeted infrastructure investment decisions.

The findings of this Step are outlined in Part 1.

Step 2: Develop an idealised network based on population and housing growth data

Building on the population growth insights within the defined geographic scope, the project applies current and projected housing and population data to design an idealised transport network that meets both present and future needs and supports equitable access across the region.

This idealised network supports the visual identification of optimal transport coverage, highlights existing infrastructure gaps, and helps prioritise areas for future investment. It can serve as a strategic planning tool to guide future infrastructure development in Melbourne's west, ensuring that transport provision keeps pace with the region's rapid urban expansion.

The idealised transport network was inspired by the slime mould concept, which models efficient, adaptive pathfinding in biological systems and was used as a conceptual guide to identify optimal transport corridors based on connectivity, flow, and responsiveness to demand.

The findings of this Step are outlined in Part 2.

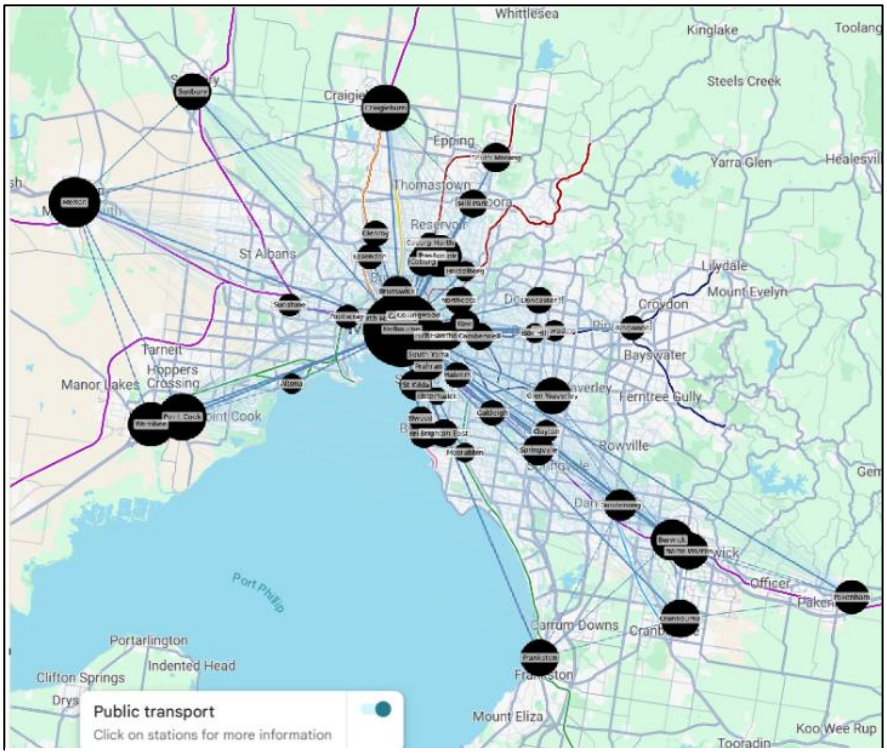


Figure 0-0 Comparison between data available from two different forecasting models

Step 3: Compare idealised network to current network and identify gaps or priority areas

Step 3 involves reviewing current transport infrastructure in the region, with a focus on major arterial roads and passenger rail services. This assessment uses a combination of supply-side (e.g., network capacity), demand-side (e.g., usage and volumes), and performance-based (e.g., congestion, accessibility) metrics to evaluate infrastructure adequacy and identify key gaps and opportunities.

These findings are then compared with the idealised transport network and the existing pipeline of committed projects. This comparison helps highlight where current plans may fall short, uncover opportunities for improvement, and prioritise investment in corridors and services where it is most urgently needed. The result is a structured, evidence-based foundation for guiding future infrastructure planning and funding decisions.

In doing so, the analysis provides a structured basis for prioritising investment where it is most urgently needed.

The findings of this Step are outlined in Part 3.

Part 1. Where are the key growth areas? (Question 1)

Understanding where population growth is likely to occur is essential for effective planning. Pinpointing these key growth areas ensures that future transport infrastructure aligns with demand, supports sustainable development, and strengthens connectivity to jobs, services, and housing. This section highlights the primary growth areas, drawing on population and dwelling forecasts.

In this section statistical analyses on various data sources are discussed to identify key growth areas.

Assessing existing growth trends

The existing data used in the present analysis is based on the latest census conducted in 2021. The forecast data is collected from various sources and compared against each other as elaborated in the following sections. The time span of maximum 15 years, i.e. from 2021 to 2036, is considered in the current analysis.

Assessing future growth forecasts

As part of the project's analytical approach, a key focus is placed on understanding the differences between forecasting methodologies used to estimate housing growth. Specifically, it examines the contrast between top-down and bottom-up models. Top-down forecasts begin with broader national, state, or regional trends and allocate growth across local areas accordingly—an approach commonly adopted by state governments. In contrast, bottom-up forecasts rely on local-level data and observations to build projections from the ground up, offering a more detailed view of local dynamics. By comparing these approaches, the project highlights how different forecasting methods can shape planning outcomes and investment decisions.

To identify key growth areas across Victoria, we assessed a combination of quantitative and qualitative data sources:

- **Quantitative (numerical)**: Sources such as the ABS, local council databases, and Planning Victoria.
- **Qualitative (categorical):** Sources including news media, social media, and resident observations.

This approach ensures that growth forecasts are both data-driven and contextually informed, reflecting national, state, and local trends.

Competing Forecast Models

Population and dwelling forecasts generally rely on either:

- **Top-down forecasts:** Examine national, state, and regional trends, distributing them across areas. Commonly used by state governments.
- **Bottom-up forecasts:** Focus on local conditions such as housing approvals and infill potential. Often used by local providers.

Comparison of approaches are listed in Table 0-1.

Table 0-1 Comparison of forecast models – strengths and weaknesses (after Informed Decisions (id))

Approach	Strengths	Weaknesses	Example Data Sources used in the current analysis/report
Top-down	• Captures broad demographic and economic trends • Maintains realistic national/state constraints • Accounts for major events (policy changes, pandemics)	• May misallocate growth locally • Cannot forecast small areas • May not reflect local housing supply • Less responsive to short-term changes	ABS Censuses, Victoria in Future (VIF) Databases

Approach	Strengths	Weaknesses	Example Data Sources used in the current analysis/report
	• Ensures consistency across regions		
Bottom-up	• Incorporates local housing and planning knowledge • Captures community dynamics and migration patterns • Provides site-specific insights	• May overestimate growth • Lacks coordination with state/national forecasts • Can be reactive rather than predictive • Not easily benchmarked	Council Websites, Informed Decisions (id)

Comparison between the two forecast models was conducted to examine if forecasting approaches can produce significantly different figures, especially when applied to fast-growing regions like Melbourne's west. Comparison between the data available from two forecast models for selected LGAs is shown in Figure 0-1. Quantitative comparisons reveal that both models yield broadly consistent projections. **Despite differences in methodology, the numerical outcomes from both forecasting models are broadly consistent.**

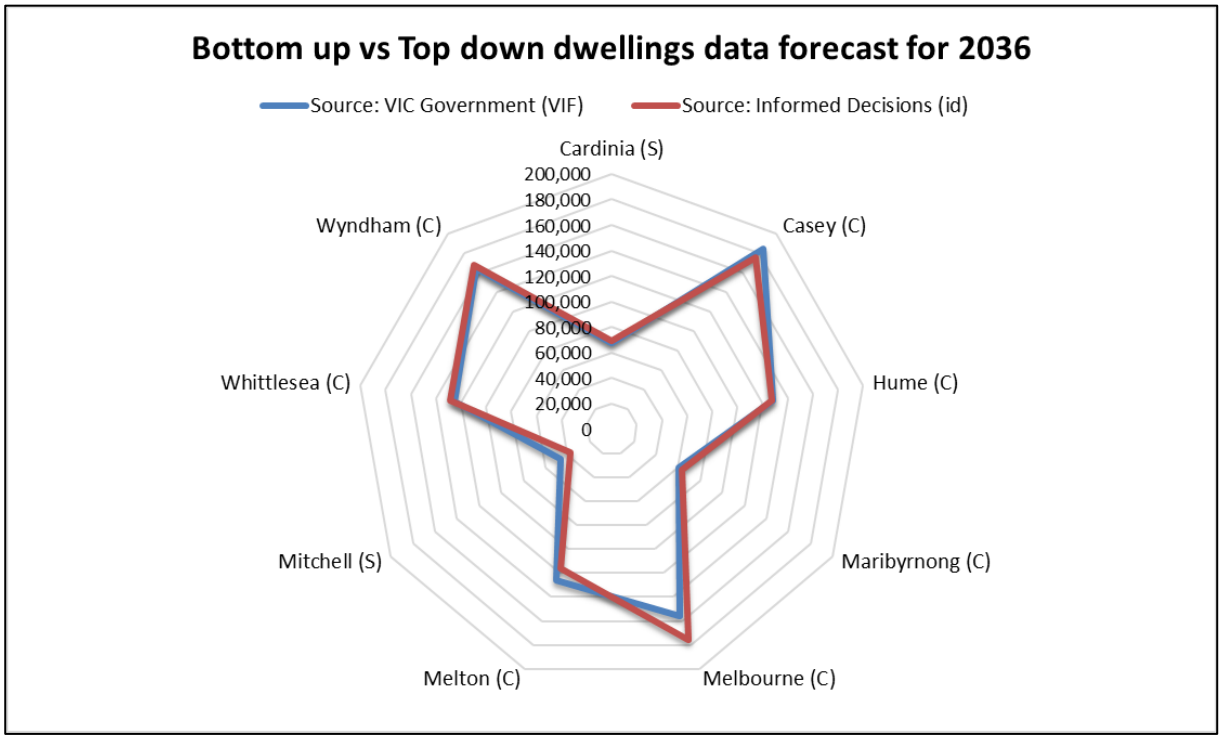


Figure 0-1 Comparison between data available from two different forecasting models

Population Growth Analysis

As shown in Figure 0-2, certain LGAs in west and also southeast of Melbourne are encountering the most significant population growth.

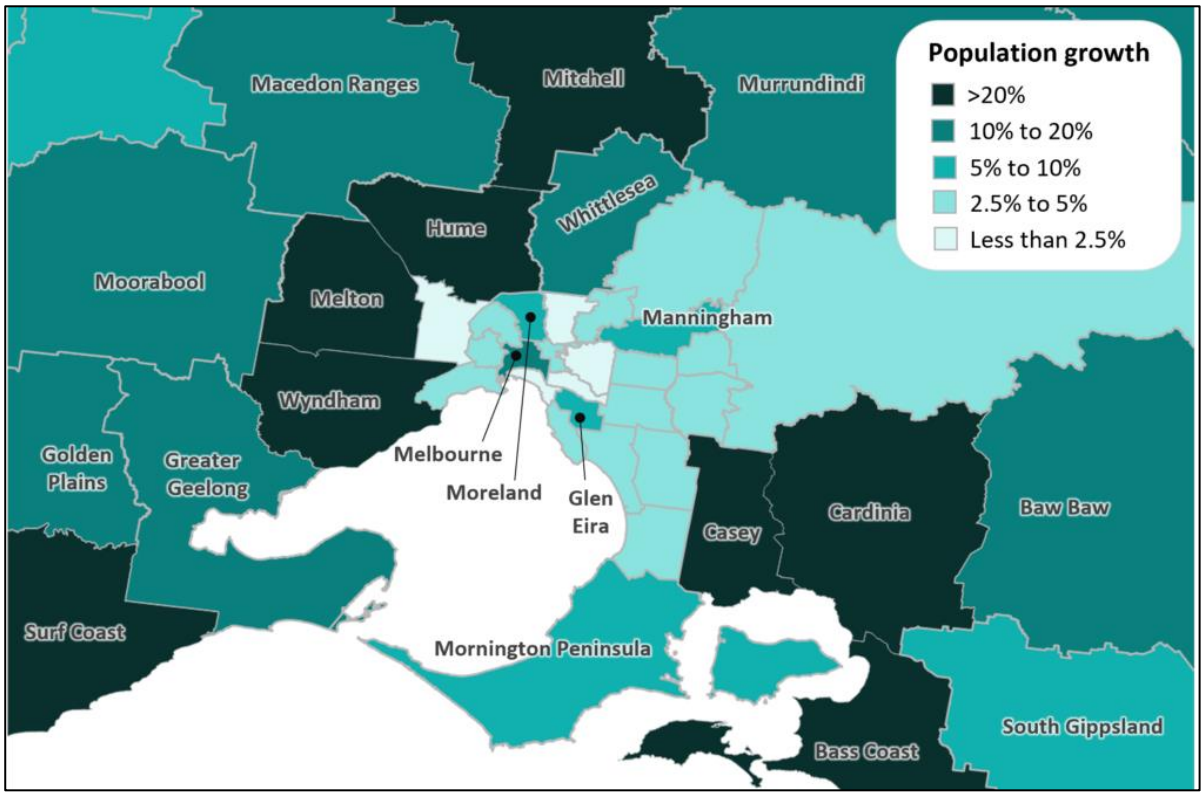


Figure 0-2 Overview of Victoria's population growth (source: ABS Census of Population and Housing, 2016 and 2021)

Referring to Figure 0-2, the highest growth LGAs recorded in Metropolitan Melbourne between 2016 and 2021 are as follows:

- Melton
- Wyndham
- Hume
- Cardinia
- Casey
- Darebin, a mature, inner/middle LGA with high public transport access and stable population growth can provide a point of comparison as a *controlled group*.

Figure 0-3 shows the population growth in percentage for the selected LGAs from 2021 to 2036. In the 20 years ahead the population of all metropolitan local government areas are set to increase. Melton City will approximately double its population bringing it to ~350,000 while Wyndham will increase its population by the largest volume bringing it to ~450,000 in 2036 (Figure 0-4).

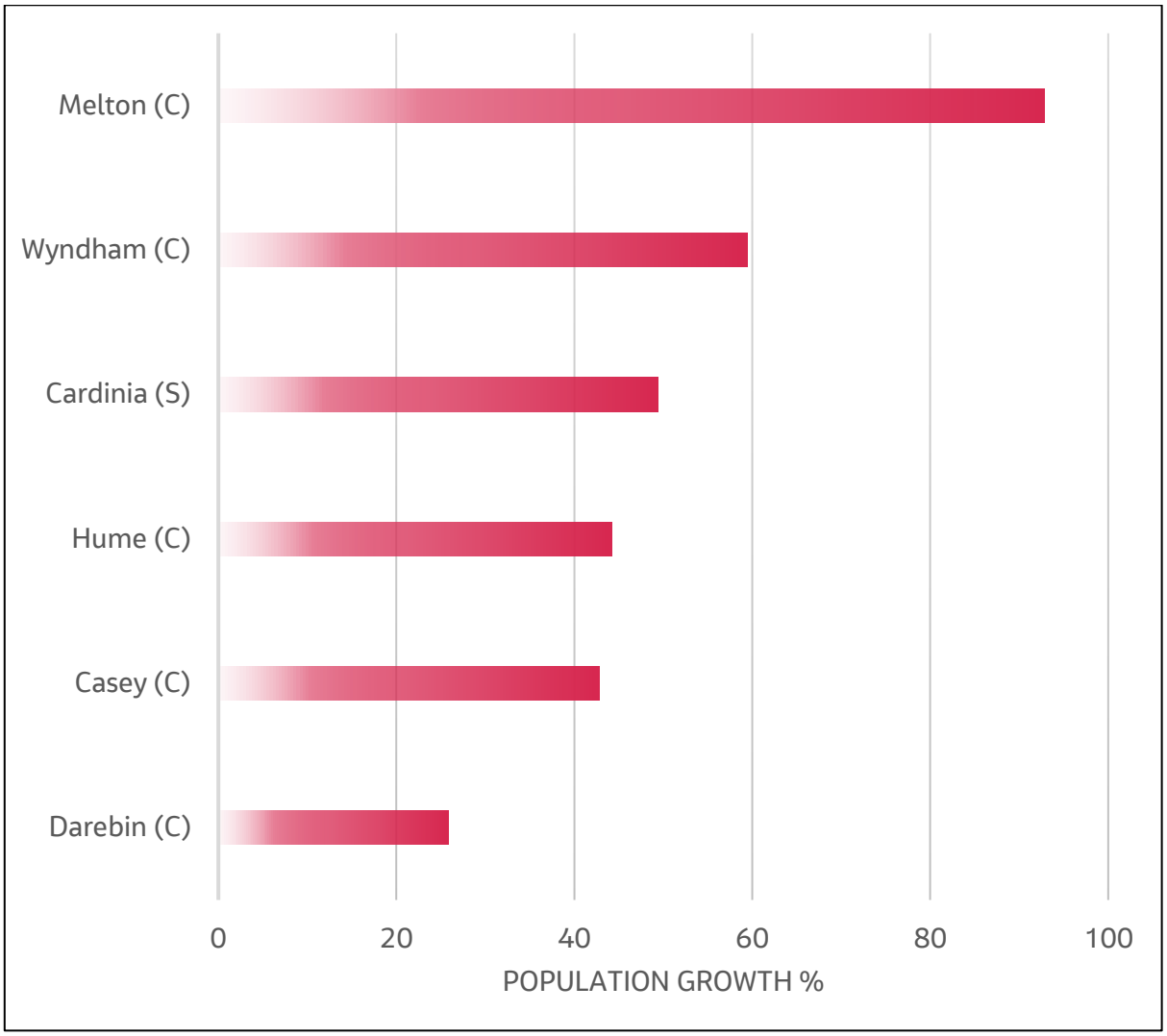


Figure 0-3 Population growth rate for selected LGAs, 2021 to 2036 (Raw Data Source: Victoria in Future (VIF))

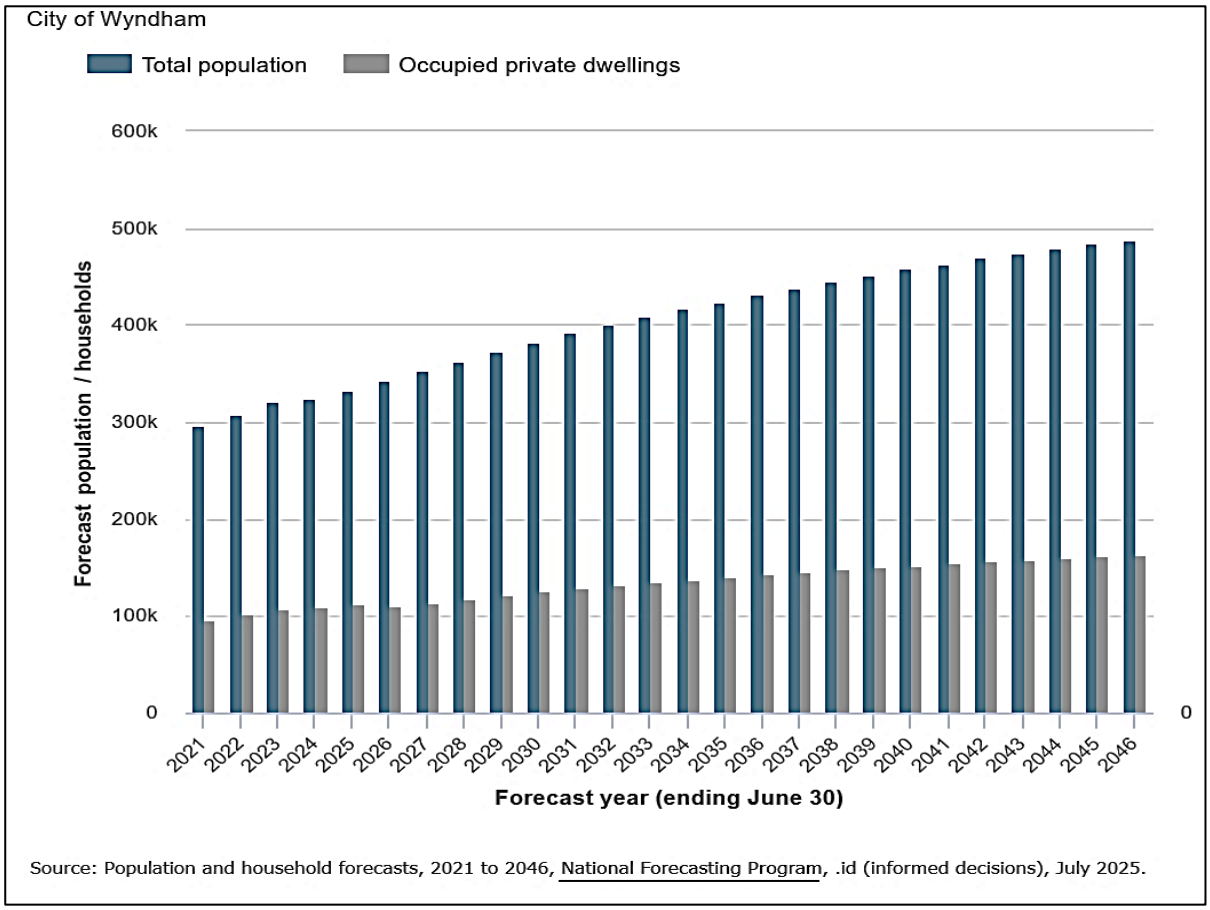


Figure 0-4 Future Forecast for City of Wyndham

Housing Growth Analysis

Compound Annual Growth Rate (CAGR) is used in the present analysis which provides a clear measure of average annual housing growth over time (Equation 1).

$$CAGR = \left(\frac{V_f}{V_i}\right)^{\frac{1}{n}} - 1$$

Eq. 1

Where

V_f = *Final value*

V_i = *Initial value*

n = Number of years

Why Use CAGR in Growth Analysis

- Smooths Year-to-Year Fluctuations: Unlike raw annual growth rates, which can vary significantly due to short-term factors (e.g. policy changes, market shifts), CAGR provides a smoothed average over a multi-year period, making trends easier to interpret.
- Enables Fair Comparisons: CAGR allows for consistent comparison between different LGAs, even if they start from different base values or have different time spans. This is especially useful when comparing high-growth areas like Melton and Wyndham to more stable regions like Darebin.
- Captures Long-Term Trends: It reflects the compound effect of growth, which is more representative of how housing supply and population expand over time—critical for infrastructure planning that spans decades.

- Simple and Intuitive: The formula is straightforward and widely understood in both engineering and economic contexts.
- Supports Strategic Decision-Making: By providing a clear measure of average annual growth, CAGR helps planners and policymakers assess whether infrastructure delivery is keeping pace with housing demand.

Table 0-2 Housing Growth (Compound Annual Growth Rate) for selected LGAs

LGA / SA2	2021 Dwellings*	2036 Projected Dwellings**	CAGR (%)	Growth Classification
Wyndham	85,000	161,890	4.39%	High Growth
Melton	50,000	121,910	6.12%	High Growth
Hume	83,977	125,070	2.69%	Medium Growth
Cardinia	44,447	65,930	2.66%	Medium Growth
Casey	100,000	180,770	4.03%	Medium Growth
Darebin	70,000	85,000	1.30%	Low Growth

Note: * 2021 Census for Victoria

** National Forecasting Program Dataset, .id (informed decisions) and Victorian Government Data Directory, VIF2023 LGA Population Household Dwelling Projections to 2036

Housing growth across Melbourne's western corridor has accelerated sharply over the past decade, reflecting the region's pivotal role in accommodating the city's population expansion. Between 2016 and 2021, annual dwelling growth reported was between 3.0% and 4.0% in key municipalities such as Wyndham and Melton—more than double the metropolitan average (Australian Bureau of Statistics (ABS). Established suburbs like Darebin recorded more moderate growth rates of 0.8% to 1.0%, driven largely by infill development and increasing medium-density housing. This sustained growth trajectory underscores the west's transformation from a peripheral suburban area to a major urban hub. Looking ahead to 2036, projections indicate a continued strong demand for new dwellings, requiring coordinated infrastructure delivery, land-use planning, and transport connectivity to maintain housing affordability and liveability across Melbourne's western corridor.

Are Growth Indices Conclusive?

While the population and housing growth indices provide robust evidence of expansion, they should be treated as indicative rather than definitive. Forecast models are sensitive to economic conditions, migration policy, and infrastructure delivery timelines.

Housing growth may lag population growth in key areas or be mismatched in dwelling type or location. Additionally, infrastructure bottlenecks—particularly in transport—can reshape growth distribution by influencing where people choose to live and work.

Thus, while growth indicators clearly signal intensifying demand, they must be interpreted within the context of infrastructure readiness and network capacity. Table 0-3 summarises the congestion index for the selected LGAs being *a ratio of traffic volume to road capacity at AM and PM peak hours*.

Table 0-3 Road congestion index for selected LGAs

LGA	Congestion Index*	Comments	Congestion Level
Melton	1.25	Peak-hour V/C ratio	High

Wyndham	1.28	Princes Fwy, inbound morning	High
Hume	Not enough publicly available data to conclude	Congestion level inferred from qualitative assessments presented in Australian Integrated Multimodal EcoSystem (AIMES) platform	High
Cardinia	Not enough publicly available data to conclude	Congestion level inferred from qualitative assessments presented in Australian Integrated Multimodal EcoSystem (AIMES) platform	Moderate
Casey	1.05	Moderate congestion	Moderate
Darebin	0.9	Inner road, lower traffic load	Low

Note: *Traffic volume is obtained from VicRoads ArcGIS (Traffic Volume) and TomTom Traffic Index Website

Evidence from transport performance indices and observed travel behaviour confirms that Melbourne's west is among the most congested subregions in Australia. Rapid residential and industrial expansion has outpaced infrastructure delivery, resulting in sustained travel delays and declining accessibility.

Without accelerated investment in high-capacity, multi-modal transport solutions, congestion will continue to undermine productivity, liveability, and housing affordability.

Insights

The data clearly establishes that population and housing growth in Melbourne's west are unprecedented and sustained, but transport infrastructure has not kept pace. Congestion levels and service pressures are already approaching critical thresholds. While growth indices are conclusive in indicating strong demand, their implications depend heavily on whether transport capacity can be expanded in parallel. Strategic, timely investment in road, rail, and active transport infrastructure will determine whether the west's growth remains an opportunity—or becomes a constraint on Victoria's future development.

This analysis confirms Melton and Wyndham as priority growth areas for further investigation.

Part 2. What is the current and future adequacy and capacity of transport infrastructure? (Question 2)

With Melbourne's west experiencing unprecedented population and housing growth, it is critical to evaluate whether current and planned transport networks can keep pace with future demand. This section outlines the methodology used to assess the adequacy and capacity of transport infrastructure and presents preliminary insights from the analysis.

An idealised transport network model can help identify the transport connections needed to accommodate Melbourne's growing population.

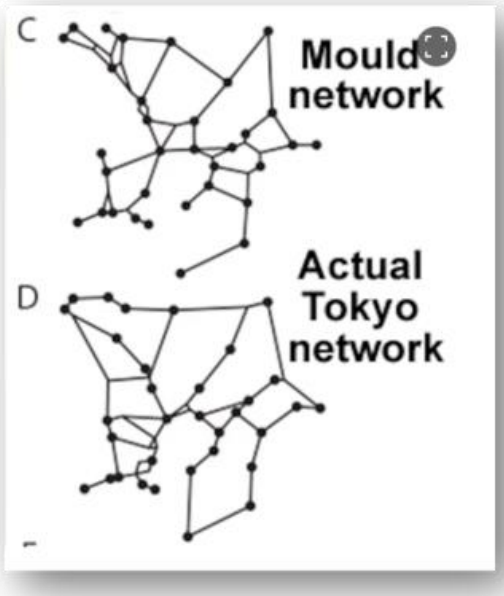
To understand the adequacy and capacity of transport infrastructure in Melbourne's west, we constructed an **idealised (theoretical), gravity-weighted transport model** which represents how transport connections might naturally form if guided purely by population demand and spatial efficiency. This idealised transport network model provides a visual benchmark against which the existing and projected future transport networks can be compared to identify areas of emerging inadequacy or oversupply.

The approach was inspired by biological systems of natural optimisation from the experiments of Atsushi Tero and colleagues (University of Tokyo, 2010), who investigated how slime mould *Physarum polycephalum* forms efficient transport networks when presented with multiple food sources. In their study, oat flakes were positioned to correspond to the spatial layout of the Tokyo metropolitan area, and the slime mould's network of nutrient tubes evolved to closely mirror the structure of the existing Tokyo rail system. This process demonstrated how a simple organism can self-organise to produce networks that balance efficiency, resilience, and redundancy — minimising total path length while maintaining multiple connection routes.

This biologically inspired principle underpins the *InfraBalance* idealised network model. Like *Physarum*, which reinforces high-benefit connections and retracts inefficient ones, the model aims to simulate how transport infrastructure might naturally evolve if guided purely by population demand and spatial efficiency, independent of constraints or externalities.

This approach integrates population projections, spatial accessibility, and biological optimisation principles into a single analytical tool. Inspired by *Physarum polycephalum's* natural behaviour, the idealised network model transforms complex urban dynamics into clear visual outputs, enabling planners to assess how West Melbourne's transport infrastructure aligns with current and future population needs.

Table 0-4 ***The slime mould network formation experiment by Tero et al. (2010), showing the emergent transport pattern closely matching the Tokyo rail system.***



The model is displayed as a gravity-weighted spatial network, where each LGA in Greater Melbourne represents a node, and potential connections between all LGAs form a complete graph. Each theoretical connection is assigned a weight that incorporates both *distance* and *population* as key variables influencing travel demand and accessibility:

- **Distance penalty** – longer separations between LGAs are penalised, reducing the likelihood of strong interaction.
- **Population attraction** – higher LGA populations increase the strength of potential connections, representing higher passenger generation and attraction.

The model was developed in Python using the NetworkX, NumPy, and Matplotlib libraries. Each LGA coordinate was projected into a metric coordinate reference system, and all possible inter-LGA connections were generated. The resulting complete graph was filtered through a shortest-path optimisation routine to produce a representative "idealised" network structure. This process mimics how efficient connectivity emerges when competing constraints of distance and demand are balanced.

Based on findings from Part 1, population data were sourced from Victoria in Future 2023 (VIF 2023), the official State Government projection of population and household change across Victoria. Two datasets were applied to capture both current and future conditions:

- **Current Scenario:** From *Victoria in Future*.
- **Future (2036) Scenario:** From Victoria in Future, representing anticipated population distribution after a decade of growth and urban expansion.

Each dataset was used to generate a distinct network visualisation:

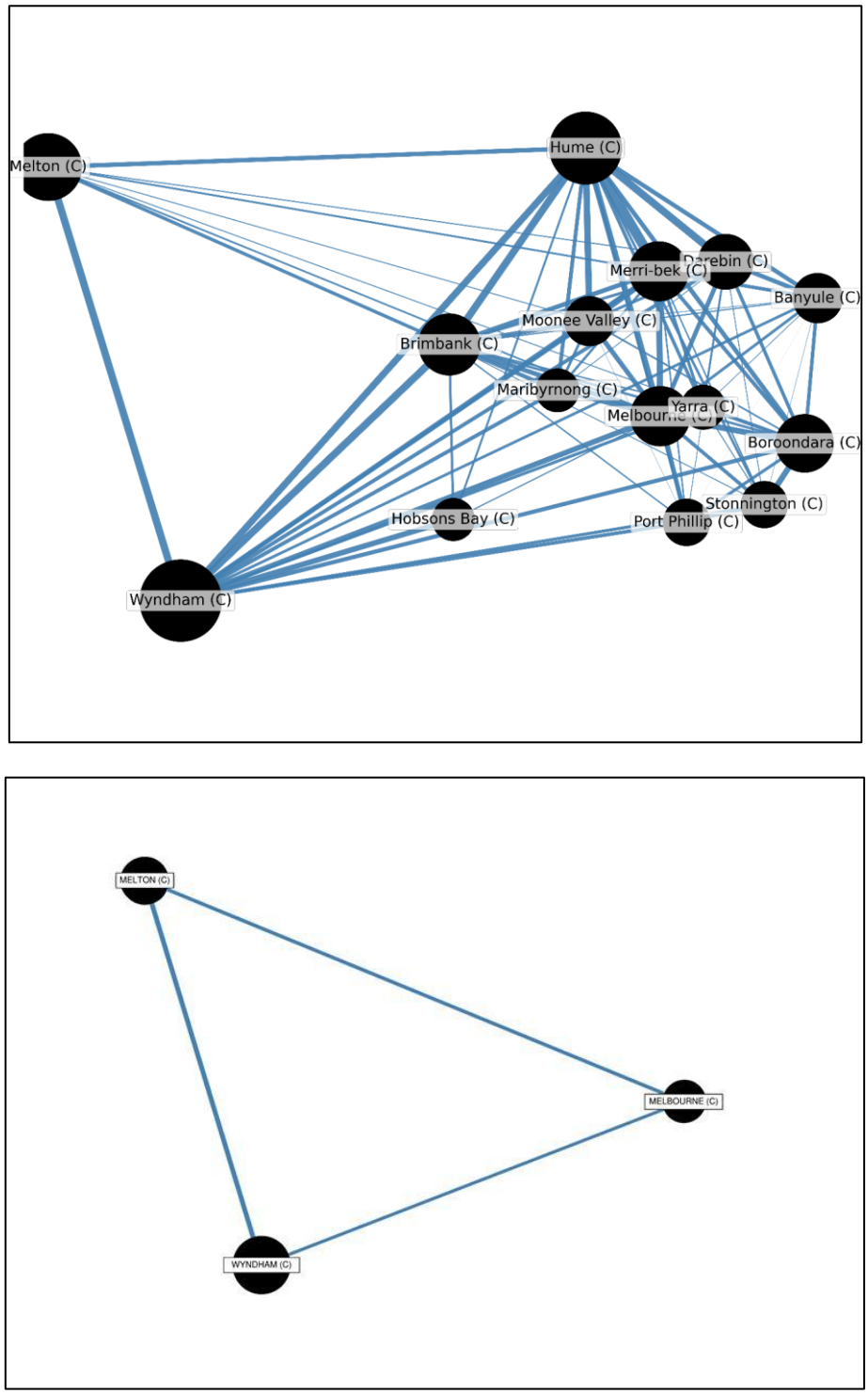


Figure 0-5 Current Gravity-Weighted Network (Extract from Idealised network model including an extract specific to Melton and Wyndham)

Figure 0-5 shows the idealised pattern of connectivity based on current population distribution.

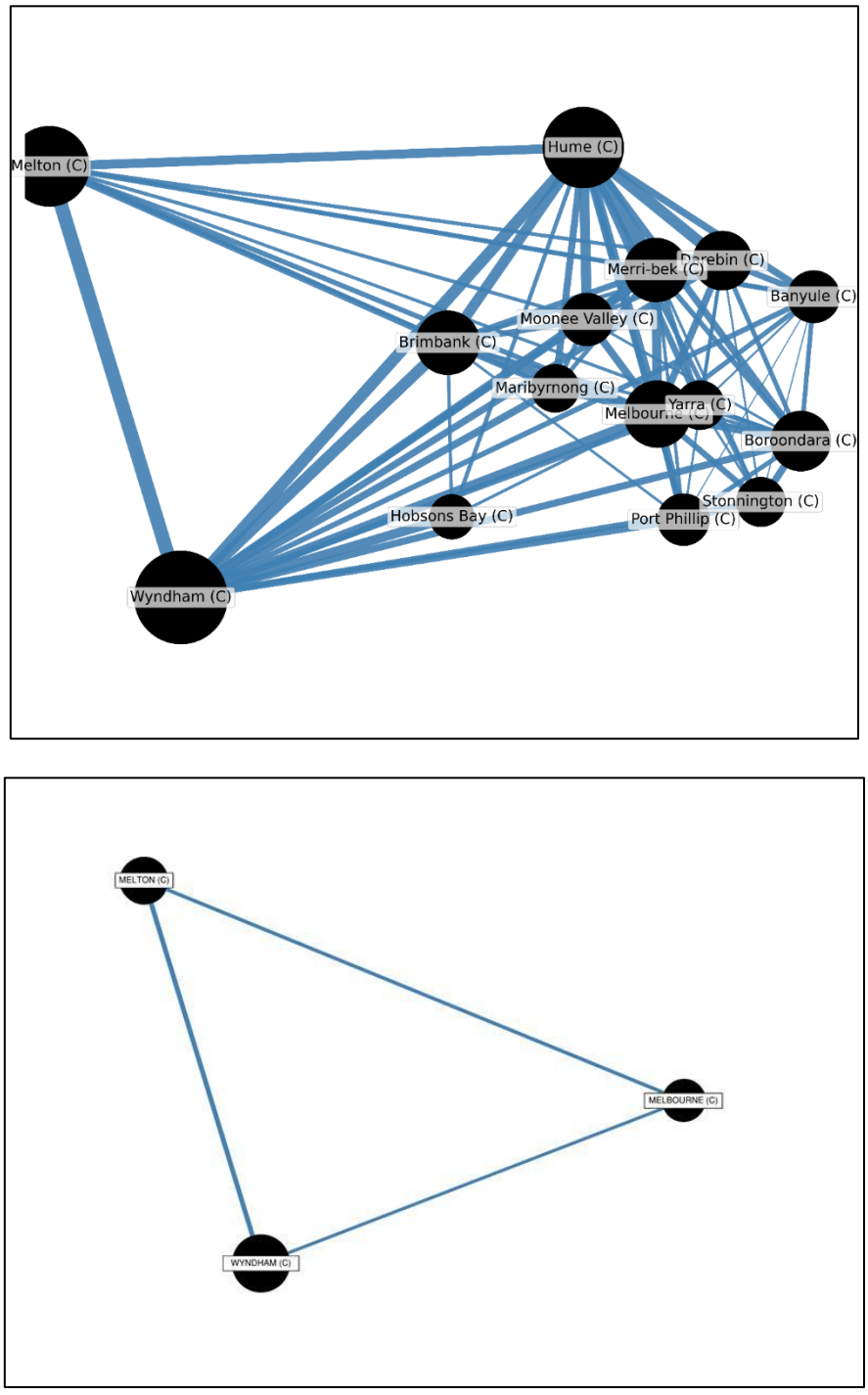


Figure 0-6 Projected (2036) Gravity-Weighted Network (Extract from Idealised network model including an extract specific to Melton and Wyndham)

Figure 0-6 reflects how increased population density and spatial redistribution may shift transport demand and connectivity corridors.

While Figure 0-5 and Figure 0-6 are helpful in providing a point in time assessment to understand transport infrastructure needs for 2026 and 2036, a comparative map was also developed to quantify changes in the idealised networks between these years and evaluate how population growth may shape infrastructure requirements over the next decade.

This produced a 'Relative Change Map' (see Figure 0- 0-7), quantifying shifts in interaction strength over time.

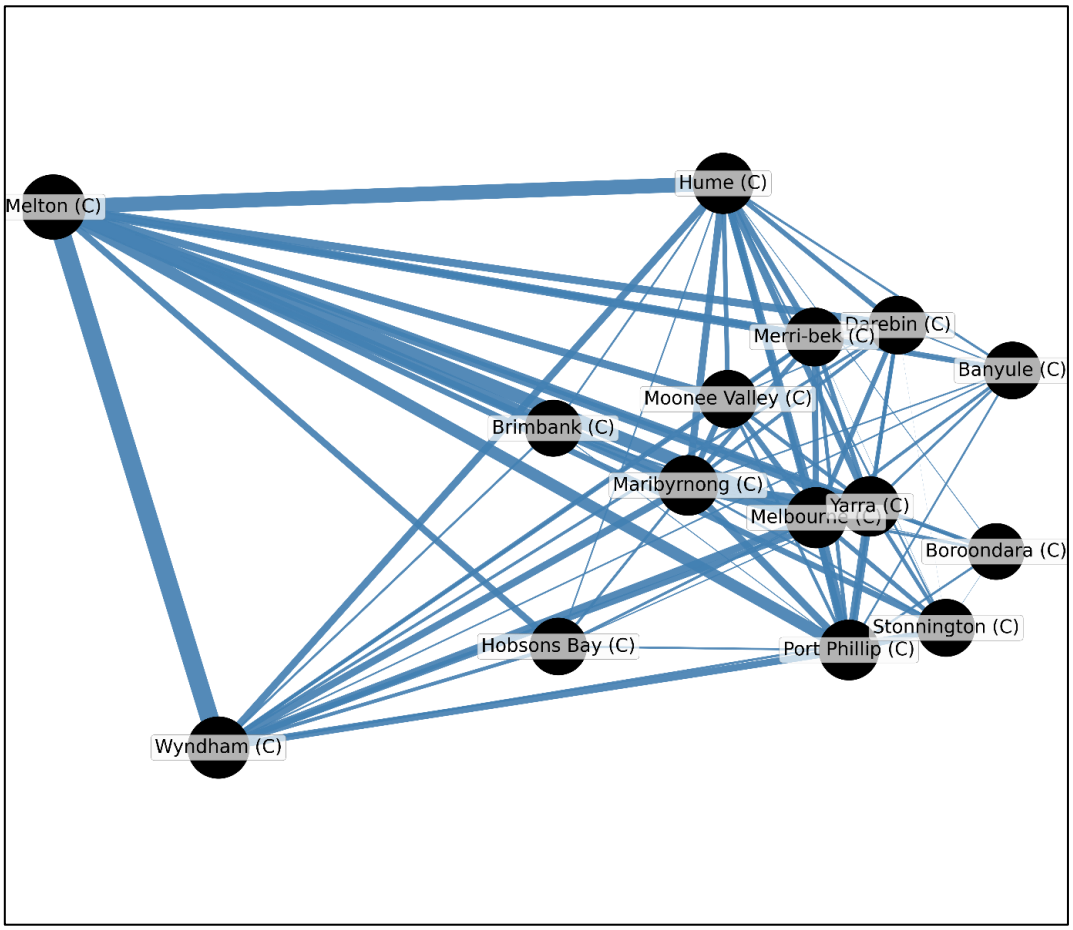


Figure 0-7 ***2036 ÷ 2026 Weighted Relative Change – Emerging Connectivity Pressure Zones (Extract of Idealised network model)***

As shown in Figure 0-7, thicker visual connections between LGAs indicate areas where demand is expected to increase significantly (e.g., Melton ↔ Wyndham), suggesting the need for higher-capacity connections. These "pressure zones" highlight where major road or rail networks may require targeted upgrades or expansion. This can help pinpoint where the network risks falling behind and direct investment where it will have the greatest impact.

When combined with existing transport infrastructure data, this model allows for a direct comparison between actual and idealised network performance, enabling planners to visualise where infrastructure lag is most likely to occur. A comparison of the idealised model and the actual and planned future network is provided in the following section.

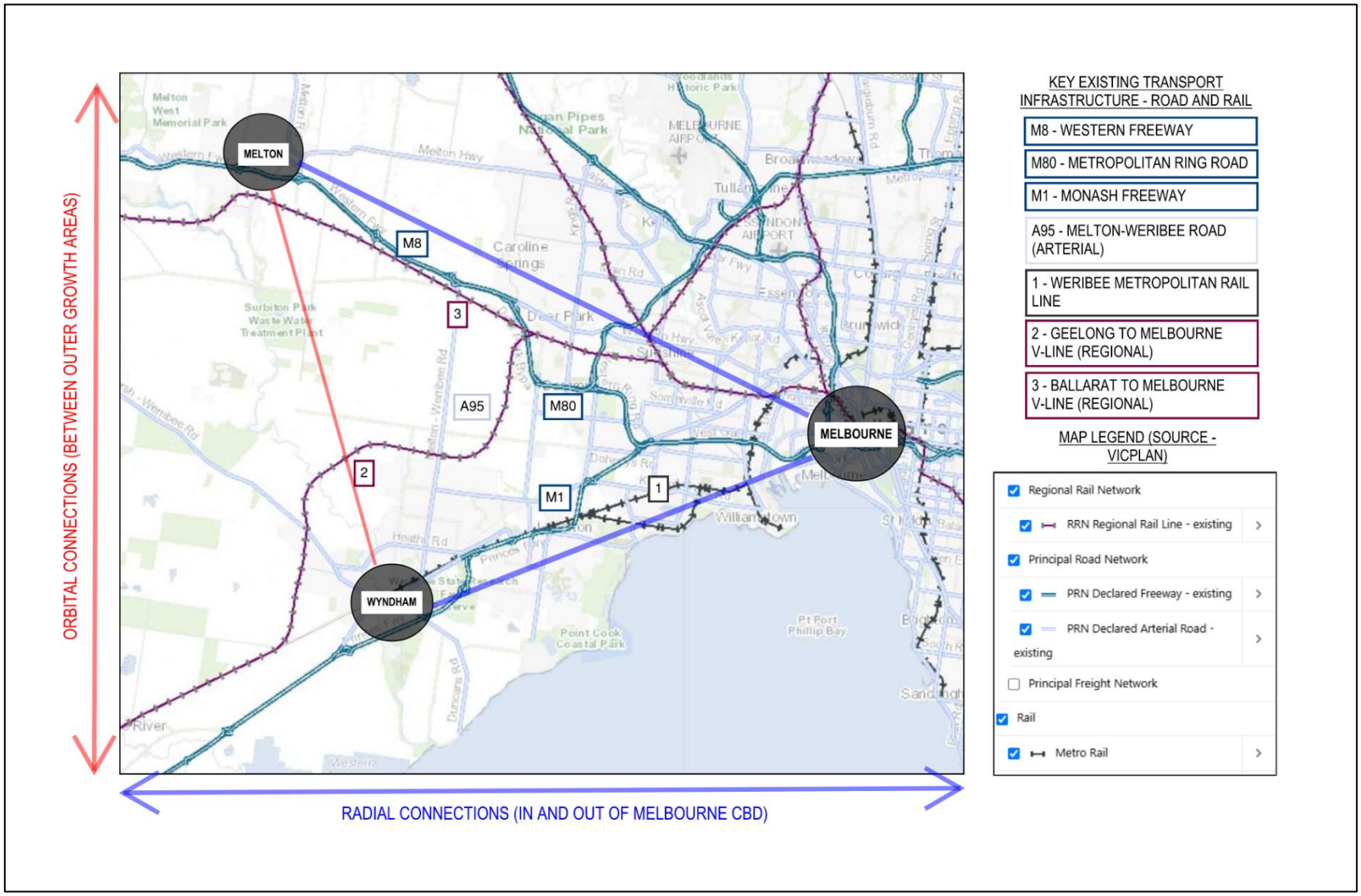
Does this idealised model align to existing infrastructure in Melbourne's west?

This section provides an overview of the existing major transport infrastructure within the geographic scope, outlining any known infrastructure gaps or opportunities. Community feedback and user experience data is used as the primary indicator of infrastructure adequacy, as it reflects how effectively the system meets the everyday needs of commuters in terms of reliability, accessibility, and comfort.

Do the connections required broadly align to Melbourne's existing transport network?

To test the validity of the idealised network model, we qualitatively assessed the model against Melbourne's existing major road and rail networks. An overview of these networks is provided in Figure 0-8 below.

Figure 0-8 Overview of current transport infrastructure provision



As shown, the current major road and rail transport networks in Melbourne's west broadly align with the idealised transport network model.

What key connections does the model identify in Melbourne's west?

The idealised network model for 2026 shows that the following major connections are required to service the LGAs of Melton and Wyndham:

- Wyndham to CBD (radial)
- Melton to CBD (radial)
- Melton to Wyndham (orbital).

A review of existing infrastructure reveals that in some cases, key infrastructure is already in place to service these connections.

Road infrastructure

Existing major road infrastructure to service these key connections (as at 2025) is outlined in Table 0-5.

Table 0-5 Existing major road infrastructure and assessment of existing gaps

Major connection	Road Infrastructure	Existing gap (Y/N)?	Evidence
Wyndham to/from CBD (radial)	M1 (Princes Freeway) extends from Melbourne CBD to Werribee, servicing the City of Wyndham.	Y - gaps in capacity and safety, impacting user experience and ease of access to jobs and services	• Publicly available sources and council-led consultations confirm that the major road network in Wyndham is struggling to meet current and future demand. • Despite recent upgrades, arterial roads such as the Princes Freeway are experiencing severe congestion, safety risks, and bottlenecks. • For example, the Princes Freeway near Werribee sees queues of up to 3km during peak hours, with residents reporting dangerous conditions and near misses involving heavy vehicles. • The community has voiced strong support for upgrades, with Wyndham City launching the *Connecting Wyndham* initiative to address these concerns.
Melton to/from CBD (radial)	M80/M8 (Western Freeway) connects Melbourne CBD to Melton, servicing the City of Melton.	Y - gaps in capacity and safety, impacting user experience and ease of access to jobs and services	• Publicly available sources consistently indicate that the major road network servicing Melton is inadequate. Widespread community concern and council advocacy reinforce this view, with key arterial roads such as the Western Freeway operating well beyond their intended capacity. • These roads have also recorded a high number of serious accidents and fatalities, underscoring persistent safety risks. Residents have expressed frustration over daily congestion, deteriorating road conditions, and delays in infrastructure upgrades.
Melton to/from Wyndham (orbital).	A95 corridor, which includes Melton-Werribee Road, Derrimut Road, and Hopkins Road, serves as a critical east-west arterial link between growth areas. This corridor facilitates intra-regional movement and supports future development.	Y – but not a high requirement based on current population.	• There is no continuous high-capacity arterial or freeway-standard link directly connecting Melton and Wyndham. • Orbital connections between Wyndham and Melton are not considered critical at this stage due to current development patterns and travel demands primarily focusing on radial connections to the CBD.

Rail infrastructure

Existing major rail infrastructure to service these key connections (as at 2025) is outlined in Table 0-6.

Table 0-61 Existing major rail infrastructure and assessment of existing gaps

Major connection	Rail Infrastructure	Gap (Y/N)?	Evidence
Wyndham to/from CBD (radial)	• Metropolitan Rail: Melbourne to Werribee via the Werribee Line. • Regional Rail (V/Line): Melbourne to Geelong.	Y - gaps in capacity and safety, impacting user experience and ease of access to jobs and services	• Wyndham City Council demonstrates a more integrated transport model, with both metropolitan services via the Werribee Line and regional services via the Warrnambool Line supporting its growth.
Melton to/from CBD (radial)	• Melbourne to Melton via the Ararat Line.	Y - gaps in capacity and safety, impacting user experience and ease of access to jobs and services	• While these services contribute to the ideal network, gaps remain, particularly in Melton City Council where metropolitan rail coverage is limited. This area is currently served primarily by regional rail, which may not adequately support the frequency and capacity needs of a growing urban population. • Publicly available sources and community feedback confirm that the rail line between Melton and the CBD is under strain, with peak-hour trains already at capacity and station car parks full by 7:30am. Residents report long commutes, unreliable bus connections, and overcrowded trains, which are impacting daily life and access to employment and education.
Melton to Wyndham (orbital)	• No existing infrastructure.	Y – but not a high requirement based on current population.	• There is no rail corridor directly connecting Melton and Wyndham. • Orbital connections between Wyndham and Melton are not considered critical at this stage due to current development patterns and travel demands primarily focusing on radial connections to the CBD.

Based on this analysis, what are the key transport infrastructure gaps in these high growth areas?

While Melbourne's west boasts robust radial connections to the CBD, these connections are increasingly strained by rapid population growth and rising user demand. Simultaneously, the area suffers from deficiencies in orbital links between major population growth centers in the western suburbs. While not seen as a high priority at this stage, addressing this imbalance by developing these missing connections has the potential to significantly boost both economic resilience and quality of life throughout Melbourne's western areas in future.

Part 3. To what extent does the existing project pipeline address these infrastructure gaps? (Question 2)

The Australian Government has proposed federal funding to support some key transport infrastructure projects in Melbourne's outer western suburbs. These projects aim to address critical gaps identified in the idealised network model for Wyndham and Melton. However, given the unprecedented rate of population growth in these areas, questions remain about whether these investments will be sufficient to meet the long-term infrastructure needs of one of Australia's fastest-expanding urban regions.

What additional transport infrastructure is planned for these high growth areas?

Table 0-7 provides a summary of the proposed transport infrastructure projects planned to service these rapidly expanding regions. A visual of these projects is provided in Figure 0-9 and more detailed information on each project is presented in Appendix A.

Figure 0-9 Overview of planned road and rail infrastructure projects

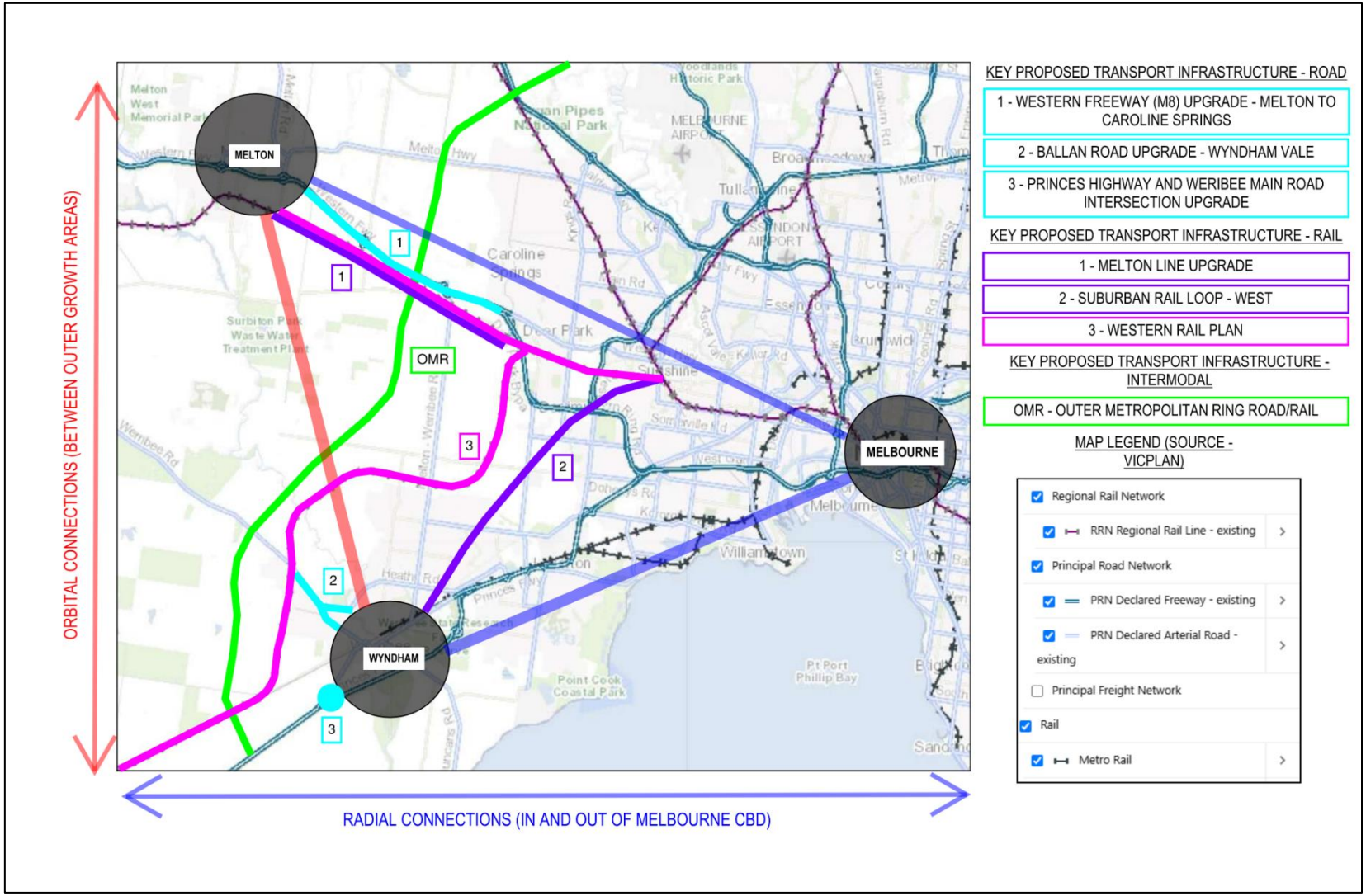


Table 0-8 presents a high-level assessment of these projects and their relative importance in addressing identified gaps in Melbourne west's transport network. Each project has been evaluated based on its potential impact on connectivity, capacity, and overall network performance.

While these planned transport infrastructure projects may help address current deficiencies, it is important to note that they face various challenges, including potential funding shortfalls. Table 0-9 also includes an initial evaluation of how effectively these projects might resolve the identified gaps in the existing transport network, with the existing constraints in mind.

Table 0-7 Overview of planned major transport infrastructure planned to address existing key connections

LGA	Gap	Road infrastructure projects	Rail infrastructure projects
Melton	Radial connections to and from CBD	• Western Highway Upgrade – Melton to Caroline Springs	• Western Rail Plan • Melton Line Upgrade
	Orbital connections between Wyndham and Melton	• Outer Metropolitan Ring (OMR) - Road	• Suburban Rail Loop West • Outer Metropolitan Ring (OMR) - Rail
Wyndham	Radial connections to and from CBD	• Princes Highway and Werribee Main Road Upgrade • Ballan Road Intersection Upgrade	• Western Rail Plan
	Orbital connections between Wyndham and Melton	• Outer Metropolitan Ring (OMR) - Road	• Suburban Rail Loop West • Outer Metropolitan Ring (OMR) - Rail

Table 0-8 Overview of planned major road and rail infrastructure and relative importance

Project	LGA	Status	Importance to servicing existing gaps and population growth
Western Highway Upgrade	Melton	Planning	• **Very High** – Vital freight and commuter corridor; supports Melton–Caroline Springs growth.
Outer Metropolitan Ring (OMR) - Road	Melton & Wyndham	Planning	• **High (Long-term)** – Major freight and passenger corridor; supports future growth and connectivity.
Ballan Road Intersection Upgrade	Wyndham	Construction starts 2026	• **Medium–High** – Improves safety and congestion in Wyndham Vale; supports local growth.

Project	LGA	Status	Importance to servicing existing gaps and population growth
Werribee Main Road & Princes Freeway Interchange	Wyndham	Planning	• **Medium–High** – Reduces congestion for 10,000+ daily motorists; supports Wyndham's transport network.
Melton Line Upgrade	Melton	Construction (2026–2027)	• **Very High** – Directly increases rail capacity and supports future electrification. Critical for Melton's growing commuter base.
Suburban Rail Loop (West)	Wyndham (future), Melton (future)	Early works for SRL East; SRL West in planning	• **High (Long-term)** – Will transform orbital connectivity; supports housing and job access.
Western Rail Plan	Melton & Wyndham	Planning	• **High (Long-term)** – Enables electrification; critical for future rail access.

Table 0-9 Overview of planned major road and rail infrastructure servicing Melton and Wyndham

Project	Funding (to date)	LGA	Scope	Status	Key Challenges	Key Outcomes and Benefits	Importance to servicing existing gaps and population growth
Melton Line Upgrade	**Total:** $650 million **Federal:** $325 million **State:** $325 million	Melton	• Platform extensions at Deer Park, Caroline Springs, Rockbank, and Cobblebank stations. • New stabling yard at Cobblebank. • New Melton Station with four platforms. • Futureproofing for future electrification	Construction (2026–2027)	While enabling works are funded, full electrification remains unfunded, which is needed for the population growth in Melton.	• Increases rail and passenger capacity by 50%. • Future-proofs infrastructure for electrification under the Western Rail Plan. • Reduced overcrowding – longer VLocity trains improve travel conditions for commuters • Increased network efficiency: new stabling yard at Cobblebank will allow new trains to start service at Melton Station	Very High: Directly increases rail capacity and supports future electrification. Critical for Melton's growing commuter base.
Western Highway Upgrade	**Total:** $1.02 billion **Federal:** $10 million (planning), $1 billion (construction)	Melton	• Additional road lanes. • Upgrades to existing and new interchanges and overpasses. • Improved walking, cycling, and public transport facilities.	Planning	• Construction timeline remains undefined, risking worsened congestion. Co-ordination with other projects (i.e. Melton Line Upgrade) to ensure cohesive and effective transport	• Improved safety with upgrades to aging rural-standard infrastructure. • Reduced congestion and travel times • Increased capacity for population growth • Supports vehicle growth from 86,000 to an estimated 113,000 per day by 2031. • Better access to employment and services such as developing industrial precincts of Mount Atkinson.	**Very High:** Vital freight and commuter corridor; supports growth within the Melton-Caroline Springs corridor.

Project	Funding (to date)	LGA	Scope	Status	Key Challenges	Key Outcomes and Benefits	Importance to servicing existing gaps and population growth
					network.		
Suburban Rail Loop (West)	**Federal:** $0 for SRL West.	Wyndham (future), Melton (future)	• Conceptual options: At-grade line via the Wyndham Vale corridor or a new rapid transit line. • Confirmed termini: Sunshine and Werribee, with Wyndham Vale as an interchange.	Planning	• Scope, funding, and timeline are undefined. • Potential delivery not until the 2050s or 2060s, well after peak growth. • Infrastructure complexity and disruption	• Transforms orbital connectivity and improves access to housing and jobs in Melbourne's west. • Improved access to employment and services, and address current imbalance of job access, which favours inner suburbs. • Connectivity to wider network such as Melbourne Airport Rail • Economic stimulus and job creation – long pipeline of jobs as a result of construction • Reduced road congestion by taking daily vehicle trips off Melbourne's Roads.	**High (Long-term)** – Will transform orbital connectivity; supports housing and job access.
Western Rail Plan	**Total (Planning):** $130 million **Federal (Planning):** $30 million **State (Planning):** $100 million **Note:** Full electrification is unfunded.	Melton & Wyndham	• **Melton line:** Full electrification and quadruplication from Sunshine to Melton. • **Wyndham Vale Line:** Full electrification and quadruplication from Sunshine to Wyndham Vale.	Planning	• Uncertain funding for full construction of electrification and track duplication • WRP must compete for government funding for	• More frequent and flexible services due to higher performing electric trains. • Increased capacity as metro electric trains can carry more passengers than the V/Line trains • Better service quality, as electrification of trains will enhance ride quality • Reduced road congestion on major western freeways such	**High (Long-term)** – Enables electrification and new stations; critical for future rail access.

Project	Funding (to date)	LGA	Scope	Status	Key Challenges	Key Outcomes and Benefits	Importance to servicing existing gaps and population growth
					other large projects such as SRL • Mismatch between planning and development – while new suburbs are being built, large-scale transport infrastructure is lagging	as Western Highway and Princess Freeway due to the option of efficient public transport alternatives • Enhanced liveability and job access • Improved network efficiency due to full track separation and electrification • Relieve overcrowding on regional trains servicing Bacchus Marsh/Ballarat areas on the Melton line and Geelong on the Wyndham Vale line	
Outer Metropolitan Ring Road (OMR)	**Federal (planning)** $10 million (planning) **State (planning)** $10 million **Federal (Rail):** $920 million **Note:** Road construction is unfunded.	Melton & Wyndham	• **OMR segment:** 70km from Princes Freeway to Hume Freeway with up to 10 road lanes and 4 rail tracks. • **E6 segment:** 23km from Hume Freeway to the M80 Ring Road with up to 8 road lanes. • **Connectivity:** Major interchanges and linkages across Melbourne's north and west.	Planning	• Road construction not expected until the 2030s or 2040s, missing peak growth. • High cost and uncertainty around funding • Co-ordination with other projects such as Western	• Improves orbital travel across Melbourne's west in the north-south direction • Improved traffic flow and relieves congestion on the M80 Ring Road. • Enhances freight efficiency and passenger transport. • Integrated transport solution as the OMR is a multi-modal corridor	**High (Long-term)** – Major freight and passenger corridor; supports future growth and connectivity.

Project	Funding (to date)	LGA	Scope	Status	Key Challenges	Key Outcomes and Benefits	Importance to servicing existing gaps and population growth
					Rail Plan, Melbourne Airport Rail, and potential intermodal freight terminals.		
Ballan Road Intersection Upgrade	**Total:** $83.5 million **Federal:** $41.75 million **State:** $41.75 million	Wyndham	• Signalisation of intersection between Ballan, Greens and McGrath Roads in Wyndham Vale • Extra lanes and priority bus lanes on McGrath, Ballan and Greens Roads through the intersection • New paths for walking and cycling	Construction starts 2026	• Project must co-ordinate with broader network upgrades to fully see the benefits of upgrades in Melbourne's west	• Improved safety • Reduced congestion and travel times to manage the flow of 58,000 daily motorists to relieve peak hour bottlenecks • Enhance public transport with new bus priority lane • Improved traffic management with new traffic lights.	**Medium–High** – Improves safety and congestion in Wyndham Vale; supports local growth.
Werribee Main Road & Princes Freeway Interchange	**Total:** $250 million **Federal:** $125 million **State:** $125 million	Wyndham	• Improvements at key intersections with new signals/roundabouts • Bridge upgrades at Werribee Main Road bridge with added lane • Ramp improvements for	Planning	• Despite funding, the project remains in the planning phase with no confirmed construction timeline.	• Reduced congestion upgrades are expected to reduce peak travel times by over 10 minutes • Increased capacity: new lanes and intersection upgrades will increase overall capacity and reduce bottlenecks • Improved safety by addressing the queuing and merging issues	**Medium–High** – Reduces congestion for 10,000+ daily motorists; supports Wyndham's transport network.

Project	Funding (to date)	LGA	Scope	Status	Key Challenges	Key Outcomes and Benefits	Importance to servicing existing gaps and population growth
			city-bound entry ramp to Princes Freeway		• Delays could prolong congestion and safety risks in a rapidly growing area.	• Improve local connectivity between key roads and Princes Freeway	

Drawing from the insights presented in the tables above, the following section provides a summary of the extent to which these projects are likely to address the existing gaps identified.

Table 0-92 Future transport infrastructure gap assessment

	Melton	Wyndham
Road network (radial – connecting to and from Melton and the CBD)	• Current deficiencies but somewhat resolved by planned infrastructure. • Still likely to be a moderate gap in accommodating unprecedented population growth.	• Current deficiencies but somewhat resolved by planned infrastructure. • Still likely to be a moderate gap in accommodating unprecedented population growth.
Road network (radial – connecting to and from Wyndham and the CBD)	• Current deficiencies but somewhat resolved by planned infrastructure. • Still likely to be a moderate gap in accommodating unprecedented population growth.	• Current deficiencies but somewhat resolved by planned infrastructure. • Still likely to be a moderate gap in accommodating unprecedented population growth.
Road network (orbital – connecting Melton and Wyndham)	• No committed funding or planned infrastructure (SRL West unlikely to include Melton). Will become major gap as these communities establish themselves as hubs.	• No committed funding. Will become major gap as these communities establish themselves as hubs.

Is this planned transport infrastructure expected to resolve these key gaps?

As Melbourne's western suburbs continue to experience rapid growth, the question arises: Will the planned transport infrastructure adequately address the identified gaps in the region's network?

Table 0-9 provided a high-level assessment of how future transport infrastructure may resolve transport infrastructure gaps in the LGAs of Melton and Wyndham. This considered factors such as committed funding, project timelines, and the scale of infrastructure relative to projected population growth.

Addressing the identified transport infrastructure gaps in Melbourne's western suburbs would yield significant social benefits for the rapidly growing communities. Improved connectivity, both radially to the CBD and orbitally between growth centres, would enhance access to employment opportunities, education facilities, and healthcare services. This increased accessibility could lead to reduced commute times, alleviating stress on residents and allowing for better work-life balance. Enhanced public transport options would promote social inclusion, particularly benefiting youth, elderly, and economically disadvantaged groups who may not have access to private vehicles. By reducing traffic congestion and improving overall mobility, these infrastructure improvements could contribute to higher quality of life, increased community satisfaction, and potentially more equitable access to urban amenities across the region.

However, there are several key issues that have the potential to hinder the full resolution of these gaps. These include the **uncertainty surrounding funding commitments**, with many projects receiving limited or no dedicated construction budgets. The **extended delivery timelines for major infrastructure projects**, often spanning decades, pose another significant challenge, as they may not keep pace with the rapid population growth in the region. Additionally, **shifting political priorities and economic fluctuations** can impact project continuity and resource allocation. The **complex interplay between federal, state, and local government responsibilities in infrastructure planning and delivery** may also impact the implementation of these projects. Moreover, competing demands from other regions and sectors may potentially leave key gaps in Melbourne's western suburbs unaddressed. A breakdown of these potential issues is outlined below.

Limited investment dedicated to Melbourne’s west comparable to other areas of Melbourne

Melbourne's western suburbs are experiencing rapid population growth. However, this growth has not been matched by commensurate infrastructure funding commitments. Historically, the western suburbs have received less attention compared to inner Melbourne and the eastern areas in terms of infrastructure development.

Key infrastructure projects for Melbourne's west, such as the Western Rail Plan and OMR, have been allocated only minimal planning funds without any committed construction budgets or schedules. This stands in stark contrast to projects in Melbourne's southeast and inner city, which have secured substantial funding and are already in the construction phase. For instance, the Suburban Rail Loop East has received funding and is moving forward, while its western counterpart, SRL West, which would serve Wyndham and Melton, remains in the planning stages.

Long delivery timelines may critical growth period

The assumed construction of the Outer Metropolitan Ring Road in the 2030s-2040s means there is around 10-25 years before this orbital freeway serves the region. By 2036, Melton and Wyndham will have grown to approximately 350,000-400,000 residents without this infrastructure.

Similarly, the Western Highway construction timeline is uncertain, despite the $1 billion federal commitment. Given the current traffic of 86,000 vehicles daily projected to reach 113,000 by 2031, delays in delivery will likely compound existing congestion.

The construction timeline of the Werribee interchange is also unclear despite the January 2025 funding announcement. The project remains in the planning phase with no confirmed construction commencement or completion dates. Detailed design work is progressing, but without a committed timeline, benefits for local communities remain uncertain.

Failing to secure funding for Melton and Wyndham Vale rail lines threatens sustainable growth

The most critical infrastructure gap is full construction funding for the electrification of both Melton and Wyndham Vale lines. While $325 million in federal enabling works funding supports initial electrification activities on the Melton line, further planning is still required to determine the full cost of electrification of both Melton and Wyndham Vale lines. This funding has not been committed by either federal or state governments.

Without electrification, future growth along the Melton and Wyndham Vale corridors will likely default to car dependency if the rail infrastructure does not cater to its needs. The capacity differential is critical, as electric metropolitan trains can carry up to 1,500 passengers at 10-minute services during peak times, while current diesel regional services carry up to 600 passengers at hourly intervals.

Electrification of the rail network allow for the following benefits:

- More frequent and flexible services: Electric trains accelerate and brake better than diesel powered trains, therefore will be able to service the lines at higher frequency. Electrifying lines to growth corridors like Melton and Wyndham Vale would allow more metropolitan trains to operate, providing higher capacity and a metro-style service for these suburbs.
- Increased capacity: Metro electric trains can hold more passengers than the V/Line diesel trains currently used in these corridors. This is essential to address the overcrowding projected for services in the western growth areas.
- Better service quality: Electrification would enhance the quality of the service for passengers through quieter trains and less travel time
- Lower maintenance costs: Electric trains have fewer moving parts than diesel trains, resulting in lower maintenance costs and less downtime.

Suburban Rail Loop West uncertainty creates planning paralysis

Zero federal funding and project definition for SRL West means Melton and Wyndham have no clarity when (or if) they will receive this section of orbital rail connections. The Victorian Parliamentary Budget Office's March 2024 statement that "the start date for SRL West passenger services is also unknown" also reflects this uncertainty.

For Melton specifically, SRL West in its current conceptual form does not include Melton except potentially via interchange at Sunshine. This means Melton's projected residents by 2037 have no planned orbital connection unless separate Western Rail Plan electrification creates this link.

Project interdependencies create cascade risk

Sunshine Station superhub (completion projected for 2030) is the critical enabling infrastructure required for the electrification of Melton and Wyndham line electrification. If Sunshine is delayed or scope reduced, electrification of the Melton and Wyndham line may be impacted.

OMR Rail South (currently federally funded for up to $920M) is designed to connect to the Western Interstate Freight Terminal at Truganina ($740M federal funding announced in 2022). However, the Victorian Government deferred WIFT indefinitely in 2024 despite federal funding. As the OMR Rail South was designed to serve WIFT by connecting the existing rail network near Werribee to the new terminal in Truganina, if WIFT does not proceed, the immediate justification and need for the rail line are removed.

Western Highway corridor must coordinate with Western Rail Plan corridor protection to avoid conflicts. The highway business case was developed with awareness of rail planning, but construction staging must ensure road works don't preclude future rail corridor needs.

These interdependencies require integrated planning and funding across projects, yet they are being advanced through separate processes with different agencies, timelines, and funding sources. The absence of a single

coordinating authority with integrated funding responsibility for the outer west creates risks of suboptimal sequencing, duplicated efforts, or conflicting infrastructure.

Political risks to long-term funding commitments

The 2023 federal infrastructure review cancelled or deferred multiple projects, demonstrating that multi-year funding commitments remain subject to policy changes. The $2 billion Geelong Fast Rail cancellation directly impacted the Western Rail Plan, resulting in rescoping. While the Western Rail Plan planning funding and OMR Rail South were retained, this shows that no funding commitment is permanent.

Multi-decade projects like SRL (2018 announcement, 2035 East completion, 2050s+ West delivery if funded) require sustained bipartisan support across election cycles at both federal and state levels.

Infrastructure delivery consistently lags population growth

The Melton Planning Scheme Review 2024 documents systematic infrastructure deficits: "Developer contributions are consistently underestimating actual development due to higher than forecast lot densities... State government schools, medical facilities and public transport infrastructure are not being delivered in sequence with housing development."

This pattern creates communities without adequate services during critical establishment periods. New suburbs in Melton and Wyndham are experiencing significant annual dwelling construction, but trains are scheduled hourly and within a diesel network. Schools are overcrowded, and road networks are congested within years of subdivision completion.

The current infrastructure approach of planning funding without construction commitment exacerbates this. Western Rail Plan received planning funding in 2021, with planning scheduled to complete mid-2023, yet at late 2025 and construction funding remains uncommitted. This three-year gap between plan completion and funding decision means infrastructure arrives later than required.

Climate change adaptation is not explicitly addressed in current project scopes despite growing extreme weather risks. Western suburbs follow patterns of heat island effects due to urbanisation, and Wyndham and Werribee are low-lying and flood prone. Bushfire risk in City of Melton requires the transport network to consider evacuation capacity. These challenges would need to be addressed within the transport infrastructure planning to allow for climate resilience.

Conclusion

Further capital investment is required to address transport infrastructure challenges in Melbourne's west.

As outlined in Part 3, there are a suite of planned major road and rail upgrades that have been proposed to tackle current and expected future transport infrastructure gaps. These projects aim to enhance connectivity, increase network capacity, and improve overall mobility in this rapidly expanding area.

The $325 million Melton Line Upgrade and $1 billion Western Highway Upgrade provides support to manage immediate capacity, while the $920 million OMR Rail South supports long-term freight efficiency. Smaller intersections and interchange upgrades such as Ballan Road ($41.75 million) and Werribee Main Road interchange ($125 million) address some of the localised congestion. The $30 million planning funding for the Western Rail Plan has also enabled detailed design work for electrification.

While the existing transport infrastructure gaps are significant, these proposed projects represent a concerted effort to align infrastructure provision with the region's growth trajectory and evolving transport needs. However, further work is required to address these infrastructure gaps. Zero federal funding for Suburban Rail Loop West, no comprehensive electrification construction funding for Melton or Wyndham Vale lines beyond enabling works, and road construction timelines extending into the 2030s-2040s for the OMR/E6 create a mismatch between population growth timelines and infrastructure delivery. Melton and Wyndham will add approximately 350,000 and 450,000 residents in 2036, respectively, yet several transformational projects essential to this growth lack full federal support or defined delivery timelines.

The enabling works such as capacity improvements, platform extensions and futureproofing for infrastructure provides incremental benefits but defers the major electrification and orbital corridor construction to future funding decisions with bipartisan agreement. In rapidly expanding communities like Melton and Wyndham, which boast some of Victoria's highest growth rates, the current incremental approach to infrastructure development may prove inadequate. For instance, Melton Station already surpasses Ballarat's patronage despite its regional classification. This stark contrast between population growth and infrastructure capacity suggests that the gradual implementation of improvements risks creating significant infrastructure deficits during the critical 2025-2040 growth period, potentially hampering the region's development and liveability.

There are also significant opportunities to apply integrated, innovative and inclusive approaches to address these gaps and current challenges.

To support the growing development of Melton and Wyndham as thriving connected communities, integrated transport and land use planning approaches are required.

While established inner city areas often benefit from comprehensive transport strategies and regular funding for diverse mobility improvements, including pedestrian, cycling, and public space enhancements, rapidly growing outer suburbs such as Melton and Wyndham frequently lack comparable support and integration in their infrastructure planning. This disparity in investment and strategic approach can lead to missed opportunities for holistic growth planning in these expanding regions.

Comparing Melbourne's western suburbs' infrastructure plans with those of similar rapidly growing regions can provide valuable insights and context. For example, the Western Sydney Aerotropolis development offers an interesting parallel. Both regions are experiencing rapid growth and require significant infrastructure investment. However, Western Sydney's approach includes a more integrated planning process bringing together federal, state, and local governments to coordinate infrastructure delivery and economic development.

Existing funding and delivery constraints present opportunities for innovative delivery approaches.

While traditional infrastructure projects form the backbone of Melbourne's western suburbs' development plans, there is an opportunity to explore innovative and alternative approaches to address transport needs more efficiently. For example, smart city technologies could play a crucial role in optimising existing infrastructure and managing demand. For instance, implementing intelligent traffic management systems could help alleviate congestion without the need for extensive road expansions. These systems could use real-time data and AI to adjust traffic signals, manage traffic flow, and provide commuters with up-to-date information for route planning. When complemented with traditional infrastructure projects, this has the potential to reduce costs and accelerate the delivery of improved transport outcomes for residents.

While this analysis is helpful in understanding whether basic transport needs are likely to be met, we also need to consider how these planned projects can support equitable growth in these fast-growing suburbs.

While the planned projects aim to improve overall connectivity and address current gaps in transport infrastructure provision in Melbourne's west, it is essential to assess how well they serve different demographic groups within these rapidly growing communities.

For instance, further analysis should be undertaken which considers whether the proposed transport improvements adequately serve a variety of communities, ensuring affordable access to job centres and essential services. For example, the placement of new stations and the frequency of services in different areas could significantly impact social equity. Similarly, we cannot determine how well the transport infrastructure services Melbourne's west without reviewing the accessibility features of new transport infrastructure and examining how well the planned network connects to healthcare facilities and community centres.

By incorporating these equity considerations, the infrastructure plans can better ensure that the benefits of development are distributed fairly across all communities in Melbourne's western suburbs.

The significant federal investments in Melbourne's western suburbs, while substantial, may fall short of meeting the unprecedented infrastructure demands of this rapidly expanding region. To achieve 'InfraBalance' - an equilibrium between population growth and transport infrastructure development, a more certain, integrated, and innovative approach is required, one that not only addresses current gaps but also anticipates future needs and ensures equitable access for all communities.

Understanding an idealised network is a key tool to kickstart the process of achieving 'InfraBalance' in Melbourne's west.

Appendix A: Overview of planned road and rail infrastructure projects in Melbourne's west

Road infrastructure projects

Western Highway Upgrade – Melton to Caroline Springs

The Western Highway Upgrade has received $10 million in federal planning funding and $1 billion for construction. The project includes additional road lanes, upgrades to existing and new interchanges and overpasses, improved walking and cycling paths, traffic signals and lighting enhancements, and public transport facilities. It is designed to support the projected increase in traffic from 86,000 to 113,000 vehicles per day by 2031 and improve safety and travel times for commuters.

Key Challenges: Despite funding, construction timelines remain undefined. The aged infrastructure struggles to meet current urban demand, and delays in delivery risk worsening congestion and safety issues.

Federal Funding: $10 million for planning, $1 billion for construction

Scope:

- Additional road lanes along the corridor
- Upgrades to existing interchanges, new interchanges and overpasses
- Upgrades to walking and cycling paths
- Traffic signal and street lighting improvements
- Public transport facilities

Key impacts:

- Supports the growth of vehicles travelling on the Western Freeway between Melton and Caroline Springs from 86,000 vehicles to approximately 113,000 by 2031.
- Independent analysis documented by Melton City Council found upgrade would see savings to travel time and improvements in safety.

Sources:

- https://bigbuild.vic.gov.au/projects/roads/western-freeway-upgrade-melton-to-caroline-springs
- https://minister.infrastructure.gov.au/c-king/media-release/11-billion-safer-more-efficient-western-freeway
- https://investment.infrastructure.gov.au/projects/121002-22vic-np
- https://www.melton.vic.gov.au/News-Media/Council-welcomes-1-billion-to-upgrade-Western-Highway-between-Melton-and-Caroline-Springs
- https://www.movingmelton.com.au/westernhighway

Outer Metropolitan Ring Road

The Outer Metropolitan Ring Road (OMR) is a proposed 100km orbital corridor comprising a 70km section from Princes Freeway to Hume Freeway and a 23km E6 section from Hume Freeway to the M80 Ring Road. The federal government has committed $920 million for the rail component, while road construction remains unfunded. The corridor will accommodate freeway lanes and rail tracks for both freight and passenger services, with major

interchanges planned across Melbourne's west. It is expected to improve traffic flow, travel times, job access, and economic growth in the outer north and west.

Key Challenges: Road construction is not expected until the 2030s or 2040s, missing the critical 2025–2040 growth period. The project's full cost is estimated at $17–35 billion, and its long delivery timeline risks locking in unsustainable development patterns.

Federal Funding: $920 million for the rail component, $0 for road construction.

Scope:

- OMR is a proposed 100km orbital transport corridor in two sections: 1) 70km OMR segment (road and rail) from Princes Freeway (near Weribee) to Hume Freeway – with up to six traffic lanes in each direction, 2) 23km E6 road link from Hume Freeway to M80 Ring Road with up to four traffic lanes in each direction.
- The OMR Corridor reserves space for both freight and high-speed passenger operation.
- Corridor directly traverses the Weribee-Melton-Tullamarine corridor, with major interchanges at Princes Freeway, Western Highway, Calder Freeway, Hume Freeway and M80 Ring Road.
- For Melton and Wyndham, the project provides direct freeway access through Melbourne's west and connects Wyndham to northern growth areas.

Key benefits:

- Provide strong traffic flow and relieve congestion along the existing Western Ring Road (M80)
- Connect growth areas in Melbourne's rapidly expanding outer municipalities of Wyndham, Melton, Hume and Mitchell.
- Boost economy – the corridor will improve connectivity to key frieght and employment hubs, supporting economic and job growth in the outer west.

Sources:

- https://www.infrastructureaustralia.gov.au/ipl/corridor-preservation-melbourne-outer-metropolitan-ring-roade6
- https://investment.infrastructure.gov.au/projects/117921-21vic-np
- https://investment.infrastructure.gov.au/projects/113717-20vic-np
- https://assets.infrastructurevictoria.com.au/assets/Resources/Fact-sheet-Outer-Metropolitan-ring-road-and-rail-corridor.pdf
- https://transport.vic.gov.au/news-and-resources/projects/outer-metropolitan-ring-e6-transport-corridor

Princes Highway and Werribee Main Road Upgrade

This upgrade project has received $125 million in federal funding, matched by the Victorian government for a total of $250 million. It includes signalisation and roundabouts at key intersections, an additional lane on the Werribee Main Road bridge across the Princes Freeway, and an upgraded citybound entry ramp. The project is expected to reduce congestion, cut peak travel times by over 10 minutes daily, improve safety for 10,000 daily motorists, and enhance local connectivity.

Key Challenges: Despite funding, the project remains in the planning phase with no confirmed construction timeline. Delays could prolong congestion and safety risks in a rapidly growing area.

Federal Funding; $125 million with the Victorian government contributing a matching $125 million for the total project value of $250 million.

Scope:

- Signalisation and roundabouts at key intersections
- Additional lane on Werribee Main Road bridge across Princes Freeway
- Upgrade princes Freeway entry-ramp for citybound traffic.

Key benefits:

- Reduced congestions by cutting peak travel time by over 10 minutes everyday
- Improving safety for 10,000 motorists who use the interchange daily.
- Beter connectivity for local residents

Sources:

- https://bigbuild.vic.gov.au/projects/roads/princes-freeway-and-werribee-main-road-interchange-upgrade
- https://bigbuild.vic.gov.au/news/roads/full-funding-committed-for-princes-fwy-werribee-main-road-interchange-upgrade
- https://minister.infrastructure.gov.au/c-king/media-release/two-new-major-road-projects-locked-melbournes-west

Ballan Road Intersection Upgrade

This intersection upgrade in Wyndham Vale is jointly funded by the federal and Victorian governments, each contributing $41.75 million for a total of $83.5 million. The project involves signalisation of the intersection between Ballan, Greens, and McGrath Roads, additional lanes and priority bus lanes, and new walking and cycling paths. It aims to improve traffic flow, intersection capacity, and safety for all road users.

Key Challenges: While fully funded and scheduled for completion in 2027, the project must manage construction impacts on 58,000 daily motorists and coordinate with broader network upgrades.

Federal Funding; $41.75 million with the Victorian government contributing a matching $41.75 million for the total project value of $83.5 million.

Scope:

- Signalisation of intersection between Ballan, Greens and McGrath Roads in Wyndham Vale
- Extra lanes and priority bus lanes on McGrath, Ballan and Greens Roads through the intersection
- New paths for walking and cycling

Key Benefits:

- Improved transport network efficiency by increasing road and intersection capacity to allow traffic to flow more freely, efficiently, and reliably.
- Improved safety

Sources:

- https://bigbuild.vic.gov.au/projects/roads/ballan-road-intersection-upgrade
- https://investment.infrastructure.gov.au/projects/130031-24vic-nat
- https://bigbuild.vic.gov.au/news/roads/full-funding-committed-for-wyndham-vale-intersection-project
- https://www.premier.vic.gov.au/transforming-road-network-across-melbournes-west

Rail infrastructure projects

Melton Line Upgrade

The Melton Line Upgrade is a major rail infrastructure project jointly funded by the Australian and Victorian governments, each contributing $325 million for a total investment of $650 million. The project aims to increase rail and passenger capacity by 50% through platform extensions at four key stations: Deer Park, Caroline Springs, Rockbank, and Cobblebank. A new stabling yard will be constructed at Cobblebank, and a new Melton Station with four platforms will be delivered. These upgrades will enable the operation of 9-car VLocity trains from 2027 and ensure the infrastructure is future-proofed for electrification under the Western Rail Plan

Key Challenges: While enabling works are funded, full electrification remains unfunded, creating uncertainty for long-term service improvements.

Federal Funding: $325 million, with the Victorian government contributing a matching $325 million for the total project value of $650 million.

Scope:

- increase rail and passenger capacity by 50% through platform extensions at four stations: Deer Park, Caroline Springs, Rockbank and Cobblebank
- New stabling yard at Cobblebank
- New Melton Station with four platforms

Key outcomes:

- Enabling of 9-car VLocity trains from 2027
- Futureproofing of infrastructure for electrification under the Western Rail Plan

Sources:

- https://investment.infrastructure.gov.au/projects/130030-24vic-nat
- https://bigbuild.vic.gov.au/news/level-crossing-removal-project/melton-line-upgrade-fast-tracked
- https://www.pm.gov.au/media/albanese-labor-government-building-victorias-future
- https://minister.infrastructure.gov.au/c-king/media-release/albanese-labor-government-building-victorias-future
- https://www.melton.vic.gov.au/News-Media/Federal-Budget-confirms-road-and-rail-upgrades-for-City-of-Melton
- https://bigbuild.vic.gov.au/projects/melton-line-upgrade

Western Rail Plan

The Western Rail Plan has received $30 million in federal planning funding and $325 million in enabling works as part of the Melton Line Upgrade. It proposes full electrification and quadruplication of the Melton Line from Sunshine to Melton, and the Wyndham Vale Line from Sunshine to Wyndham Vale. These upgrades aim to separate regional and metropolitan services, improve network reliability, reduce congestion, and enhance passenger rail services. While planning is underway, full construction funding for electrification has not yet been committed.

Key Challenges: The plan has been scaled back following the cancellation of the Geelong Fast Rail. Full electrification is estimated to cost $5-10 billion and re0.03mains unfunded, delaying critical upgrades needed to support rapid population growth

Federal funding: $30 million for planning, $325 million as part of Melton Line Upgrade for the futureproofing and enabling works, not full electrification construction funding.

Scope:

- Melton line:
- full electrification from Sunshine to Melton
- Quadruplication to separate regional and metropolitan services
- Supporting projects to facilitate electrification
- Wyndham Vale Line:
- Full electrification from Sunshine to Wyndham Vale
- Quadruplication to separate regional and metropolitan services
- Supporting projects to facilitate electrification

Key benefits:

- Support improved efficiency and network reliability
- Improved passenger rail services
- Reduction in congestion and improving travel times.

Sources:

- https://investment.infrastructure.gov.au/projects/110484-20vic-np?page=4379
- https://www.vic.gov.au/western-rail-plan
- https://assets.infrastructurevictoria.com.au/assets/Resources/Fact-sheet-Western-rail-corridor-upgrade.pdf

Suburban Rail Loop – West

The Suburban Rail Loop – West (SRL West) has not received any federal funding to date. While $2.2 billion was committed federally for SRL East, SRL West remains in the conceptual phase. Proposed options include an at-grade line using the existing Wyndham Vale corridor or a new rapid transit line connecting Sunshine to Werribee. Confirmed termini include Sunshine and Werribee, with Wyndham Vale designated as an interchange station. The project is expected to transform orbital connectivity and improve access to housing and employment across Melbourne's western growth areas.

Key Challenges: The lack of scope, timeline, and funding creates planning paralysis. SRL West is designated as the final section of the loop, with potential delivery not expected until the 2050s or 2060s—well after the peak growth period in Melton and Wyndham.

Federal funding: $0 for SRL West. Widely reported $2.2 billion federal commitment is exclusively for SRL East (Cheltenham to Box Hill).

Scope:

- Undefined, key conceptual options include:
- At-grade line using existing Wyndham Vale Line rail corridor or
- New rapid transit line directly connecting Sunshine to Werribee
- Only confirmed termini at Sunshine and Werribee, with Wyndham Vale confirmed as interchange station.

Impacts:

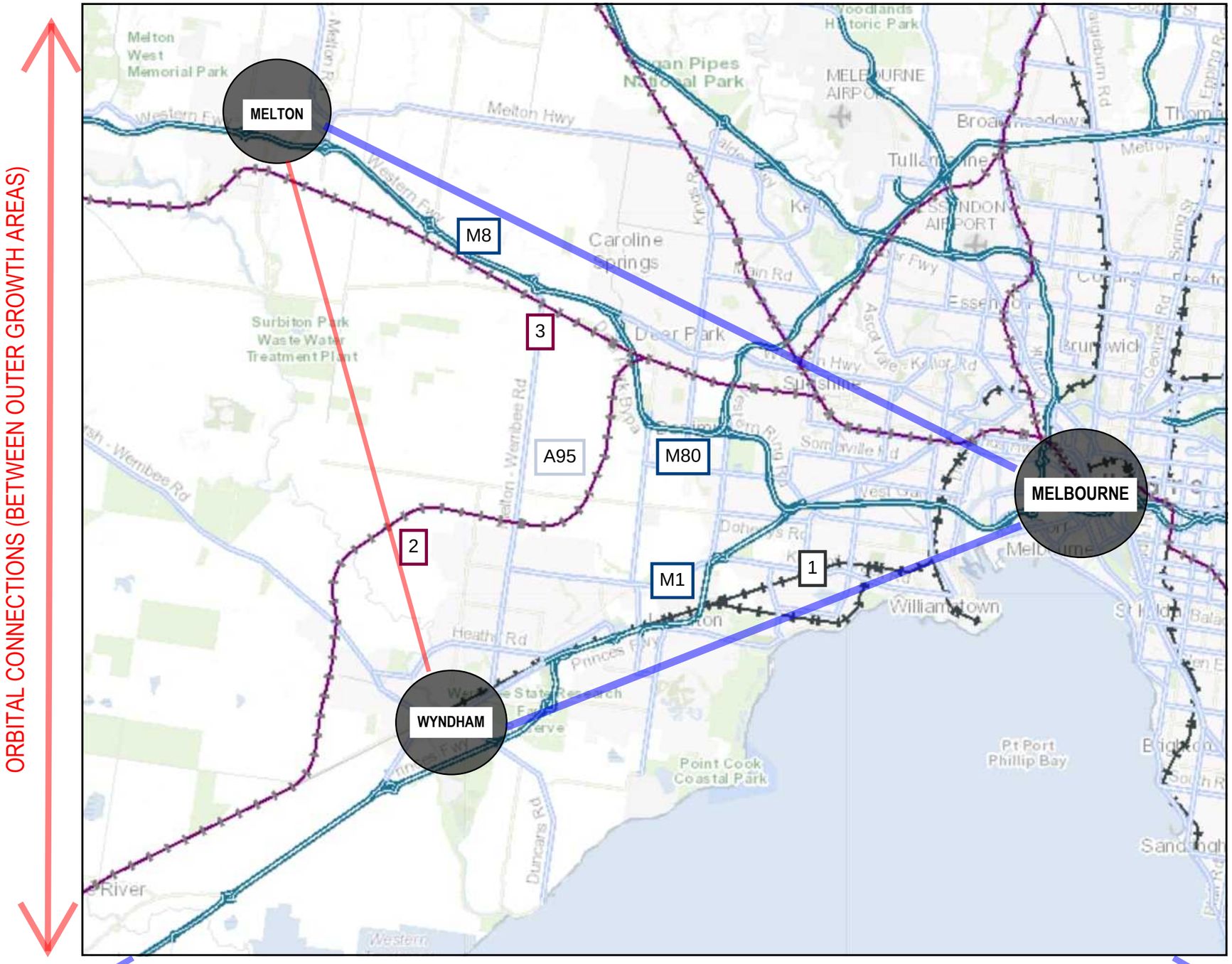
- Will transform orbital connectivity; supports housing and job access between growth nodes in Melbourne's west

Sources:

- https://bigbuild.vic.gov.au/projects/suburban-rail-loop/srl-west
- https://infrastructuremagazine.com.au/suburban-rail-loop-secures-2-2b-in-fed-funding/

Appendix B: Overview of current and existing road and rail network infrastructure in Melbourne's West

OVERVIEW OF CURRENT TRANSPORT INFRASTRUCTURE PROVISIONS



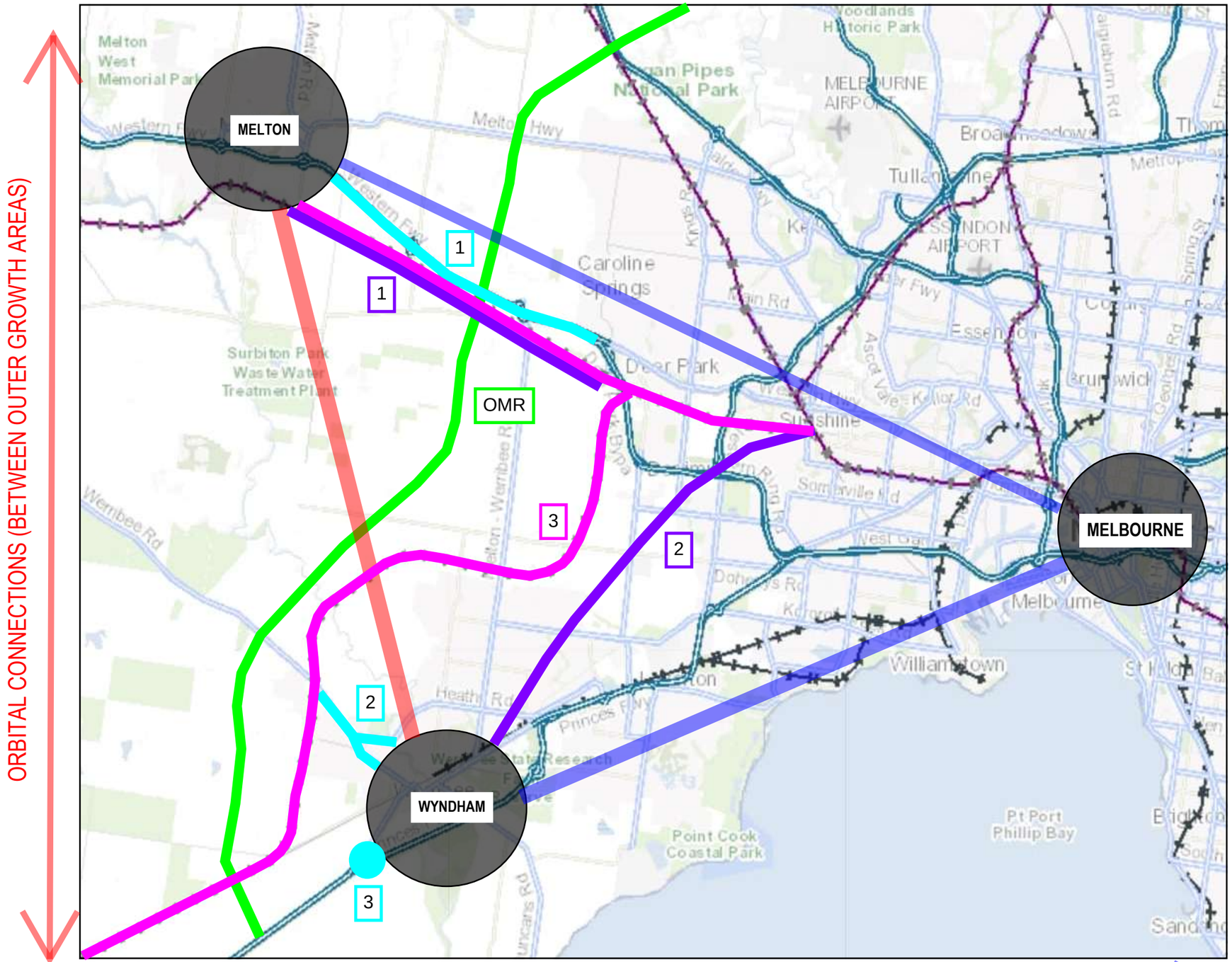
KEY EXISTING TRANSPORT INFRASTRUCTURE - ROAD AND RAIL

- M8 - WESTERN FREEWAY
- M80 - METROPOLITAN RING ROAD
- M1 - MONASH FREEWAY
- A95 - MELTON-WERIBEE ROAD (ARTERIAL)
- 1 - WERIBEE METROPOLITAN RAIL LINE
- 2 - GEELONG TO MELBOURNE V-LINE (REGIONAL)
- 3 - BALLARAT TO MELBOURNE V-LINE (REGIONAL)

MAP LEGEND (SOURCE - VICPLAN)

- [x] Regional Rail Network
  - [x] RRN Regional Rail Line - existing
- [x] Principal Road Network
  - [x] PRN Declared Freeway - existing
  - [x] PRN Declared Arterial Road - existing
- [ ] Principal Freight Network
- [x] Rail
  - [x] Metro Rail

OVERVIEW OF PLANNED ROAD AND RAIL INFRASTRUCTURE PROJECTS



KEY PROPOSED TRANSPORT INFRASTRUCTURE - ROAD

1 - WESTERN FREEWAY (M8) UPGRADE - MELTON TO CAROLINE SPRINGS

2 - BALLAN ROAD UPGRADE - WYNDHAM VALE

3 - PRINCES HIGHWAY AND WERIBEE MAIN ROAD INTERSECTION UPGRADE

KEY PROPOSED TRANSPORT INFRASTRUCTURE - RAIL

1 - MELTON LINE UPGRADE

2 - SUBURBAN RAIL LOOP - WEST

3 - WESTERN RAIL PLAN

KEY PROPOSED TRANSPORT INFRASTRUCTURE - INTERMODAL

OMR - OUTER METROPOLITAN RING ROAD/RAIL

MAP LEGEND (SOURCE - VICPLAN)

- [x] Regional Rail Network
  - [x] RRN Regional Rail Line - existing
- [x] Principal Road Network
  - [x] PRN Declared Freeway - existing
  - [x] PRN Declared Arterial Road - existing
- [ ] Principal Freight Network
- [x] Rail
  - [x] Metro Rail