DEPARTMENT OF TRANSPORT AND HOBSONS BAY CITY COUNCIL

HOBSONS BAY TRANSPORT PLANNING STUDY

NETWORK INVESTIGATIONS TECHNICAL REPORT

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Hobsons Bay Transport Planning Study
Network Investigations Technical Report

FINAL

Department of Transport and Hobsons Bay City Council

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ABBREVIATIONS

ARTC	Australian Rail Track Corporation
BBP	Brooklyn Business Park
BICP	Brooklyn Industrial and Commercial Precinct
BIFT	Beveridge Intermodal Freight Terminal
BUG	Bicycle User Group
DELWP	Department of Environment, Land, Water and Planning
DoT	Department of Transport
EES	Environmental Effects Statement
EPRs	Environmental Performance Requirements
FSI	Fatality and Serious Injury Score
HBCC	Hobsons Bay City Council
HBITP	Hobsons Bay Integrated Transport Plan
HBPS	Hobsons Bay Planning Scheme
HBTPS	Hobsons Bay Transport Planning Study
ILMS	Industrial Land Management Strategy
ITP	Integrated Transport Plan
LAMP	Local Area Movement Plan
LNAC	Large Neighbourhood Activity Centre
LoS	Level of Service
MAC	Metropolitan Activity Centre
MHF	Major Hazard Facilities
MRPV	Major Roads Project Victoria
MSS	Municipal Strategic Statement
NEIC	National Employment and Innovation Cluster
P&E Act	Planning and Environment Act
PBN	Principal Bicycle Network
PFN	Principal Freight Network
PPF	Planning Policy Framework
PPTN	Principal Public Transport Network
SCC	Strategic Cycling Corridors
SITNP	Subregional Integrated Transport Network Plans
SRA	Strategic Redevelopment Area

SSIP	State Significant Industrial Precinct
SSRIP	Safe System Road Infrastructure Program
TAC	Transport Accident Commission
TIA	Transport Integration Act
UDG	Urban Design Guidelines
VPP	Victoria Planning Provisions
WGT	West Gate Tunnel
WIFT	Western Interstate Freight Terminal

OVERVIEW

STUDY BACKGROUND

Hobsons Bay is experiencing significant population growth and is at the centre of a number of major infrastructure projects, including level crossing removals at Kororoit Creek Road and Ferguson Street, and the West Gate Tunnel Project.

The Hobsons Bay Transport Planning Study ('the Study', HBTPS), reviewed the cumulative effects of the West Gate Tunnel Project, land use changes, residential growth, and nearby level crossing removals on the Hobsons Bay transport network.

The Study identified challenges and opportunities to improve transport in the area to maximise the benefits, mitigate any adverse effects of nearby infrastructure projects and maintain or improve the liveability of the municipality during a period of increased residential growth.

The Department of Transport and Hobsons Bay City Council will use the Study to support the future development of the Hobsons Bay Transport Network.

The Hobsons Bay Transport Planning Study (HBTPS) **Network Investigations** provides an evidence-based approach to verify network transport challenges and opportunities, combining data from previous studies and known land use assumptions to develop a Technical Report that identifies and evidences key themes in the Hobsons Bay Study Area.

STUDY REPORT STRUCTURE

This study report is structured as follows:

- **Study background** outlines the study purpose and approach, and defines the study area.
- **Legislation, Policy, Plans and Guidelines** summarises the overarching legislation guiding the study and how they are relevant to meeting the study objectives; along with relevant strategic land use and transport planning policy framework, and transport plans and guidelines that will inform the development and assessment of initiatives.
- **Related studies, projects and planning** reviews the network improvements, investigations and studies that are related to this study.
- **Objectives** outlines the three broad principles for this study and the associated overarching objectives.
- **Existing conditions** provides a summary of the people, places and movement within the study area.
- **Future vision** looks at the vision for Hobsons Bay, along with summary a what is known about the future of Hobsons Bay, as well as future trends that may influence the study area and the development of initiatives.
- **Challenges and opportunities** provides details to give understanding to issues and identify the challenges and opportunities for the study area.

1 STUDY BACKGROUND

1.1 GENERAL STUDY DESCRIPTION

Hobsons Bay City Council (HBCC) and Department of Transport (DoT) engaged WSP to undertake a transport planning study in the Hobsons Bay area.

Hobsons Bay City Council (HBCC) and the Department of Transport (DoT) have a challenge to build a transport network for the future which responds to the needs and requirements of the community. Achieving a positive outcome means considering both placemaking and movement and putting people at the centre of the network.

The Network Investigations Technical Report (this report) comprehensively review the Hobsons Bay Transport Network to find ways to serve local residents and wider users, with reference to the new West Gate Tunnel under construction and the broader challenge of catering for state-significant infrastructure and the growing community's needs.

The Department of Transport and Hobsons Bay City Council will use the Study to support the future development of the Hobsons Bay Transport Network. This report's findings provide an evidence based that can be drawn on by both DoT and HBCC:

- DoT will seek to respond to the main themes identified through this investigation, and look for future funding opportunities of a strategic nature.
- HBCC will respond to localised challenges and opportunities identified through this investigation, through the relevant Local Area Movement Plan (LAMP), or developed into other initiatives for delivery by Council.

1.2 APPROACH

Network investigations were undertaken in two phases:

Phase 1: A background review of existing and future conditions in Hobsons Bay, with reference to the broader Victorian transport context transport context:

- **Legislation, Policy, Plans and Guidelines** summarises the overarching legislation, policies, plans and guidelines used to guide the network investigation.
- **Related studies, projects and planning** reviews the network improvements, investigations and studies that are related to this study.
- **Existing conditions** provides a summary of the people, places and movement within the study area.
- **Future vision** looks at the vision for Hobsons Bay, along with summary about what is known about the future of Hobsons Bay, as well as future trends that may influence the study area.

Phase 2: Targeted network investigations guided by Phase 1 findings. Investigations were structured around challenges and opportunities present in the Hobsons Bay transport network under three clear themes.

A Movement and Place workshop was held for each phase, which enabled stakeholders to provide valuable local knowledge and guidance, and provided a forum for the project team to workshop ideas and seek feedback as investigations progressed.

1.3 PRINCIPLES AND OBJECTIVES

Network investigations have been guided by the principles (P), objectives (O) and performance measures (PM) that have developed and refined in collaboration between DoT and HBCC. They are collated into three broad principles and the associated overarching objectives as shown in Table 1-1, with the complete list of objectives and performance measures shown in Appendix A.

Table 1-1 Principles and objectives

PRINCIPLES	
 **Principle 1:** **An efficient, integrated and sustainable transport network outcome**	Improving Overall Transport Network
	Improving Linkages
	Improving Balance of Modal Choices
	Developing the Active Transport Network
	Facilitating Efficient Freight Movements
	Mitigating Adverse Transport Movements for Local Communities
 **Principle 2:** **Positive liveability, amenity and community wellbeing**	Achieving Outcomes for Transport
	Managing Noise and Air Quality
	Supporting Local Liveability
 **Principle 3:** **Planning for future growth**	Integrating Land Use and Transport
	Planning/ Allowing for Future Network Improvements

Source: DoT and HBCC, 2019

1.4 STUDY AREA

The study area sits within the Hobsons Bay City Council area, bounded by Kororoit Creek Road, Princes Freeway/Geelong Road, West Gate Freeway, Douglas Parade and Melbourne Road, as shown in Figure 1-1.

A wider area of influence, shown in Figure 1-2 has been considered to understand the broader challenges and opportunities facing the wider region.

The report reflects the current state and local policy transport and planning policy framework and is intended to provide guidance on network issues and opportunities based on these policies and current transport conditions and demands. It is intended the report will be reviewed on a regular basis to reflect the transport network and policy changes impacting on the Hobsons Bay transport network.

Figure 1-1 Hobsons Bay Transport Planning Study: Study area

Figure 1-2 Hobsons Bay Transport Planning Study: Broader area of influence

2 LEGISLATION, POLICY, PLANS AND GUIDELINES

2.1 LEGISLATIVE CONTEXT

This section provides an overview of the overarching legislation guiding the network investigation:

- Transport Integration Act 2010
- Planning and Environment Act 1987.

2.1.1 TRANSPORT INTEGRATION ACT 2010

The Transport Integration Act 2010 (TIA) is the principal transport statute for Victoria and establishes a common policy framework for use by state and local government bodies when making decisions about the transport system. It achieves this through the vision statement, transport system objectives and decision-making principles set out in the Act. The vision for transport in Victoria is:

"an integrated and sustainable transport system that contributes to an inclusive, prosperous and environmentally responsible state."

The TIA recognises that land-use and transport planning are interdependent and provides for interface bodies which play a role in creating an effective transport system. Land use planners need to consider the TIA framework where decisions about land use change are likely to have an impact on the transport system. Similarly, transport bodies must have regard to the land use impacts of decisions around the transport network.

This study must be consistent with all relevant requirements of the TIA having regard to the transport system objectives and decision-making principles identified in this legislation. The TIA specifies the following objectives for the transport system:

- Social and economic inclusion
- Economic prosperity
- Environmental sustainability
- Integration of transport and land use
- Efficiency, coordination and reliability
- Safety and health and wellbeing.

Network investigations will be undertaken with reference to TIA objectives.

2.1.2 PLANNING AND ENVIRONMENT ACT 1987

The purpose of the Planning and Environment Act 1987 (P&E Act) is to

> "establish a framework for planning the use, development and protection of land in Victoria. within which decisions about the use and development of land can be made. "

It is interface legislation under the TIA. The P&E Act provides for planning schemes for each municipality that contain the state and local policies, zones and overlays and other provisions that affect how land can be used and developed. The P&E Act also provides for the Victoria Planning Provisions (VPP), a template document of standard state provisions that form the basis from which planning schemes are constructed.

The study area is within Hobsons Bay City Council and interfaces with the environs of the Port of Melbourne. The area is subject to the provisions of the Hobsons Bay Planning Scheme (HBPS) and Ministerial Direction No. 14 Port Environs. The HBPS set out the key strategic planning, land use and development objectives for the municipality and the strategies and actions for achieving those objectives which are discussed further in Section 2.2.

Network investigations will consider the integration of transport with current and future land use and the relevant strategic planning and land use policy framework within the City of Hobsons Bay.

2.2 STRATEGIC LAND USE AND TRANSPORT PLANNING POLICY FRAMEWORK

This section provides an overview of the strategic land use and transport planning policy framework that are relevant to the network investigation, including:

- Plan Melbourne 2017-2050
- Principal Public Transport Network
- Hobsons Bay 2030
- Hobsons Bay Council Plan 2017-2021
- Hobsons Bay Planning Scheme
- Hobsons Bay Integrated Transport Plan
- Transport Strategy for Melbourne's West
- Hobsons Bay Industrial Lands Management Strategy 2008
- Hobsons Bay Housing Strategy 2019
- Hobsons Bay Activity Centre Strategy 2018-2036.

2.2.1 PLAN MELBOURNE 2017-2050

The Metropolitan Planning Strategy, Plan Melbourne 2017-2050 (Plan Melbourne), released in March 2017, sets out the State Government's vision for the City to 2050. One of the key challenges identified in the strategy is:

> "keeping up with the growing transport needs of the city".

Plan Melbourne notes that congestion and overcrowding are an issue on parts of the road and public transport network, particularly at peak times (DELWP 2017). Hobsons Bay City Council is located within the Western Region of Metropolitan Melbourne. The study aligns with all outcomes of Plan Melbourne, and seeks to deliver an integrated transport system that supports the following key directions within Plan Melbourne.

Direction 1.1 Create a city structure that strengthens Melbourne's competitiveness for jobs and investment establishes the locations that will be the focus for investment and growth. Places of state significance in proximity or within the study area include the Melbourne CBD; Fishermans Bend and Werribee National Employment and Innovation Clusters (NEIC); Footscray Metropolitan Activity Centre (MAC); Western Industrial Precinct (which includes the Brooklyn Business Park); Port of Melbourne and Melbourne Airport; Victoria University (Footscray); and the Werribee Health and Education Precinct.

Direction 2.2 Deliver more housing closer to jobs and public transport focuses on locating medium and higher-density development near services, jobs and public transport and the associated policies provides guidance on encouraging housing consolidation in the inner and middle suburbs in locations that have employment, services and good access to public and active transport networks. Melbourne has a network of activity centres which are defined within Plan Melbourne and classified into three main types; Metropolitan Activity Centre, Major Activity Centre and Neighbourhood Activity Centres. *Policy 1.2.1 Support the development of a network of activity centres linked by transport* seeks to improve the range of transport options linking communities to these activity centres. Williamstown, Altona and Altona North are identified as Major Activity Centres within Plan Melbourne.

A key outcome of *Plan Melbourne* is that *"Melbourne has an integrated transport system that connects people to jobs and services and goods to market"* Key directions are Direction 3.1*"transform Melbourne's transport system to support a productive system,"* Direction 3.3 "*improve local travel options to support 20-minute neighbourhoods"* **and Direction 3.4*"improve freight efficiency and increase capacity of gateways while protecting urban amenity.".*** One of the challenges within the City of Hobsons Bay is to facilitate continuous improvement of the freight network to support the growth of core and secondary industrial areas without compromising urban amenity. This is particularly important given that a portion of the Western State Significant Industrial Precinct (WSSIP) is located within Hobsons Bay, known as Altona North industrial precinct. *Policy 3.4.3 Avoid negative impacts of freight movements on urban amenity* seeks to identify and prioritise key freight routes and provide a more consistent and informed approach to land-use planning in freight precincts such as Altona North.

Other policies focus on supporting cycling for commuting by establishing strategic cycling corridors. To achieve 20 minute neighbourhoods, *Plan Melbourne's* focus is on improving the walkability of neighbourhoods, improving local transport choices and encouraging the location of high trip generators such as schools and regional facilities close to public transport. The study will support creating identifiable sense of place within Hobsons Bay which is consistent with the Outcome *Melbourne is a distinctive and liveable city with quality design and amenity*. Direction 4.1 which supports this outcome to *create more great public places across Melbourne*. A key policy is to *Integrate place making practices into road space management* which introduces the principles relating to movement and place to better engage the community in balancing the competing demands on road space and defining the priority functions of streets. This represents an opportunity to improve place-making outcomes within the metropolitan road network.

Policies associated with Direction 5.1 *Create a city of 20-minute neighbourhoods* recognises neighbourhood activity centres as a focus for local jobs and social interaction. To achieve this there is recognition of the need to encourage mixed use at varying densities within neighbourhoods to enable residents and visitors to carry out a range of functions in one location. There are 13 neighbourhood activity centres within Hobsons Bay and one identified urban renewal precinct (Precinct 15). A key focus of this study will be to embed the movement and place framework into the future planning and growth of these centres.

Underpinning the plan is Direction 6.1 *Transition to a low carbon city to enable Victoria to achieve its target of net zero greenhouse gas emissions by 2050*. Transport is a key contributor to greenhouse emissions and by improving transport choice and delivering jobs and services closer to where people live will all contribute to reducing dependency of private vehicle use.

Network investigations will be undertaken with reference to the outcomes, directions and policies of Plan Melbourne, particularly in relation to seeking to achieve 20-minute Neighbourhoods; improving local transport choices to key destinations; integrating place making practices into road space management; concentrating

development along the PPTN and support improvements to the freight network without compromising residential amenity.

2.2.2 20 MINUTE NEIGHBOURHOODS

Plan Melbourne 2017-2050 is the whole-of-government metropolitan planning strategy with a long-term plan to accommodate Melbourne's future growth in population and employment. The 20-minute neighbourhoods principle underpins the strategy.

Work undertaken by DELWP in collaboration with DHHS and the Heart Foundation (Victoria) has identifies the hallmarks of a 20-minute neighbourhood. A 20-minute neighbourhood must:

- Be safe, accessible and well connected for pedestrians and cyclists to optimise active transport
- Offer high-quality public realm and open space
- Provide services and destinations that support local living
- Facilitate access to quality public transport that connects people to jobs and higher-order services
- Deliver housing/population at densities that make local services and transport viable
- Facilitate thriving local economies.

The 20-minute neighbourhood is all about 'living locally'—giving people the ability to meet most of their everyday needs within a 20-minute walk, cycle or local public transport trip of their home.

2.2.3 PRINCIPAL PUBLIC TRANSPORT NETWORK

The Principal Public Transport Network (PPTN) is a policy of Plan Melbourne which holds statutory weighting informing transport and land use integration. The PPTN is incorporated into the Victorian Planning Provisions (Clause 81.01) and identifies locations and corridors that are currently, or expected to be served by high-quality public transport. This will support public transport usage across the network and encourage diverse and dense development near high-quality public transport.

The PPTN identifies locations and corridors within the study area that are expected to, or currently provide high-quality public transport services.

2.2.4 HOBSONS BAY 2030

Hobsons Bay 2030 is the community plan informed through extensive community consultation and engagement and its role is to identify community needs and aspirations over the long term. The purpose of the plan is to guide Council's work through the Council Plan, subsequent annual Action Plans, and budgets. The community's vision for Hobsons Bay is:

"By 2030, embracing our heritage, environment and diversity, we – the community of Hobsons Bay – will be inclusive, empowered, sustainable and visionary community led and supported by a progressive Council of excellence."

It is underpinned by six priorities:

1. **Visionary, vibrant, accountable urban planning:** Residential development should be in keeping with and enhance neighbourhood character, high rise development limited to appropriate areas, foreshore protected from development over two stories, surplus or former industrial land regenerated and planning guidelines to prevent inappropriate development.
2. **Community wellbeing and inter-connection.**

3 **Growth through innovation, access to local jobs, technology and education:** Increase local job opportunities by supporting the business community.

4 **Proactive enrichment, expansion and conservation of the natural and urban environment**: provide accessible green areas, facilitate outdoor activity, provide for safety and wellbeing, shared bike/walk pathways between parklands and natural areas.

5 **Active sustainable practices;** Council to deliver greenhouse strategy plans to address climate change.

6 **An accessible and connected community: improve the public transport system, address gaps and capacity in the road network and inefficient connections in train and bus services across the municipality,** linking bike paths with community and transport hubs with secure bike storage. The community is seeking duplication of the existing Altona loop along with reopening of closed railway stations (Paisley/Altona North and Galvin) which would reduce local travel congestion and parking demands at existing stations and increase capacity. Visionary connection of water transport system with road and rail in Hobsons Bay.

Network investigations will be undertaken with reference to the community's needs and aspirations.

2.2.5 HOBSONS BAY COUNCIL PLAN 2017-2021

The Council Plan was developed in conjunction with the Hobsons Bay 2030 Community Vision and puts the outcomes of that plan into operation in the medium term. The four goals of the Council Plan are aligned with the six principles listed above and include an inclusive and healthy community; a great place; a well-designed, maintained and environmentally sustainable place; and a Council of excellence.

Each goal area is supported by what the Council will do. Most relevant to this study is, Council will:

"Work with all levels of government and other stakeholders to improve our transport network and to address gaps and capacity in public transport, our roads, footpaths and cycling routes".

Development of this report as a collaboration between DoT and HBCC aligns with this Council aim.

2.2.6 HOBSONS BAY PLANNING SCHEME

The Hobsons Bay Planning Scheme (HBPS) provides a clear and consistent framework within which decisions about the use and development of land can be made and provides for the implementation of state, regional and local policies affecting land use and development.

The Planning Policy Framework (PPF) is the policy context of planning scheme which needs to be considered when making decisions about the transport network. The key high level objective and strategies relevant to this study are shown in Table 2-1.

Table 2-1 Relevant clauses to this study

RELEVANT CLAUSES/OBECTIVES AND STRATEGIES
Clause 11.01-1R Settlement – Metropolitan Melbourne Strategy - Develop a network of activity centres linked by transport.
Clause 15.01-1R Urban Design – Metropolitan Melbourne Strategy - Integrate place making practices into road space management.
Clause 15.01-4R Healthy Neighbourhoods – Metropolitan Melbourne Strategy - Create a city of 20 minute neighbourhoods, that give people the ability to meet most of their everyday needs within a 20-minute walk, cycle or local public transport trip from their home.

RELEVANT CLAUSES/OBECTIVES AND STRATEGIES
Clause 17.03-3S State significant industrial land Objective: To protect industrial land of state significance.
Clause 18.01-1S Land use and transport planning Objective: To create a safe and sustainable transport system by integrating land use and transport.
Clause 18.01-2S Transport System Objective: To coordinate development of all transport modes to provide a comprehensive transport system.
Clause 18.02-1R Sustainable personal transport – Metropolitan Melbourne Strategy: To improve local travel options for walking and cycling to support 20-minute neighbourhoods and develop local cycling networks and new cycling facilities that support the development of 20-minute neighbourhoods that link to and complement the Principal Bicycle Network.
Clause 18.02-2R Principal Public Transport Network Strategy: Maximise the use of existing infrastructure and increase the diversity and density of development along the Principal Public Transport Network, particularly at interchanges, activity centres and where principal public transport routes intersect.
Clause 18.02-3S Road System Objectives: To manage the road system to achieve integration, choice and balance by developing an efficient and safe network and making the most of existing infrastructure Strategies: Make better use of roads for all road users through the provision of wider footpaths, bicycle lanes, transit lanes (for buses and taxis) and specific freight routes. Improve the management of key freight routes to make freight operations more efficient while reducing their external impacts. Ensure that road space complements land use and is managed to meet community and business needs.
Clause 18.03-2S Planning for port environs To plan for and manage land near commercial trading ports so that development and use are compatible with port operations and provide reasonable amenity expectations.

Hobsons Bay City Council is currently reviewing its Municipal Strategic Statement (MSS) to ensure that it reflects current adopted Council policy and the community's value and aspirations for land use. The MSS sets out the current vision, objectives and strategies for managing land use change and development in Hobsons Bay City Council. Clause 21.02-4 identifies the Strategic Vision:

"working together to achieve a vibrant, diverse and sustainable community that simultaneously pursues economic success, environmental quality and social equity to provide opportunities for all".

The objectives and strategies of the MSS are set out under eight themes. Council has recently undertaken extensive strategic planning for the municipality which will support and inform the MSS review These are discussed in more detail in Section 2.2.7 2.2.8 and 2.2.9. Of specific relevance to this project is Clause 21.09 Transport and Mobility outlined in Table 2-2.

Table 2-2 Transport and mobility clause in the MSS

CLAUSE 21.09 TRANSPORT AND MOBILITY
Hobsons Bay City Council seeks an integrated transport system that balances good road access for industrial and residential land uses and carefully manages the impact of freight on residential amenity. High quality integrated public transport, cycle and pedestrian paths to enhance walkability and safety, and promotes adequate parking in tourist precincts and activity centres is supported. Objective 1 – to provide access to, through and within the municipality by all modes of transport, including walking, cycling, public transport and private and commercial vehicles Objective 2 – to protect residential and other sensitive land uses from the adverse effects of vehicular traffic Objective 3 – to support increased use of public transport and an efficient network.

Network investigations will be undertaken with reference to the PPF and the Local Planning Policy

2.2.6.1 MINISTERIAL DIRECTION NO. 14 PORT ENVIRONS

The area to the east of Hall Street in Spotswood is covered by the Port Environs Policy. The purpose of this Direction is to ensure that any planning scheme amendment in the environs of a commercial trading port has regard to protecting the operations and development of the port from the encroachment or intensification of sensitive uses.

While Direction No. 14 is not directly related to the study area, network investigations will give consideration any potential impacts on port operations and the management of the freight network.

2.2.7 HOBSONS BAY INTEGRATED TRANSPORT PLAN 2017-30

The Hobsons Bay Integrated Transport Plan 2017-30 (which is an update of the Integrated Transport Strategy 2006) sets a long-term vision for integrated transport in Hobsons Bay, and provides a set of overarching principles to guide Council's transport planning, programs, policies, operations, investment and decision making. It has been informed by extensive stakeholder and community engagement and will also underpin Council's platform for advocacy and collaboration. The vision is:

"an integrated, innovative and equitable transport system, providing a range of sustainable, efficient, accessible and safe ways for people and goods to reach their destination".

The key guiding principles are integration; equity; efficiency; sustainability and innovation.

The plan establishes six strategic directions for both neighbourhood travel and regional travel. The plan identifies key implementation outcomes.

The Hobsons Bay Integrated Transport Plan is the key HBCC document that will be referred to as part of the network investigation. The other HBCC documents referenced in this report provide context in relation to existing conditions and the future state. Figure 2-1 provides a summary of the key findings from the ITP relevant to the network investigation.

It should be noted that the HBTPS will focus on challenges identified in the ITP that are relevant to the scope and project objectives of the HBTPS.

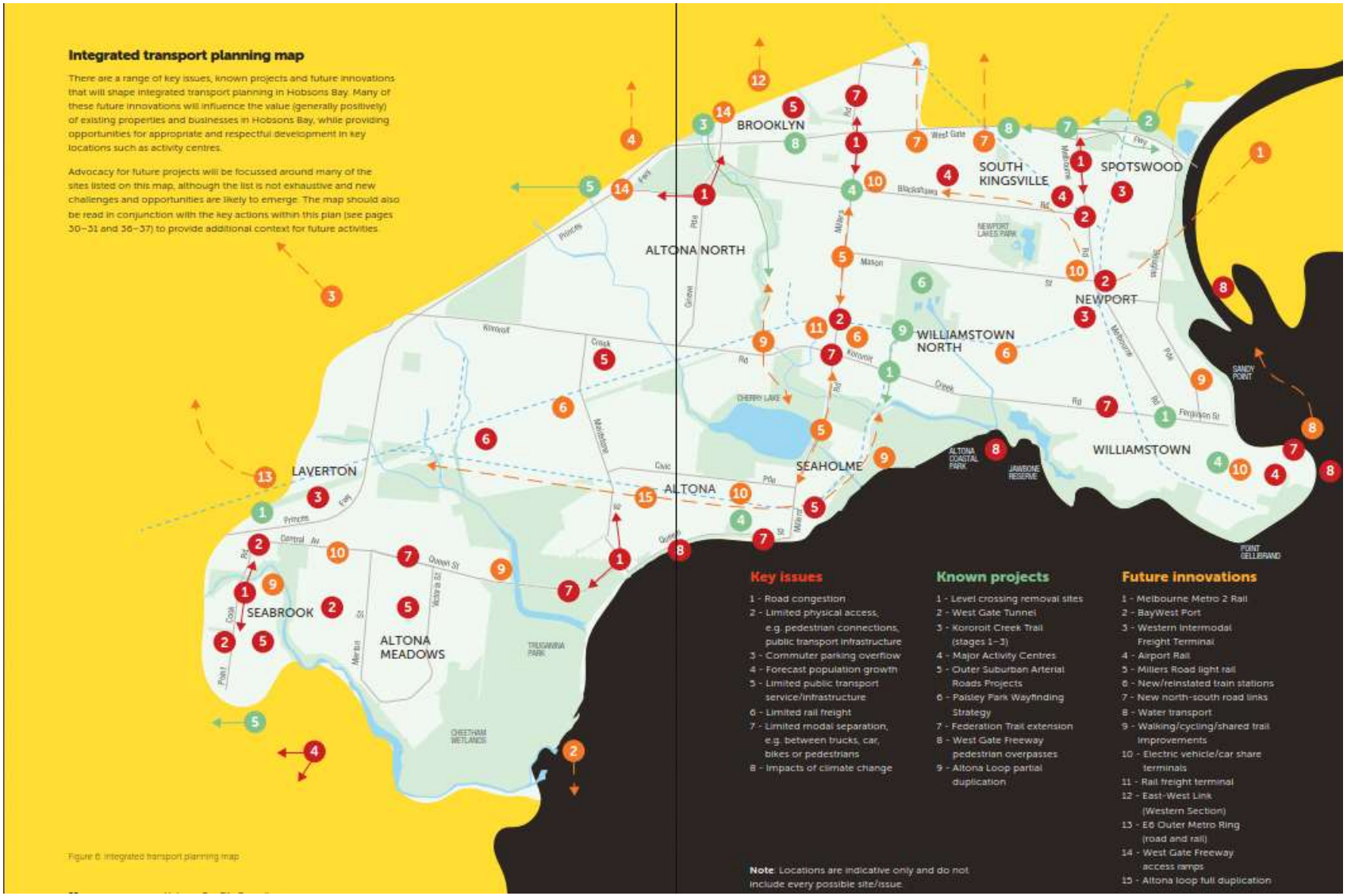


Figure 2-1 Integrated transport planning map (Hobsons Bay Integrated Transport Plan)

Source: Hobsons Bay City Council, 2017a

2.2.8 TRANSPORT STRATEGY FOR MELBOURNE'S WEST

The Transport Strategy for Melbourne's West was developed by GHD in conjunction with the Western Transport Alliance and Lead West.

This advocacy document describes the refreshed transport strategy for Melbourne's West (from the Western Melbourne Transport Strategy from 2012). The strategy defined a renewed vision for transport in the region, and set out aligned initiatives for the next 10-15 years.

Key principles of the transport strategy include:

- Promote an integrated land use and transport plan that moves in parallel with the growing population enabling a 20-minute city
- Develop a robust public transport and road network that offers capacity, flexibility, is safe and environmentally sustainable
- Promote health in transport with an improved and linked active transport network
- Enable a technology forward network that improves efficiency using emerging technologies
- Promote drivers for efficient industry development and investment
- Strengthen access to major activity centres and nodes to enable employment opportunities.

The strategy seeks the following outcomes:

- An integrated transport plan for Melbourne's West that reflects better integration of land use and transport planning
- Extended and improved active transport paths and infrastructure
- Increased capacity for the commuter rail network
- Effective cross-region bus routes
- Better frequency and accessibility for existing and future bus services
- Public transport services delivered to new communities as people move in
- Arterial road development that builds resilience
- Consolidated freight is managed on well planned major roads and rail networks.

Key regional initiatives to support the strategy have been developed from inputs across the western suburban regional councils and with reference and discussion with Government agencies. Initiatives have been evaluated and prioritised by the Western Transport Alliance, Lead West and local councils in alignment with their key issues and needs.

Challenges and opportunities will be identified with consideration to the principles and outcomes of this strategy.

2.2.9 HOBSONS BAY INDUSTRIAL LAND MANAGEMENT STRATEGY 2008

The Hobsons Bay City Council (HBCC) is currently the focal point of Victoria's petroleum, chemical and manufacturing industries, including some of the State's largest and most significant industrial enterprises. The industrial precincts located at the north-west corner of the municipality forms the southern edge of the Western Industrial Precinct and industrial precincts in the north-east corner interface with the Port of Melbourne.

To provide clear direction in relation to the future use and development of industrial land in Hobsons Bay over the next 15 years, Council prepared the *Industrial Land Management Strategy 2008* (ILMS). The key objectives of this strategy were to better understand the suitability and desirability of the City's industrial land resources to meet future market demand and to determine whether any current industrial zoned land was better suited for redevelopment to support urban consolidation objectives. A review of 22 precincts identified that nine precincts were considered suitable (in whole or in part) for review of alternative land uses. The remaining precincts were classified according to their future role and function into Core Industrial Areas and Secondary Industrial Areas. These are shown in Figure 2-2.

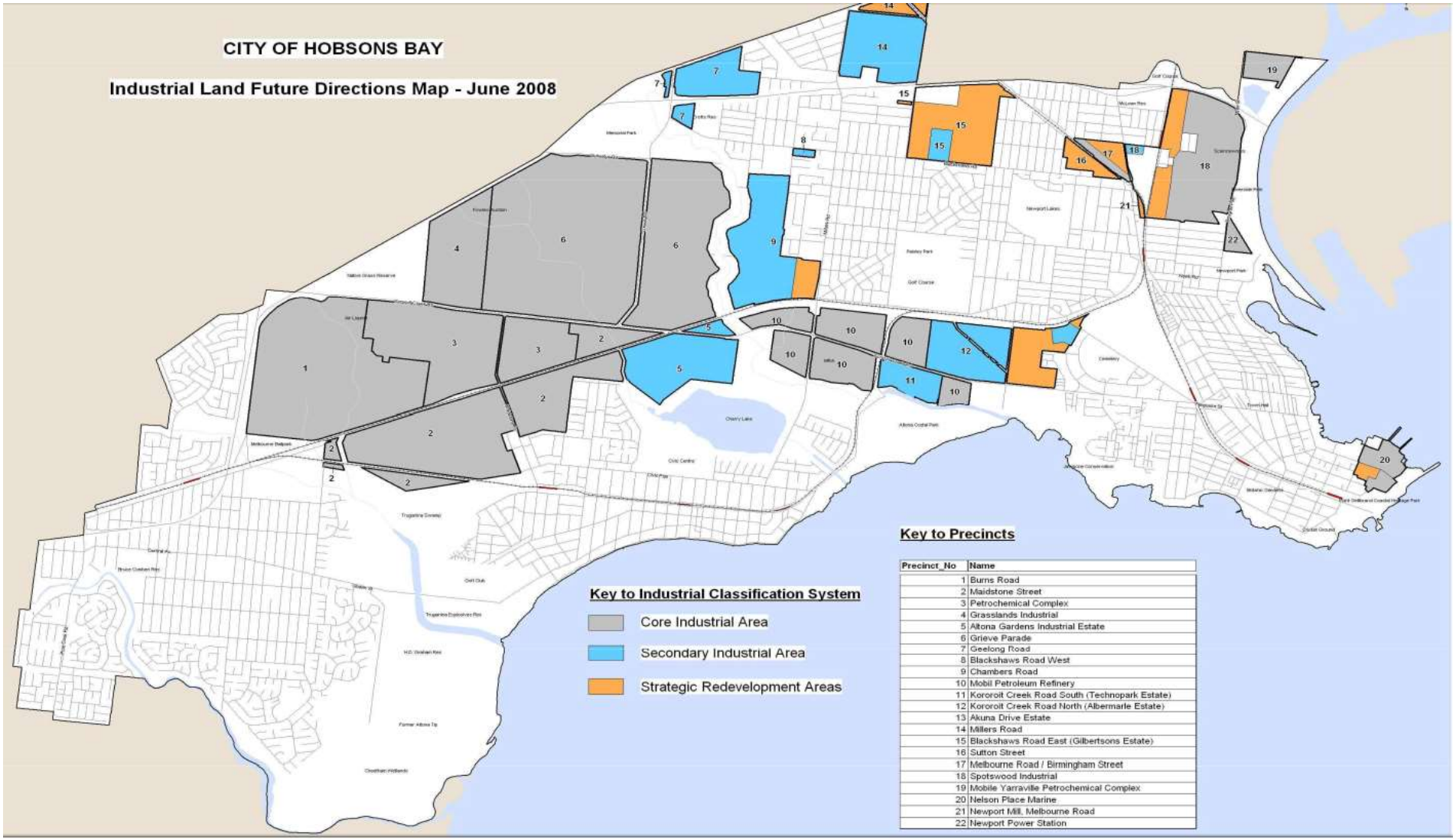


Figure 2-2 Industrial Land Future Directions Map

Source: Hobsons Bay City Council, 2008

The network investigation will recognise the importance of the Western SSIP (the Core and Secondary Industrial Areas in the City of Hobsons Bay form the southern edge) and understand the challenges facing the management of urban encroachment and providing for freight routes without compromising local amenity and broader redevelopment initiatives.

The strategic redevelopment sites identified in Figure 2-2 will be the key focus for land use change and population growth within the City of Hobsons Bay. Many of these sites have been through the planning process and future development potential has been identified. The resultant land use change is discussed in Section 5.2.

2.2.10 HOBSONS BAY HOUSING STRATEGY 2018

The *Hobsons Bay Housing Strategy* comprises Volume One - Background Report; Volume Two - Housing Framework Plan and Housing Capacity Assessment and Volume Three - Housing Strategy. The Housing Strategy is expected to guide the future residential development in the municipality and sets out housing policy and its implementation. The four policies address:

1. Population Growth and Change
2. Housing Location and Housing Type
3. Housing Affordability and Affordable Housing
4. Housing Design, Functionality and Sustainability.

Future growth in Hobsons Bay is expected to generate demand for approximately 443 new dwellings per annum, or additional 8,849 new dwellings by 2036.

Volume Two identifies where future housing growth can occur to help determine the potential supply of additional housing in Hobsons Bay (Hobsons Bay City Council, 2019b).

The final Housing Strategy provides direction on where future residential growth will occur within the City of Hobsons Bay to meet forecast demand. The network investigation will consider this future land use change and growth taking into consideration the significant development potential identified for Precinct 15 and 16. More detail is provided in Section 5.2.

2.2.11 HOBSONS BAY ACTIVITY CENTRE STRATEGY 2019-2036

A review of the existing Activity Centre Strategy (2006) commenced mid-2014, where background investigations were undertaken and consultation with the community, trader groups and other stakeholders was conducted. A Technical Report (August 2016) was prepared containing all the existing information on the Activity Centres. This report considered the data received from previous workshops, face-to-face meetings and a community survey. The ACS has calculated the present provision of retail floor space in Hobsons Bay as 135,550m^2 distributed within a five-tier activity centre hierarchy (including the Enterprise Centre at Millers Road) shown in Figure 2-3.

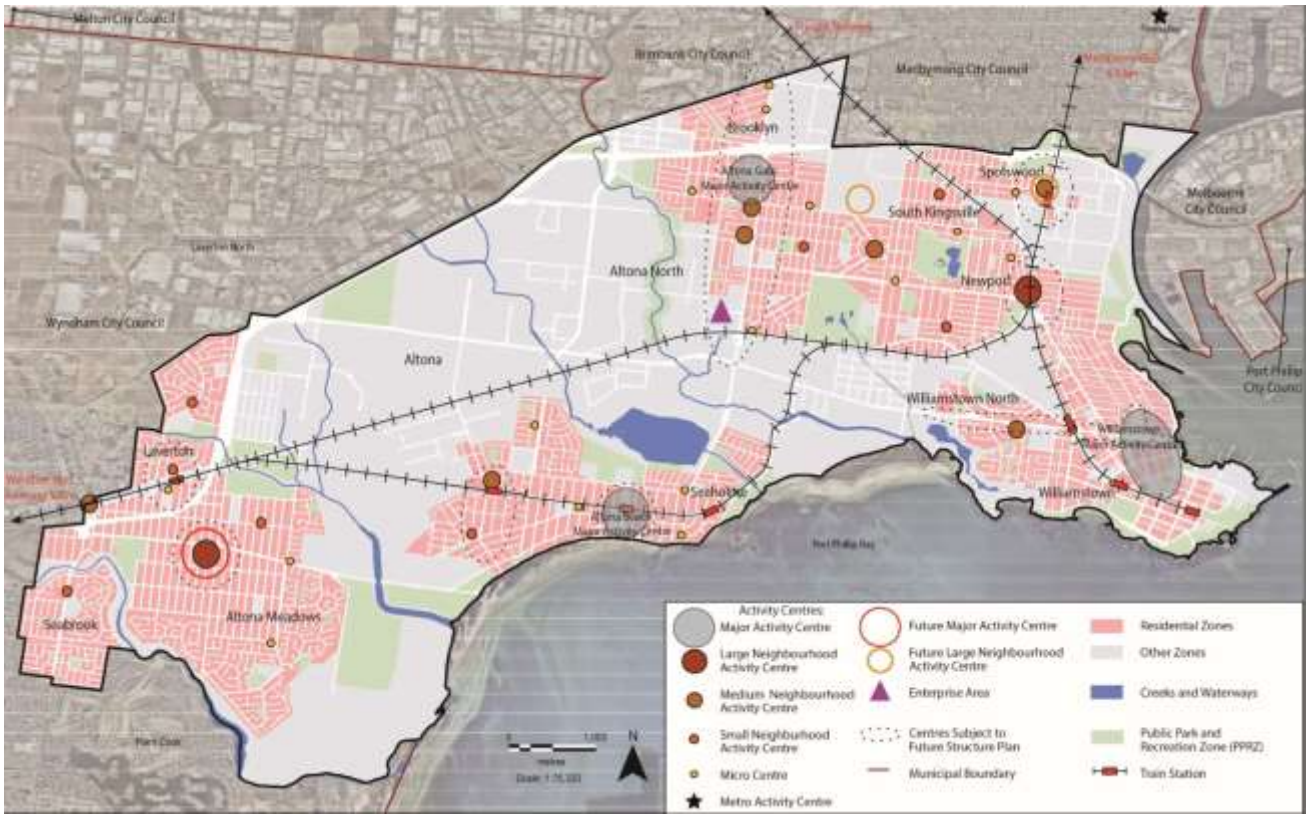


Figure 2-3 Hobsons Bay Activity Centre Strategy

Source: Hobsons Bay City Council, 2019a

The Activity Centre Strategy (ACS) has developed a local activity centre network (LACN) which translates the activity centre typologies designated in *Plan Melbourne* into the local level and context. The analysis recognises and reinforces the three Major Activity Centres identified in Plan Melbourne and identifies one Future Major Activity Centre and three future Neighbourhood Activity Centres. The City of Hobsons Bay has also commenced work on structure plans for Newport Large Neighbourhood Activity Centre and the Spotswood Activity Centre Structure Plan. More detail is provided in section 5.2.

The Strategic Redevelopment Sites (particularly Precinct 15) and Major and Large Neighbourhood Activity Centres (including Altona Gate and Spotswood) will accommodate the majority of future growth within the City of Hobsons Bay for the next 15 to 20 years. Network investigations will consider their implications for the transport network.

2.3 VICTORIAN GOVERNMENT TRANSPORT PLANS AND STRATEGIES

2.3.1 VICTORIAN RAIL PLAN – GROWING OUR RAIL NETWORK 2018-2025

Growth in population and jobs is driving the need for Government to invest in infrastructure and services to move people and goods on our roads, public transport, freight and port networks. By 2051 Melbourne's transport network will need to facilitate an extra 10.4 million trips per day (Transport for Victoria, 2018).

Transport services and infrastructure need to adapt and expand to meet the needs of our growing State, and support Melbourne and Victoria's liveability and productivity into the future. This network plan outlines the funded investments in rail across the State over the next seven years. It supports the key principles outlined within Plan Melbourne.

The Government's $30 billion Major Transport Infrastructure Program (MTIP) has seen major investment in public transport and road projects. The MTIP is delivering a series of projects to transition the network through improved services. Some of the funded projects which are currently underway, include:

The Metro Tunnel

The project will create a new rail line, with high capacity trains from Sunbury in the west to Cranbourne and Pakenham in the south-east. By running two of the busiest train lines through a tunnel under the city, and freeing up space in the City Loop, more trains will be able to run in and out of the central city. The project will enable over half a million additional passengers per week to use the rail system during the peak periods.

Level Crossing Removal Program

By 2025, 75 of Melbourne's most dangerous and congested level crossings will have been removed. This will improve travel around the city by increasing safety and enabling more trains to run more often.

Planning is underway for several possible future investments in the transport network, including the Airport Rail Link, Fast Rail to regional Victoria and Electrification of the metropolitan rail network to growth areas including Wyndham.

The rail plan provides an overview of the funded projects resulting in changes to the rail network, these changes will be considered in the network investigation.

2.3.2 WESTERN RAIL PLAN

The Western Rail Plan outlines three major connected projects for fast, high-capacity rail that are targeted at meeting future growth in suburbs and regional cities, these are:

1. Two new electrified metropolitan rail lines through the western suburbs to growth areas in Melton and Wyndham Vale to separate these suburbs from the Ballarat and Geelong lines.
1. Increased track capacity between Sunshine and the CBD to allow for faster and more frequent metro and regional trains.
2. Major investment in the Geelong and Ballarat lines to run trains faster than 160 km/h and investigation of the electrification of these lines and new, electric regional trains.

2.3.3 VICTORIAN CYCLING STRATEGY 2018-2028

The Victorian Cycling Strategy is a strategy to encourage more people to cycle. It guides planning and investment in cycling up to 2028. It sets two goals and a range of initiatives to increase the number, frequency and diversity of people cycling for transport (commuter trips to work or education, and local trips to stations, shops and schools). The goals are to:

- Invest in a safer, lower-stress, better-connected network, prioritising strategic cycling corridors
- Making cycling a more inclusive experience.

The strategy says that more than half the vehicle trips in Melbourne are short trips (less than 6 km) and that encouraging people to cycle for short trips would reduce pressure on the road network and support the development of 20-minute neighbourhoods.

Network investigations will consider the intent of the cycling strategy and the planning work DoT has undertaken for the Strategic Cycling Corridors within the study area.

2.3.4 VICTORIAN FREIGHT PLAN

High-quality, reliable freight transport and logistics services are essential to connectedness and liveability and for the success of Victorian businesses, primary producers and job creation.

Delivering the Goods – Victorian Freight Plan is a state-wide plan for freight. The plan identifies future challenges and opportunities that freight and logistics businesses, their employees and local government have raised and the initiatives needed to address them.

Victoria has committed to and completed a number of projects (such as the M80 Upgrade and West Gate Tunnel Project), which are expected to boost freight efficiency.

The Plan has identified five priority areas and actions over the next five years to improve freight efficiency, capacity and amenity and to prepare the state for future growth and challenges, including:

- **Manage existing and proposed freight corridors and places in conjunction with urban form changes**

  Actions include:

  - Reviewing the PFN
  - Expanding the HPFV network
  - Planning for bigger vehicles and vessels
  - Working with local government to remove or reduce first and last mile impediments.

- **Reduce the impact of congestion on supply chain costs and communities**

  Actions include:

  - Prioritising the use of technology to improve the management of network congestion
  - Improving landside efficiency
  - Develop more freight friendly solutions for Melbourne's CBD
  - Align future toll contracts with Government's freight efficiency and congestion management objectives.

- **Better use of our rail freight assets**
  - Improve the efficiency and reduce the cost of rail access to the Port of Melbourne
  - Manage the regional below-rail infrastructure and operating rules.

- **Plan for Victoria's future port capacity**
  - Develop the Port of Melbourne to its optimum capacity
  - Plan for Bay West as Victoria's second container port whilst retaining the Port of Hastings as an option in reserve. Land and transport corridors have been reserved, and all relevant approvals obtained, to enable the commencement of the development Bay West, timed for completion when the Port of Melbourne reaches capacity.

- **Stay ahead of the technology curve**
  - Give priority to new technologies which enhance safety, optimise the metropolitan road network, better manage congestion and reduce supply chain costs
  - Invest in better, more reliable freight data.

As part of the plan, the Government created Freight Victoria to coordinate the development of an efficient freight and logistics system for Victoria.

Network investigations will consider projects and actions which have been committed to by Freight Victoria that impact the study area.

2.3.5 TOWARDS ZERO 2016-2020, VICTORIA'S ROAD SAFETY STRATEGY AND ACTION PLAN

Towards Zero (2016 – 2020) is Victoria's Road Safety Strategy and Action Plan and includes a target of reducing road deaths in Victoria to less than 200 by 2020 as a step towards zero. The Victorian Government is investing $1.1 billion to implement towards zero, which includes a mix of infrastructure projects and driver training programs.

Road safety, including pedestrian and cyclist safety will be a focus of network investigations.

2.3.6 VICTORIA'S 30-YEAR INFRASTRUCTURE STRATEGY, 2016-2046

Infrastructure Victoria's 30-year strategy is designed to prepare for population change, and provide infrastructure that enables successful social, economic, and environmental outcomes. The recommendations to government presented in this strategy are primarily focused on increasing the potential which infrastructure development has on driving connectivity between people and places. The top three recommended actions are:

- Increasing densities in established areas and around employment centres to make better use of existing infrastructure.
- Introducing a comprehensive and fair transport network pricing regime to manage demands on the network.
- Investing in social housing and other forms of affordable housing for vulnerable Victorians to significantly increase supply.

A large number of recommendations within the strategy are targeted at areas in an around the study area and/or align with strategic objectives of planning policies detailed in section 2.2. These recommendations target existing and planned transport infrastructure and providing accessibility and increased mobility to users. This strategy will be updated in early 2020.

2.3.7 GROWING VICTORIA'S POTENTIAL, APRIL 2019

Infrastructure Victoria (2016) identifies the opportunities and challenges of Victoria's population growth and which will inform the updated 30-year infrastructure strategy to be released in early 2020. The 2020 strategy will incorporate the following positions for future infrastructure provision:

- Regional investment should be targeted to address regional opportunities and challenges.
- Increasing density will help accommodate growth and improve access to infrastructure.
- Infrastructure should be planned and delivered in a way that integrates with where people want to live and work.

2.3.8 VICTORIAN INFRASTRUCTURE PLAN, 2017

The Victorian Infrastructure Plan is a long-term, state-wide infrastructure plan developed in response to the recommendations made in Victoria's 30-Year Infrastructure Strategy, 2016-2046 (Infrastructure Victoria, 2016). This plan outlines the infrastructure priorities for a five-year period from the 2017/18.

The plan is organised into nine critical sectors which cover areas such as transport, health and human services, environment, and culture, sport and community. The top priorities for Victoria's transport sector plan are:

- Making the most of existing assets
- Building for the future
- Connecting regional Victoria
- Developing smarter transport solutions.

Each priority presented addresses a recommendation from Infrastructure Victoria (2016).

2.4 LAND USE PLANNING AND TRANSPORT GUIDELINES

This section provides an overview of the following land use planning and transport guidelines, which will be used to inform the identification and assessment of initiatives:

- Urban design guidelines
- Public transport guidelines for land use and development 2008
- A guide to movement and place framework Victoria.

2.4.1 URBAN DESIGN GUIDELINES FOR VICTORIA 2017

The Urban Design Guidelines for Victoria (UDG) are policy guidelines within the State PPF of the VPP and must be considered when assessing design and built form of new development, where relevant. These guidelines cover the movement network and focus on urban design for active transport. Key objectives include:

- Objective 2.1.1: To ensure the movement network accommodates the diversity of transport modes and support activities, including active transport.
- Objective 2.1.2: To ensure the movement network provides for safe interactions between transport modes.
- Objective 2.1.3: To maintain a safe, inclusive and serviceable movement network.

The guidelines provide specific guidance for ensuring that pedestrians and cyclists are considered in the design of pedestrian priority streets, pedestrian and bicycle paths and crossings, major roads, public transport on roads, on and off street parking. Recognising the importance of integrating public transport and the built form the UDG provides urban design principles for public transport environs.

These guidelines will be used to inform the movement and place analysis as part of the study.

2.4.2 PUBLIC TRANSPORT GUIDELINES FOR LAND USE AND DEVELOPMENT 2008

The Public Transport Guidelines for Land Use and Development aim to assist decision makers when considering proposals for land use change that may affect public transport and delivery. These guidelines set out design principles and assist with the public transport aspects of strategic plans, integrated transport plans and layouts of new subdivisions and major developments.

These are policy guidelines within the State PPF of the VPP and will be considered in the development of this study, where relevant.

2.4.3 A GUIDE TO MOVEMENT AND PLACE FRAMEWORK VICTORIA

The Movement and Place Framework is a new approach to designing, planning and delivering transport solutions. Movement and Place offers a progressive way of working so that a variety of considerations and outcomes in land-use and transport planning are better integrated.

Fundamental to the Movement and Place concept is that streets perform multiple functions. Transport links are not only to move people from A to B, they also serve as key places and destinations in their own right.

The Movement and Place Framework is a system of classifying transport links and hierarchies based on the broader network outcomes. However, unlike previous classification systems, it considers the future needs of both the movement and place functions of roads, streets and interchanges on the network.

The Movement and Place Framework has many uses at the strategic network planning and development level and at the detailed project level. It marries network-wide and localised considerations. The Framework organises transport links by

their ‘place’ and ‘movement’ roles into road and street types. A set of priority uses, performance measures and potential interventions are then developed for each road and street type.

At the Strategic level, the Framework can:

— Set aspirations to enact the State’s vision for an integrated and sustainable transport system

— Classify the transport network and assign future vision for roads and streets

— Promote thinking about performance of the network as a whole rather than as individual transport links

— Assess network problems, assist with investment decisions and project identification.

At the project level, the Framework can:

— Translate the experience and requirements of different users during their journey within a street

— Provide design guidance for the development of project options and solutions

— Provide a framework for project impact evaluation that can be aligned with wider network performance

— Guide asset maintenance regimes

— Assist community engagement.

The Movement and Place Framework will be used to understand the existing transport network hierarchy within the study area and its associated performance. In collaboration with DoT/HBCC this Framework will be used to define the future vision for the transport network, understanding this future vision will guide the identification of network challenges and opportunities, and possible responses to them.

3 RELATED STUDIES, PROJECTS AND PLANNING

There are a range of transport projects and network investigations currently underway or recently completed within and around the Hobsons Bay Municipality that are relevant to this study. These projects have undertaken various levels of community consultation and network analysis through their development.

This section reviews the network improvements, investigations and studies that are related to this study.

3.1 NETWORK IMPROVEMENTS

3.1.1 THE WEST GATE TUNNEL PROJECT

The West Gate Tunnel will be a 17-kilometre road connecting Melbourne's west with the central city. The tunnel will serve as an alternative to the city's heavily congested West Gate Bridge. The project connects the West Gate Freeway with the Port of Melbourne, CityLink and the Melbourne central city.

A map of the project study area is shown in Figure 3-1 and key details of the project include:

— Two additional lanes in each direction on the West Gate Freeway between the M80 Ring Road and Williamstown Road

— Ramps from the West Gate Freeway to Hyde Street

— A new tunnel under Yarraville to the Maribyrnong River and a new bridge over the Maribyrnong River joining an elevated freeway above Footscray Road with connections to the Port of Melbourne, CityLink and CBD

— Major new cycling and walking paths and open space.

The project is being delivered by the Victorian Government in partnership with Transurban and the CPB contractors / John Holland Joint Venture.

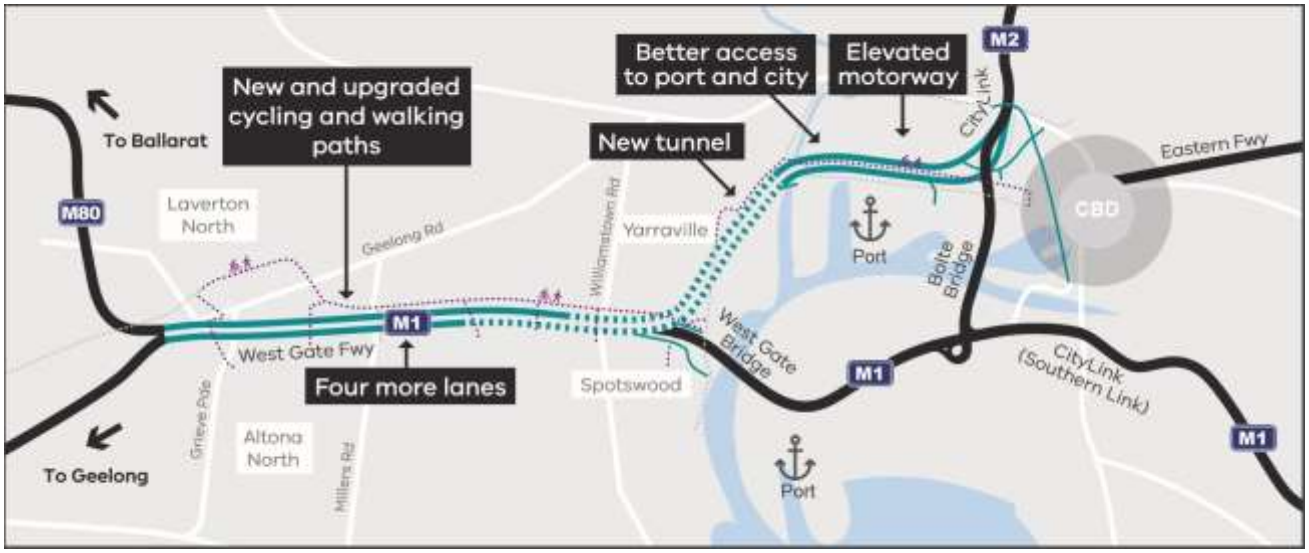


Figure 3-1 Scope of WGT project

Source: http://westgatetunnelproject.vic.gov.au/__data/assets/image/0004/339817/Project-Scope-Map.jpg

This $6.7 billion project will be funded through tolls on the West Gate Tunnel, changes to the CityLink concession and contributions from the Victorian Government.

According to Transurban, once completed the West Gate Tunnel will provide the following benefits when compared to the scenario without doing the project:

- Provide an alternative to the West Gate Bridge
- Reduce peak travel time by up to 20 minutes
- Take around 28,000 vehicles off West Gate Bridge, 22,000 vehicles off the Bolte Bridge and remove more than 9,000 trucks from local streets a day
- Create 6,000 jobs
- Offer more than 14 kilometres of new cycling and walking paths
- Provide close to nine hectares of open space
- Deliver stronger roads and bridges to carry heavier loads and support Victoria's and (Australia's) high productivity freight network.

Consultation with stakeholders and community occurred in 2016, the EES was published in June of 2017, planning approvals were granted in December 2017 and construction started in January 2018.

The West Gate Tunnel is expected to open to traffic in 2023.

Truck tolls and bans will also come into effect when the WGTP opens in 2023. Toll points are presented in Figure 3-2. Under the proposed operations, Francis Street, Somerville Road, Buckley Street, Moore Street, Hudsons Road and Blackshaws Road are banned to trucks. Truck bans along these key east-west routes are proposed to "reduce the likelihood of toll avoidance on routes parallel to the West Gate Freeway; and to protect residential areas from the impact of the forecast growth in freight" (GHD, 2017, page 338).

24-hour truck bans will be enforced along sections of Somerville Road, Francis Street, Blackshaws Road, and Hyde Street, as well as along Buckley Street, Moore Street, and Hudsons Road with the opening of the WGTP in 2023. This is further discussed in Section 6.2.2.2. It should be noted that exemptions to the truck bans will apply to trucks with local origins and destinations.

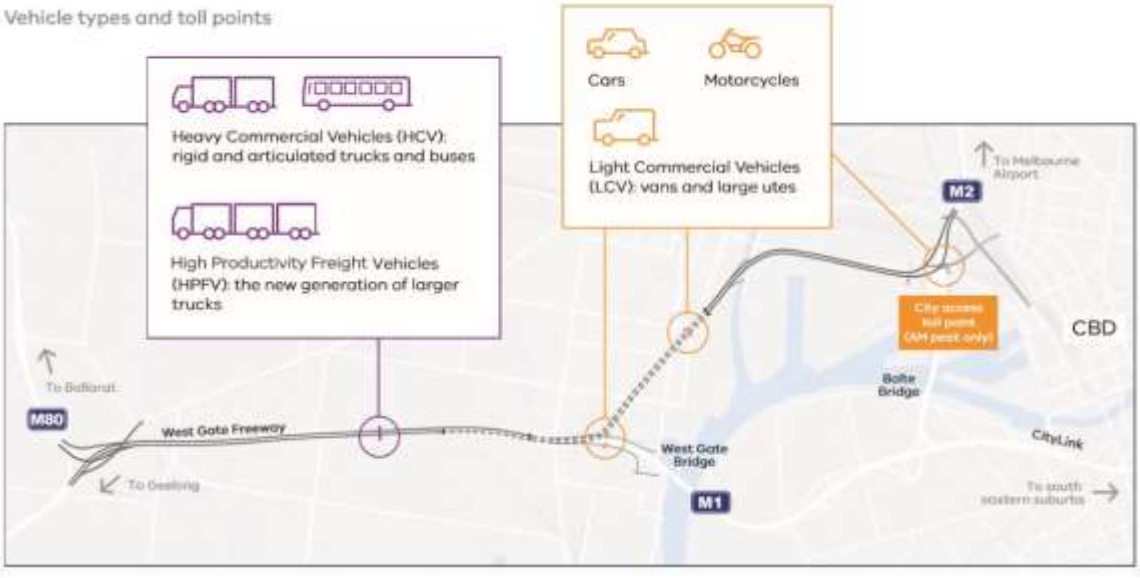


Figure 3-2 West Gate Freeway toll points

Source: http://westgatetunnelproject.vic.gov.au/about/keytopics/tolls

The WGTP is expected to have an impact on the study area, with the scope of works expected to cause changes in the traffic behaviour and volumes on the road network within Hobsons Bay. Understanding the impact of the WGTP will be key in identifying challenges and opportunities for the Hobsons Bay transport network.

3.1.1.1 ENVIRONMENTAL EFFECTS STATEMENT OVERVIEW

The planning for the West Gate Tunnel Project required an Environmental Effects Statement (EES), a requirement of the Minister for Planning under the Environment Effects Act 1978. The EES was undertaken by the West Gate Tunnel Authority. The EES for the West Gate Tunnel Project assessed potential impacts in 17 areas including but not limited to transport, air quality, noise, landscape and visual amenity, vibration, business, ecology, social and human health.

3.1.1.2 ENVIRONMENTAL EFFECTS STATEMENT: TRANSPORT IMPACT ASSESSMENT

This technical report was an attachment to the West Gate Tunnel Project Environmental Effects Statement (EES). It provided an assessment of transport impacts associated with the West Gate Tunnel Project and defined the Environmental Performance Requirements (EPRs) necessary to meet the EES objectives.

The West Gate Tunnel Project is set in a highly urbanised area. The urbanised setting and complex number of interfaces influences the nature and extent of the impacts likely to be generated by the Project.

The assessment focused on the following three levels of analysis in the metropolitan Melbourne area to understand the impacts:

- Network wide
- Road network in the local area
- Project corridor.

The assessment covers construction and operation of the West Gate Tunnel Project.

The assessment found that without the project, the metropolitan road network would continue to be more congested over time.

It found the West Gate Tunnel Project would increase transport capacity and improve connectivity to and from the west of Melbourne. The assessment found that the project would reduce traffic volumes on roads in the surrounding network, including removing heavy vehicles from some local and arterial roads. However, some arterial roads within Hobsons Bay including Millers Road and Melbourne Road will experience increases in traffic and freight volumes with the implementation of the West Gate Tunnel Project.

3.1.1.3 HOBSONS BAY CITY COUNCIL POSITION ON THE WEST GATE TUNNEL PROJECT

At its Ordinary Council meeting on 23 August 2016, Hobsons Bay City Council considered community comments received and finalised its position on the Project, adopting a number of recommendations - including that the Project should be assessed against the following Principles:

- An efficient, integrated and sustainable transport network outcome
- Positive liveability, amenity and community wellbeing outcomes
- An environmentally responsible project
- A genuine commitment to consult with the community
- A value for money outcome
- Planning for future growth.

In December, 2017 Council considered the Minister for Planning's assessment of the WGTP Environmental Effects Statement (EES) and noted that while a number of changes to the Project have been included in the Minister's report which respond to Council's concerns, specific outstanding items remain unresolved, including:

- uncertainty with regard to traffic impacts as a result of the Project to Hobsons Bay from the new tolling of the freeway and the introduction of truck bans
- the likely significant increase in truck traffic in Millers Road, Brooklyn.

3.1.2 DOHERTYS ROAD DUPLICATION

Dohertys Road is being upgraded as part of the Metropolitan Road Project Victoria (MRPV) Western Roads Upgrade Package. The upgrade for Dohertys Road from Fitzgerald Road to Grieve Parade will provide:

- An extra lane in each direction, creating a 4-lane, 2-way road
- Second bridge over Princes Freeway
- Five intersection upgrades
- An overpass for the Federation Trail.

Dohertys Road from Foundation Road to Palmers Road in Truganina is also being upgraded and will provide:

- An extra lane in each direction
- Traffic signals and an intersection upgrade at the intersection of Palmers Road
- New walking and cycling paths.

The Dohertys Road upgrade projects are expected to increase road capacity and improve traffic flow.

The Dohertys Road upgrade will improve road network capacity and the standard of facilities in the western portion of the study area for cyclists, pedestrians as well as freight and general traffic.

3.1.3 LEVEL CROSSING REMOVALS- KORORROIT CREEK ROAD

The Level Crossing Removal Project (LXRP) is program of the Victorian Government to remove 75 dangerous and congested level crossing across Melbourne by 2025. The Kororoit Creek Road level crossing was identified in the Level Crossing Removal Authority's initial list of 50 level crossing removal sites.

Kororoit Creek Road is used by approximately 22,000 vehicles each day and is part of VicRoads' Principal Freight Network (LXRP, 2019a). It is a key transport corridor that connects the Williamstown North industrial precinct, nearby ports and residential areas to the Princes Freeway.

The level crossing at Kororoit Creek Road in Williamstown North was removed in mid-2018. New rail bridges have been built over Kororoit Creek Road, allowing traffic to flow freely underneath the rail line. Additional road works were completed in 2019.

Construction also included the partial duplication of the Altona Rail Loop to improve service reliability by allowing trains the opportunity to pass one another without waiting on the Werribee Line.

The expected benefits of the project include:

- More reliable roads and rail with a reduction in traffic congestion
- Improved safety by eliminating the risk of incidents between passenger trains and road vehicles, including large freight vehicles that use the road daily, and provide safer passage for pedestrians and cyclists
- Partial duplication of the Altona Rail Loop improves service reliability.

In 2016 the Level Crossing Removal Authority (LXRA) undertook a community consultation program for the project. Some of the issues the community were concerned about included:

— Not providing the full duplication of the Altona Rail Loop

— Not prioritising the Maddox Road, Maidstone Street level crossings

— Disruptions to train services and road closures during construction

— Ensuring the bridge height allows for large trucks and towed boats to access the industrial and port areas.

A review of the outcomes for this project may inform the study through consideration of changes on Kororoit Creek Road, as a result of the level crossing removal.

3.2 INVESTIGATIONS AND STUDIES

3.2.1 LEVEL CROSSING REMOVALS - FERGUSON STREET

The Level Crossing Removal Project (LXRP) has identified the level crossing at Ferguson Street in Williamstown, which is planned for removal between 2019 and 2022. The Ferguson Street Level Crossing is used by 22,000 vehicles daily and has a poor history of safety for pedestrians, cyclists and drivers in the area (LXRP, 2019b). This level crossing has been the site of two pedestrian fatalities and one serious injury involving a cyclist. The Ferguson Street Level Crossing Removal site is located within the southern boundary of the study area.

The benefits/objectives of the Level Crossing Removal Projects are:

- Improving safety for road users and pedestrians
- Improving travel for public transport users, pedestrians, cyclists and drivers.

The community were invited to provide feedback on two designs. Lowering the rail line under the road has been selected as the treatment for this level crossing removal project.

The Ferguson Street Level Crossing is a reported source of congestion within the study area, with impacts of multiple modes of transport. The removal of this level crossing will have safety and travel time benefits throughout the study area.

3.2.2 MILLERS ROAD AND WILLIAMSTOWN ROAD CORRIDOR STUDY

The Millers Road and Williamstown Road Corridor Study was a direct response to a recommendation from the Minister of Planning Assessment of the West Gate Tunnel Environment Effects Statement. The recommendation requested that VicRoads undertake a corridor study and recommend mitigation measures to address amenity, safety and network impacts of increased truck volumes on the Millers Road corridor. The Williamstown Road corridor was included in the study area following additional consideration of the traffic impacts and community feedback. The Minister recommended that impacted stakeholders should be included in a Corridor Working Group. As such, VicRoads coordinated the Corridor Working Group (referred to as the 'Group') and included representatives from the community, Transport for Victoria, Western Gate Tunnel Project, Maribyrnong City Council, Hobsons Bay City Council and Brimbank City Council. The working group's initial priorities included a focus on the following north-south corridors:

- **Millers Road** – investigating access for the residential area to the west, safety and the expected increased freight movement after the WGTP.
- **Williamstown Road** – investigating measures for the optimal use of Williamstown Road corridor noting the surrounding land use.

The study investigated the impacts and changes to how people and freight move through the corridor, now and after completion of the West Gate Tunnel Project and developed initiatives that balance community and business needs. The working group played an important role in identifying challenges of importance to communities in the inner west. The working group developed a number of recommendations which will be utilised by the Department of Transport in developing future initiatives that seek to minimise the impact of trucks on local residents.

A number of initiatives identified as part of the Corridor study have been implemented, including;

- Speed reductions to 50 km/h on Williamstown Road, Francis Street and Somerville Road as a result of safety concerns raised by the community group.
- Road resurfacing to improve safety and a reduction of truck noise on Williamstown Road.
- The development of pedestrian safety barriers at the Francis Street/Wembley Avenue intersection, near Wembley Primary School and the intersection of Hyde Street/Napier Street intersection near Footscray City Primary School.

Initiatives identified through the Williamstown and Millers Road Corridor Study Working Group that require further investigation or are longer term in nature are being considered as part of the investigations in this report.

3.2.3 LOCAL AREA MOVEMENT PLANS (LAMPS)

The objectives of the LAMPs are to address local road safety issues, traffic speed and volume issues, parking safety problems and improve residential amenity and environment. The process involves extensive community consultation leading to the development of a transport management plan for the local area. The Plans are not limited to infrastructure provision but also the opportunity to influence and support behaviour including modal change.

The development of LAMPs (shown in Figure 3-3) is consistent with the Council Plan, Municipal Strategic Statement, and HBITP, amongst others.

The municipality has been divided into approximately 30 local area precincts for the purposes of planning and implementing the LAMPs. The Western LAMP is currently underway for the suburbs of Point Cook, Altona Meadows, Laverton and Seabrook.

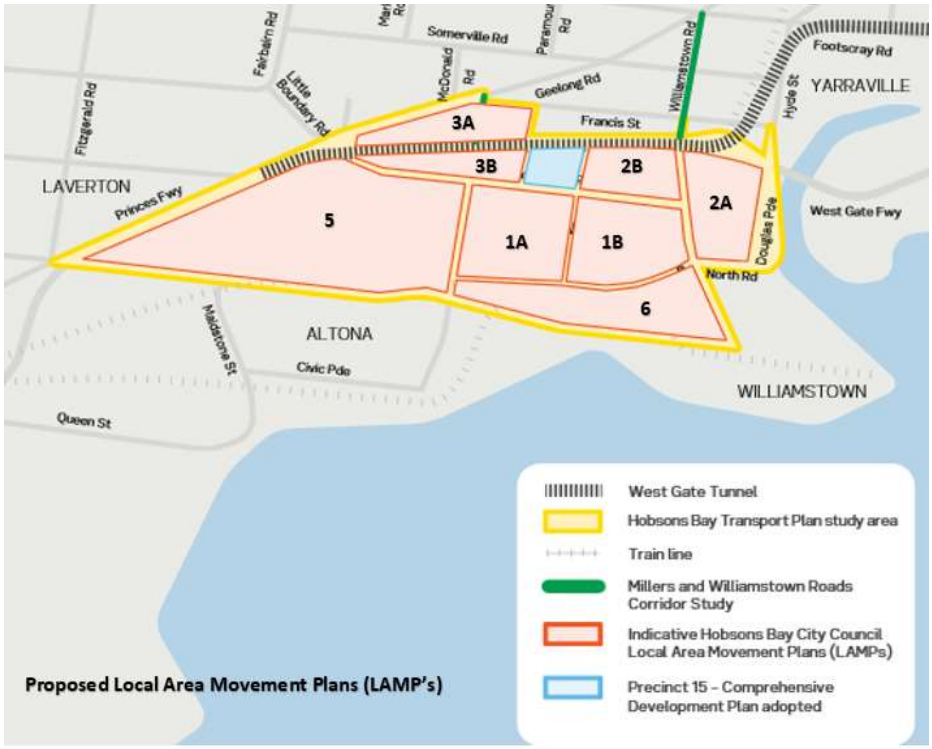


Figure 3-3 Proposed Local Area Movement Plans

Source: Hobson Bay City Council

The findings of this report can be used by HBCC to inform the development of LAMPs within the study area.

4 EXISTING CONDITIONS

The purpose of the existing conditions section is to provide a summary of the people and places (existing land use, demographics) and movement within the study area and surrounding area of influence for the study.

4.1 PEOPLE AND PLACES

4.1.1 REGIONAL AND URBAN CONTEXT

Hobsons Bay is located on Port Phillip Bay to the south-west of the Melbourne Central Business District (CBD) and shares an interface boundary with the Port of Melbourne environs. It shares municipal boundaries with the City of Wyndham to the west and Cities of Maribyrnong and Brimbank to the north. The municipality is well positioned within approximately seven kilometres of the Melbourne CBD.

The Western Metropolitan Region (WMR), as identified on Map 13 in Plan Melbourne, comprises six local government areas (LGAs) including the inner LGAs of Brimbank, Hobsons Bay, Maribyrnong, Moonee Valley and the outer growth LGAs of Melton and Wyndham. The Western Region has a population of approximately 909,300 people (approximately 19 per cent of metropolitan Melbourne's total) (DELWP, 2018). The population of the WMR is expected to grow at a higher rate than other metropolitan areas within the exception of the Inner Metropolitan Region.

The WMR is the centre for transport and logistics activity in south-eastern Australia (DELWP, 2018). The WMR interfaces with the Port of Melbourne which is a key origin and destination for freight movements by road and rail and supports more than 15,000 jobs. The National Land Transport Network extends through the WMR, which includes a standard gauge rail line providing a connection for freight movement on rail between Melbourne, Sydney and Adelaide. The region also has strong road freight connections to Melbourne Airport at its northern edge. Melbourne Airport accommodates 14,300 jobs which is expected to grow to 23,000 by 2033. Plan Melbourne identifies the indicative location of the future Western Interstate Freight Terminal at Truganina which will include a rail link to the interstate freight network. This will provide terminal facilities closer to the industrial areas in the west and reduce reliance on the Dynon Precinct. The Hobsons Bay Planning Scheme identifies that one of the key issues is the increasing freight and traffic movement associated with the expansion of the Port of Melbourne and residential growth to the west of Melbourne.

National Employment Innovation Clusters such as the Sunshine National Employment Innovation Cluster (NEIC) (including Sunshine Hospital and Victoria University Precinct), Fishermans Bend NEIC and the East Werribee NEIC (including the Werribee Health and Education Precinct) together with the Western State Significant Industrial Precinct (Western SSIP) are significant employment areas within and adjacent to the WMR, according to Plan Melbourne. The NEICs are to be developed with good transport links to provide access to jobs and services for the communities within these areas. Plan Melbourne states that Sunshine has the potential to attract a broader range of businesses, including office, retail services and entertainment, as well as residential development. It currently accommodates around 14,600 jobs and is well located to support the growth in the WMR and diversify its health, education and research related activities. Connectivity will increase with the completion of the Metro Tunnel. The Werribee NEIC currently supports around 8,400 jobs and could ultimately support 50,000 jobs in health, education and high-tech research. In Fishermans Bend, the key will be to enhance manufacturing productivity with a focus on research and development The WMR is diversifying from the traditional manufacturing employment base to a range of knowledge-based industries, driven by Sunshine and Werribee National Employment and Innovation Clusters (NEIC), the future Toolern MAC and the creation of a university precinct in Footscray. There are significant plans for ongoing growth of the Western SSIP to secure gateway capacity for the movement of freight to support future employment and economic development opportunities. The City of Brimbank, is preparing a structure plan for the Brooklyn Industrial and Commercial Precinct. These are discussed in section 5.2.1.

The Western State Significant Industrial Precinct (WSSIP, 11.9 million square metres) has the largest area of built space and has a greater share of transport and warehousing and less manufacturing workplaces compared with the Southern and Northern SSIPs. The former Inner SSIP has been added to the Western SSIP, increasing its significance in the region. Hobsons Bay is situated at the southern end of the Western SSIP. These areas need to be linked to the Principal Freight Network (PFN) and transport gateways. Plan Melbourne forecasts job growth in the region to be 2.3 per cent or an additional 113,000 jobs created by 2031 within the Brooklyn-Truganina-Laverton industrial area.

Metropolitan Activity Centres serving the WMR include the Footscray Metropolitan Activity Centre (MAC), and the Sunshine MAC (which forms part of the Sunshine NEIC) and the future Toolern MAC. These MACs are supported by a number of Major Activity Centres and Neighbourhood Activity Centres of varying size, role and function. Plan Melbourne focuses on the growth and diversification of these centres to increase the range of goods and services available to residents within 20 minutes' travel distance. Outside of the study area key major activity centres include Braybrook Central West, Maribyrnong-Highpoint, Williams Landing, Point Cook, Hoppers Crossing, Tarneit, Werribee Plaza and Werribee. These centres are located on the metropolitan rail network and future growth will place pressure on the capacity of the rail network.

The majority of growth within the Western and Inner Metropolitan Regions will occur outside of Hobsons Bay, which will place pressure on the Werribee Line and the road network which also services parts of the City of Hobsons Bay. Significant growth is being experienced within the outer growth area LGAs including the City of Wyndham which is currently home to 250,186 people (.id Consulting, 2018). By 2036 population is expected to grow by an additional 74.2 per cent reaching more than 435,000 people. The Victorian Planning Authority has commenced the background studies for the Aviators Field Precinct Structure Plan (PSP) and Wyndham City Council are leading the development of the Quandong PSP.

Major urban renewal initiatives are being planned and implemented for Docklands, Fishermans Bend, E-Gate, Dynon and Arden Macaulay which will be transformative city shaping projects. The Melbourne CBD, Fishermans Bend and the Footscray MAC will all grow strongly offering employment and other destinations to people and businesses based in the precinct. The City of Melbourne expects that employee and student numbers in the municipality will increase by 157,000 between 2016 and 2030 – an increase of one third. The Government expects Fishermans Bend to support 80,000 jobs and 80,000 residents. Growth of residents in Footscray between 2017 to 2026 will be 'very significant growth' with an annual rate of 9.6 per cent between 2017 and 2021 – around 10,000 people are expected to move in in this five-year period.

A network of waterways within the region provide biodiversity corridors which link to conservation reserves, such as the Western Grassland Reserve and Ramsar Wetlands, and the western coastline of Port Phillip Bay. These corridors provide active transport links and opportunities to expand the trail network through the Western Metropolitan Region linking it to the Inner Metropolitan Region.

4.1.2 POPULATION AND EMPLOYMENT

The population of Hobsons Bay accounts for approximately 12 per cent of Western Melbourne population, as shown in Figure 4-1. Within Hobsons Bay, Altona North and Newport accounts for 38 per cent of the population and currently provides a significant proportion (52%) of the total employment (33,246) within Hobsons Bay as shown in Figure 4-2. Of the 33,246 employed in Hobsons Bay, 10,176 (31%) are local residents (.id Consulting, 2018).

A breakdown of employment in Hobsons Bay by industry is shown in Table 4-1 and identifies that manufacturing (19%), transport, postal and warehousing (13%), construction (10%) and retail trade (9%) account for more than 50 per cent of the employment within Hobsons Bay. These employment industry trends are reflected within the study area (i.e. Altona North and Newport), predominantly in Altona North.

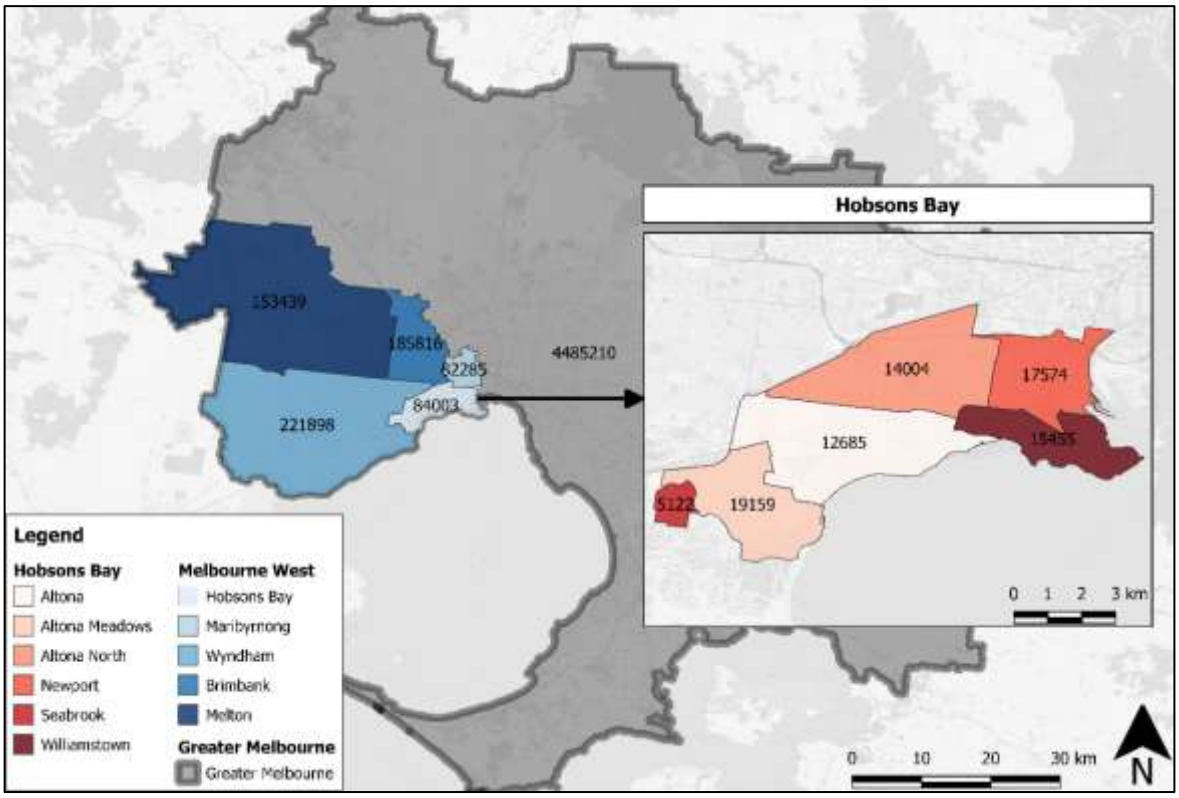


Figure 4-1 Hobsons Bay and surrounding areas population (2016)

Source: ABS 2016

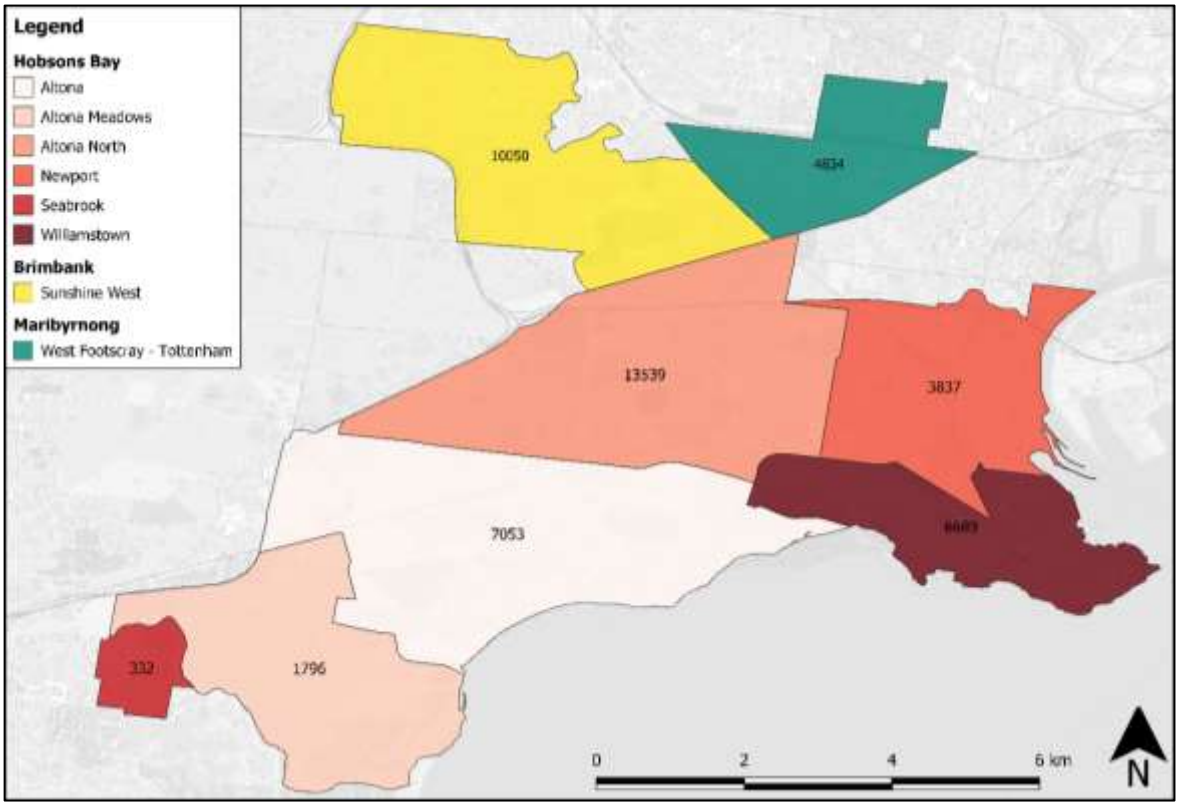


Figure 4-2 Hobsons Bay and surrounding areas employment (2016)

Source: ABS 2016

Table 4-1 Hobsons Bay employment by industry

INDUSTRY TYPE	ALTONA	ALTONA MEADOWS	ALTONA NORTH	NEWPORT	SEABROOK	WILLIAMS-TOWN	TOTAL: HOBSONS BAY
Accommodation and Food Services	276	259	377	196	26	627	*1,761*
Administrative and Support Services	260	56	245	108	18	182	*869*
Agriculture, Forestry and Fishing	16	3	18	11	0	9	*57*
Arts and Recreation Services	91	24	138	176	4	111	*544*
Construction	999	130	860	461	25	826	*3,301*
Education and Training	370	220	384	323	105	545	*1,947*
Electricity, Gas, Water and Waste Services	58	5	195	37	0	52	*347*
Financial and Insurance Services	82	13	159	47	6	123	*430*
Health Care and Social Assistance	413	372	652	395	32	853	*2,717*
Information Media and Telecommunications	30	15	20	125	3	48	*241*
Manufacturing	1125	36	3,687	661	3	726	*6,238*
Mining	7	0	22	15	0	8	*52*
Professional, Scientific and Technical Services	204	63	293	214	23	473	*1,270*
Public Administration and Safety	544	38	210	100	5	262	*1,159*
Rental, Hiring and Real Estate Services	109	19	205	36	3	162	*534*
Retail Trade	439	331	1,399	194	17	586	*2,966*
Transport, Postal and Warehousing	1,112	72	2,537	237	18	209	*4,185*
Wholesale Trade	305	14	906	122	0	148	*1,495*
Other Services	188	68	431	165	21	382	*1,255*
Inadequately described	320	52	578	172	16	279	*1,417*
Not stated	97	20	221	52	7	74	*471*
Grand Total	**7,045**	**1,810**	**13,537**	**3,847**	**332**	**6,685**	**33,256**

Source: ABS 2016

4.1.3 LAND USE AND ACTIVITY

37% residential

Hobsons Bay contains the suburbs of Altona, Altona Meadows, Brooklyn, Laverton, Newport, Seabrook, Seaholme, South Kingsville, Spotswood, Williamstown and Williamstown North. Around 37 per cent of the total land use in Hobsons Bay is zoned for residential purposes and the predominant residential zone is General Residential Zone. The neighbourhood character of each of these suburbs varies, however there is a distinction between the eastern and western areas of the municipality. The eastern area is much older and more established containing a wide variety of heritage places. Clause 22.01 of the HBPS states that *the heritage places of Hobsons Bay reflect the key themes that have shaped the development of the city since the establishment of Williamstown in the 1840s as the first port of Melbourne, through the development of Newport and Spotswood during the Federation and Interwar periods associated with the growth of railways and related industries, to the post-war industrial and residential expansion that transformed Altona and Laverton*.

There are extensive heritage precincts within the study area of state and local heritage significance, particularly within Williamstown, Williamstown North, Newport and Spotswood including but not limited to the Newport and Spotswood Industrial Heritage Precinct. There are also two significant landholdings zoned for railway purposes (Public Use Zone-Transport (PUZ4)) which contain the Victorian Railway Stores Branch Complex and Trees (HO185) and the Newport Railway Workshops (2-78 Champion Road, Newport) which are listed on the Victorian Heritage Register (VHR H1000; HO65 and HO175). The former Newport Railway Workshops comprise a large complex of buildings and land on a site that is generally bounded by Champion Road, the Melbourne-Geelong Railway, and the Melbourne-Williamstown Railway. There are a number of buildings associated with the development of railways in this area which include the Newport Substation, Foreman and Deputy Foreman's Houses and Stations and associated infrastructure along the Melbourne-Williamstown line. To the south of this area is the Williamstown Cemetery zoned as Public Use Zone-Cemetery (PUZ5). The Substation at Newport contains a gallery and events space and is a significant attractor for large events, concerts and other community functions.

Plan Melbourne designates Williamstown, Altona Beach and Altona Gate Shopping Centre as Major Activity Centres and there are 13 additional neighbourhood activity centres and smaller local centres within the City of Hobsons Bay. Millers Junction, Altona North is an Enterprise Area for mixed business that includes a range of large format homemaker, bulky goods retail, showroom and other commercial businesses relying on significant exposure to passing traffic via the regional road network. A new planned neighbourhood centre has been proposed within Precinct 15 in Altona North. The activity centres are shown in Figure 4-4. Neighbourhood activity centres serve as places for socialising, working and living and as places where the community can access local services, shops and community facilities. These centres are important places for community life.

30% industrial

Industrial land use (Special Use Zone, Industrial 1 Zone, Industrial 3 Zone) accounting for 30% of the land area. These areas are unconstrained by sensitive land uses and are located to the west of the municipality close to the national rail freight network and the freeway network, forming a part of the Western State Significant Industrial Precinct. A number of significant industries are within the Special Use Zone (SUZ) and identified as *Core Industrial areas* including petrochemical, petroleum refining industries and manufacturing industries. The municipality contains *secondary industrial areas* which are strategically important to Hobsons Bay in terms of local economic development and employment. The Core and Strategic Industrial areas are identified on the *Industrial Land Future Directions Map June 2008* provided in Section 2.2.7, which forms a reference document under the HBPS. To the north of the study area is the suburb of Brooklyn which contains some residential areas and the Brooklyn Business Park. The Tottenham and Brooklyn industrial precincts are also located just outside of the study area, to the north of Hobsons Bay, and contribute to industrial movements within Hobsons Bay, as well as port related movements.

There are four Major Hazard Facilities within the study area and three abutting the study area in addition to the Somerton to Altona petroleum pipeline (petrol) and the Western Port, Altona, Geelong (WAG) pipeline. Interfacing with the eastern boundary of the study area is the Port of Melbourne environs and the Yarra River.

18% open space

The third largest land use is open space which accounts for around 18 per cent (Public Park and Recreation Zone, the Public Conservation and Resource Zone and the Urban Floodway Zone). The amount of unencumbered open space is 7.9 per cent. Significant open space areas within the study area include the 20 km of coastline and foreshore; Laverton North Grasslands, areas of faunal significance including Kororoit Creek, and the valuable ecological and environmental areas of Newport Lake. Cherry Creek and Stony Creek are two other designated waterways located within the study area. These creeks are affected by the land subject to inundation overlay and/or special building overlay and Kororoit Creek is affected by the Environmental Significant Overlay (ESO1).

Other areas of open space are predominately located within residential areas including Altona Lakes Public Golf Course, Paisley Park, Newport Lakes Reserve, Crofts Reserve, Donald McLean reserve and a number of smaller local reserves. In Brooklyn, the residential suburb is dissected by a linear green park and the Federation Trail. The Federation Trail is being extended along the northern side of the West Gate Freeway past the Bradmill site as part of the WGTP. Kororoit Creek to the west of the study area also provides a linear corridor of open space and connects at its north to Altona Memorial Park and at its south, Altona Coastal Park. The latter is located outside of the study area. The Open Space Strategy 2018 identifies the hierarchy of open space within the City of Hobsons Bay within Figure 4-3.

The 23km Hobsons Bay Coastal trail extends from West Gate Bridge to Skeleton Creek via Williamstown and is currently being upgraded to a three-metre path from Dowman Street to Yarra Street, Newport. Scienceworks is the major tourist attraction within the study area which attracts over 500,000 visitors per year.

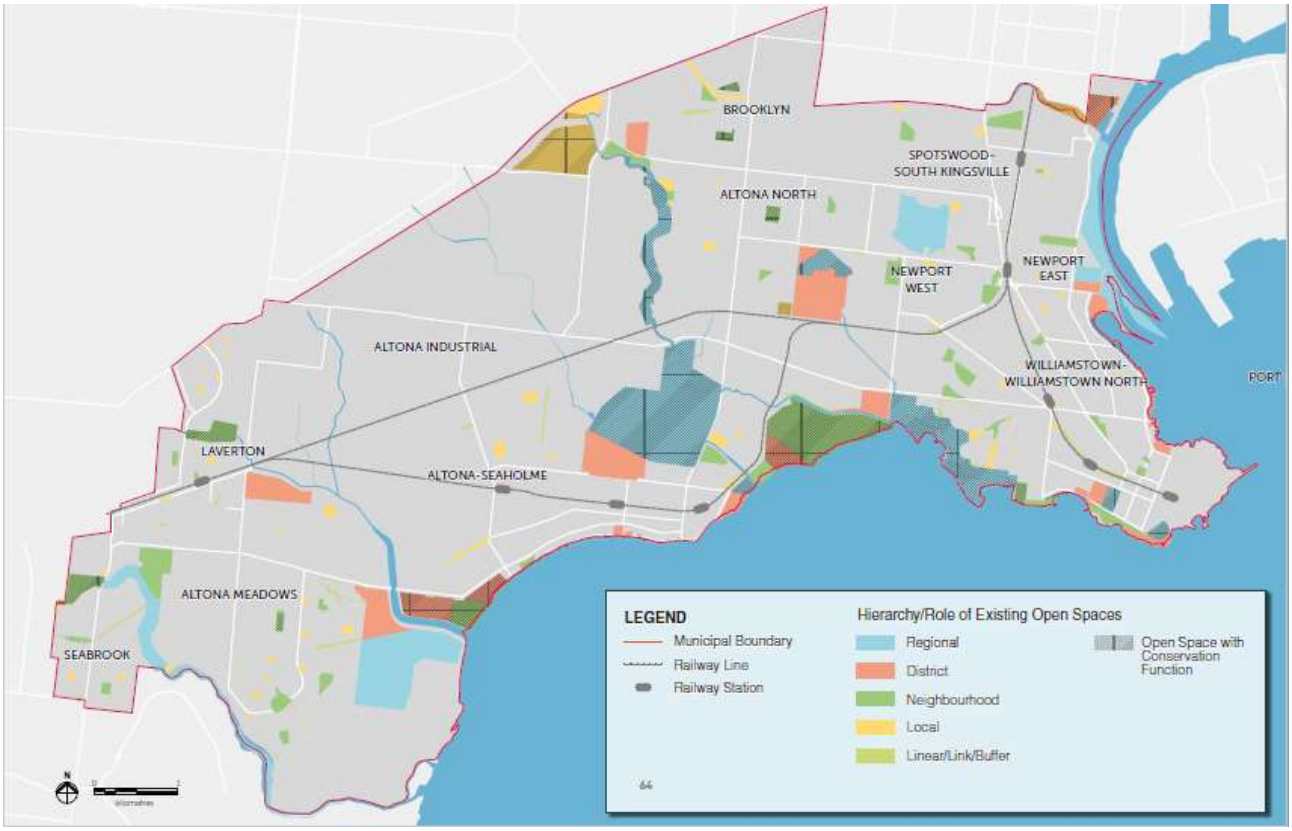


Figure 4-3 Hobsons Bay Open Space Strategy

Source: Hobsons Bay City Council, 2018

The study area also contains local schools, community facilities and health facilities. Each suburb contains local primary schools which are generally located within residential areas, close to open space and local activity centres. Key secondary schools within the study area include Emmanuel College (Altona North), Bayside P-12 (Altona North and Paisley Campuses), and Westbourne Grammar School (Williamstown North).

Key land uses are shown within the Hobsons Bay Strategic Context Map provided in Figure 4-4.

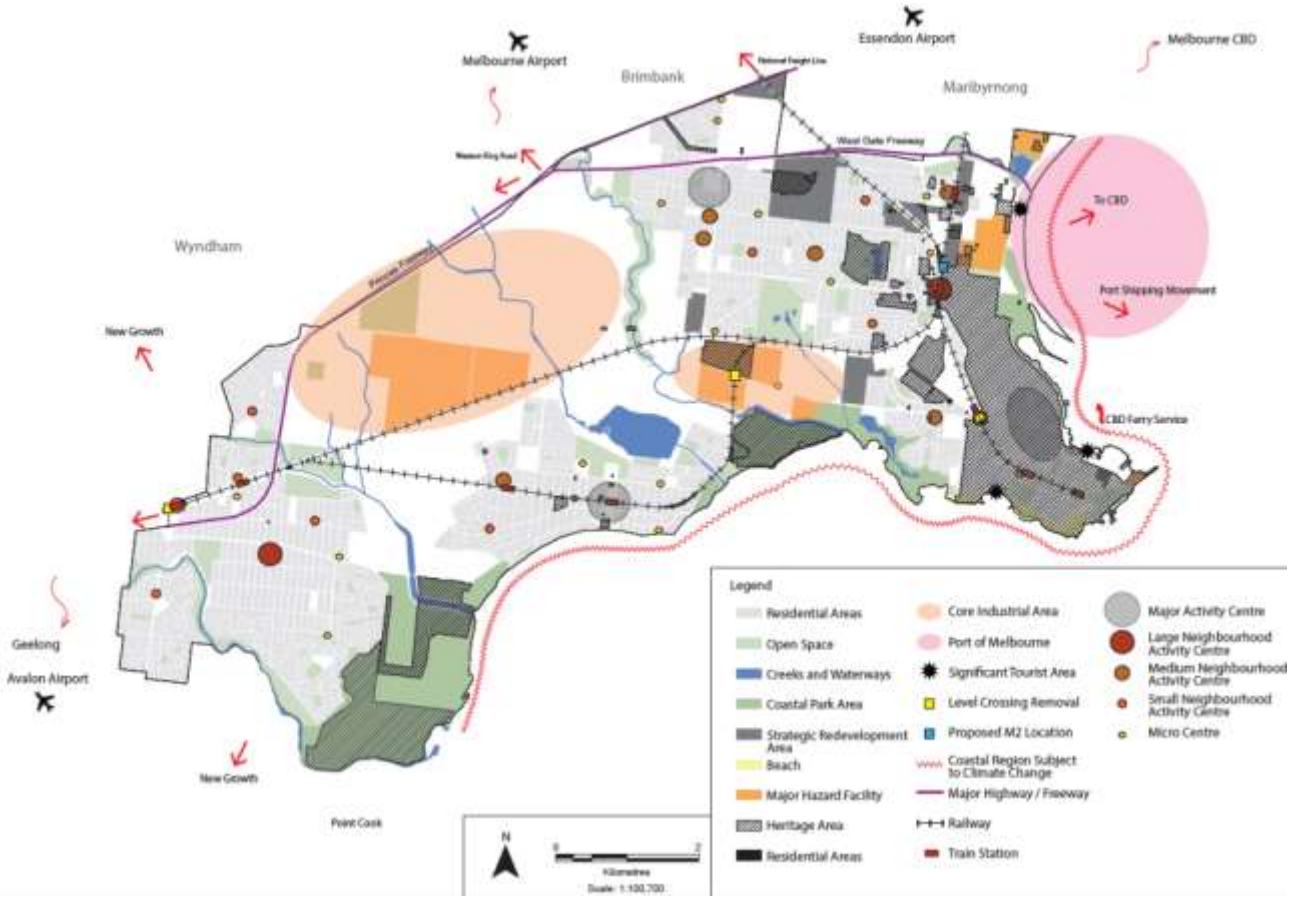


Figure 4-4 Hobsons Bay Strategic Context Map

Source: Hobsons Bay City Council, 2019b

4.2 MOVEMENT

This section provides an overview of existing movement of all residents, visitors and travellers within and through the study area - including characteristics of the transport system, information collected on the system's operation, and the experience of transport system users.

Stonnington has been used as a comparison area for this overview due to its similarities to Hobsons Bay in proximity to Melbourne CBD, and provision of public transport – particularly train stations which have a customer service hub staffed from the first to last train daily, much like Newport station in Hobsons Bay.

An overview of the peak movement for journeys to work is provided, supported by review of the active transport, public transport, freight and road traffic networks that support all journeys in the study area.

4.2.1 JOURNEY TO WORK OVERVIEW

Journey to Work destinations for the local areas in Hobsons Bay are shown in Table 4-2. The following key findings can be identified from this data:

- The dominant journey to work travel movements are to or within Altona North. More than a third of work trips are destined for Altona North (12,613 trips or 41%), a major employment area.
- Altona (6,574) and Williamstown (6,106) also draw large journey numbers for the area.
- Overall journey to work travel is car dominated, with 87 per cent using private motor vehicles and 4 per cent using public transport, and even less walking (2%) and cycling (1%).
- The use of motor vehicle for the method of travel to work in Hobsons Bay (87.4%) is similar to Melbourne's west (86.8 per cent). For comparison, Newport (76.5%) has around the same level of motor vehicle use for travel to work as Stonnington in Melbourne's east (76.8%) (see Figure 4-5).
- Figure 4-6 shows the place of work data in terms of the mode share proportions for public transport, cycling and walking. Altona North stands out because of the small proportion of public transport trips (2.7%) and very small cycling (0.5%) and walking trips (0.6%).

Table 4-2 Hobsons Bay journey to work numbers by destination

	MOTOR VEHICLE	PUBLIC TRANSPORT	CYCLING	WALKING	OTHER	NOT STATED	TOTAL
Altona	5,880	251	57	108	220	58	6,574
Altona Meadows	1,253	55	17	46	175	24	1,570
Altona North	11,799	339	63	80	196	136	12,613
Newport	2,709	266	52	90	385	37	3,539
Seabrook	225	6	0	3	65	3	302
Williamstown	4,983	322	88	231	431	51	6,106
Hobsons Bay	**26,843**	**1,259**	**279**	**561**	**1,469**	**310**	**30,721**
Melbourne - West	173,705	9,397	1,274	3,735	9,769	2,343	200,223
Stonnington – East	14,489	2,237	167	610	1,212	163	18,878

Source: ABS 2016

Figure 4-5 and Figure 4-6 shows the percentage splits of methods of travel to work for people who are employed within Hobsons Bay.

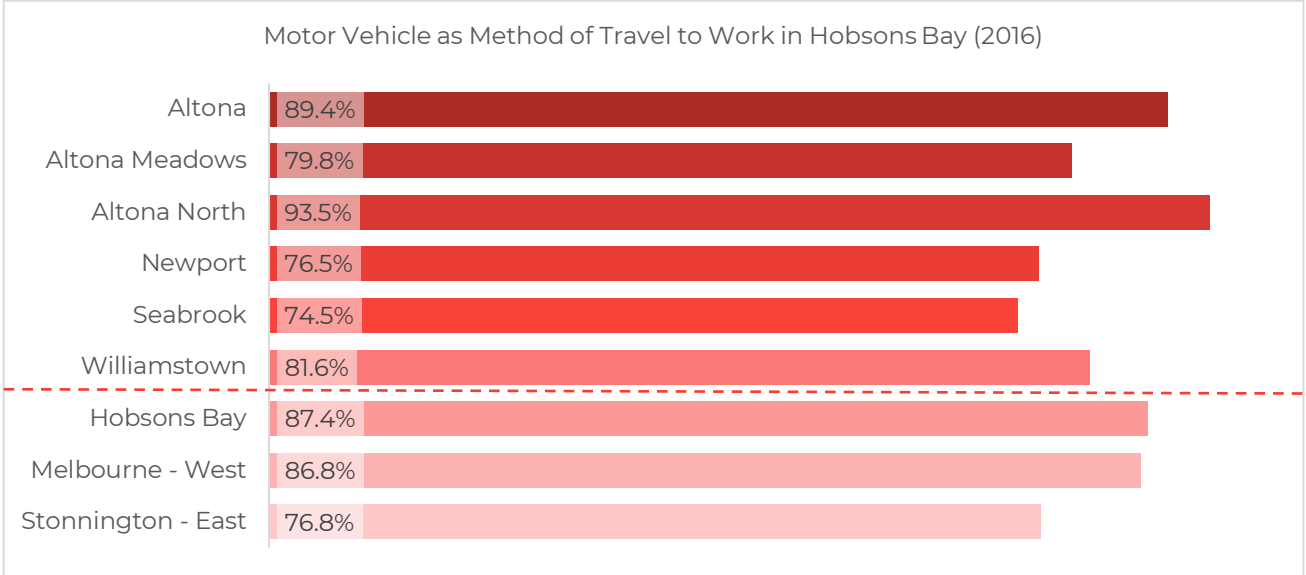


Figure 4-5 Percentage motor vehicle as method of travel to work by place of work (destinations in Hobsons Bay)

Source: ABS 2016

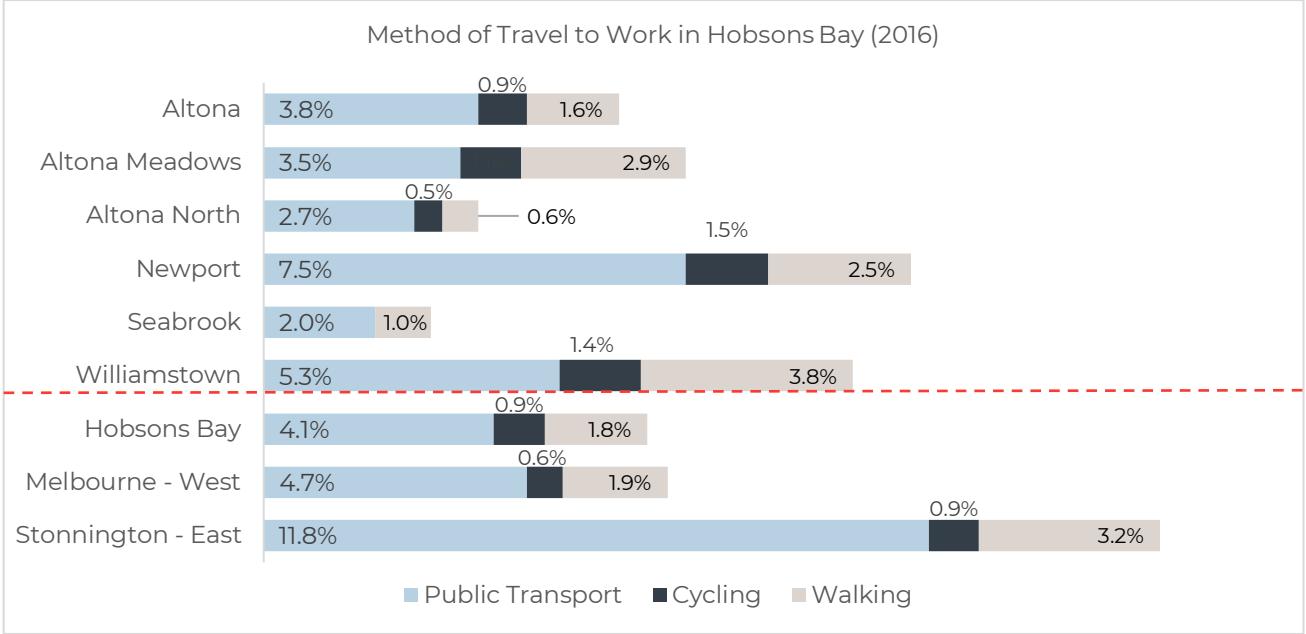


Figure 4-6 Method of travel to work by place of work (destinations in Hobsons Bay)

Source: ABS 2016

The ABS also provides statistics on how residents in Hobsons Bay travel to work. Figure 4-7 and Figure 4-8 shows mode of travel to work based on the origin (residence) of trips and presents the following key findings:

- The Hobsons Bay areas are highly dependent on private motor vehicle, ranging from 66 per cent in Newport and Williamstown, to 80 per cent in Altona Meadows
- Newport has a higher percentage of public transport use (23%) than Altona North and Seabrook (15%).

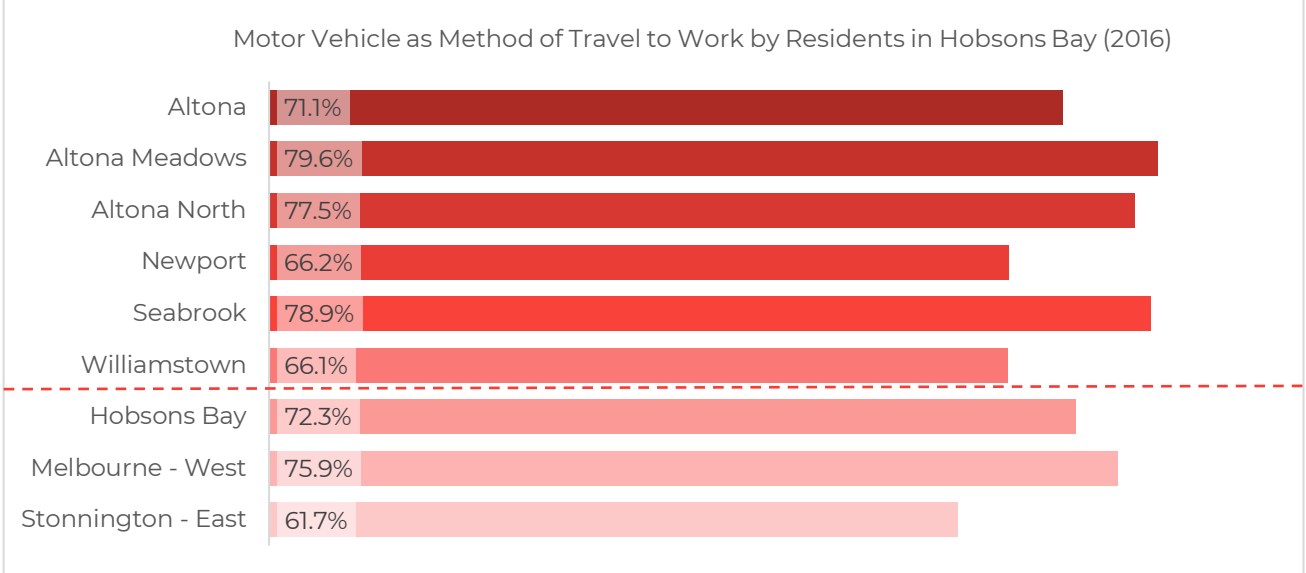


Figure 4-7 Percentage motor vehicle as a method of travel to work by residents of Hobsons Bay

Source: ABS 2016

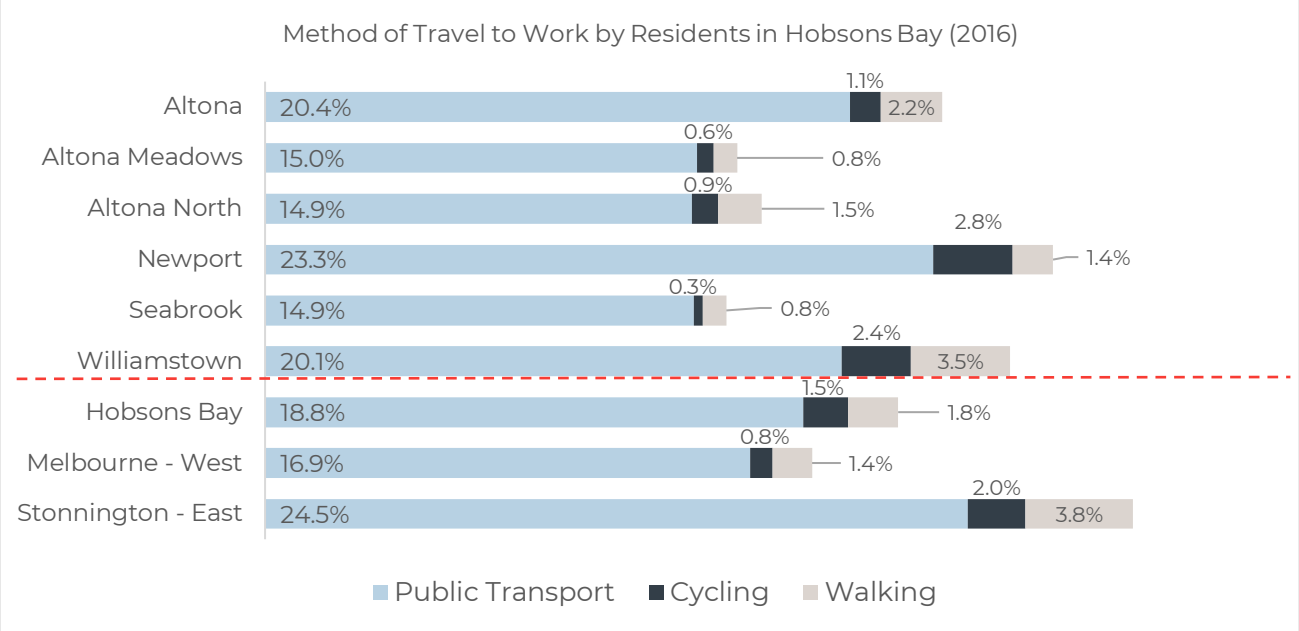


Figure 4-8 Method of travel to work by residents of Hobsons Bay

Source: ABS 2016

Overall, private motor vehicles are the dominant mode of travel for work journey both coming to and going from Hobsons Bay, though it can be seen that those areas such as Newport, with better access to public transport, have a higher public transport use as a method of travel to work.

Motor vehicle ownership for individual neighbourhoods in Hobsons Bay is shown in Figure 4-9 and indicates that majority of residents own one or more motor vehicles. Table 4-3 shows the motor vehicle ownership in Hobsons Bay and comparison areas. Overall, the percentage of residents owning one or more vehicles in Hobsons Bay is similar to Melbourne West, and higher than Stonnington East.

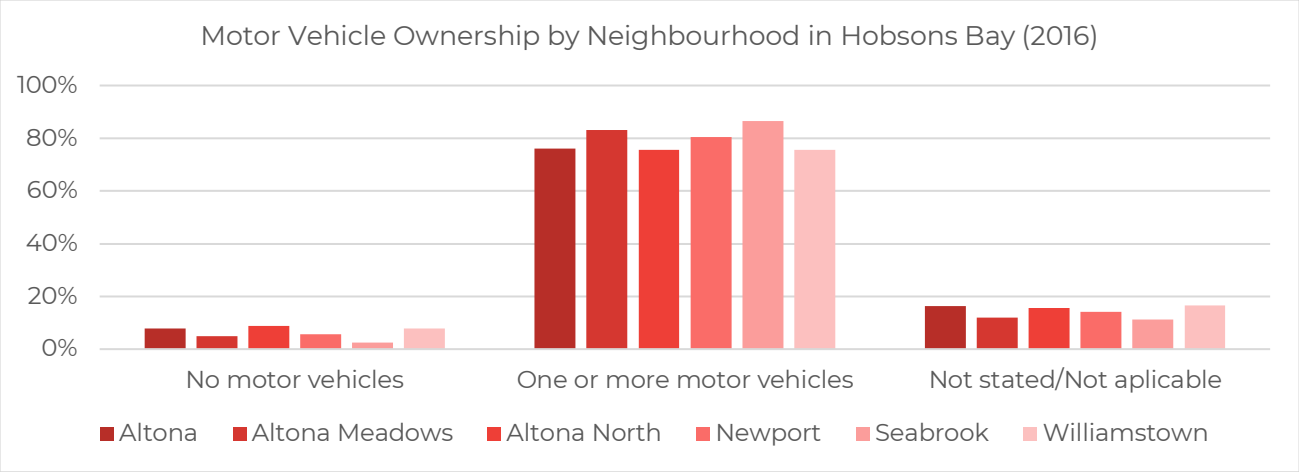


Figure 4-9 Motor vehicle ownership in Hobsons Bay

Source: ABS 2016

Table 4-3 Motor vehicle ownership in Hobsons Bay and comparison areas

MOTOR VEHICLE OWNERSHIP	HOBSONS BAY		MELBOURNE - WEST		STONNINGTON - EAST	
No motor vehicles	2,321	*7%*	15,136	*6%*	1,534	*9%*
One or more motor vehicles	27756	*79%*	214,360	*80%*	13,650	*76%*
Not stated/ Not applicable	5,118	*15%*	38,352	*14%*	2,728	*15%*
Total	**35,195**		**267,848**		**17,912**	

Source: ABS 2016

4.2.2 ACTIVE TRANSPORT

Active transport refers to those parts of a journey which are completed using active modes, such as walking and cycling. Most journeys made in Melbourne include an element of active transport – for example, most journeys made by public transport require people to walk to or from their home to the public transport stop, and then to their final destination.

When considering existing transport modes, it is therefore important to understand the existing provision for walking.

Cycling is also an important active transport mode, as it enables residents to travel to a wider range of destinations located further away.

In Hobsons Bay, the health, environmental and amenity benefits of encouraging more trips to be made by active modes is well accepted. This section describes the existing provision for walking and cycling trips in the municipality.

4.2.2.1 WALKING

The footpath network on Hobson Bay's arterial road network is almost entirely complete with most arterial roads providing high standard footpaths. Council's footpath strategy has identified priorities for improving footpath standards on the arterial road network.

In addition, the Council footpath strategy identified an action to provide footpaths on the 50 kilometres of Hobsons Bay streets which do not currently have a footpath, and a further 120 kilometres where footpath is provided on just one side of the street.

Hobsons Bay Council also has 50 kilometres of shared paths which are available for both pedestrians and cyclists.

Figure 4-6 shows that for those who work in the municipality, the combined active modes for workers in Hobsons Bay were found to be 6.8 per cent (including walking all the way to work, cycling all the way to work, and walking or cycling to public transport). Newport had 11 per cent of workers using combined active modes, while Williamstown has the highest percentage of commuters using active modes to access employment in Williamstown (10.5%).

Principal Pedestrian Network

The PPN is a strategic network of pedestrian routes to promote walking for transport. The PPN was developed by the Victorian Government to facilitate network planning for walking. It aims to support and encourage walking as part of the transport system by identifying routes that are likely to have the potential to carry more pedestrians walking to key destinations. PPNs can reinforce the strengths of existing land use and transport patterns by encouraging pedestrian movements in desired areas.

The PPN methodology was piloted through the PPN Demonstration Project, a collaboration between the State, Victoria Walks, Melbourne University and four councils – Boroondara, Frankston, Geelong and Yarra Ranges. Since the release of the guidelines, a number of councils have used the methodology to identify their PPN.

Key aspects of guidelines:

- A 2 km catchment area for the purpose of developing a PPN for a large activity centre such as a large employment cluster is recommended.
- Lesser catchment areas have been adopted in instances where the total local government area is small with a high density residential and employment population.
- Within a PPN, different levels of prioritisation are possible – primary and secondary – allowing for prioritisation of pedestrian infrastructure on parts of the pedestrian network that will benefit the greatest number of pedestrians.
- Primary routes are those that generate regular and high levels of travel demand on a daily basis, such as residential, retail, educational and commercial destinations. The primary network should be evenly spaced, provide comprehensive coverage to major destinations and enable access to all workers, residents and visitors within two minute (200m) of commencing their walking trip.
- Exceptions to this, to be considered on a case-by-case basis, include:
  - High density, spread out over a large area may warrant denser spacing of primary routes
  - Single 'main street' small activity centres may only warrant one or two primary routes – possibly the main streets and another perpendicular route leading to the main street.

4.2.2.2 CYCLING

The shared trail network in Hobsons Bay caters for recreational, exercise and some commuter cyclists and includes over 50 kilometres of off-road shared trails, including:

- The Skeleton Creek Trail (6.5 km)

- Laverton Creek Trail (6.2 km)
- Kororoit Creek Trail (7.6 km)
- Cherry Lake Trail (3.5 km)
- Coastal Trail (23 km).

These form part of the regional trails network in Western Metropolitan Melbourne which aim to provide a quality experience for all users and a range of social, health, environment, tourism and economic benefits.

The Coastal Trail also provides access to the West Gate Punt ferry service, which departs from Spotswood Jetty and links to the Yarra and Bay trails on the eastern bank of the Yarra River in Port Melbourne. Hobsons Bay also has approximately 30 kilometres of on-road bike lanes, on both local and arterial roads. According to the HBITP, community satisfaction on Hobsons Bay's bike paths is quite high, registering 79 (out of 100) in a 2015-16 survey. A map of the cycling infrastructure is shown in Figure 4-11, including the off-road paths that border the study area, with on-road bicycle lanes along most of the arterial roads, and some local roads.

The existing bicycle facilities within Hobsons Bay are shown in Figure 4-10.There is a Parkiteer Secure bike cage at Newport station. Recently community requested an additional Parkiteer Secure Bike cage at Spotswood station, however it is worth noting that funding has not been allocated.

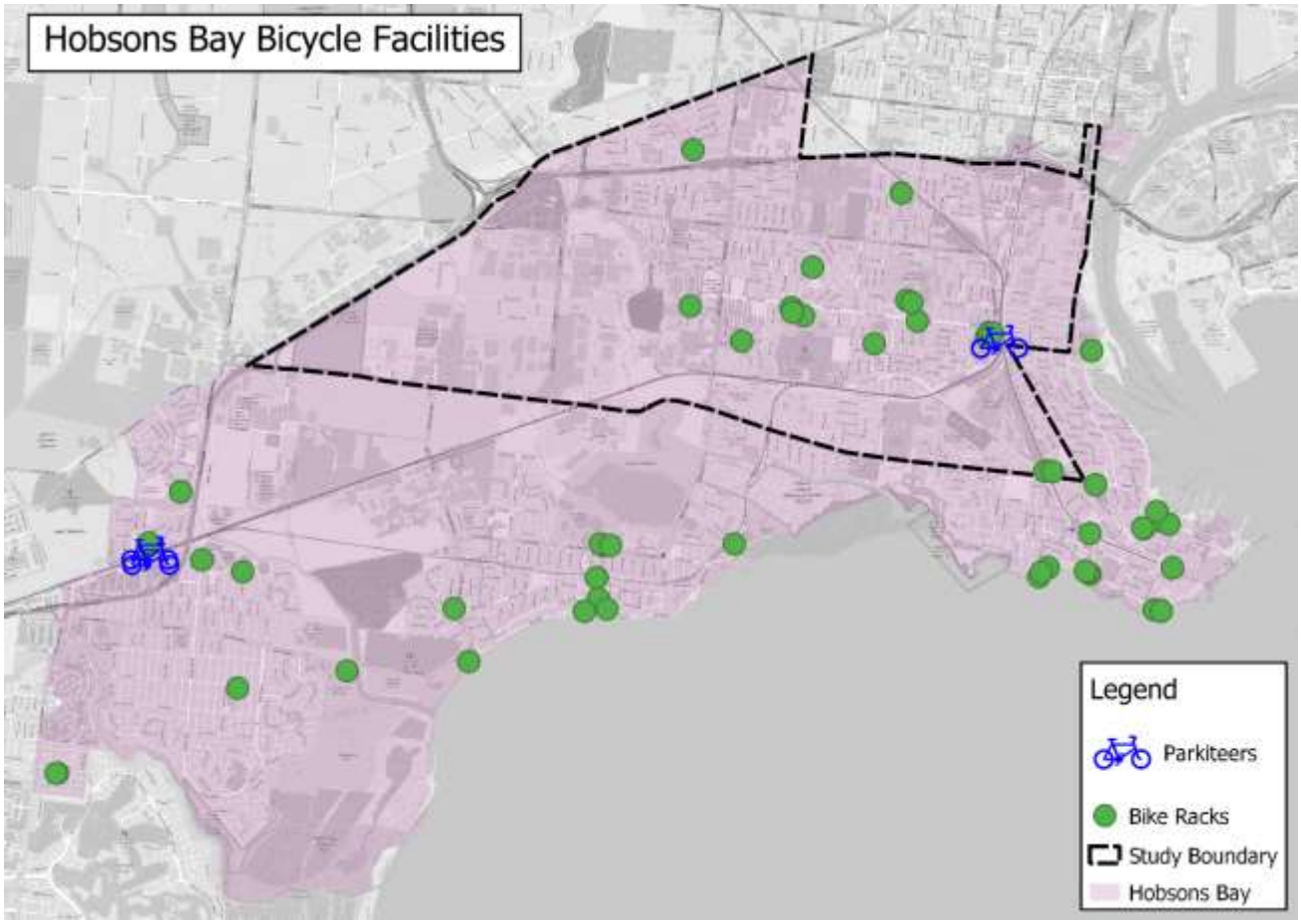


Figure 4-10 Hobsons Bay bicycle facilities

Source: Hobsons Bay City Council

Figure 4-11 Hobsons Bay bicycle infrastructure

Source: OpenStreetMap

Approximately 1.8 per cent of working age residents in Hobsons Bay cycle to work for their entire journey (this does not include those residents who cycle to public transport as part of their journey). Williamstown has the highest percentage of residents walking to work (3.8%), while Seabrook and Altona Meadows have a lower percentage (0.8%). These walking rates do not include those residents who walk to public transport as part of their journey to work, and therefore, the combined proportions of residents walking regularly is likely to be significantly higher.

There is also a strong gender bias within Hobsons Bay's cycling to work rates. Cycling to work is more likely for men than women (4.6 to 1) which is higher than results in other municipalities such as Moreland (1.6 to 1) and Darebin (2 to 1) (Hobsons Bay City Council, 2017b). Female participation rates for commuter cycling may be lower due to perceived safety issues and concerns.

Walking and cycling is ideal for shorter trips and work journeys to Hobsons Bay show that nearly two-thirds (64%) of people working in the municipality travel from a neighbouring local government area (LGA) or within Hobsons Bay itself. There is potential to increase the mode share by encouraging these people to walk or cycle to work.

Cycling Counts

VicRoads operates a set of permanent cycle counters, as shown in Figure 4-12 - the closest to the study area are located on Moreland Street, south of Shepherd Bridge and on the Federation Trail, south of the Princes Highway. Data from these permanent counters is available from 2015 to 2018, and provides an indication of general trends in cycling in the area.

The Moreland Street permanent counter (which include counts for Maribyrnong residents) demonstrates that there is a strong weekday commuter use of this section of the network, with average weekday bicycle flows of 1,100-1,200 in 2018 (an increase of approximately 200 bicycles per day since 2015 – and an average annual growth rate of 7 per cent).

On weekends the bicycle numbers are still strong with average daily flows of 350-500 bicycles per day. However, there has been minimal change in weekend bicycle use since 2015.

The Federation Trail permanent cycle counter demonstrated that this cycle trail currently is used for both recreational and commuter purposes. In 2018, the average weekday cycle count was between 110 and 140 bicycles, and weekend counts were between 80 and 160 bicycles. There has been no significant change in recorded use of the Federation Trail at this location since 2015.

Figure 4-12 VicRoads permanent cycle counters

Source: Google maps / VicRoads

Super Sunday Counts provide an indication of recreational use of active transport facilities. Super Sunday Counts were collected in Hobsons Bay on 11 November 2018 (Bicycle Network, 2018). Fourteen sites were surveyed across the municipality at the Coastal Trail, Skeleton Creek Trail, Laverton Creek Trail and Kororoit Creek Trail as shown in Figure 4-13 and Table 4-4. Overall the number of users increased by 33 per cent (9,059 trips) compared to the same 14 sites surveyed in 2017 (6,804 trips). Pedestrians represented the highest proportion of users in the municipality, comprising of 44 per cent of all users.

Recent upgrades to the paths which may contribute to the growth in trips include:

- Kororoit Creek Trail lower section opened in July 2017
- Hobsons Bay Coastal Trail stage one from North Road to Mulholland Lane

The most recent Super Tuesday bicycle counts were recorded in 2012 within the Hobsons Bay area.

Figure 4-13 Locations of Super Sunday Counts

Source: Bicycle Network, 2018

Table 4-4 Super Sunday Recreation Count Hobsons Bay 2018 9:00-13:00

SITE NO.	LOCATION	TOTAL COUNT				
		Bicycles	Pedestrians	2017	2018	% Growth
1	Millers Road/Federation Trail	53	58	146	118	-19%
2	Laverton Creek Trail/Queen Street	108	48	73	168	+130%
3	Coastal Trail/ The Punt	707	81	780	792	+2%
4	Coastal Street/Ferguson Street	323	645	1,083	1,057	-2%
5	Millers Road/Costal Trail/Esplanade	475	636	444	1,247	+181%
6	Laverton Creek Trail/ Merton Street	18	23	76	53	-30%
7	Hobsons Bay Coastal Trail/ Kororoit Creek Trail	100	36	533	145	-38%
8	Steve Bracks Promenade/Bay Trail	461	608	656	1,279	+95%
9	Pier Street/Bay Trail	488	1,791	1,942	2,533	+30%
10	Kororoit Creek Trail/carpark	23	68	34	127	+274%

Source: Bicycle Network, 2018

Pedestrian and cyclist crash history

A review of crash history in the study area shows that in the five-year period from 2013 to 2018 there were five fatal crashes involving a cyclist or a pedestrian, and 54 serious injury crashes. As shown in Figure 4-14 the number of crashes on average is trending downwards with 39 crashes involving a cyclist or a pedestrian reported in 2014, 31 crashes in 2015, 25 in 2016 and 16 in 2018.

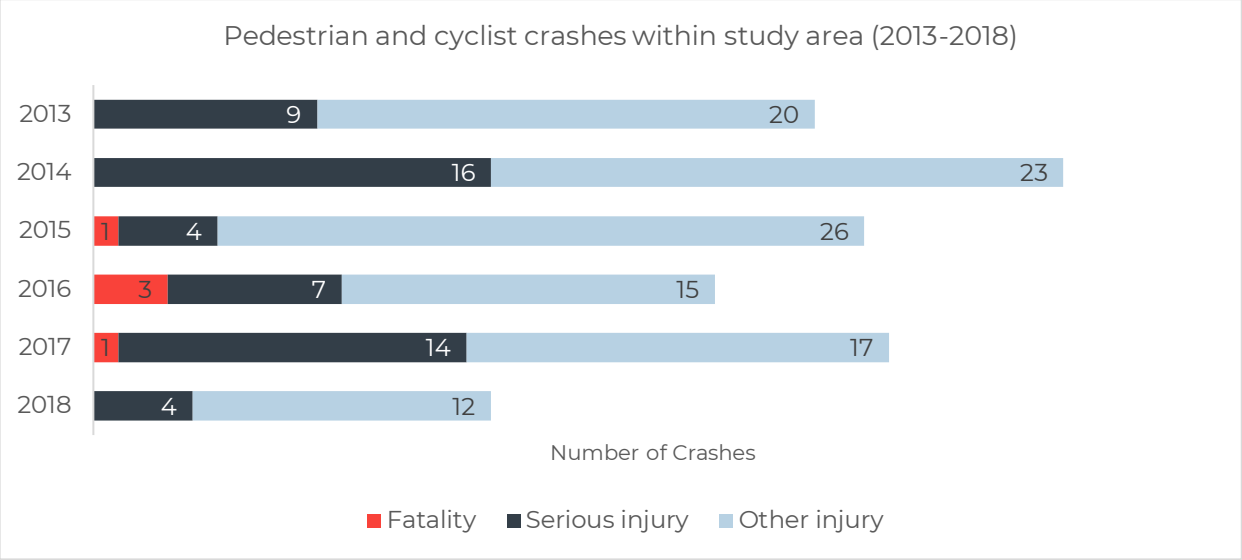


Figure 4-14 Crashes involving a cyclist or pedestrian in study area, 2013-2018

Source: www.data.vic.gov.au

Figure 4-15 shows where the cyclist / pedestrian crashes occurred, demonstrating that numerous bicycle crashes have been recorded along Mason Street and Kororoit Creek Road. Millers Road south of the West Gate Freeway also has recorded a number of bicycle and pedestrian crashes.

Figure 4-15 Crashes involving a cyclist or pedestrian in study area 2013-2018

Source: www.data.vic.gov.au

4.2.3 PUBLIC TRANSPORT OVERVIEW

Public transport in Hobsons Bay consists of rail and bus services. Figure 4-16 shows the Principal Public Transport Network for the study area. The Principal Public Transport Network (PPTN) is a part of Plan Melbourne and reflects the routes where high-quality public transport services are or will be provided. The PPTN shows that main features in the study area are the rail stations, the Altona Gate Shopping Centre bus interchange, and the north-south bus corridors on Millers Road and Williamstown Road/ Melbourne Road. The PPTN does not provide east-west coverage through the HBTPS study area.

Figure 4-17 shows the public transport network in the study area, indicating that rail is on the eastern side of the study area (Williamstown Line) with the Werribee line branching further south and extending to the west. The concentration of north-south bus services is on Millers Road, with other bus services connecting east-west through the study area, providing feeder services to the rail network with connections at Newport station.

The WGT EES showed public transport accessibility within a public transport walking catchment (see excerpt in Figure 4-18). This figure shows that there are gaps in accessibility in areas of Altona North and Altona. It is also observed that some heavily populated neighbourhoods such as Altona Meadows and Altona North do not have a local train station (see Figure 4-17).

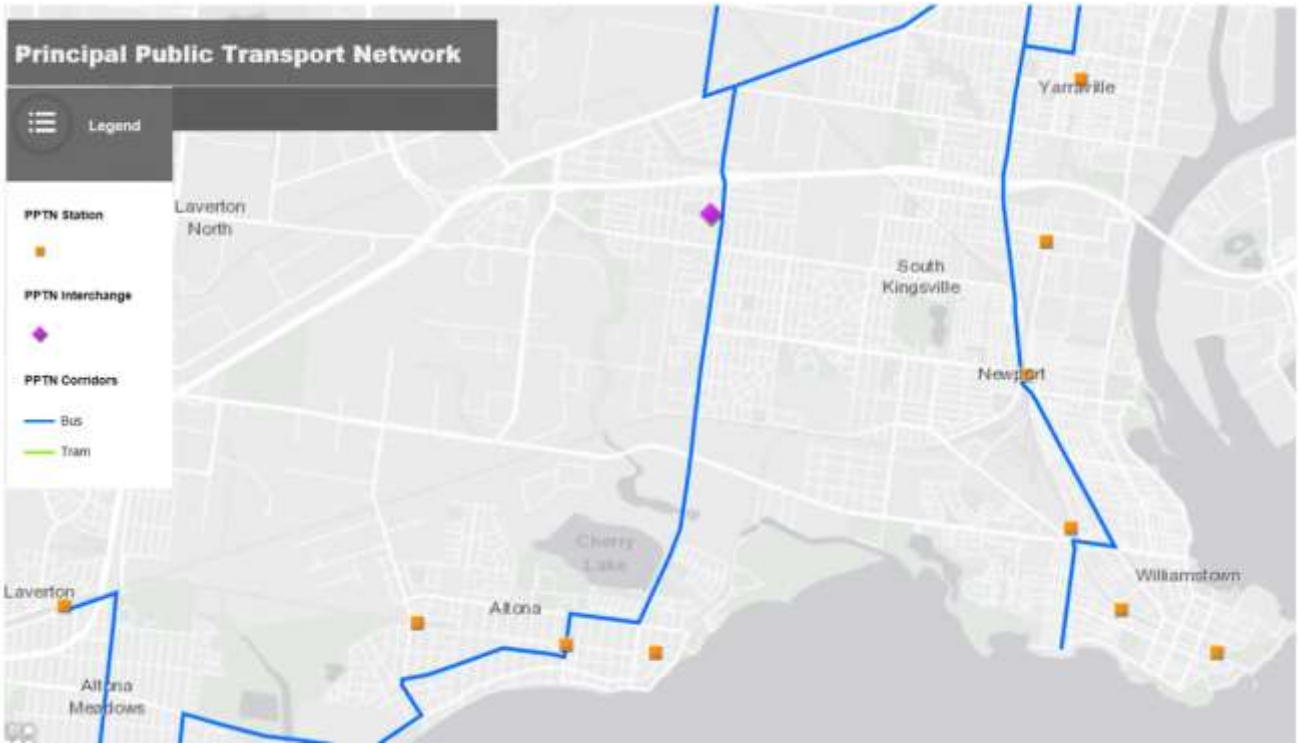


Figure 4-16 Principal Public Transport Network within the study area

Source: https://transport.vic.gov.au/about/planning/principal-public-transport-network

Figure 4-17 Public transport in Hobsons Bay

Source: www.ptv.vic.gov.au

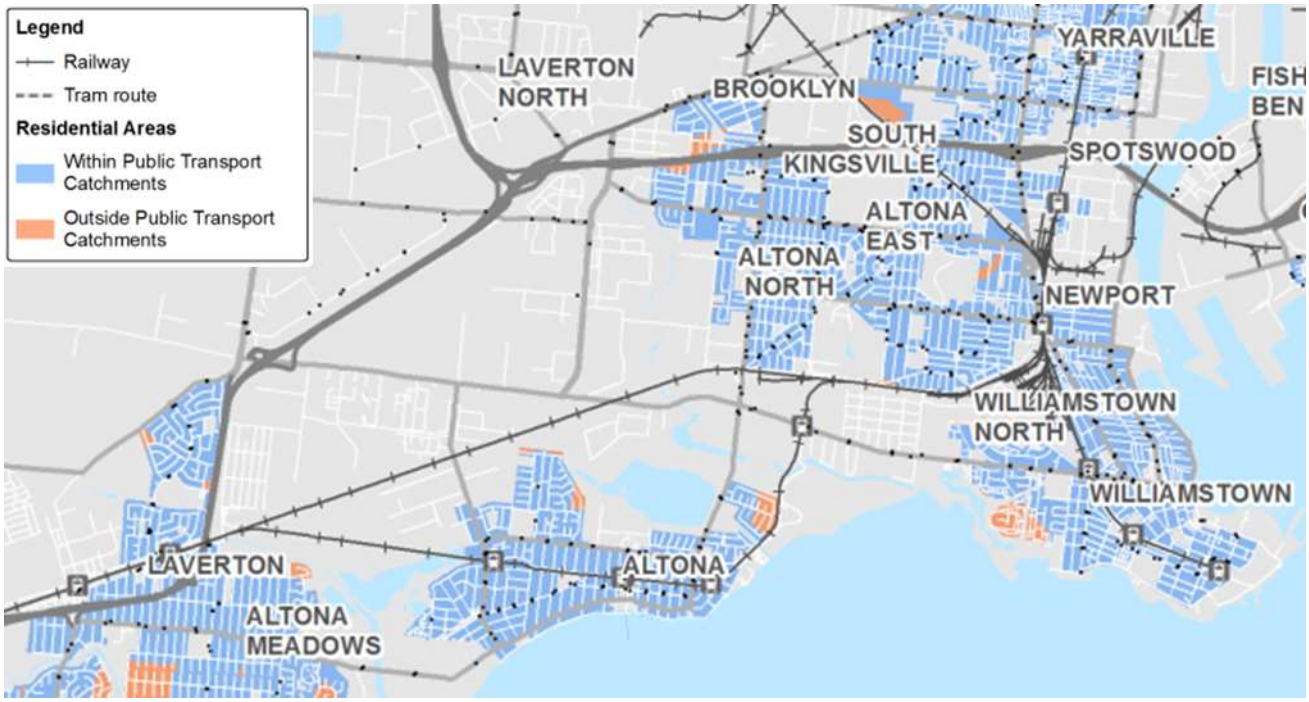


Figure 4-18 Public transport accessibility in Hobsons Bay

Source: GHD, 2017

4.2.4 PUBLIC TRANSPORT - RAIL

Hobsons Bay has two rail lines; the Werribee and Williamstown lines, which meet at the junction at Newport station.

Rail service levels vary considerably in Hobsons Bay with three different services running during peak periods. These are the Werribee limited express, Laverton, and Williamstown services. Werribee limited express services bypass the Altona Loop, Spotswood, Yarraville, Seddon, and South Kensington station during AM peak periods. Meanwhile, the Laverton service originates from Laverton station and stops all stations except South Kensington via the Altona Loop during the

AM peak. In the PM peak, the two services along the Werribee line operate in a similar manner. The Williamstown and Werribee line, with the Altona Loop are shown in Figure 4-19.

Figure 4-19 Werribee and Williamstown train line

Source: ptv.vic.gov.au

The Werribee limited express line services (direct to Flinders Street bypassing the Altona Loop) offers 10 to 12-minute peak frequency. The Werribee line services (via the Altona Loop on some services) and Williamstown lines both offer 22-minute peak services (which is at the lower end of frequency times compared to other metropolitan lines).

Details of the train frequencies for study area stations are shown in Table 4-5. The table also shows the service span, which is 5:00 am to 2:30 am during the week, and 24 hours on the weekends.

From the HBITP, Figure 4-20 shows the proportion of municipality that can reach the CBD within 60 minutes via walking and rail. Altona North and Brooklyn are outside of the areas that can travel to the CBD within 60 minutes by walking and rail.

For comparison purposes, bus route 232 (Altona North – City), operates from the Millers Road park and ride and travels along Millers Road and the West Gate Freeway, with a morning peak period timetabled travel time of 35 minutes to Southern Cross station.

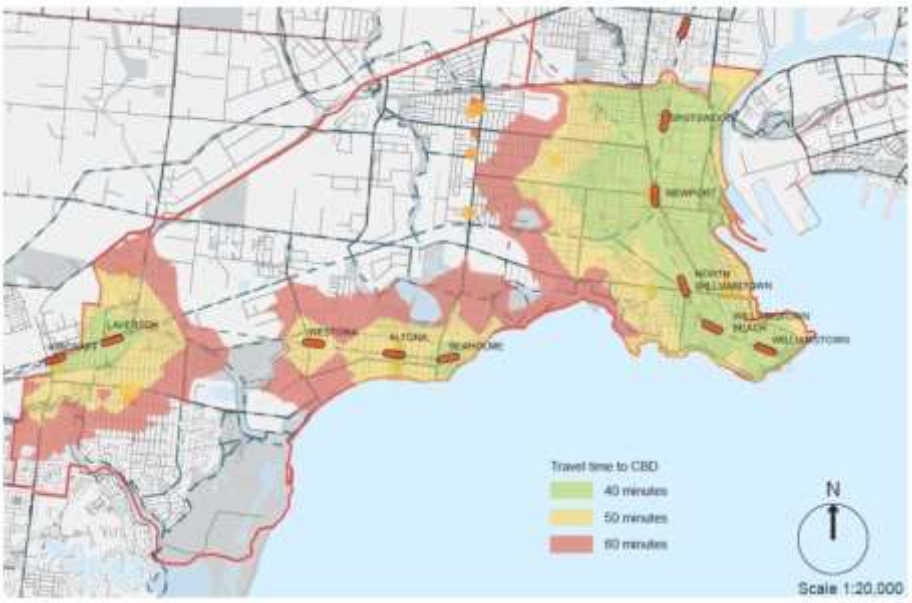


Figure 4-20 Connectivity to Melbourne CBD by walk and rail

Source: Hobsons Bay City Council 2017, with Hale Consulting 2016

Table 4-5 Study area train timetable and frequency summary

Trainline	Direction	Station	Weekdays					Saturday		Sunday	
			*Temporal span	Headway (min)				*Temporal span	*** Headway (min)	*Temporal span	***Headway (min)
				AM Peak	Inter-Peak	PM Peak	Off-Peak (PM)				
Werribee	Outbound	Spotswood	5:00 - 00:00 midnight	17	20	13	23	24 hr	27	24 hr	32
		Newport		8	10	5	15				
	Inbound	Newport		20	7	4	9				
		Spotswood		11	10	6	15				
Williamstown	Outbound	Spotswood	5:00 - 19:30	24	20	12	23				
		Newport	5:00 - 00:00 midnight		19	13					
		North Williamstown									
	Inbound	North Williamstown		20	20	13	23				
		Newport		5	7	4	9				
		Spotswood		11	10	6	15				

Source: www.ptv.vic.gov.au

* Temporal Spans are approximate
** Headway is the average time between services (min), AM peak (07:00-09:00), Inter-peak (09:00 -15:00), PM peak (15:00-16:00), Off-peak (18:00 till last service)
*** Weekend headway is approximate and based on temporal span

The Werribee train line operates two different services during peak periods, the Werribee Express and Laverton service. The train frequency and headways in Table 4-5 include both the Werribee limited express service (bypassing the Altona Loop) and Laverton (via Altona Loop) services.

4.2.5 PUBLIC TRANSPORT - STATIONS

Hobsons Bay has ten train stations, however the study area for this study includes the following three: Spotswood, Newport and North Williamstown station.

Figure 4-21 shows that there is large differences in how each of the stations is accessed (with all the Hobsons Bay station information shown to understand the broader area context). The majority of people travel by walking to Spotswood station (65%) and North Williamstown station (77%). Newport station has 46 per cent of people arriving by car. How people access stations is influenced by factors such as:

- the private vehicle or bicycle parking facilities available at the station
- connecting public transport services (such as bus)
- distance to the station from residential areas
- the frequency of trains from the station.

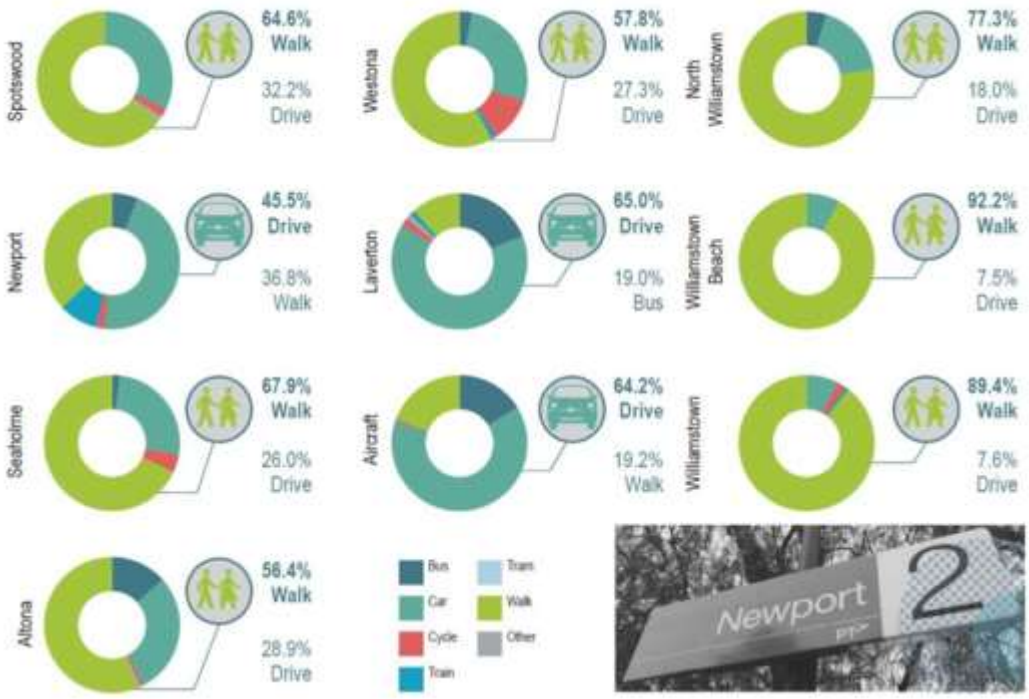


Figure 4-21 Mode of travel to Hobsons Bay train stations

Source: Hobsons Bay City Council 2017, with Hale Consulting 2016

Table 4-6 shows the average weekly entries by train station, indicating that Newport station has much higher average weekly entries than Spotswood and North Williamstown, reflecting the strategic location, frequency of trains and availability of nearby parking or other transport connections. Low frequency of trains at other nearby stations, as well as arterial connections that provide ease of access to Newport station may also influence the higher number of average weekly entries observed.

The three stations in the study area have varying facilities available to rail passengers (Table 4-7). Newport station, as a premium station, offers more facilities than the other stations.

Table 4-6 Average weekly entries by train station

STATION	2009-2010	2011-2012	2013-2014
Spotswood station	5,350	4,900	5,520
Newport station	28,870	26,460	23,500
North Williamstown station	8,150	6,920	6,410

Source: Access to Transport (Hobsons Bay City Council 2018)

Table 4-7 Station facilities summary

STATION	RAIL	CAR	PT AND ACTIVE TRANSPORT
Spotswood station	Williamstown and Werribee Line (Laverton Services via Altona Loop only) No facilities Two side platforms	Parking (approx. 22 spaces) No public electric vehicle charging stations[1]	No formalised bicycle facilities[2]
Newport station	Williamstown and Werribee Line (Werribee limited express and Laverton services) Premium station (staffed) Two side platforms Toilets	Parking at nearby Council carparks (approx. 500 all-day commuter spaces), at various car parks in close proximity to the station No public electric vehicle charging stations	Connecting bus services Parkiteer Secure Bike Cage
North Williamstown station	Williamstown Line Two side platforms No facilities	Parking (approx. 40 spaces) No public electric vehicle charging stations	No formalised bicycle facilities

The existing car parking strategy for Hobsons Bay has been developed within The Hobsons Bay Integrated Transport Plan, which details an approach to parking policy that is "*evidence-based and designed the maximise the use of existing spaces. Responsible and consistent provision, permit, restriction and enforcement systems will create more certainty for residents, visitors, businesses and developers. Integrated planning will also provide opportunities to use parking policy to encourage mode shift to more sustainable travel methods. Additionally, valuable car parking land will be used in*

[1] The only public electric vehicle charging station in Hobsons Bay is currently being installed behind the Altona Civic Centre

[2] Note: Online community consultation was undertaken to investigate the level of local interest in implementing a Parkiteer cycle cage at Spotswood station, however this project did not proceed, as it did not receive enough votes https://pickmyproject.vic.gov.au/rounds/pick-my-project/ideas/spotswood-station-free-secure-bicycle-cage-parkiteer-and-hoops

increasingly innovative, diverse and equitable ways, including through 'pop up' community spaces and appropriately-located residential developments that includes affordable housing above existing public car parks." (Hobsons Bay City Council, 2107a p.28).

This plan is aimed at delivering a "c*oordinated approach to parking management across Council; more efficient and equitable use of land currently used for car parking; mode shift toward sustainable transport".* (Hobsons Bay City Council, 2107a p.31).

Additionally, the state government is creating *"11,000 new parks across the state"* (Daniel Andrews) with the $150 million Car Parks for Commuters Fund to support the delivery of parking strategy plans.

4.2.6 PUBLIC TRANSPORT – BUS

Within the study area there are eight metropolitan bus routes, one SmartBus service and two night-bus services, with a summary of these routes provided in Table 4-8 and shown on the map in Figure 4-17.

Bus route 232 provides services to the CBD from Altona North and has 10 to 20 minute peak frequencies on weekdays. SmartBus route 903 and bus route 472 also provides weekday frequencies between 12 to 15 minutes in the both the AM and PM peaks.

Weekday peak frequencies on several routes (Routes 414, 415, 496) is 40 to 45 minutes. The situation deteriorates considerably on weekends, when many services run at 60 to 80 minute intervals, while the Route 414 and 415 routes do not operate on Sundays.

Table 4-8 Bus route and timetable information summary

Road	Stop	Route No.	Direction	Weekdays							Saturday		Sunday	
				*Temporal Span	Peak Hour and Headway (min)						*Temporal Span	*** Headway (min)	*Temporal Span	*** Headway (min)
					AM Peak		Inter-Peak	PM Peak		Off-Peak				
Millers Road	Altona Gate SC	232	Altona North	7:00-21:30	8:00-9:00	20	20	17:00-18:00	10	20	8:30-20:30	31	9:00-19:00	26
			City	6:00-21:00	7:00-8:00	12	19	16:00-17:00	20	20	8:00-19:00	29	8:00-16:00	26
		411	Laverton	6:00-21:30	7:00-8:00	30	40	17:00-18:00	30	42	8:00-21:30	83	9:00-21:30	83
			Footscray	5:30-22:00	7:00-8:00	15	40	16:00-17:00	15	48	7:30-22:00	73	9:00-22:00	65
		412	Laverton	6:00-20:30	7:00-8:00	30	36	17:00-18:00	30	38	8:00-21:30	74	9:00-21:30	68
			Footscray	6:30-22:00	7:00-8:00	20	40	17:00-18:00	30	48	7:30-22:00	87	9:00-22:00	78
		471	Williamstown	6:30-21:30	9:00-10:00	20	19	16:00-17:00	20	26	7:30-21:30	40	9:00-22:00	37
			Sunshine station	6:30-22:00	7:00-8:00	20	19	16:00-17:00	20	27	7:00-21:30	38	8:30-21:30	35
		903	Altona	5:00-12:00 midnight	11:00-12:00 noon	12	15	19:00-20:00	12	18	6:00-12:00	28	6:30-20:30	24
			Mordialloc	5:00-00:30	7:00-8:00	12	15	19:00-20:00	12	22	6:00-12:00	28	7:00-21:00	23
Kororoit Creek Road	Millers Road	415	Williamstown	6:30-19:30	10:15-11:15	30	40	15:45-16:45	30	45	8:00-19:00	73	NA	
			Laverton station	6:30-20:00	9:15-10:15	30	40	16:15-17:15	30	40	8:00-19:00	73		
Blackshaws Road	Newport Interchange	471	Williamstown	6:30-21:30	9:00-10:00	20	19	16:00-17:00	20	26	7:30-21:30	40	9:00-22:00	41
			Sunshine station	6:30-22:00	7:00-8:00	20	19	16:00-17:00	20	27	7:00-22:00	41	9:00-22:00	41
		432	Newport	6:30-22:00	7:00-8:00	20	24	16:00-17:00	20	22	8:00-22:00	44	9:00-22:00	43
			Yarraville	6:00-21:00	7:00-8:00	20	24	16:00-17:00	20	20	7:30-21:00	43	8:00-21:00	43
Melbourne Road	Mason Street	472	Moonee Ponds	6:00-22:00	7:00-8:00	15	15	16:00-17:00	15	27	6:30-22:00	24	9:00-22:30	48
			Williamstown	6:30-22:00	7:00-8:00	15	15	16:00-17:00	15	20	8:00-21:30	23	8:30-22:00	48
Dohertys Road	Grieve Parade	414	Footscray	6:00-19:00	7:00-8:00	30	40	17:00-18:00	30	40	7:30-17:00	71	NA	
			Laverton station	7:00-20:00	7:00 -8:00	30	40	17:00-18:00	30	60	8:00-17:30	71		

Source: www.ptv.vic.gov.au

*Temporal spans are approximate ** Headway is the average time between services, AM Peak (see column), Inter-Peak (9:00-15:00), PM Peak (See column), Off-Peak (18:00 till last service)
***Weekend headway is approximate and based on temporal span

4.2.7 PUBLIC TRANSPORT – INTERCHANGES

There are several key public transport hubs in Hobsons Bay, with close integration between train and bus services, including Altona (2 bus + 1 train), Laverton (8 bus + 1 train) and Newport (3 bus + 1 train), as well as Altona North which has six bus routes passing through the area. The Newport interchange is within the study area for the HBTPS and this interchange is shown in Figure 4-22.

Figure 4-22 Interchanges in Hobsons Bay: Newport station

Source: Department of Transport, 2011

Altona Gate Shopping Centre is marked as an interchange on the PPTN map. Bus routes 232, 411, 412, 471 and 903 all stop at the Altona Gate Shopping Centre stop on Millers Road.

The Altona North Park and Ride (Route 232) operates from Millers Road just south of the Werribee rail line.

4.2.8 FREIGHT

The Western region (Melton, Wyndham, Hobsons Bay, Brimbank and Moonee Ponds councils) are identified in Plan Melbourne as a region where the key industries are manufacturing, retail, healthcare and warehousing (DELWP, 2017). Plan Melbourne forecasts job growth in the region to be 2.3 per cent or an additional 113,000 jobs created by 2031.

The majority of arterial roads within the study area are approved to operate B-Double vehicles (VicRoads, 2019b).

Part of the National Land Transport Network rail network extends through the study area, which includes a standard gauge rail line providing a connection for freight movement on rail between Melbourne, Sydney and Adelaide.

The Port of Melbourne is a key origin and destination for freight movements by road and rail and therefore has the potential to influence freight movements on the transport network, as further development occurs.

4.2.8.1 FREIGHT NETWORK - ROAD

The existing freight network within and surrounding the study area incorporates road and rail links, which are shown in Figure 4-23. Roads shown in green have no restrictions. Roads shown in orange a level of restriction and roads shown in red are prohibited access roads.

The key freight roads within the study area include two divided dual carriageway arterial roads which are part of the Principal Freight Network (PFN) – Geelong Road and Kororoit Creek Road. Geelong Road has service lanes which further mitigate heavy vehicle impacts. All other arterial roads in the area are either two-lane undivided carriageway, or four lanes undivided carriageway.

VicRoads has reviewed all arterial roads within the western suburbs with respect to the suitability of operating B-Doubles and Higher Mass Limit vehicles. In Hobsons Bay all arterial roads are cleared for B-Doubles and Higher Mass Limit vehicles operation. This means other than heavy vehicle curfews there are no restrictions on these vehicles operating in the study area on arterial roads.

Figure 4-23 Freight routes in Hobsons Bay

Source: VicRoads, 2019c

The study area also includes the West Gate Freeway / Princes Freeway (M1) and the Western Ring Road (M80), which are both National Key Freight Routes which provide connections to Victoria and the rest of Australia.

A map of the heavy vehicle crashes occurring within the study area in the past five years is summarised in Figure 4-24, with the specific data on these crashes shown in Figure 4-25. The data shows a high concentration of heavy vehicle crashes on the West Gate Freeway, predominantly at the interchanges, with the largest volume of heavy vehicle crashes occurring at the Princes Freeway / Kororoit Creek Road interchange.

The key focus of this crash data is on the fatal and serious injury crashes, which will be investigated further as part of the challenges and opportunities section of the study.

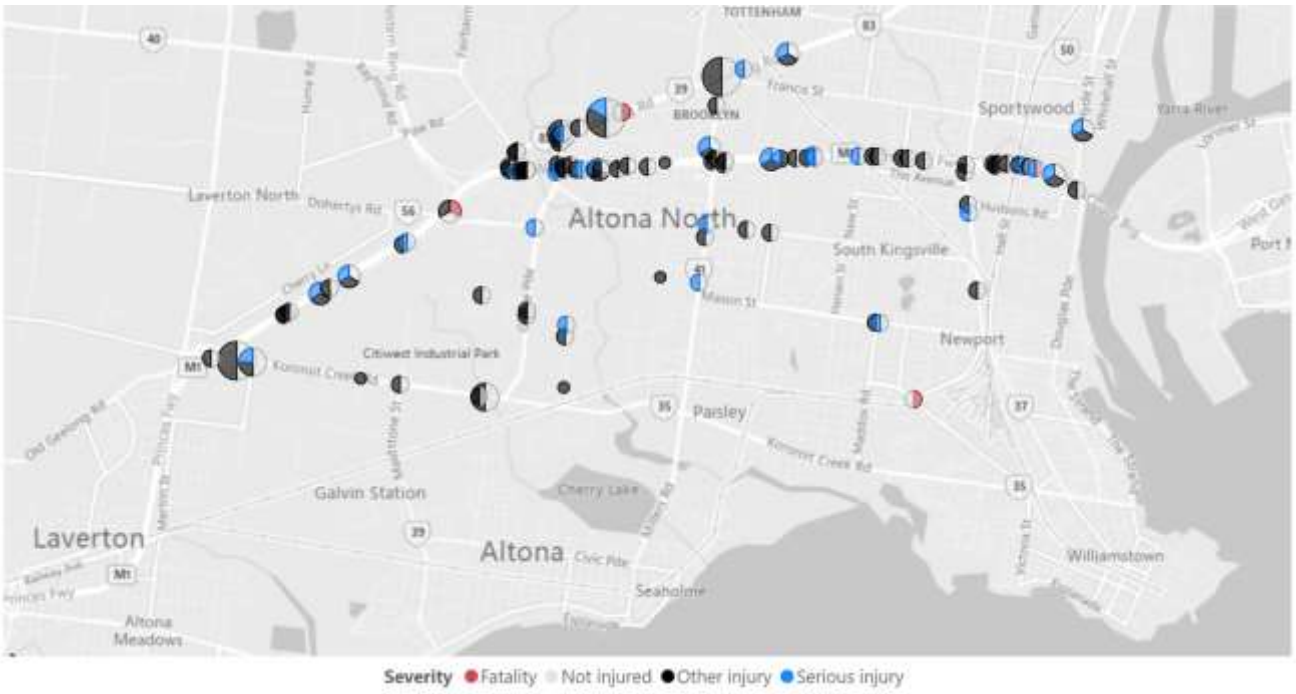


Figure 4-24 Map of heavy vehicle crashes within the study area (2013-2018)

Source: data.vic.gov.au

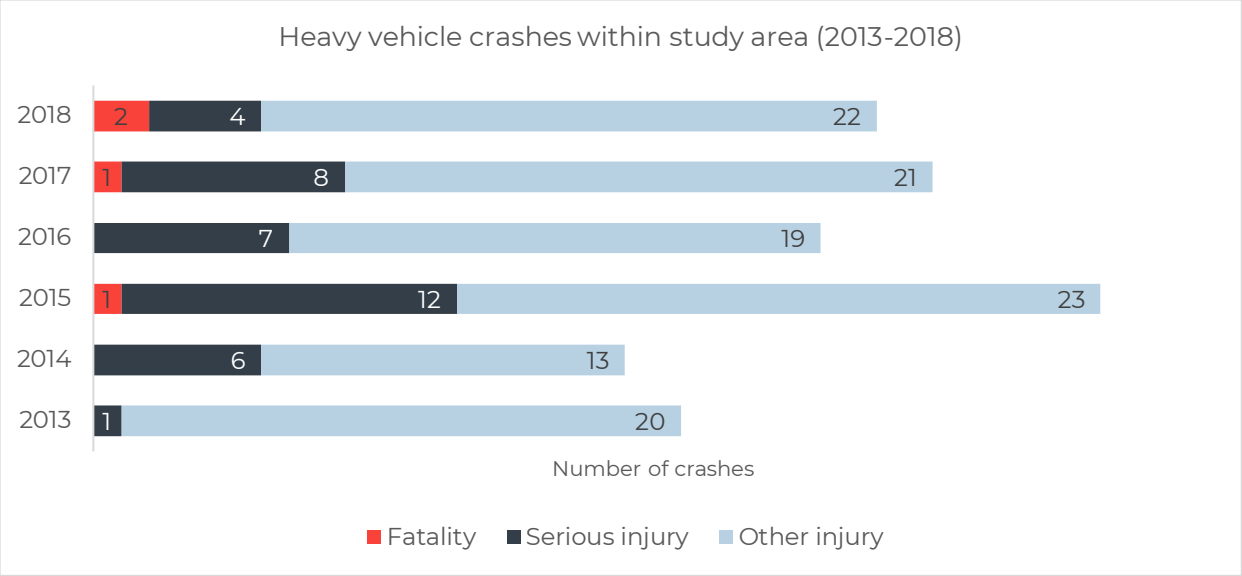


Figure 4-25 Heavy vehicle crash summary data within study area (2013 – 2018)

Source: data.vic.gov.au

4.2.8.2 FREIGHT NETWORK - RAIL

The Melbourne to Adelaide standard gauge rail line runs through the study area. This line connects Melbourne to Adelaide, Perth and Sydney. The interstate network operated by the Australian Rail Track Corporation (ARTC) is shown in Figure 4-26.

Figure 4-26 Interstate rail network map

Source: ARTC, 2019a

The broad-gauge network consisting of the Werribee, Williamstown and Altona lines has no freight services operating on it. There is one daily return freight service that operates via the Regional Rail Link line from Dennington, near Warrnambool.

The standard gauge line provides a relatively circuitous route to the Port of Melbourne as trains are required to operate via Sunshine. There is not a direct connection by the standard gauge to the SCT inter-modal site.

Currently 94 trains operate on the standard gauge line through the study area on a weekly basis. These services vary from intermodal freight, steel services and general freight. The standard gauge line has no interactions with the broad gauge on the Werribee or Williamstown railway lines.

The standard gauge line is predominately single track with a small number of loops to enable trains to pass. Most of the freight services on this line are operating to Adelaide or Western Victoria. The ARTC train timetable identifies that there are four services a week towards Tottenham (Melbourne) and four services a week towards Adelaide from the SCT site. All services are classed as intermodal trains (ARTC, 2019b).

The key rail freight routes and intermodal terminals in Victoria are shown in Figure 4-27.

Figure 4-27 Victoria - Key rail freight routes

Source: Transport Infrastructure Council, 2014

4.2.8.3 FREIGHT GENERATORS

There are large areas of freight generating land uses within and surrounding the study area, as shown in Appendix B – planning zones map. This land use generates truck movements on the Hobsons Bay and surrounding road network, which also accommodates a high proportion of through truck movements on the West Gate Freeway.

Hobsons Bay is home to many major industrial land uses that generate freight movements. These industrial uses import $798 million of goods and services (Hobsons Bay City Council, 2019c). The primary locations of industrial generators in Hobsons Bay are Altona North, Altona, Brooklyn, Spotswood and Williamstown. Hobsons Bay is part of a major industrial precinct which the State Government has identified as one of the four key industrial areas in Melbourne – the Brooklyn-Truganina-Laverton industrial area. The Western Industrial Precinct spans Hobsons Bay, Maribyrnong, Wyndham and Brimbank council areas. The primary industrial uses within Hobsons Bay are:

- **Logistics**
  - To the west of Hobsons Bay around the interchange of the M1 and M80 there is a growing amount of logistics centres clustering. The accessibility to the Port of Melbourne, Victoria and interstate makes this area ideal for logistics. Logistics movements generally operate on a just-in-time schedule. This means that they are sent from the centre to the end user at random intervals, as the end user runs out of product. These uses are primarily containerised freight.
- **Chemical manufacturing**
  - The largest agglomeration of chemical manufacturing in Australia is within the Altona complex in Hobsons Bay (Qenos, 2019). Within this area there are three predominate chemical manufacturing business types, including: plastics, resins and olefins. This plant generally produces 410 kilotons of products which are moved out of the site by heavy vehicles. The customers for these products are located around Australia, which means these heavy vehicles have dispersed origin-destinations, within and beyond the study area.
  - Polyethylene is a non-hazardous usage and would generally be carried in containers. Other chemical outputs are likely to be more hazardous and require additional precautions.
- **Petroleum**
  - The Altona refinery produces approximately half of Victoria's petroleum products. Approximately 90 per cent of the refined product is moved out of the complex by heavy vehicles (Exxon Mobil, 2019). These products are distributed through Victoria, South Australia and Southern NSW. This means that there is a significant variability as to which roads that these heavy vehicles will be operating on to reach the end distributor. The majority of these products are classified as hazardous uses and require additional precautions.
- **Container storage**
  - Container storage is becoming a more common land use in and around the study area. In 2017 there was an average of 10,000 container movements a day between half a dozen container parks in Western Melbourne and Port Melbourne (The Age, 2017). It is likely with the growth in shipping from the Port of Melbourne that the volume of containers has increased. These are purely containers, and require no special treatment. The introduction and development of the Webb dock is also expected to contribute to container truck volumes along the network.

Surrounding council industrial land uses

Within the City of Maribyrnong there is an area of industrial land located to the north-west of Hobsons Bay. The predominate industrial land uses in this area are container parks, logistics and repair facilities.

With the City of Brimbank to the west of Hobsons Bay there is the Tottenham industrial precinct and landfill. These land uses will generate heavy vehicle use through the Maribyrnong and Hobsons Bay areas.

The City of Wyndham industrial areas are located to the west of the study area. This is a newer industrial land release which is undergoing development into industrial uses. Major land uses in this industrial area are prisons, logistics and bulky goods retail.

Intermodal terminals

There are three intermodal terminals located near Hobsons Bay, including:

- Qube intermodal terminal, located in Altona close to Millers Road and Kororoit Creek Road
- Sadlier intermodal terminal, located in Spotswood, adjacent to Melbourne Road
- SCT terminal, located in the City of Wyndham. This intermodal terminal is currently only an interstate terminal. This terminal opened in June 2016, with the first intermodal train arriving in 2017 (WGE, 2017). The ARTC train timetable identifies that there are four intermodal services a week towards Tottenham (Melbourne) and four services a week from this intermodal terminal towards Adelaide (ARTC, 2019b). All services are identified in the ARTC train timetable as intermodal freight. This intermodal terminal has been identified by the Victorian Government to operate a port shuttle between the Port of Melbourne and the SCT site in Altona. The Victorian Government is spending $9.5 million to develop the Port Shuttle to and from this intermodal terminal. (Department of Transport, 2019).

Port of Melbourne

- The Port of Melbourne is the largest port in Australia. It consists of several different terminals located along the Yarra river. The main ones include:
  - Webb Dock, located in Fishermans Bend and primarily utilised for vehicles and bulk commodities. It can also handle some containers.
  - Swanston Dock is the primary container dock for the Port of Melbourne. It is located just to the south of Footscray Road in West Melbourne.
  - Appleton Dock is located to the south east of Footscray Road and is primarily a general use dock and generally utilised for bulk exports. It can also handle some containers.
- Only Appleton and Swanston docks are connected into the rail network, limiting the effectiveness of the port to utilise rail.
- The port consists of 500 hectares of land and 30 berths for ships. In 2018 it moved nearly three million TEU (twenty-foot equivalent unit) of containers and 1,200 vehicles for sale a day (Port of Melbourne, 2019a). On an average day 7,200 containers utilise the port each day. This is an increase of 8.6 per cent of containers utilising the port compared to 2017 (Port of Melbourne, 2019b).
- The Victorian and Federal Governments have identified the need for a new major intermodal terminal near Melbourne. Two sites have been identified; one in Truganina and another at Beveridge in the north of Melbourne (Port of Melbourne, 2019c). This terminal is required to enable efficient movement of freight from interstate and the Inland Rail project.

4.2.8.4 FREIGHT MOVEMENTS

The only access roads from the port to the inner west are Dynon Road, Footscray Road and the West Gate Freeway. The access from the northern part of the port such as Swanston Dock are serviced by Footscray Road and Dynon Road. It is a significant detour to travel to the West Gate Freeway if travelling west. To get from the port to the Brooklyn industrial estate requires movements through either Francis Street, Somerville Road, Barkly Street or Geelong Road.

There are existing truck curfews on some arterial roads within the inner west as shown in Figure 4-28.

Figure 4-28 Existing truck curfews in the inner western suburbs

Source: VicRoads, 2018

These curfews were developed to minimise impacts on residential areas.

There is no available origin and destination (OD) data for heavy vehicle movements within the study area for the HBTPS. It is worth noting that the focus of these OD surveys for the WGTP was to the north of the West Gate Freeway. Without this OD information, it is difficult to gain an understanding of heavy vehicle movements through the study area.

Volumes for freight on arterial roads is shown in Figure 6-65.

4.2.9 ROAD TRAFFIC

The VicRoads declared arterial routes within the study area are shown in Figure 4-29. This map indicates the key east-west arterial roads within the study area:

East-west arterial roads within the study area include:

- West Gate Freeway
- Geelong Road
- Blackshaws Road
- Kororoit Creek Road

North-south arterial roads within the study area include:

- Grieve Parade
- Millers Road
- Melbourne Road / Williamstown Road
- Douglas Parade
- Hyde Street

Figure 4-29 VicRoads declared arterial routes

Source: VicRoads, 2019

4.2.9.1 TRAFFIC VOLUMES

As freeways and arterial roads serve a movement function within the road hierarchy, traffic within the study area is concentrated on these routes as shown in Figure 4-30. Table 4-9 shows the traffic volumes between the differing peak periods. The data indicate that the majority of traffic within the study area is travelling along the Princes Freeway and West Gate Freeway. For north-south orientated arterial roads, the highest traffic volumes are on routes which connect to the freeway, such as Millers Road, Grieve Parade and Williamstown / Melbourne Road, with a higher concentration of traffic near the interchanges or connections to the freeway. For east-west orientated arterial roads, the highest traffic volumes were recorded on Koroit Creek Road, particularly near the Princes Freeway connection.

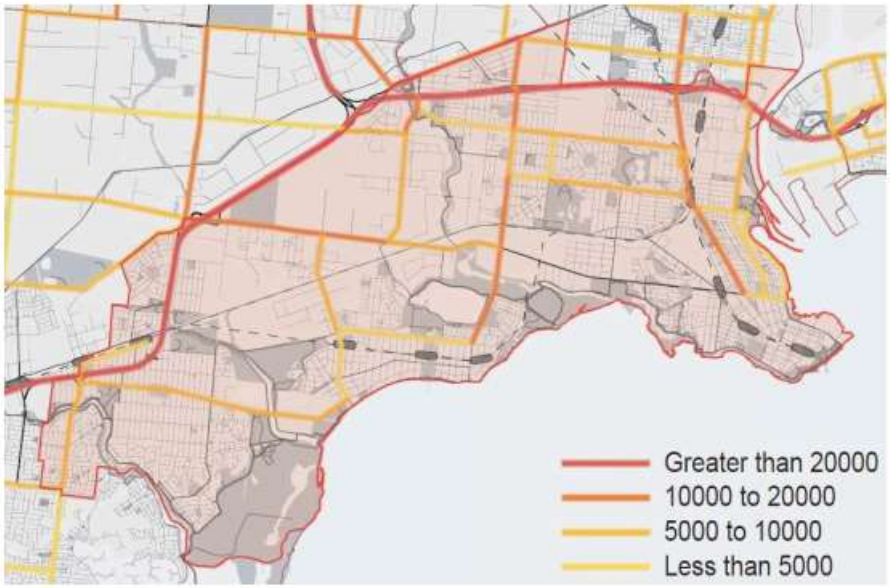


Figure 4-30 Average daily road traffic volumes

Source: Hobsons Bay City Council, 2017b, with Hale Consulting, 2016

Table 4-9 Traffic volume counts within study area (one-way volumes)

ROAD NAME	LOCATION	YEAR	AM	INTER PEAK	PM	OFF PEAK	DAILY
Blackshaws Road	West of New Street	2016	630	2,442	1,072	1,252	5,395
Blackshaws Road	East of Grieve Parade	2016	647	1,923	566	810	3,947
Blackshaws Road	East of Grieve Parade	2016	508	1,887	636	778	3,810
Douglas Parade	South of Burleigh Street	2016	1,759	2,474	811	1,321	6,366
Douglas Parade	South of Burleigh Street	2016	584	2,365	1,446	1,555	5,950
Grieve Parade	South of Blackshaws Road	2016	2,374	6,762	2,225	3,444	14,805
Grieve Parade	South of Blackshaws Road	2016	1,954	6,406	2,275	3,738	14,373
Melbourne Road	Btw Birmingham St & Blackshaws Rd	2015	1,580	6,577	1,759	4,247	14,163
Melbourne Road	Btw Birmingham St & Blackshaws Rd	2015	1,241	6,219	2,826	5,132	15,417
Millers Road	North of WGF	2016	1,842	6,195	1,724	3,054	12,815
Millers Road	North of WGF	2016	1,873	6,302	2,196	2,873	13,244
Millers Road	South of WGF	2016	3,162	8,745	2,553	5,061	19,521
Millers Road	South of WGF	2016	1,753	8,573	3,208	5,002	18,537
Princes Highway	SW of Grieve Parade	2013	5,113	11,417	3,341	8,081	27,951
Princes Highway	NE of Grieve Parade	2013	5,210	10,132	2,938	7,135	25,415
Princes Highway	SW of Grieve Parade	2013	2,726	11,007	4,695	7,737	26,164
West Gate Freeway	Millers Rd EB Onramp	2014	1,814	3,814	1,120	2,498	9,245
West Gate Freeway	Millers Rd WB Off-ramp	2014	1,023	4,070	1,155	2,626	8,873
West Gate Freeway	Grieve Parade EB Onramp	2014	2,078	5,842	1,726	3,078	12,724
West Gate Freeway	Btwn WRR and Grieve Parade	2014	11,230	32,081	9,546	26,106	78,964
West Gate Freeway	On Ramp from WGB to Bolte Bridge	2015	946	5,333	1,911	2,720	10,910
West Gate Freeway	Millers Rd EB Off-ramp	2014	715	4,430	1,492	2,962	9,599
West Gate Freeway	Btw Millers Rd and Williamstown Rd	2014	13,543	36,785	10,656	27,708	88,692
West Gate Freeway	Off Ramp from Bolte Bridge to WGB	2015	1,806	5,039	1,583	3,590	12,017
West Gate Freeway	Millers RD WB Onramp	2014	1,277	4,322	1,597	2,863	10,060
West Gate Freeway	Williamstown Rd On Ramp	2014	4,058	8,474	2,427	5,589	20,548
West Gate Freeway	East of Grieve Parade	2014	9,597	34,625	15,373	28,692	88,287
West Gate Freeway	West Gate Bridge	2014	16,924	42,148	11,863	30,559	101,494
West Gate Freeway	West Gate Bridge	2014	10,591	39,608	16,492	32,577	99,267
West Gate Freeway	Williamstown Rd WB Off-ramp	2014	1,989	7,578	3,467	6,800	19,833
West Gate Freeway	Btw Millers Rd and Williamstown Rd	2014	9,712	36,357	13,892	30,162	90,123
West Gate Freeway	East of Grieve Parade	2014	12,867	35,129	10,847	29,400	88,243
West Gate Freeway	Williamstown Rd WB Onramp	2014	1,097	5,025	1,453	3,809	11,384

Source: VLC – WGT EES, 2014

4.2.9.2 ROAD SAFETY

A heatmap of the recorded crashes within Hobsons Bay is shown in Figure 4-31 for the five-year period from 2013 to 2018. The data shows that the crashes are concentrated primarily along the West Gate Freeway/Princes Freeway, Melbourne Road, and Millers Road corridors.

Figure 4-31 Heatmap of all crashes within the study area (2013 – 2018)

Source: www.data.vic.gov.au

Figure 4-32 shows a summary of the crash statistics for the Hobsons Bay study area for the five-year period from 2013 to 2018. The general recent trend has been a reduction in crashes.

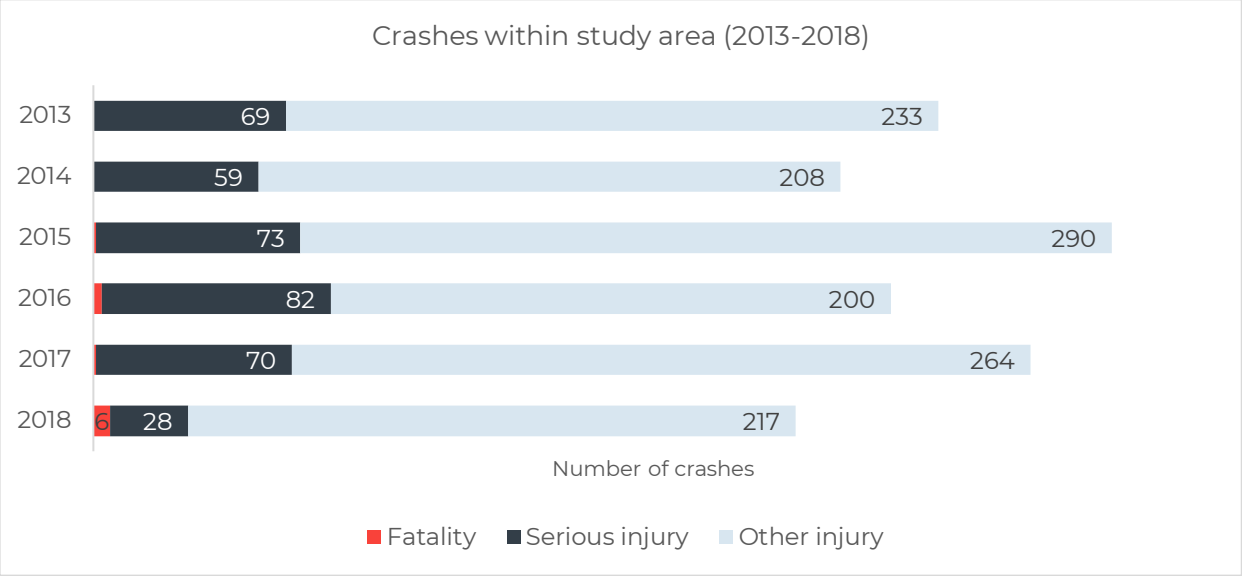


Figure 4-32 Summary of crashes by classification in Hobsons Bay study area (2013 – 2018)

Source: www.data.vic.gov.au

The Australian National Risk Assessment Model (ANRAM) is a tool developed by Austroads to identify the risk of severe crashes on the road network and involves the calculation of the Fatal and Serious Injury (FSI) crash risk based on road infrastructure, speed traffic volumes and crash history.

The FSI incorporates predictive models based on the relationship between traffic flow and severe crashes occurring on the road network. ANRAM then uses risk algorithms to adjust the predicted FSI scores. The nationwide approach ensures that the results are comparable across jurisdictions.

Figure 4-33, Figure 4-34, Figure 4-35 and Figure 4-36 indicate the predicted number of serious and fatal crashes that will occur on road and intersection segments within the Hobsons Bay study area.

Source: DoT

Figure 4-33 Northern Study Area- Melbourne Road - Blackshaws Road - Hudsons Road and West Gate Freeway Interchange at Williamstown Road

Source: DoT

Figure 4-34 Study area from Melbourne Road South to Kororoit Creek Road, including Mason Street.

Source: DoT

Figure 4-35 Study area Millers Road and Grieve Parade

Source: DoT

Figure 4-36 Kororoit Creek Road through to interchange with West Gate Freeway.

These maps indicate that the following intersections and road segments within the HBTPS study area have an FSI above 2.5, highlighting potential safety risks:

- Maddox Road / Kororoit Creek Road
- The Avenue / Williamstown Road
- Williamstown Road / West Gate Freeway Interchange
- Mason Street / Melbourne Road
- Ferguson Street / Melbourne Road
- Old Boundary Road / Geelong Road
- Kororoit Creek Road / Princes Freeway Interchange
- Millers Road / Blackshaws Road
- Millers Road / Mason Street
- Kororoit Creek Road / Grieve Parade.

5 FUTURE VISION

Hobsons Bay Council have a vision for:

"an integrated, innovative and equitable transport system, providing a range of sustainable, efficient, accessible and safe ways for people and goods to reach their destination".

The purpose of this section is to provide a summary of what is known about the future of Hobsons Bay (population, employment, land use, transport networks and freight), as well as future trends that may influence the study area.

5.1 FORECAST POPULATION AND EMPLOYMENT

Population forecasts are shown in Table 5-1, which indicate that the majority of residential population growth in Hobsons Bay is expected to occur in Altona North, with an increase of 10,940 people (74 per cent increase between 2016 and 2036), approximately 2.81 per cent per annum. In comparison, Victoria in Future (DELWP, 2019) forecasts an average annual growth rate of 2.75 per cent per annum for Western Melbourne and 1.41 per cent per annum for Stonnington, which has been used as a comparison LGA within this report.

Given that the population growth in Altona North is in line with the expected Western Melbourne region growth, future development and planning within this area is of particular importance. Employment in Western Melbourne is also expected to grow at a similar rate (2.3 per cent per annum) according to the Plan Melbourne 2017-2050 strategy.

Table 5-1 Population forecasts

AREA	2016	2036	GROWTH	OVERALL GROWTH (%)	COMPOUNDED ANNUAL GROWTH RATE (% PA)
Altona	13,210	16,740	+3,530	+27%	+1.19%
Altona Meadows	20,110	22,060	+1,950	+10%	+0.46%
Altona North	14,790	25,730	+10,940	+74%	+2.81%
Newport	18,520	23,380	+4,860	+26%	+1.17%
Seabrook	5,410	6,100	+690	+13%	+0.60%
Williamstown	16,390	20,140	+3,750	+23%	+1.04%
Hobsons Bay (SA3)	**88,420**	**114,140**	**+25,720**	**+29%**	**+1.28%**
Melbourne - West (SA4)	*762,560*	*1,311,810*	*+549,250*	+72%	*+2.75%*
Stonnington (C)	*111,000*	*146,890*	*+35,890*	+32%	*+1.41%*

Source: DELWP, 2019

The forecast population growth within the study area is lower than the combined western metropolitan region and the comparison LGA of Stonnington. The West Gate Tunnel EES Transport Impact Assessment considered projected population, employment and impacts of changes to road and rail networks from other projects to understand the future traffic and freeway network as a result of the West Gate Tunnel Project. According to the EES studies, the population in the western municipalities is predicted to grow by 44 per cent, compared to the Victorian average of 28 per cent.

A number of the future developments in Hobsons Bay are in brownfield areas which do not currently have a transport system that support residential development.

5.2 FUTURE LAND USE

5.2.1 INDUSTRIAL/EMPLOYMENT GROWTH

5.2.1.1 BROOKLYN BUSINESS PARK

Part Precinct 14 outlined in the ILMS comprises land bounded by Geelong Road, Millers Road, Francis Street and Cemetery Road in Brooklyn. The Brooklyn Business Park (BBP) is industrial land bound by Millers Road to the west, Princes Highway/Geelong Road, Cemetery Road and Francis Street to the north and the goods rail line to the east, with direct access onto the West Gate Freeway. The site will benefit from the future access to the West Gate Tunnel. Planning for this site is in its pre-planning and scoping phase.

5.2.1.2 BROOKLYN INDUSTRIAL AND COMMERCIAL PRECINCT

The BICP is located within an industrial area covering 262ha of industrially zoned land across the municipalities of Brimbank, Maribyrnong, Wyndham and Hobsons Bay known as the Western Industrial Precinct. It is a triangular area bordered by Kororoit Creek to the west and Geelong Road to the south, freight rail boundary to the east (including a rail spur) and the northern boundary follows the Brooklyn suburb boundary. The broader study area includes Tottenham Industrial Precinct to the east, Sunshine West Industrial Precinct and land further west over the Western Ring Road in the Derrimut and Laverton North Industrial Precincts. To the north and south are the residential suburbs of Brooklyn

The City of Brimbank prepared a Precinct Structure Plan and Urban Design Framework including an implementation plan for Brooklyn Industrial and Commercial Precinct (BICP), titled *Brooklyn Evolution February 2016*. Amendment C177 to the Brimbank Planning Scheme, which was gazetted on 25 August 2016, implemented the statutory recommendations of *The Brooklyn Evolution, February 2016*, by introducing policy direction for the BICP into the Municipal Strategic Statement, rezoned part of the Geelong Road frontage to Commercial 1 Zone to stimulate growth and introduced development design guidelines that will guide future development within the Precinct.

The site has been identified as suitable for transport, logistics and distribution; general manufacturing; light industry and mixed-use factory estates.

5.2.1.3 MILLERS JUNCTION ENTERPRISE AREA, ALTONA NORTH (PART PRECINCT 9)

The ILMS identified the redevelopment potential of this 15-hectare site, following the closure of Cabots. The site redevelopment was subject to two planning scheme amendments. This site forms part of the Millers Road Spine which is identified within the *Hobsons Bay Activity Centres Strategy 2019* as a key spine of future growth associated with Altona Gate Major Activity Centre (the northern anchor), Blackshaws Road / Millers Road and Borrack Square Medium NAC and the Millers Junction Enterprise Area (the southern anchor). These amendments sought the following:

— Amendment C077 to the HBPS was gazetted on the 9 May 2013 and a subsequent Planning Permit PA0817391 was issued for the use and development of bulky goods retail for the southern portion of the site to be developed for a restricted retail premises, trade supplies and two ancillary cafes at 302-330 Millers Road, Altona North.

— Amendment C109 to the HBPS south a combined planning scheme amendment and planning permit for land at 24-42 Cabot Drive and 290-298 Millers Road, Altona North. This was gazetted on 28 June 2018. The planning permit was for a supermarket and licensed premises, subdivision of the land into six (6) lots and the creation and alteration of access to a road in a Road Zone.

5.2.2 GROWTH AREAS

One of the key challenges of land use planning in Hobsons Bay is balancing the competing demands of residential, environmental, industrial and employment uses. Many of the areas are constrained by buffer distances associated with state significant industries (including eight of the State's Major Hazard Facilities), potentially contaminated land (including former landfill sites), pipeline infrastructure (above and below ground liquid and gas pipelines), rail corridors (passenger and freight), high water tables, and areas subject to flooding which reduces the availability of suitable land for residential development.

Significant reduction in labour intensive industry within the Hobsons Bay (i.e. the petrochemical industries moving into automation) and the decline in manufacturing (i.e. the closure of Toyota and meat works) has given rise to the redevelopment of brown fill sites. Clause 21.02 of the HBPS states that *most of the residential growth is expected to be in the Altona North and Spotswood – South Kingsville neighbourhoods*. The *Industrial Land Management Strategy 2008* (ILMS) and the *Housing Capacity Assessment 2019* has identified that future growth will occur within:

— Strategic Redevelopment Areas (SRAs) which will account for a total of 91ha of land with Precinct 15 accounting for 66 ha

— Activity Centres and their catchments of either 400/200 metres depending on the type of activity centre. The form of this land use transition is discussed in Sections 5.2.2.1, 5.2.2.2 and 5.2.2.3

— Smaller infill sites and shop top housing within activity centres.

5.2.2.1 HOBSONS BAY HOUSING STRATEGY

The Hobsons Bay Housing Strategy provides a plan for the housing needs of current and future residents over the next 20 years (Hobsons Bay City Council, 2017d).

The housing capacity assessment *conservatively estimates that Hobsons Bay has development sites/opportunities to provide a net gain of 16,958 dwellings*. Housing demand was identified in Volume One as an additional 8,849 new dwellings (443 new dwellings per annum) in Hobsons Bay by 2036. Therefore, there is sufficient capacity to accommodate demand and it is expected that the strategic redevelopment areas alone could accommodate more than half (54%) of the total forecasted dwelling demand by 2036. The Housing Capacity Assessment anticipates an increase in population of around 19,252 residents by 2036. Figure 5-1 identifies where there will be low, moderate and substantial land use change in the City of Hobsons Bay.

The Housing Capacity Assessment conservatively estimates that there are opportunities for 2,654 additional dwellings in 15 of the major activity centres or key neighbourhood centres. Within the study area there is capacity for an additional 1,546 dwellings within Altona Gate, Spotswood, Newport Junction, Borrack Square, The Circle, Vernon Street, Challis Street, Williamstown North station and Williamstown Central, Douglas Parade. Opportunities for additional dwellings is greatest within Altona Gate (203 dwellings), Borrack Square (105 dwellings), Newport Junction (173 dwellings) and Williamstown North station (154 dwellings).

With regard to infill development, the Housing Capacity Assessment conservatively estimates that there is potential for an additional 6,795 dwellings in Hobsons Bay (excluding strategic redevelopment sites and activity centres) through infill development with the General Residential Zone potentially delivering 30 per cent of total infill development opportunities and 70 per cent within the neighbourhood residential zone.

The *Integrated Transport Plan Background Paper 2017* acknowledges that:

"spatial coverage of public transport in the City of Hobsons Bay is uneven and that service levels vary considerably, with reduced bus frequency and service span reinforcing car use and limiting mobility options in some neighbourhoods".

Further, congestion on arterial roads in the north of the municipality is expected to increase, particularly on Millers, Melbourne and Blackshaws Roads with the concentration of future residential development within Altona North and

Spotswood and the growth of the City of Wyndham. The residential growth within the City of Hobsons Bay and the growth within the City of Wyndham, Brimbank and Maribyrnong will also place pressure on the rail network.

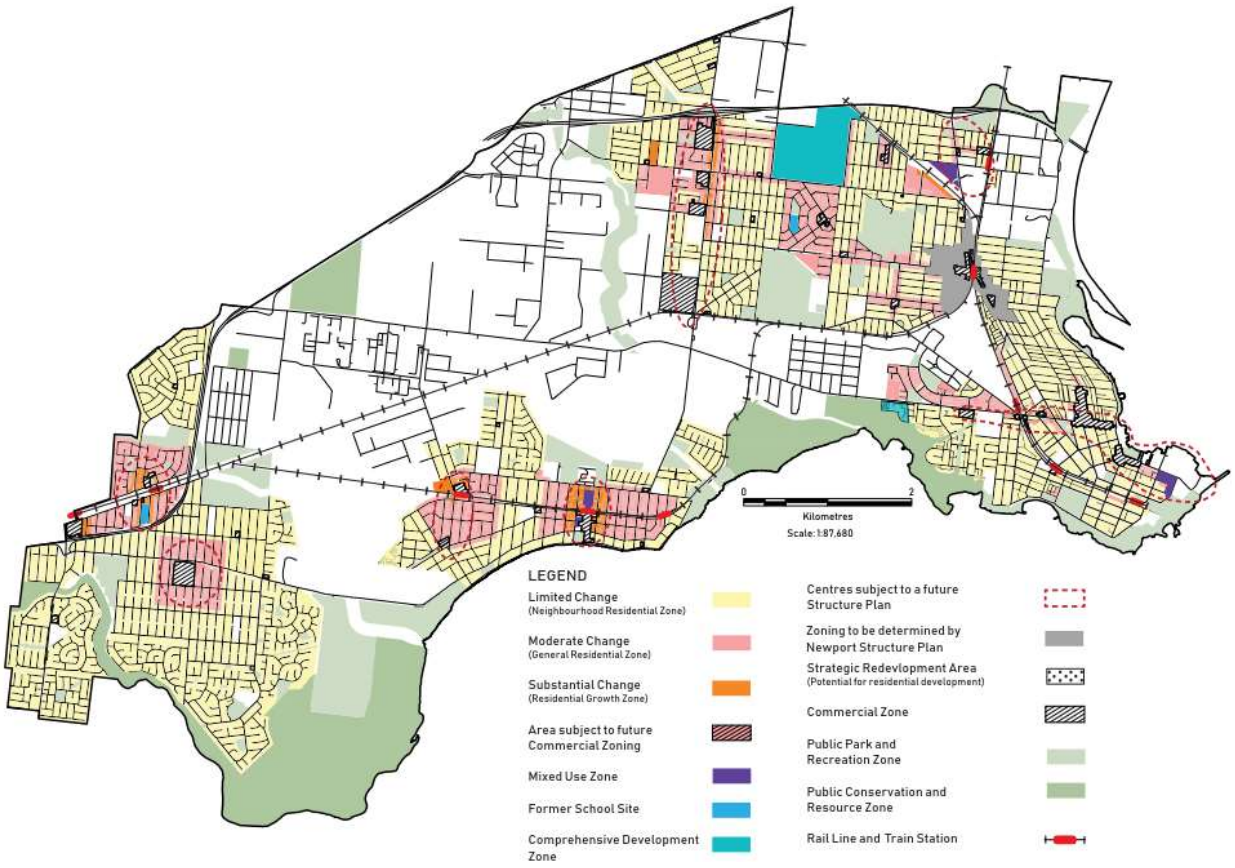


Figure 5-1 Future land use changes in Hobsons Bay

Source: Hobsons Bay City Council, 2019b

5.2.2.2 ACTIVITY CENTRES

The *Hobsons Bay Activity Centre Strategy 2019 (ACS)* has developed a local activity centre network which translates the activity centre typologies designated in *Plan Melbourne* into the local level and context. The ACS has identified that four activity centres will transition to higher order centres over the next 15-20 years. Within the study area it is likely that Spotswood and Precinct 15 will transition to Large Neighbourhood Activity Centres to support future demand for growth. Newport is already functioning as a Large Neighbourhood Centre. Hobsons Bay City Council are currently preparing structure plans for Newport and Spotswood and have recently introduced the Comprehensive Development Plan for Precinct 15 into the HBPS. Background studies are currently being undertaken for the Spotswood Structure Plan, including the traffic assessment. A draft Newport Structure Plan has been prepared and further detail is provided below. It also identifies the Millers Road Spine which recognises the proximity and interdependent functioning of four centres including Altona Gate Major Activity Centre (the northern anchor), Blackshaws Road / Millers Road and Borrack Square Medium NAC and the Millers Junction Enterprise Area (the southern anchor).

The ACS forecasts an increase in retail floor space to increase by between approximately 43,000m^2 and 61,000m^2 between 2014 and 2036. In indicative terms, an additional 8,760m^2 to 27,820m^2 of commercial office space is also forecast for the municipality over the same period to 2036.

The spatial distribution of the local activity centre network is provided within Figure 5-2.

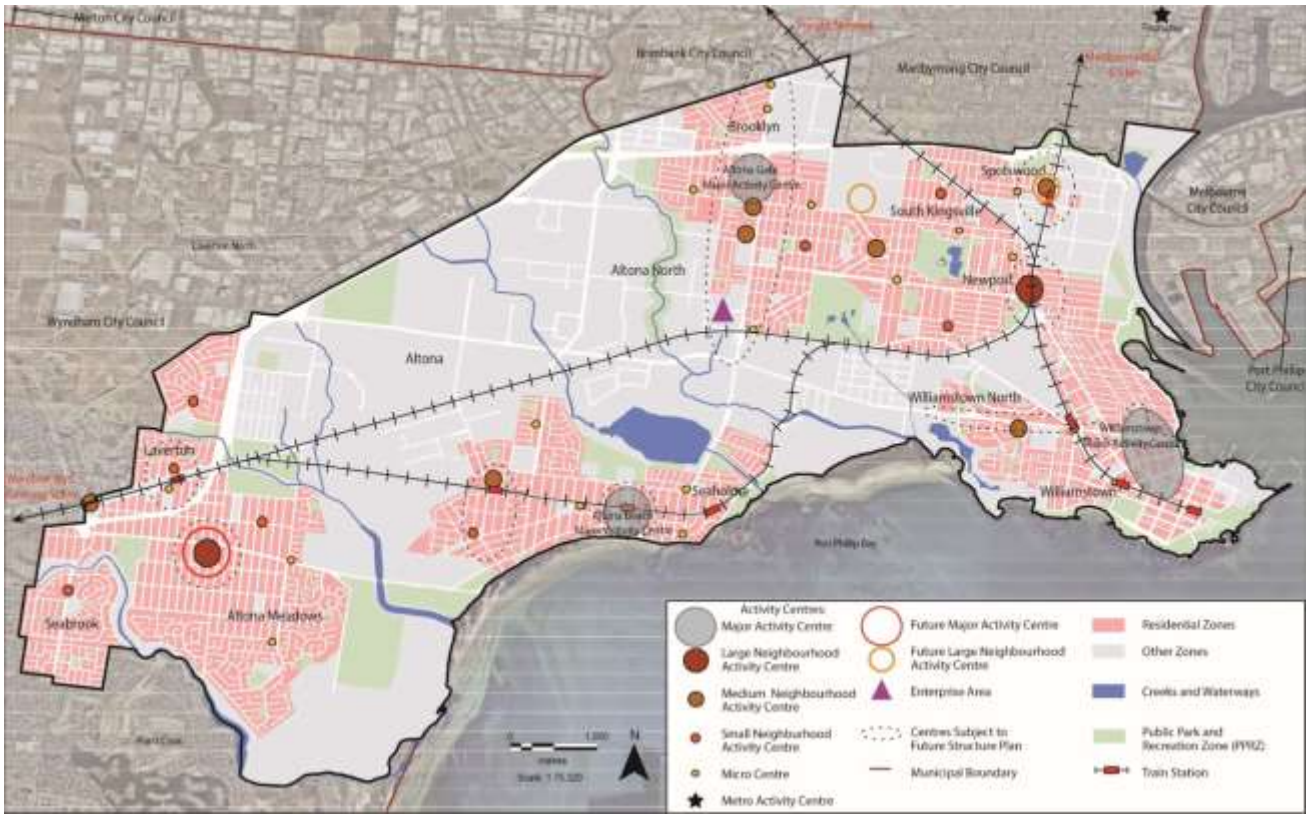


Figure 5-2 Hobsons Bay Local Activity Centres

Source: Hobsons Bay Activity Centre Strategy, 2019

NEWPORT LARGE NEIGHBOURHOOD ACTIVITY CENTRE STRUCTURE PLAN

The Newport Large Neighbourhood Activity Centre (LNAC) Structure Plan (draft) has been prepared to guide land use, development, and public realm improvements. It sets the long-term vision for the Newport LNAC and provides strategies for how the vision will be realised over a 15-20-year planning horizon.

The vision for Newport is:

The Newport Activity Centre will build on its intrinsic village charm and character while recognising the importance and influence of major infrastructure as part of its urban fabric. Quality built form and public realm improvements will provide the key ingredients. Buildings will comprise a mix of heritage and mid-rise contemporary architecture which interprets and responds to Newport's heritage and industrial context. Well-designed streets, plazas and public areas will stitch together scattered spaces and provide a bridge between place and infrastructure needs

Five elements of the place have been identified with directions to guide future urban renewal of the Newport LNAC, namely:

1. **Identity*:*** The construction of the Melbourne Road overpass bisected the village and impacted on the functionality of the civic and commercial centre of the precinct. There is a recognised need to create a sense of arrival, improve legibility and the spatial relationships between the precincts.
2. **Land use and activity:** the railway station is an intrinsic part of the centre and transit plaza on Mason Street is the civic heart. There is a need to capitalise on Newport's access to the PPTN, improve shop top offices and housing, increase retail and leisure activities in the centre and create relationships between the precincts.
3. **Built form and heritage:** Built form and heritage are intrinsically linked in Newport, however there is no consistent or discernible character. A strategy is required to manage growth and guidance on how to protect the heritage character of the area whilst providing for growth.

4. **Public realm and open space*:*** The treatment of public realm in Newport needs to be more consistent and the existing open space network to be better connected with the Activity Centre. Improve bicycle storage at the train station and create a plaza at the eastern end of Melbourne Road and Mason Street.
5. **Access and movement:** Identifies improvements to pedestrian and cycle access within the centre include provide pedestrian crossings at the intersection of Newcastle Street and Melbourne Road, on Melbourne Road to the south of the roundabout and connecting the northern and southern section of Mason Street. There is a need to address the break in the cyclist movement within the core of the Activity Centre. A recommendation is to plan for Metro 2 Project

The structure plan highlights the opportunity to increase retail within NAC, especially convenience, lifestyle focused tenancies, and small-scale commercial uses to help strengthen the fine grain nature and feel of the Activity Centre. Residential development will be encouraged on upper levels to assist in attracting additional commercial uses. The Mason Street precinct and Northern Gateway Precinct are specifically identified as areas suitable for intensification. To increase economic activity increased residential density is to be encouraged above ground level. Large footprint uses which impact the grain, rhythm and levels of activity and occupies prime space that could be used better is to be discouraged. The structure plans recommend changing the zoning within the inner structure plan area from predominately General Residential Zone (GRZ) and Commercial 1 Zone (C1Z) to also include areas of Mixed Use Zone (MUZ), Residential Growth Zone (RGZ) in order to strengthen the mix of land uses within NAC and increase economic activity. The outer structure plan area is proposed to rezone areas to Neighbourhood Residential Zone (NRZ) to protect its character.

Constraints to strategic development sites within the outer structure plan include the Major Hazard Facilities (MHFs) that limits the development of sensitive land uses and density of development within the buffer area.

5.2.2.3 STRATEGIC REDEVELOPMENT AREAS

Whilst significant growth will occur within Precinct 15, planning has also been undertaken for Precinct 16 to facilitate future residential development.

PART PRECINCT 13

Precinct 13 is partially located within the buffer of the Mobil Altona Refinery and comprises a number of separate sub-precincts. A planning permit was recently approved through the Victorian Civil and Administrative Tribunal (VCAT) for an industrial park on the western side of the Precinct. Amendment C96 and PA1328001 (gazetted on the 5 November 2015) applies to 222-238 and 240-258 Koroit Creek Road, Williamstown North. The amendment rezones the land from Industrial 3 Zone to General Residential Zone and applies the Environmental Audit Overlay and a new Schedule 14 to the Design and Development Overlay to facilitate redevelopment of the site for residential purposes (with appropriate site remediation). The combined planning permit application is for the development of part of the land at 240-258 Kororoit Creek Road, Williamstown North for a double storey 90 bed residential aged care facility, subdivision of the land into two lots and the creation of a road reserve and access to a Category 1 Road.

PART PRECINCT 15, ALTONA NORTH

Precinct 15 which is an irregular shaped piece of land located in Altona North and generally bound by Blackshaws Road to the south, New Street to the east, West Gate Freeway to the north and Kyle Road to the west.

Amendment C88 to the HBPS was gazetted on 24 September 2018 and incorporates the *Altona North Comprehensive Development Plan August 2018 and Altona North Development Contributions Plan August 2018* into the HBPS. These documents guide the use and development of Precinct 15. It is anticipated that the site will provide for 3,000 dwellings, a Local Town Centre and Commercial/Mixed Use area, multipurpose and flexible community facility, a legible and properly inter-connected street, bus, bike and pedestrian network and a network of open space (8.86ha).

PRECINCT 16 – CALTEX, SOUTH KINGSVILLE

Amendment C082 was gazetted on 08 August 2013 and sought to rezone land at 38 to 48 Blackshaws Road, South Kingsville (the Former Caltex Terminal) and part 561 to 569 Melbourne Road South Kingsville from Industrial 3 to Residential 1. It also applied a Design and Development Overlay - Schedule 10 (DDO10) to guide future use and development within the Precinct.

PRECINCT 17 – BIRMINGHAM STREET AREA, SPOTSWOOD

Land adjacent to the Spotswood Maintenance Centre was rezoned to allow for its disposal as it is surplus the Victorian Governments requirements. The site is owned by VicTrack and is within the Mixed Use Zone (MUZ). Amendment C122 to the HBPS rezoned an existing access road to the SMC (571-589 Melbourne Road, Spotswood) from Industrial 1 Zone to Mixed Use Zone to be consistent with the remainder of the property. The site is affected by Design and Development Overlay – Schedule 2 (Birmingham Street Area). The amendment was gazetted on 8 November 2018.

THE BRADMILL PRECINCT, YARRAVILLE (MARIBYRNONG CITY COUNCIL)

On the boundary with Hobsons Bay City Council to the east of the railway line, Maribyrnong City Council has sought to facilitate the redevelopment of the Bradmill Precinct.

Amendment C063 to the Maribyrnong Planning Scheme was gazetted on 05 May 2011. It sought to rezone the Bradmill Precinct at 355-359, 361-367 and 371-383 Francis Street Yarraville from part Industrial 1 and Industrial 3 Zone to part Residential 1 and Business 1 Zone. The *Bradmill Precinct Development Plan 2012* (approved 25 September 2012) provides for a new Neighbourhood Activity Centre containing a supermarket, specialty retail outlets, cafes, a library, medical centre and other facilities; approximately 1,300 – 1,500 new dwellings; central open space corridor to link to McIvor Reserve and improvements to Francis Street through the addition of a central median and landscaping treatments. It identifies that VicRoads will extend the Federation Trail along the northern side of the West Gate Freeway past the site in the short to medium term as part of the Principal Bicycle Network.

Planning scheme amendments have been sought for a number of precincts identified by the ILMS, however these have been abandoned or lapsed due to land use conflict between existing industrial land and the proposed residential use.

5.3 FUTURE TRAFFIC AND FREEWAY NETWORK: WEST GATE TUNNEL

VLC and GHD undertook transport modelling for the West Gate Tunnel EES Transport Impact Assessment. The assessment considered projected population, employment and impacts of changes to road and rail networks from other projects to understand the future traffic and freeway network as a result of the West Gate Tunnel Project.

Without the West Gate Tunnel Project, in 2031 the road network performance in Melbourne's western municipalities is forecast to deteriorate. The total number of vehicle trips is expected to increase by over two million in the western municipalities (48 per cent increase).

A comparison of the outputs of the 2031 Project Case shows the West Gate Tunnel Project would have positive impacts across western and central Melbourne. While the West Gate Tunnel Project will have a positive impact for the wider network, as shown in Figure 5-3 total daily traffic volumes in comparison to the scenario without the project will increase along Millers Road and to a lesser extent Hyde Street, Grieve Parade, Blackshaws Road and Melbourne Road, which given the capacity increase included in the modelling along the West Gate Freeway, is to be expected of the arterial roads accessing it. These increases are greater than the 2031 case without the project. It is worth noting that volumes were not provided for the arterial roads to the south of Blackshaws Road.

Figure 5-3 Difference in daily two-way traffic volumes (for all vehicles) - 2031 project case vs 2031 no project case

Source: West Gate Tunnel Project, EES, Chapter 11 – Effects on traffic and transport

New truck bans have been approved to reduce the likelihood of toll avoidance on routes parallel to the West Gate Freeway; and to protect residential areas from the impact of the forecast growth in truck movements. These truck bans will take effect upon completion of the WGTP and are discussed further in section 6.2.2.2. Like existing curfews, trucks with a local destination would be exempt. This would mean it is not possible to fully remove all trucks from the roads in the inner west.

Figure 5-4 shows the difference in truck volumes for 2031 project case and 2031 no project case. It is worth noting that truck volumes were not provided for the arterial roads to the south of Blackshaws Road.

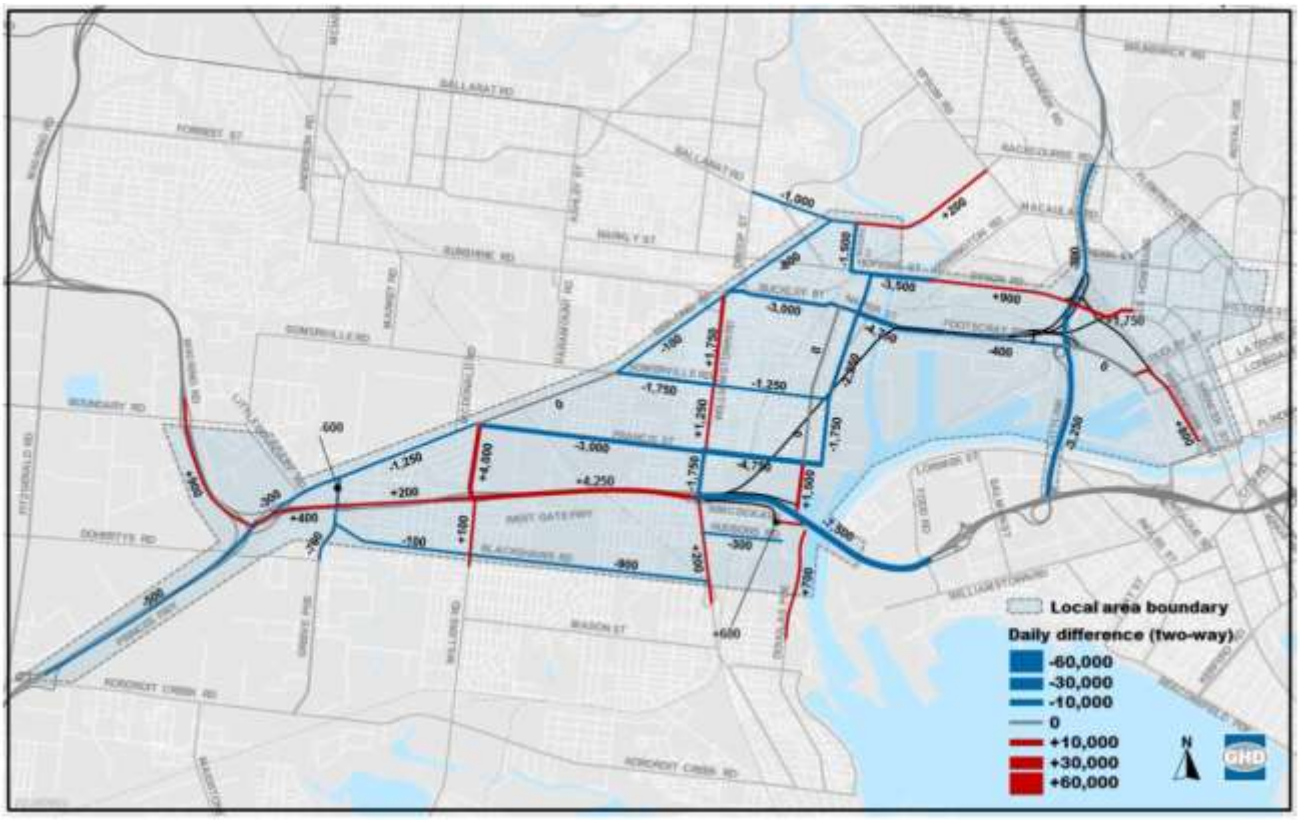


Figure 5-4 Difference in daily two-way truck volumes 2031 project vs 2031 no project case

Source: West Gate Tunnel EES Inquiry Project note 001 - Traffic and Transport - Sensitivity Testing - IAC Request Issue 19 (Updated)

The following points were stated in the West Gate Tunnel EES Technical Report A in relation to the comparison between the 2031 no project case and 2031 project case and show changes to local area truck volumes:

- "*Truck volumes would increase significantly on Millers Road and Williamstown Road. There would be redistribution away from Somerville Road, Francis Street, Buckley Street and Moore Street onto Millers Road and Williamstown Road due to the proposed full-time curfew when vehicles have an origin or destination in Tottenham and Brooklyn*.
- *Truck volumes along Simcock Avenue would increase due to the westbound Hyde Street ramps. This connection redistributed placarded and other local heavy vehicles from Francis Street onto the onto the westbound Hyde Street ramp. The increase in trucks along Simcock Avenue is limited to the section between Douglas Parade and Stephen Street. West of Stephen Street there is not forecast to have an increase in truck volumes*" (GHD 2017, Section 7.8).

Strategic redevelopment sites such as Precinct 15 are being developed at the same time as the West Gate Tunnel Project which will contribute to volumes experienced within the vicinity of the West Gate Freeway. This additional traffic is not directly correlated to the development of the West Gate Tunnel, instead, arises from the provision of additional residential dwellings. GHD completed a Cumulative Impact Assessment to assess the changes in future (2031) traffic volumes with the development of Precinct 15, 16, and 20. The residential development in Precinct 15, 16, and 20 (shown in Figure 5-5) is expected to provide approximately 5,000 additional dwellings. This report finds:

- A large portion of the increase in vehicle volumes from the development of Precinct 15, 16 and 20 will be noticed on Blackshaws Road (west of New Street), Millers Road (south of the West Gate Freeway), and Melbourne Road (south of the West Gate Freeway). Apart from these locations, the additional vehicle trips from the development of these precincts is expected to have minor impact on overall traffic within Hobsons Bay.

- Modelling on Blackshaws Road, Millers Road, and Melbourne Road indicates that there will be an increase of approximately 100-200 vehicles in the AM peak (07:00-09:00 am one-way) along these arterial roads with the full development of Precinct 15, 16, and 20 compared to a no development scenario.
- Truck traffic within the vicinity of the precinct areas is expected to decrease with the residential growth in the Precincts.
- Congestion on Melbourne Road and Blackshaws Road is expected to increase with the full development of Precincts 15, 16, and 20.

Figure 5-5 VITM Zones comprising precincts of HBCC major redevelopment sites

Source: HBCC Transport modelling and analysis, GHD

5.4 FUTURE ACTIVE TRANSPORT NETWORK

5.4.1 STRATEGIC CYCLING CORRIDOR NETWORK PLANNING

The Governments Victorian Cycling Strategy 2018-28 sets out a pathway to transform our approach to cycling across the State and encourage more people to cycle for transport – to school, to stations, to shops and to work. The Strategy prioritises future State investment towards strategic cycling corridors (SCCs) – the arterials of the cycling network that connect people to important destinations: the central city, job and service clusters other important destinations, including key railway stations. The SCC network has been developed to guide planning of the transport network. The Department of Transport has collaborated with local council officers and other key stakeholders over the past 2 years to review the 2015 SCC network and ensure that indicative routes best reflect the aspirations of the Cycling Strategy and maximise future opportunities to provide safer and low stress facilities to encourage more people to cycle for transport. The updated network forms part of a cohesive cycling network based on the well-established Principal Bicycle Network and reflects a "one network" approach to planning the cycling network between the state and local governments. The Department will continue to engage with local councils and communities to refine SCC routes, including the coordination of network priorities for investment.

With the review complete the Department is in the process of replacing the existing publicly available network maps with the updated network.

The SCC network aspires to provide a safe and low level of stress experience to attract more Victorians who are "Interested but Concerned" about cycling. The level of stress approach will be used when investing in routes to provide a safer, lower-stress cycling experience on the SCC network. The level of traffic stress varies across the cycling network depending on motor vehicle conditions (the volumes of vehicles, the speed at which they move and parking activity) and

whether cyclists are in mixed traffic, a cycle lane or a protected cycleway. Conflicts with pedestrians, lighting and wider and smoother paths also impact of level of stress. The treatment to achieve this outcome will be considered on a street by street basis at a detailed development stage. Currently a number of documents exist to provide guidance to practitioners on the design of safer, lower-stress facilities, namely:

- VicRoads design guidance for strategically important cycling corridors
- VicRoads guidance on treating bicycle car dooring collisions
- VicRoads guidance on pedestrian and cyclists treatments at roundabouts
- Various Austroads guides on cycling, safe systems and local roads management
- Various Australian Standards

Further discussion regarding the SCC for Hobsons Bay and surrounding areas can be found in 6.1.5.2

5.4.2 HOBSONS BAY CITY COUNCIL FOOTPATH UPGRADE PROGRAM

Council's footpath program is responding to some of the challenges to walking and cycling by completing the outstanding footpaths in residential areas as a priority within three years from 2016-17 and the relevant non-residential areas in the following seven years. The priority for new footpaths is to improve connectivity to and from activity centres and destination attractions such as schools and childcare centres. Additionally, recent footpath defect hazard inspections have identified $7.5 million of backlog maintenance repair works across the municipality, with Altona, Altona Meadows, Altona North and Williamstown having the highest number of defects.

5.4.3 WEST GATE TUNNEL PROJECT – ACTIVE TRANSPORT IMPROVEMENTS

The West Gate Tunnel Project will provide over 14 kilometres of new and upgraded walking and cycling paths.

The projects relevant to the HBTPS are shown in Figure 5-6 and include:

3. A new north-south link connecting the Kororoit Creek and Federation trails (1)
4. Wider, well-lit paths under the West Gate Freeway at Millers Road (2)
5. Completing the missing link in the Federation Trail with a new off-road path between Fogarty Avenue and Hyde Street and upgrades to the trail from Kororoit Creek to Fogarty Avenue (3)
6. A cycling and pedestrian path near the Newport freight rail line at New Street, South Kingsville that will connect to the Federation Trail, the Bradmill site and Precinct 15 sites (4)
7. A new connection from the Federation Trail to Hyde Street Reserve and Spotswood station that will improve access and connect the neighbourhoods of Spotswood and Yarraville (5) (Westgate Tunnel Project, 2019).

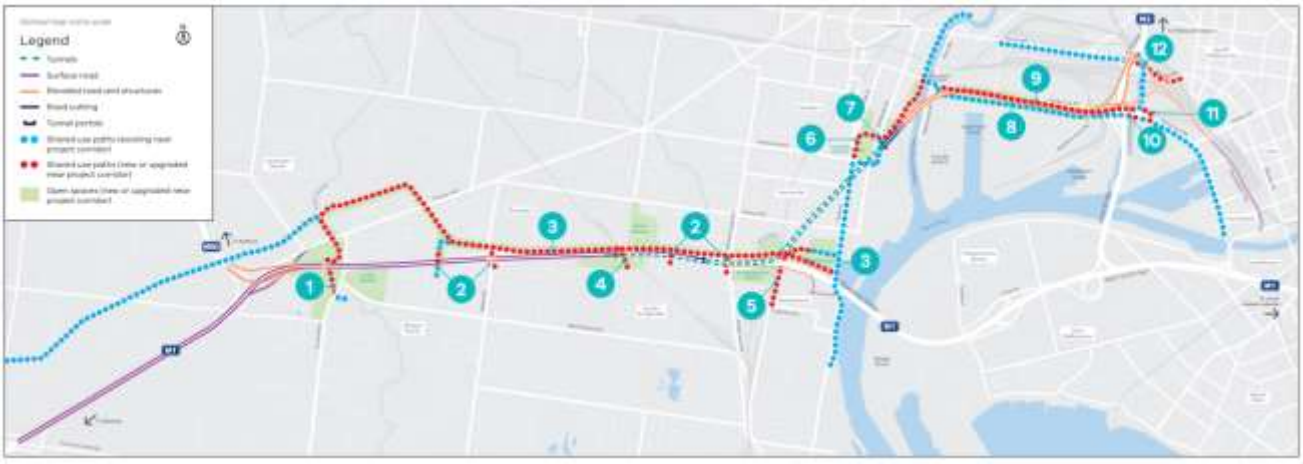


Figure 5-6 Walking and cycling improvements as part of the West Gate Tunnel Project

Source: Westgate Tunnel Project, 2019

The West Gate Tunnel Project will also deliver a 2.5 kilometre veloway (indicated by the number 9 on Figure 5-6) from Footscray to Docklands. This will provide an off-road route that removes six intersections for cyclists. It runs from Shepherd Bridge to the city side of Moonee Ponds Creek.

5.5 FUTURE PUBLIC TRANSPORT

5.5.1 RAIL NETWORK PLANNING

The Network Development Plan – Metropolitan Rail, developed by PTV provides advice to the Victorian Government in relation to a staged approach to upgrading the rail network (PTV, 2012). This plan provides for signalling and capacity improvements to provide additional capacity on congested corridors. It divides the infrastructure upgrades into four stages.

Stage one connected the Werribee, Altona and Williamstown lines to the Frankston line to reduce congestion through the City Loop and provide for a cross city train route. This provided for marginal capacity increases on these lines. It also identified that the development of Regional Rail Link should provide capacity relief for the Werribee line through altered travel patterns.

Stage two proposes an increase to the number of services operating on these three lines to 20 trains per hour. This is a frequency where reliability can start to become impacted, with delays. This is proposed to provide additional capacity.

Stage three proposes marginal increases in train frequency through significant signalling upgrades.

Stage four of the Network Development Plan anticipates that there will be 24 trains per hour operating in the peak periods, on the Werribee, Williamstown and Altona lines into the City, via Footscray. Stage four also identifies a major new rail corridor called Melbourne Metro Two. This corridor was originally Mernda – City – Fishermans Bend. Further investigation is occurring as to whether Melbourne Metro Two should be extended under the Yarra River into the Werribee Line. If this occurs it enables the Werribee Line services to have a reduced commute into the City on a faster alignment. It also takes significant pressure off the existing line via Footscray. This would provide for significantly more capacity than today.

5.6 FUTURE FREIGHT

5.6.1 WESTERN INTERMODAL FREIGHT TERMINAL / BEVERIDGE INTERMODAL FREIGHT TERMINAL

The 2018-19 State Budget included funding to commence the business case for the Western Interstate Freight Terminal (Department of Transport, 2019b). This project will complement the Inland Rail project. The Inland Rail project will have a structural gauge which will enable double stacking of containers. This means that the current intermodal terminals in Melbourne are unsuitable, as the structure gauge does not permit the height required for the Inland Rail project.

Currently two sites are being investigated: Beveridge Intermodal Freight Terminal (BIFT) – which is located to the north of Melbourne, in the suburb of Beveridge. The second site is the Western Interstate Freight Terminal (WIFT) which will be located in the suburb of Truganina. If the WIFT site is chosen there is potential for additional port rail shuttles to utilise this site, reducing the number of heavy vehicles operating on the roads within the study area.

5.6.2 PORT SHUTTLE

In 2017 the Victorian government committed to the development of an intermodal freight terminal at the SCT logistics site at Altona (Department of Transport, 2019). This project should reduce the number of heavy vehicles travelling between the Port of Melbourne and the western suburbs of Melbourne. Currently the Victorian government provides subsidies for container freight to operate via rail (Department of Transport, 2019c). This may provide for an incentive for non-just-in-time freight to utilise port shuttles.

It should be noted however that this terminal is located on the standard gauge network. (Melbourne to Adelaide) This means that there will be a relatively circuitous route to the Port of Melbourne as trains will be required to operate via Sunshine. Currently 94 trains operate on the standard gauge line weekly. The standard gauge has no interactions with the broad gauge on the Werribee or Williamstown railway lines. The standard gauge is predominately single track with low numbers of loops to enable trains to pass. Most of the freight services on this line are operating to Adelaide or Western Victoria. There are only a couple of services operating into the SCT terminal at Altona. There are also four trains weekly operating to and from Adelaide to Melbourne.

If this port rail shuttle was to use the broad-gauge network (the Melbourne suburban railway network) the ability to access the network will become increasingly constrained in the future with the increase in passenger services. There are occasional freight services operating on the line south of Werribee, however these operate via the Regional Rail Line. Currently 156 passenger services operate in each direction on an average weekday between Werribee, Williamstown and the City. In the AM peak approximately 13 passenger services operate to the City between 07:30 and 08:30 am.

5.6.3 EASTERN FREEWAY CITYLINK – WESTERN RING ROAD CONNECTIVITY

The government is moving forward with the West Gate Tunnel, which creates a vital second river crossing and delivers improved transport connections between CityLink and the Western Ring Road. (State Government, 2019, p139).

5.6.4 OUTER MELBOURNE FREEWAY AND RAILWAY LINE

The Victorian government has completed planning work to establish the Planning Acquisition Overlay for the outer orbital freeway and railway line reservation. Further work is required in relation to approvals and finalising the design.

As part of the Minister for Planning Assessment of the WGTP, noting that over time there would be significant pressure on existing inner west freight routes, the Minister for Planning recommended that the Department of Transport commence planning for the ‘northern corridor’ as proposed by the Eddington Report as a complementary link to the West Gate Freeway and the WGTP.

5.7 FUTURE MOBILITY TRENDS

Global megatrends such as demographic shifts, climate change, resource scarcity, accelerating urbanisation and technological advancement are driving the potential significant overhaul of the conventional transport system. Core components or features of a future mobility system include the move to a renewable energy source for vehicles (such as the electricity or hydrogen), the automation of vehicles, the increasing connectivity and data generation/analytics within the transport system and the move towards decreasing vehicle ownership and increase in mobility options through Mobility as a Service (MaaS) and micromobility.

These trends will also change the transport system in Hobsons Bay and transform how people and goods move. The HBITP notes the need to be ready to respond to new technologies and innovations, particularly for sustainable travel options.

5.7.1 FUTURE VICTORIAN ROAD TRANSPORT SYSTEM

In a Victorian context, Infrastructure Victoria has prepared their report "Advice on automated and zero emissions vehicles" for the Victorian Government. In it, they consider a range of possible scenarios of what the road transport system might look like in Victoria in 2046. These are outlined in Figure 5-7.

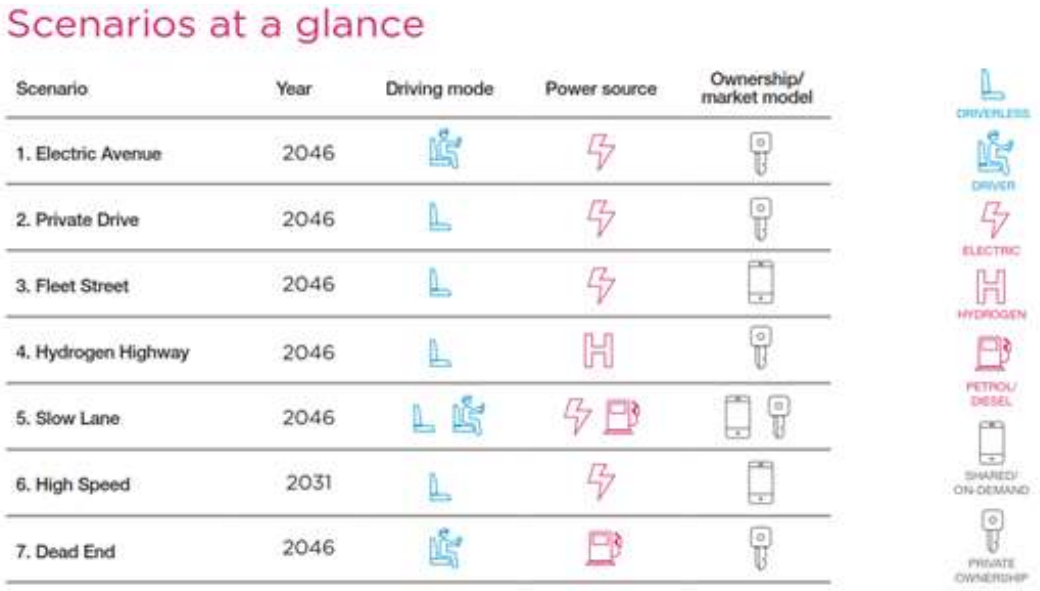


Figure 5-7 Future transport system scenarios

Source: Infrastructure Victoria, 2018a

To support the maximisation of the value and benefit capture of each of these scenarios, the following recommendations were provided by Infrastructure Victoria in a transport and planning context:

- Update Victoria's roads - Update road maintenance and monitoring to take into account the needs of automated vehicles, including changes to lines and signs, roadworks, and road maintenance throughout Victoria, and provision of reliable and timely data to connected and automated vehicles.
- Rethink road space - Incorporate automated and zero emissions vehicles into a transparent road space allocation framework in Victoria, building on existing transport system and place-based planning principles.
- Future-proof projects - Develop specific guidance for business cases for transport projects to account for the risks, opportunities and uncertainties posed by automated and zero emissions vehicles.

- Plan for transport - Develop a transport plan that includes potential impacts of automated and zero emissions vehicles, to enable priority transport investments and reforms to be identified and to support the development of business cases that address transport needs.
- Manage before you build - Ensure Victoria's transport planning considers how non-infrastructure solutions, including transport network pricing, can provide a policy response to address the potential impacts of automated and zero emissions vehicles.
- Integrate new transport options - Incorporate new services like on-demand and mobility as a service into the public transport mix, in preparation for automated vehicles.
- Rethink planning values - Re-examine planning values, assumptions and opportunities related to where people may want to live and work in a future with automated vehicles, and how government should constrain or support these preferences.
- Create planning flexibility - Create flexibility for property owners and local authorities to adapt to future changes due to automated and zero emissions vehicles.

5.7.2 MICROMOBILITY TRENDS

In addition to vehicular trends, future scenarios of what the road transport system might look like in Victoria, will also be influenced by micro-mobility, kerbside and urban realm technologies. In particular, there is an increasing trend in micromobility – the growth in forms of personal transport such as electric bicycles and scooters. These types of personal transport can increase the distances that users can travel and the skills/fitness level required to use them (compared to walking and cycling). This can increase both participation rates and accessibility to public transport interchanges.

In a mixed used area such as Hobsons Bay, micro-mobility is expected to create pressure for more suitable network infrastructure and end of trip facilities to be provided - particularly accessing and in activity centres and transport nodes. The speeds of micromobility may not be suitable for active transport networks (causing conflict on footpaths, cycle ways or shared use paths) but are also incompatible with high speed road ways – particularly those with a high share of light and heavy vehicles. As such, these networks will need to be modified or additional networks created.

6 NETWORK INVESTIGATION - CHALLENGES AND OPPORTUNITIES

Network investigations were undertaken with a view to understanding the challenges and opportunities presented by the Hobsons Bay transport network.

Through the investigation process, three clear themes emerged, and the challenges and opportunities identified have been grouped within them:

- **Theme 1:** Providing accessible connected journeys to employment and recreation to support future growth in Hobsons Bay
- **Theme 2:** Achieving a balanced network that supports access within, into and out of Hobsons Bay
- **Theme 3**: Supporting the sustainable integration of future infrastructure.

Theme 1 considers the broader network challenges and opportunities for accessible connected journeys for Hobsons Bay, particularly for public transport and active transport connectivity.

Theme 2 considers the facilitation of key freight movements into and out of Hobsons Bay and road network congestion, understanding the need to maintain the balance between key freight movements and local land uses.

Theme 3 considers mitigating the impact of future infrastructure on the study area, particularly WGTP.

These investigations:

- provide detailed information to answer questions raised and give understanding to issues
- summarise and collate a range of information sources
- interrogate the challenges further to validate them and to identify underlying causes
- identify the challenges and opportunities for the study area
- identify gaps where further data collection or assessment is required to understand the challenges and opportunities.

The scope of the challenge/opportunity assessments included reviewing:

- current and anticipated land uses within the study area
- current and anticipated changes to the transport network within the study area
- current public transport offering within the study area
- current active transport offering within the study area
- trips from and within the study area by common modes
- current and anticipated freight movements to, from and within the study area
- information on the effects of the WGTP and future infrastructure.

The investigation process also drew on findings from Movement and Place workshops held with key stakeholders, and through a review of community feedback.

DRAWING TOGETHER CHALLENGES AND OPPORTUNITIES – MOVEMENT AND PLACE

Discussion with stakeholders at the movement and place workshops revealed several performance challenges and opportunities. The three most significant topics were:

- **Active Transport**: safety concerns, constrained cross section, bicycle parking issues, poor connectivity, wayfinding, physical barriers;
- **Millers Road**: conflict between Place/Movement functions, congestion, capacity at intersections, conflict between modes, unpleasant environment; and
- **Public Transport**: lack of commuter carparks, poor accessibility, bus reliability and coverage, Altona North Park & Ride is underutilised (route 232 bus), connectivity at Newport station.

Participants were also given the opportunity to discuss key mobility challenges relevant to the study. The purpose of this activity was to draw on the experiences of the stakeholders and understanding of the problems, to unpack these challenges and begin to identify potential response themes. Six key areas of discussion came out of the Movement and Place workshop 2. These challenges and relative scale of the challenge discussion - are presented in Figure 6-1.

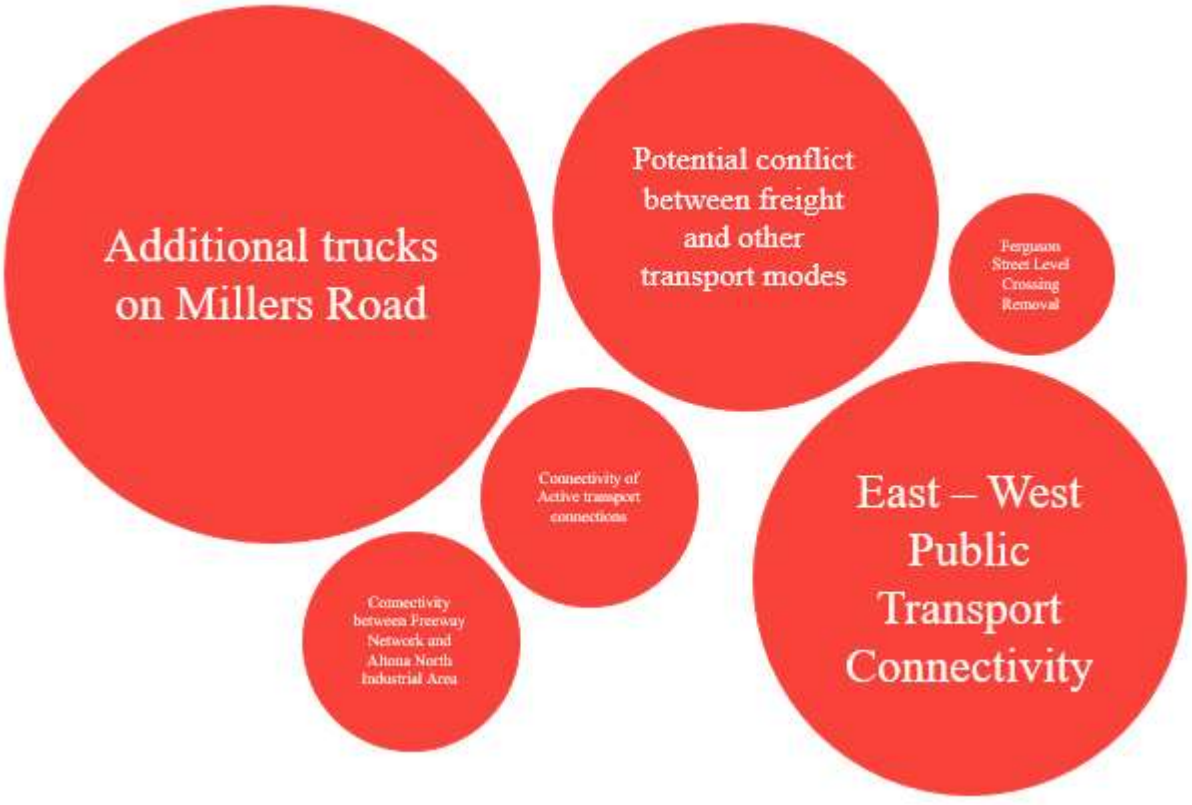


Figure 6-1 Key challenges discussed in M&P Workshop 2

COMMUNITY FEEDBACK

Customer enquiries from the DoT (formerly VicRoads) Enquiry Tracking System (ETS) and the HBCC CHARM system were reviewed as part of this process. A summary of this review has been included in Appendix C.

The HBCC CHARM system tracks comments and complaints from the community. Some relevant topics of note were:

- requests for traffic calming devices to reduce speeds on residential streets
- need for additional safe pedestrian crossings or safety concerns at existing crossings (particularly Hudsons Road).

From the ETS system (VicRoads), some relevant topics of note were:

- Various concerns relating to vehicle congestion, safety, intersection/phasing operations
- Requests for pedestrian crossings (especially Blackshaws Road)
- Cycling safety concerns and request for bicycle lanes.

6.1 THEME 1: PROVIDING ACCESSIBLE CONNECTED JOURNEYS TO EMPLOYMENT AND RECREATION TO SUPPORT FUTURE GROWTH IN HOBSONS BAY

Theme 1 considers the broader network challenges and opportunities for accessible connected journeys for Hobsons Bay, in particular for public transport and active transport connectivity. The challenges and opportunities that were explored under this theme are as follows:

Accessibility

- Strategic redevelopment sites, such as Precinct 15, Precinct 16 and the Bradmill Precinct are all slated to support significant residential growth
- Public transport coverage in the study area is unevenly spread and covers a limited catchment, concentrated primarily on specific areas such as the rail network
- There is a need to improve accessibility along key transport corridors between activity centres / interchanges within Hobsons Bay and key activity centres within the western metropolitan region, in particular (Sunshine NEIC, Werribee Employment cluster, Footscray Metropolitan Activity Centre and Fishermans Bend).
- Accessibility to and from local rail stations
  - Lack of integration between bus services and train services
  - Overcrowded commuter parking (car parking and bicycle parking) at rail stations.

Public transport

- Bus services are infrequent, indirect, unreliable, making for an unattractive transport option
- Bus services are caught in traffic congestion at West Gate Freeway interchanges
- East-west public transport services do not provide complete coverage through the study area, and are infrequent on weekends
- Rail service inconsistencies/infrequent to the Altona Loop.

Active transport

- Insufficient cycle facilities at rail stations, and gaps in the cycle network limit transport options for journeys to work
- Lack of safe and connected pedestrian infrastructure across Hobsons Bay to encourage and support safe walking
- Gaps in the provision of a safe, connected, convenient cycling network for Hobsons Bay discourage residents from completing short trips by bicycle (e.g. trips to work and school, activity centres, and family)
- Lack of quality cycling facilities and infrastructure across Hobsons Bay discourages cycling trips.

This section examines these challenges by assessing:

- Population and employment demographics – now and future
- Accessibility of public transport and method of journey to work
- Bus and rail performance analysis
- Active transport accessibility, particularly to rail services.

6.1.1 DEMOGRAPHIC IMPACTS

6.1.1.1 POPULATION

The population of Hobsons Bay in 2016 was approximately 84,000 people, making up approximately 12 per cent of the western metropolitan Melbourne region (ABS, 2016). Hobsons Bay is forecast to grow by 1.28 per cent annually to 2036, which is lower than the 2.75 per cent growth rate of the western metropolitan Melbourne region. For comparative purposes this growth rate has also been compared to the Stonnington LGA in the eastern metropolitan Melbourne region, which is forecast to grow at a higher rate of 1.41 per cent. The highest growth rate in Hobsons Bay is forecast to occur in Altona North (2.81%).

The Hobsons Bay Housing Strategy adopted by Hobsons Bay City Council in August 2019, outlines where population growth will be directed. A large proportion of population growth in Altona North can be attributed to the proposed development in the Comprehensive Development Zone (Precinct 15 site), bound by Blackshaws Road, New Street, Kyle Road and the WGF. It is anticipated that this development will provide approximately 3,000 additional dwellings, a local town centre and commercial/mixed use area. One of the challenges for this site is the lack of high frequency, rapid public transport services, which may limit accessibility for residents/employees in this area.

As outlined in the Hobsons Bay Housing Strategy, moderate to substantial change in terms of permitted density will occur throughout the study area, with key locations including along Millers Road and around Newport and Spotswood stations. It is recognised that each site will have its own unique accessibility challenges to overcome to encourage a mode shift to sustainable travel modes.

6.1.1.2 EMPLOYMENT

According to the ABS, the total level of employment in Hobsons Bay was approximately 35,000 jobs in 2016. Altona North comprises the largest concentration of employment within Hobson Bay, with 13,539 employees. This area has good access to the freeway network, via the Millers Road, Grieve Parade and Kororoit Creek Road interchanges, however, it experiences a gap in passenger rail access. Altona North is serviced by the high frequency Route 903 SmartBus, which runs north-south along Millers Road through the area and the Route 232, which provides access to the CBD, via Millers Road the West Gate Freeway.

The Department of Transport (DoT) owned Victorian Integrated Transport Model[3] (VITM) forecasts the 2031 employment in Hobsons Bay to grow to approximately 54,000 jobs (3.0 per cent annual growth). Industrial and employment growth within Hobsons Bay will be driven by developments such as Millers Junction Enterprise Area, in Altona North and the Brooklyn Business Park, which VPA are working in partnership with City of Maribyrnong and HBCC to prepare a Comprehensive Development Plan. Both development sites provide good access to the WGF, via Millers Road and are located on the SmartBus Route 903 and Route 232. These sites are not serviced by passenger rail.

6.1.1.3 KEY DEMOGRAPHICS FINDINGS

- Population growth in Hobsons Bay is forecast to grow at a lower rate (1.28%) than the western metropolitan region, which is forecast to grow at 2.75 per cent annually to 2036. By comparison the Stonnington LGA is forecast to grow at 1.41 per cent annually
- The highest population growth in Hobsons Bay is forecast to occur in Altona North (2.81%), which is likely to be attributed to the re-development of strategic sites, such as Precinct 15
- Victorian Integrated Transport Model[4] (VITM) forecasts the 2031 employment in Hobsons Bay to grow to approximately 54,000 jobs (3.0% annual growth), compared to 35,000 jobs in 2016. Industrial and employment

[3] VITM18_v1_14 as of November 2018, Department of Transport
[4] VITM18_v1_14 as of November 2018, Department of Transport

growth within Hobsons Bay will be driven by developments such as Millers Junction Enterprise Area, in Altona North and the Brooklyn Business Park.

6.1.2 ACCESSIBILITY

6.1.2.1 REGIONAL ACCESSIBILITY

The designated National Employment and Innovation Clusters (NEICs), Metropolitan Activity Centres (MACs) and other precincts are critical to the growth across the western metropolitan region (refer to section 4.1.1). The western sub region is experiencing strong population and employment growth, which is placing greater demand on transport infrastructure and services.

According to the EES studies, the population in the western municipalities is predicted to grow by 44 per cent, compared to the Victorian average of 28 per cent. However, the population growth is not matched by an equivalent jobs growth in this region, which creates a disconnect between where people live and work, resulting in the need to travel to employment (GHD, 2017).

Figure 6-2 shows the NEICs, MACs and other precincts within the western subregion, representing the key employment clusters that will drive transport demand, including demand from Hobsons Bay.

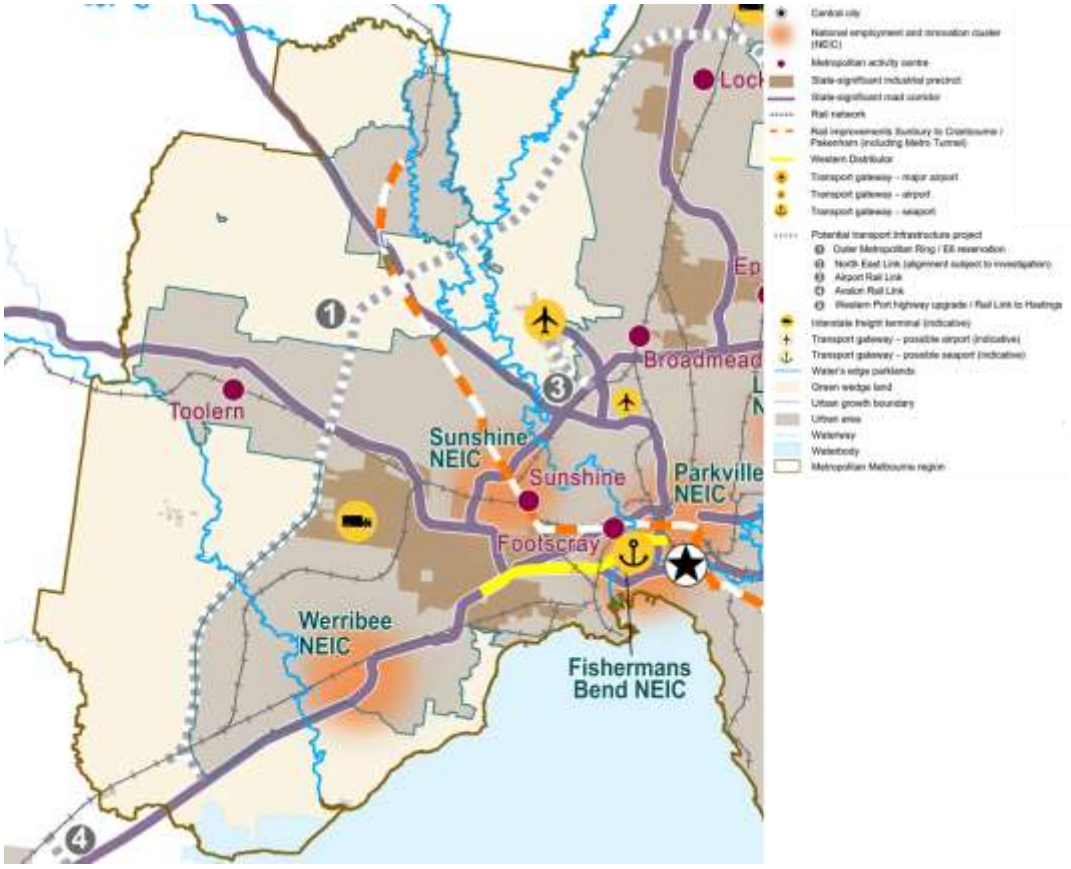


Figure 6-2 Map of Western subregion – employment clusters

Source: DELWP, 2017. Plan Melbourne 2017-2050

Employment can be accessed from Hobsons Bay with:

- North-south and east-west arterial routes that provide access to the WGF, M80 and Princes Freeway
- Rail access to the central city, Werribee NEIC and Footscray MAC

- High frequency SmartBus (route 903) access north-south to Sunshine NEIC
- Express bus access (route 232) to the central city, via the WGF
- Cycling access to the Fishermans Bend NEIC, via the Federation Trail, Coastal Trail and West Gate Punt Ferry service.

Further discussion is provided in the sections below in relation to the challenges and opportunities associated with the accessibility for these transport modes to/from Hobsons Bay and the employment clusters.

6.1.2.2 JOURNEYS TO WORK FROM HOBSONS BAY

Figure 6-3 shows the workplace locations (by Local Government Area) of the employed population of Hobsons Bay. Just over half of the employed population of Hobsons Bay have a work destination either in Melbourne City (26.5%) or within Hobsons Bay (24.9%). Other notable LGAs workplace locations for residents of Hobsons Bay include Wyndham (9.6%), Maribyrnong (7.16.4%), and Brimbank (5.8%).

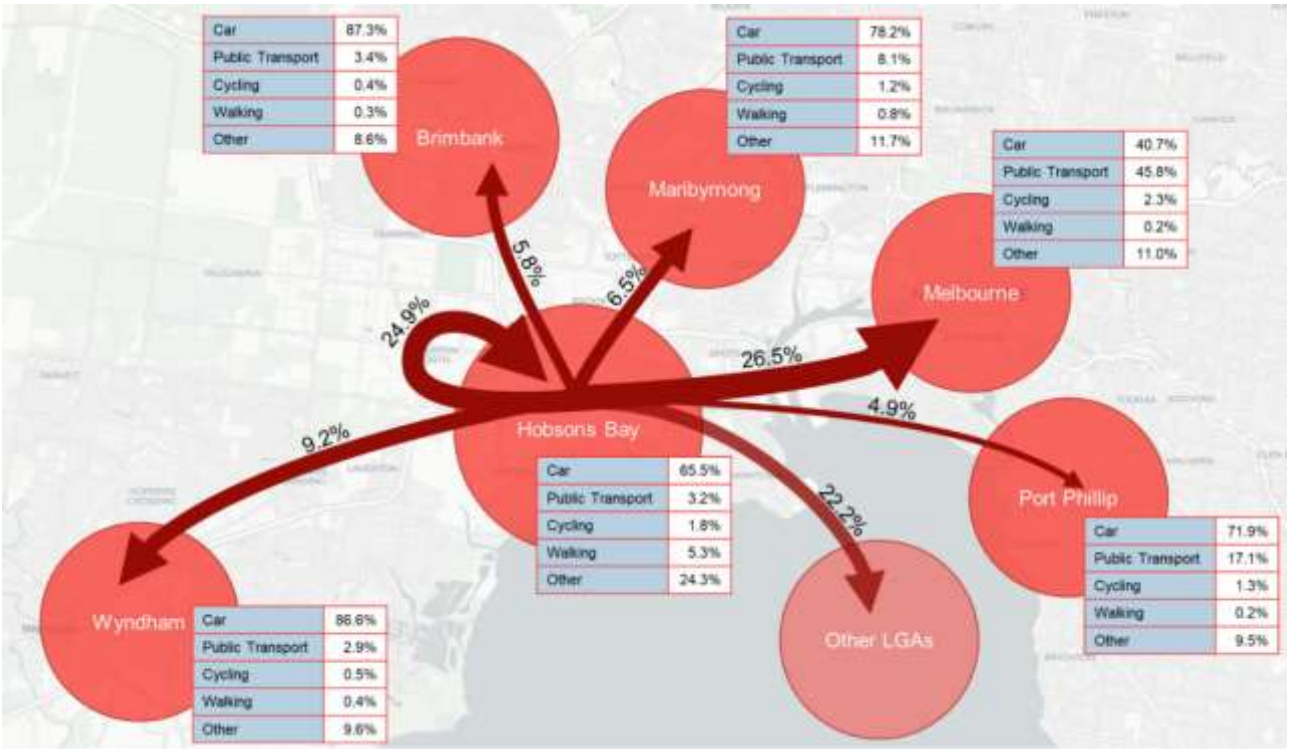


Figure 6-3 Journey to Work from Hobsons Bay to Place of Work LGA (2016)

Source: ABS 2016

As shown in Figure 6-4 the use of cars from Hobsons Bay to the Melbourne LGA is higher than average for LGAs within Greater Melbourne. As the Melbourne LGA has a high density of public transport, relatively high levels of congestion and parking costs, this level of car use indicates car dependence generally from Hobsons Bay as other alternatives are not considered attractive.

Other LGAs have a similar proportion for journey to work in Melbourne LGA by car, but have less rail lines and stations than Hobsons Bay. These LGAs are:

- Wyndham – three stations on the Werribee line
- Manningham – no rail service
- Brimbank – six stations on the Sunbury line

— Hume – four stations on the Craigieburn line, Sunbury station on the Sunbury line.

In comparison, Hobsons Bay is served by two commuter train lines (Werribee and Williamstown) from nine train stations.

	Journey to Work: Method of Travel to Melbourne (LGA)		
Greater Melbourne: Origin LGA	**Motor Vehicle**	**Public Transport**	**Other**
Melbourne	10.7%	32.3%	57.0%
Yarra	18.5%	48.2%	33.4%
Darebin	25.4%	54.8%	19.9%
Moreland	25.6%	52.5%	21.9%
Whitehorse	26.0%	62.5%	11.5%
Stonnington	26.7%	56.6%	16.7%
Greater Dandenong	26.7%	63.2%	10.1%
Port Phillip	27.6%	50.7%	21.7%
Monash	27.8%	61.0%	11.2%
Casey	29.0%	59.7%	11.4%
Maroondah	29.0%	58.8%	12.2%
Glen Eira	29.2%	58.2%	12.6%
Banyule	30.0%	56.2%	13.8%
Kingston	30.3%	56.9%	12.8%
Cardinia	30.8%	53.5%	15.7%
Yarra Ranges	31.2%	55.9%	12.9%
Maribyrnong	33.3%	50.8%	15.9%
Boroondara	33.7%	52.1%	14.2%
Knox	35.3%	53.5%	11.2%
Frankston	36.2%	50.1%	13.7%
Bayside	36.6%	49.7%	13.7%
Whittlesea	36.6%	52.2%	11.2%
Nillumbik	37.8%	49.8%	12.3%
Moonee Valley	38.7%	45.5%	15.8%
Wyndham	39.6%	49.9%	10.5%
Hobsons Bay	**40.3%**	**46.2%**	**13.5%**
Manningham	41.6%	48.0%	10.3%
Brimbank	42.3%	47.0%	10.8%
Hume	42.4%	46.2%	11.5%
Melton	45.7%	43.4%	10.9%
Mornington Peninsula	48.7%	34.0%	17.4%
Average	**32.7%**	**51.6%**	**15.7%**

Figure 6-4 Method of travel to Melbourne LGA for journeys to work

Source: ABS 2016

6.1.2.3 PUBLIC TRANSPORT ACCESSIBILITY FROM HOBSONS BAY

The time taken to access key employment hubs from Hobsons Bay by public transport in the AM peak has been mapped for:

— Melbourne CBD, using Flinders Street station as a proxy (Figure 6-5)

— Footscray Metropolitan Activity Centre (Maribyrnong), using Footscray station as a proxy (Figure 6-6)

— Sunshine Metropolitan Activity Centre (Brimbank), using Sunshine station as a proxy (Figure 6-7).

While a large proportion of journey to work trips in the AM peak are to Wyndham (9.2%), it does not have an activity centre of equivalent density for the purposes of a meaningful assessment.

Travel time catchments as plotted in the figures are indicative only, and due to bus service frequency, may not pick up all catchments surrounding all bus stops. They include walking as a mode and have been generated from the public transport timetable, rather than actual trip times.

These travel time catchments have then been interpreted by using the published timetable to generate hypothetical trips and trip times for journeys from within the catchment.

The figures show that accessibility to key employment locations by public transport varies markedly within the study area. There are several areas that it would take 60 minutes or longer to get to a key employment hub using public transport.

The fastest PT access to Footscray as shown in Figure 6-6 is achieved through walking to the train stations in the study area. Similar trips times within the 45-minute band can be achieved by either catching direct bus services to Footscray (Route 411,412, 414) or catching a bus to a station to then train to Footscray.

The fastest PT access to Sunshine (Figure 6-7) is provided by the Route 903 bus along Millers Road (30 minutes). Trips to Sunshine within 45 minutes can be achieved via bus services connecting with the Route 903, or via the less direct Route 471 and 472 bus routes. Trips starting within the walking catchment of the train stations can also be made within a 45-minute period, by interchanging at Footscray.

Car travel in the inner western suburbs is expected to provide faster access to the destinations analysed in this section compared with the existing public transport network and conditions.

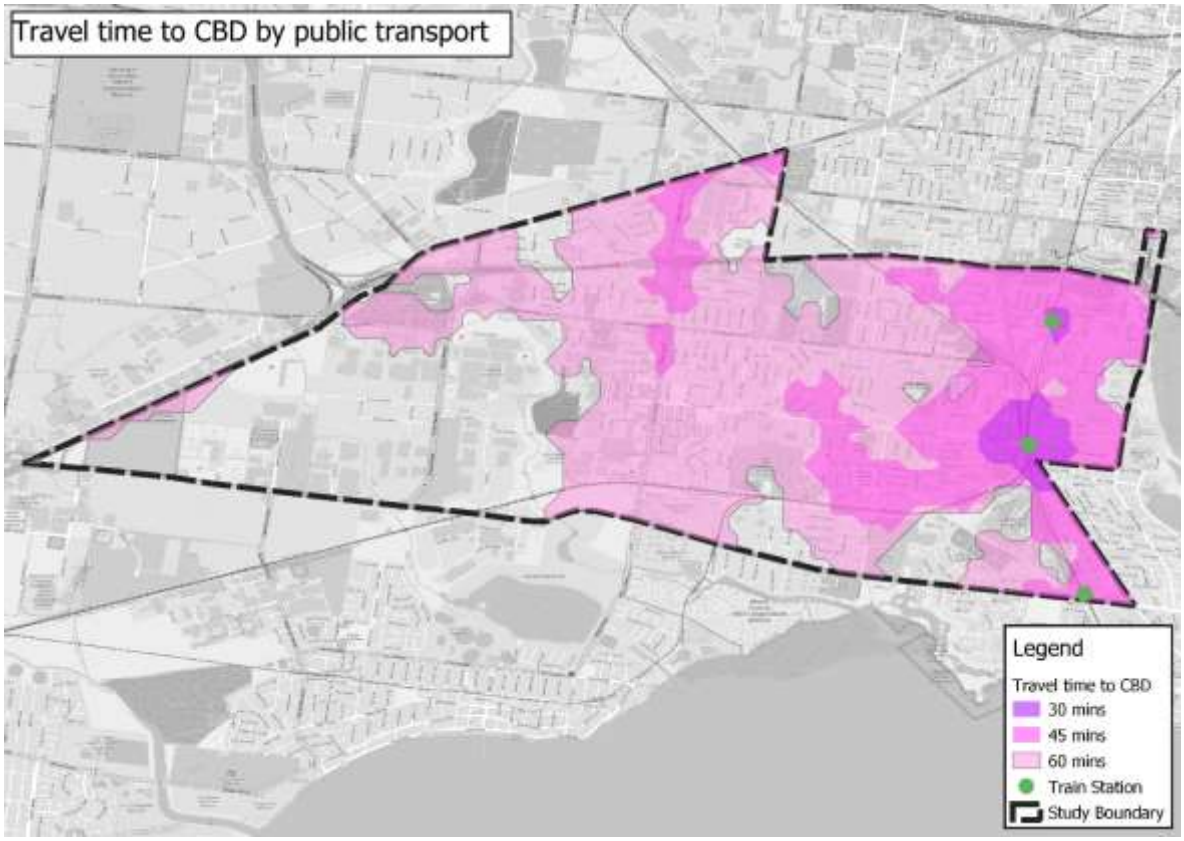


Figure 6-5 Travel time to CBD by public transport in AM peak

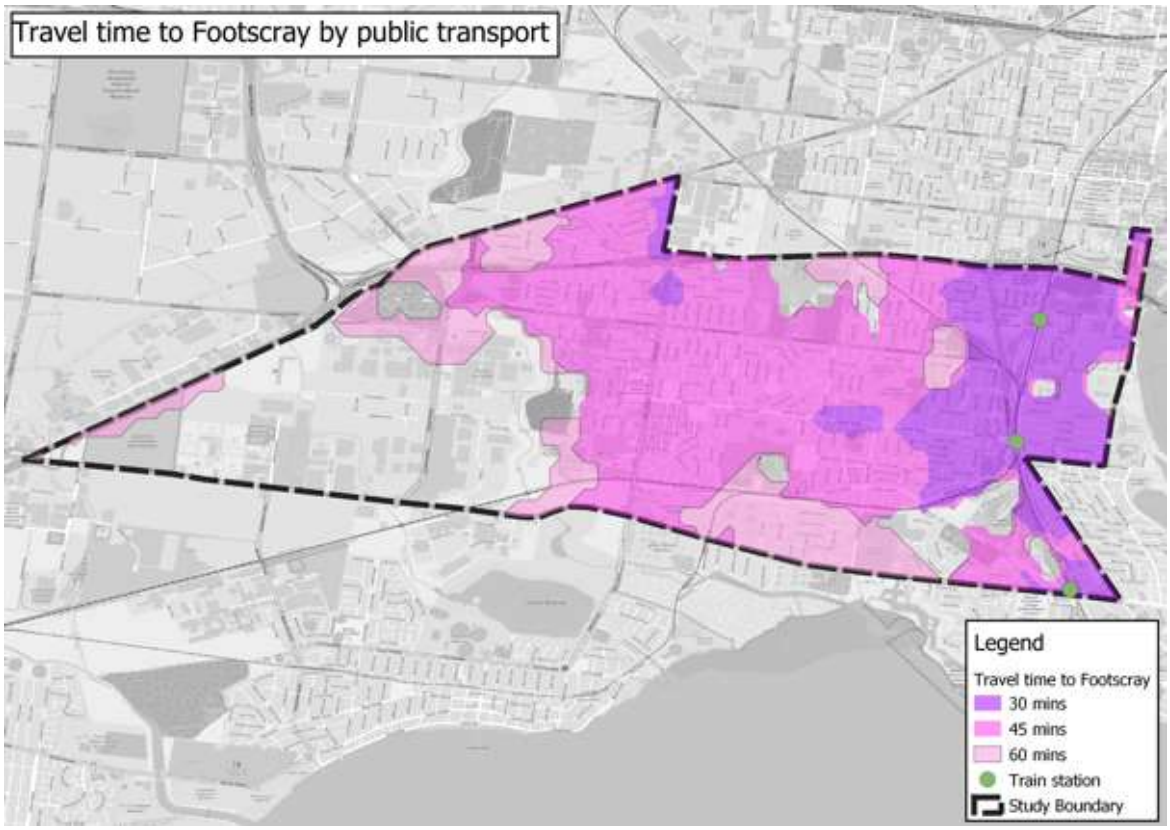


Figure 6-6 Travel time to Footscray by public transport in AM peak

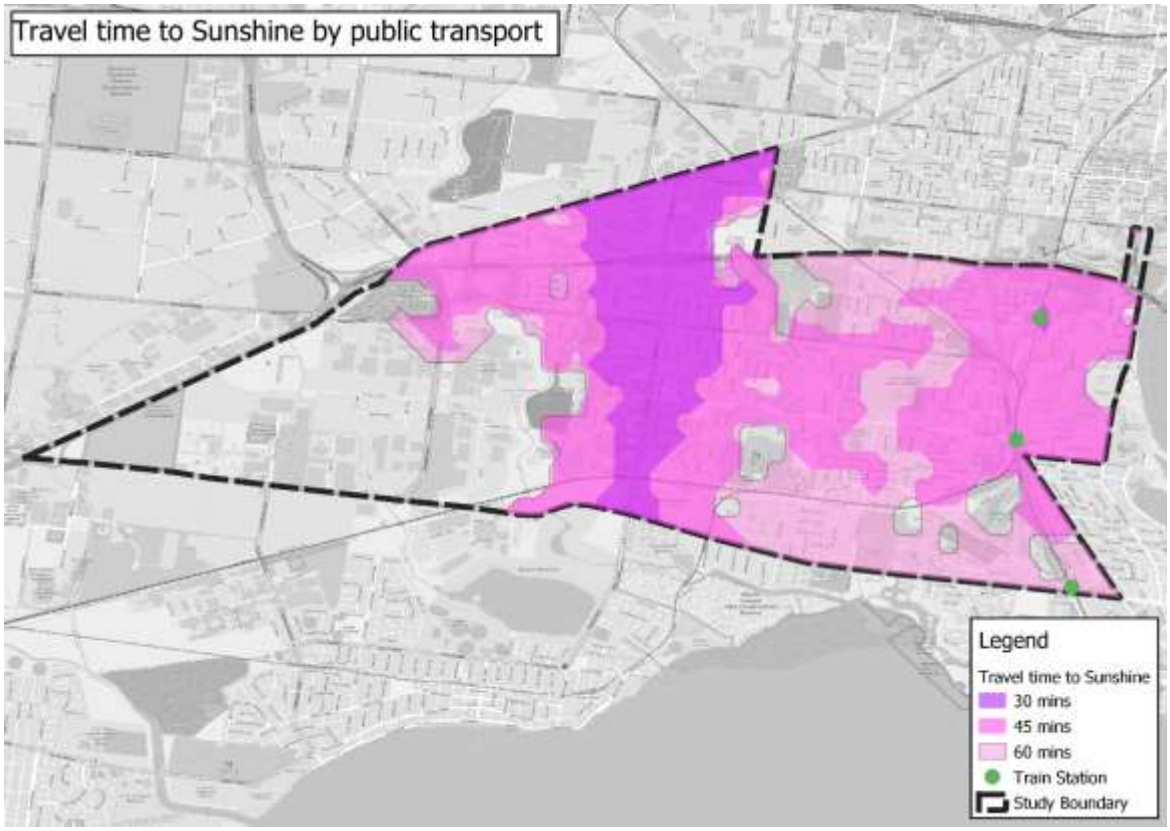


Figure 6-7 Travel time to Sunshine by public transport in AM peak

6.1.2.4 JOURNEYS TO WORK TO HOBSONS BAY

Journey to work for destinations within Hobsons Bay is dominated by private car travel, with 87 per cent travelling by car to their employment destination in Hobsons Bay. This compares closely with the western metropolitan Melbourne average (86.8%) but significantly higher than the comparison LGA of Stonnington (59.2%).

Greater Melbourne: Journey to Work Destination	Motor Vehicle	Public Transport	Cycling	Walking	Other
Melbourne	30.2%	50.3%	3.3%	5.0%	11.2%
Stonnington	59.2%	17.3%	1.6%	5.5%	16.4%
Maribyrnong	71.9%	9.9%	1.3%	3.1%	13.8%
Whittlesea	80.5%	3.5%	0.3%	1.2%	14.4%
Wyndham	80.9%	2.8%	0.4%	1.4%	14.6%
Brimbank	83.7%	3.4%	0.3%	1.0%	11.6%
Hobsons Bay	**87.4%**	**4.1%**	**0.9%**	**1.8%**	**5.8%**
Average	**70.5%**	**13.0%**	**1.2%**	**2.7%**	**12.5%**

Figure 6-8 Journey to Work Destination by mode (2016)

Source: ABS 2016

It is worth noting that the areas within Hobsons Bay that have better rail access also have lower car mode share for journey to work (e.g. Newport with 76.5 per cent and Williamstown with 81.6 per cent, see Figure 4-5 in Existing conditions).

Public transport mode share for journey to work is low for areas not served by rail and higher for those with rail access.

The trends above are similar for the method of travel to work for Hobsons Bay residents, with higher car mode shares for residents in areas without rail access and higher public transport mode shares for areas with rail access.

6.1.2.5 ACCESS TO STATIONS

There are different elements that make interchanging at a rail station an attractive experience relative to other transport alternatives (e.g. driving to their destination), such as:

- Pedestrians require safe and secure walking access
- Car drivers require parking for private vehicles, drop off areas and kiss and ride
- Cyclists require safe access and parking
- Bus users need their service to integrate with the station and for their combined bus/train trip time to be competitive relative to other alternatives.

Key Hobsons Bay interchange locations and their relevant interchange features are shown in Figure 6-9.

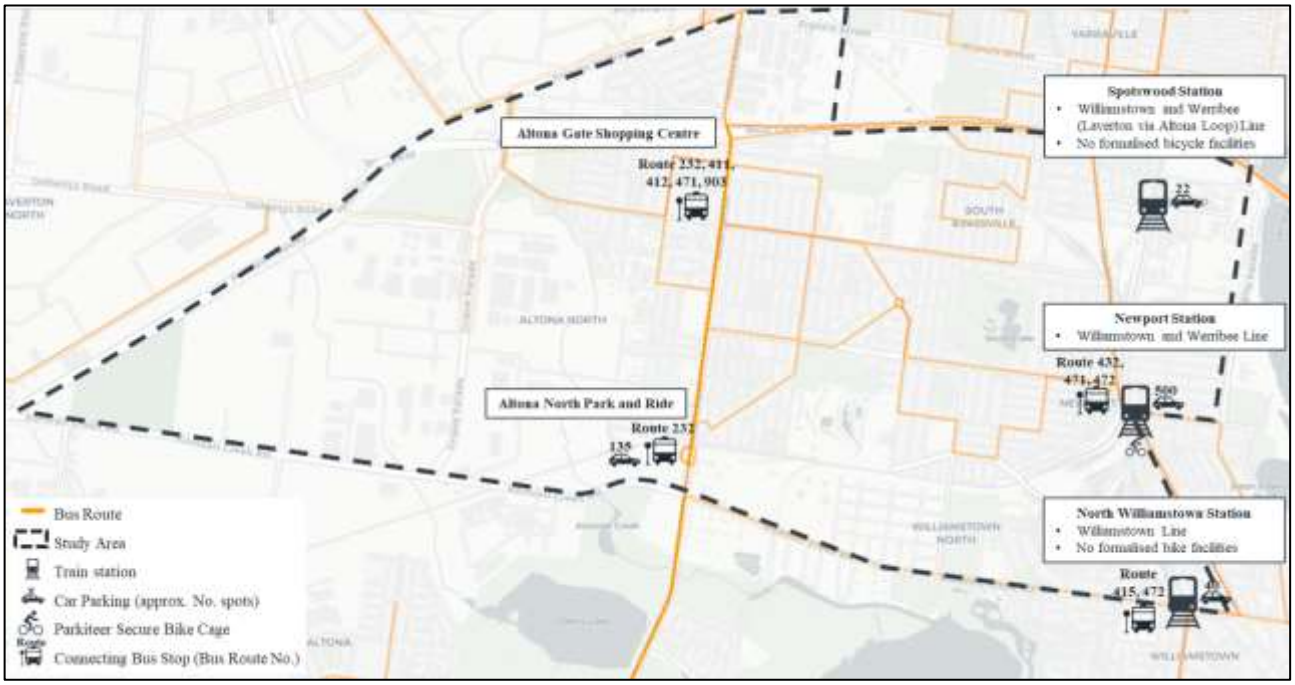


Figure 6-9 Interchange at train and bus stations within study area

MODE SPLIT TO STATIONS

Newport station is the station that attracts the largest number of rail patrons in the study area. Newport station has approximately four times as many entries and exits in the AM and PM peaks compared to North Williamstown station and Spotswood station (see section 7.1.4).

Figure 6-10 shows the mode split access to the train stations within study area. The main access mode to North Williamstown and Spotswood station is by walking (77% and 65% respectively), whilst access to Newport station is mainly via car (46%) and walking (37%). The low percentage of commuters walking to access Newport station despite the high residential population is likely influenced by poor pedestrian connectivity. In comparison, cycling and public transport access to these train stations is relatively low.

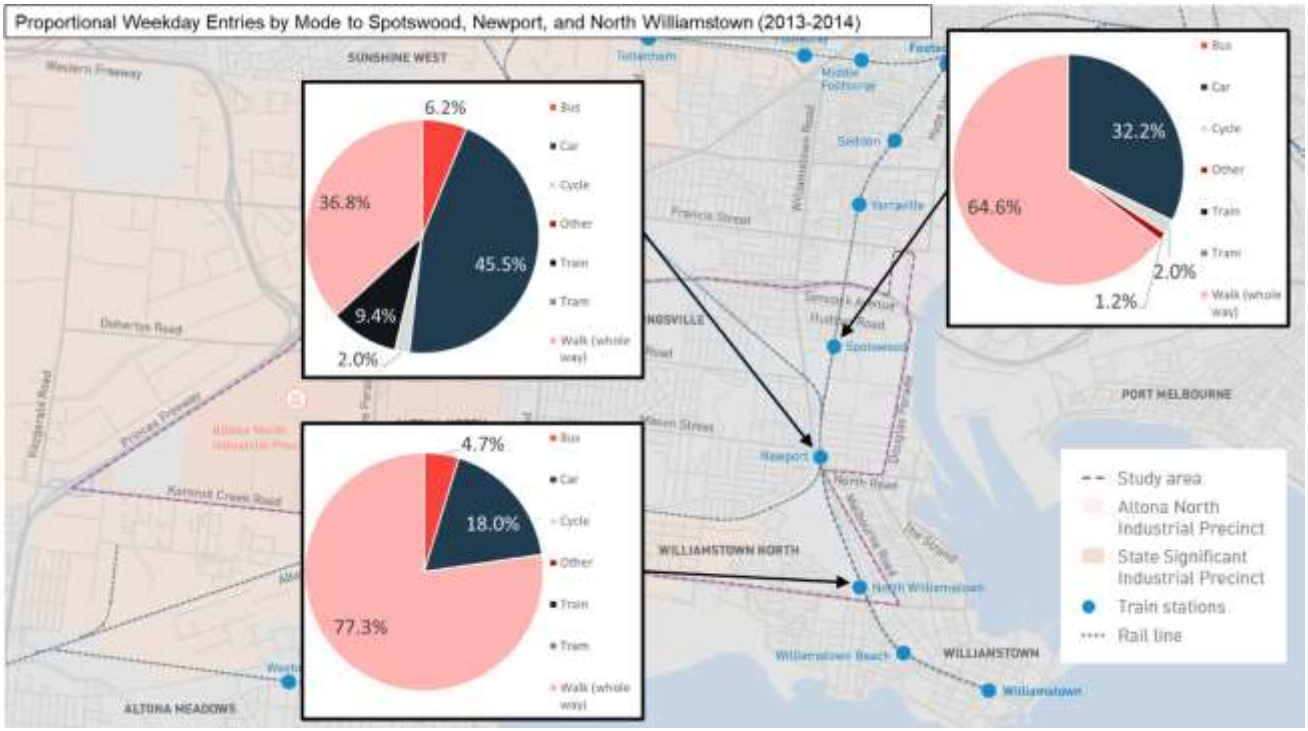


Figure 6-10 Journey to train stations by mode (weekday – 2013/2014)

Source: Passenger Activity by Metropolitan Station 2008-09 to 2013-14, PTV 2015

BUS-RAIL COORDINATION

While there are three stations within the study area, Newport station is the primary bus-train interchange because:

- Newport station as a dedicated bus interchange and is served by the Route 432, 471 and 472 bus services
- While North Williamstown is served by the Route 415 and 472 bus services, they provide access to the station for a relatively minor catchment within the study area
- There are no connecting bus services at Spotswood station.

The potential for coordination was explored by analysing the difference between scheduled time and arrival time for the Route 432, 471 and 472 buses at Newport station, as shown in Figure 6-11.

With approximately 40 per cent of services arriving four minutes or later than scheduled, coordination between services is likely to require such a significant buffer between bus and train services that it may not add much value.

This issue can be potentially managed by identifying what is preventing buses from arriving at their scheduled times, or by increasing service frequencies such that coordination is no longer required.

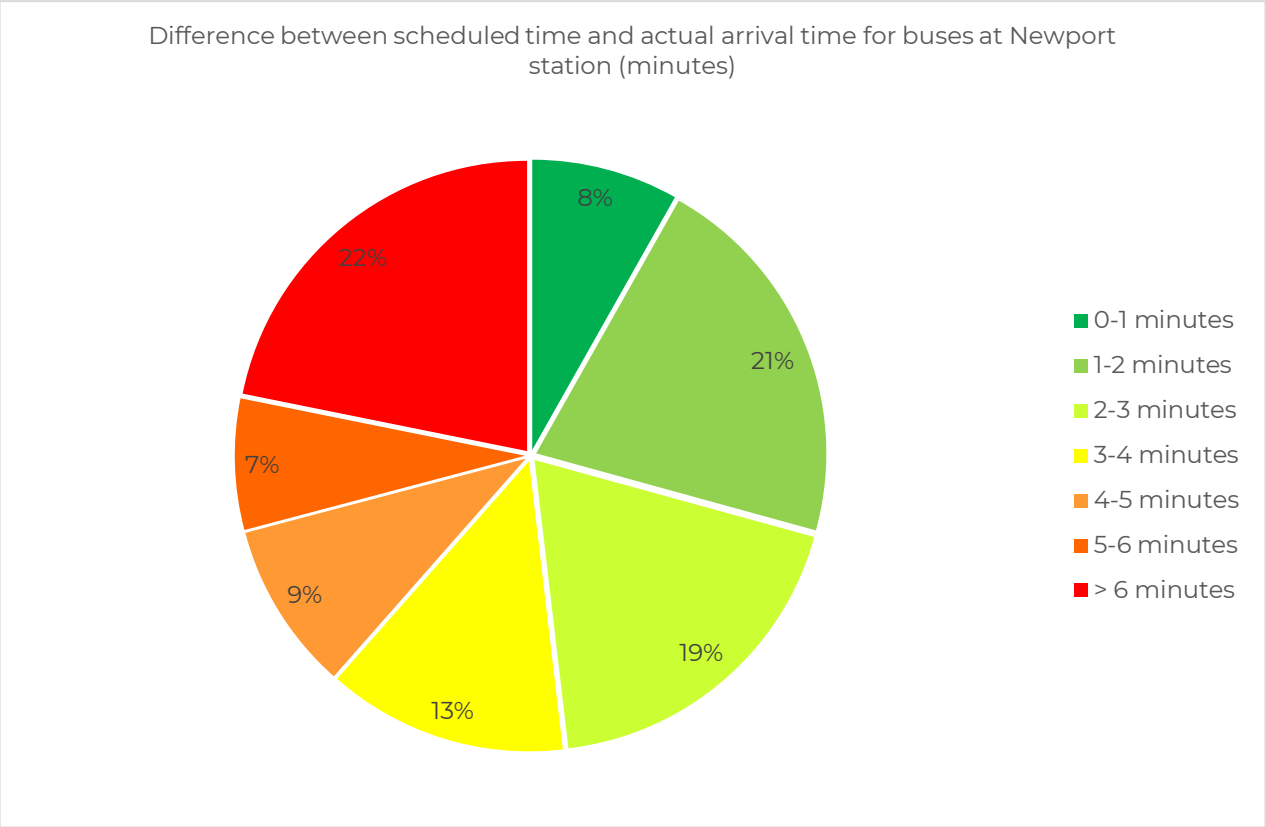


Figure 6-11 Difference between scheduled time and actual arrival time for buses at Newport station (minutes)

PARKING AT STATIONS

Park and ride car parking spaces are in high demand in Newport, with the approximately 500 car parking spaces available near the station. There is parking specifically signed for use by people interchanging onto the train network, and nearby untimed parking. Users of the untimed parking include people visiting The Substation (a multi-purpose art space), Newport Library, and the Newport Community Hub. Due to people parking to access Newport station before these other sites open, access to them may be inhibited. The parking is typically near or close to capacity.

Time restricted parking 4P zones have been implemented at parking spaces near Newport Community Hub. Council has also recently introduced new parking restrictions in the residential streets surrounding the station to discourage the spread of park and ride parking into local residential streets.

There is limited parking available at Spotswood station and North Williamstown station.

Figure 6-12 Car parking at Newport station – midday on Friday 19 October 2018

Newport station has a Parkiteer cage, and a limited number of bike hoops. The Parkiteer cycling cage at Newport station is near capacity – it has 26 spaces and average daily usage of 24 spaces. Cycling demand at Newport station regularly exceeds supply of bike parking space, and HBCC has found that commuters are regularly parking informally by locking their bicycles to fences or railings as shown in Figure 6-13.

There are no other Parkiteer cages located at the other rail stations within the HBTPS study area.

Spotswood has a lower demand for bicycle parking, but this may be due to a lack of facilities as there are only a limited number of bike hoops and limited opportunities for informal parking.

Parkiteer at Newport station
(Douglas Rowland, 4/6/2018)

Informal bike parking, Market St, Newport
(Douglas Rowland, 4/6/2018)

Informal bike parking, Market St, Newport
(Douglas Rowland, 4/6/2018)

Informal bike parking, Hall St, Newport
(Douglas Rowland, 4/6/2018)

Figure 6-13 Informal bicycle parking at Newport station

Source: Note on bicycle parking at Newport and Spotswood, HBCC 2019

ACCESS TO STATIONS VIA PUBLIC TRANSPORT AND WALKING

The ability to access train stations within the study area by public transport and walking was assessed using Conveyal Analysis[5], with 15 minute catchments for the weekday AM peak (07:00-09:00) generated as shown in Figure 6-14.

The 15-minute public transport catchment represents an ideal scenario where:

- Services are assumed to run to their timetable
- PT users are assumed to leave at exactly the right time to catch their bus.

It is noted that in practice these assumptions likely do not reflect the experience of public transport users within the catchment due to the punctuality and reliability issues (as identified in Section 7.1.3), and the 15-20 minute wait experienced by users if they miss their bus.

Analysis of walking networks and their connectivity to key locations within the study area, including train stations is included in Section 7.1.5.

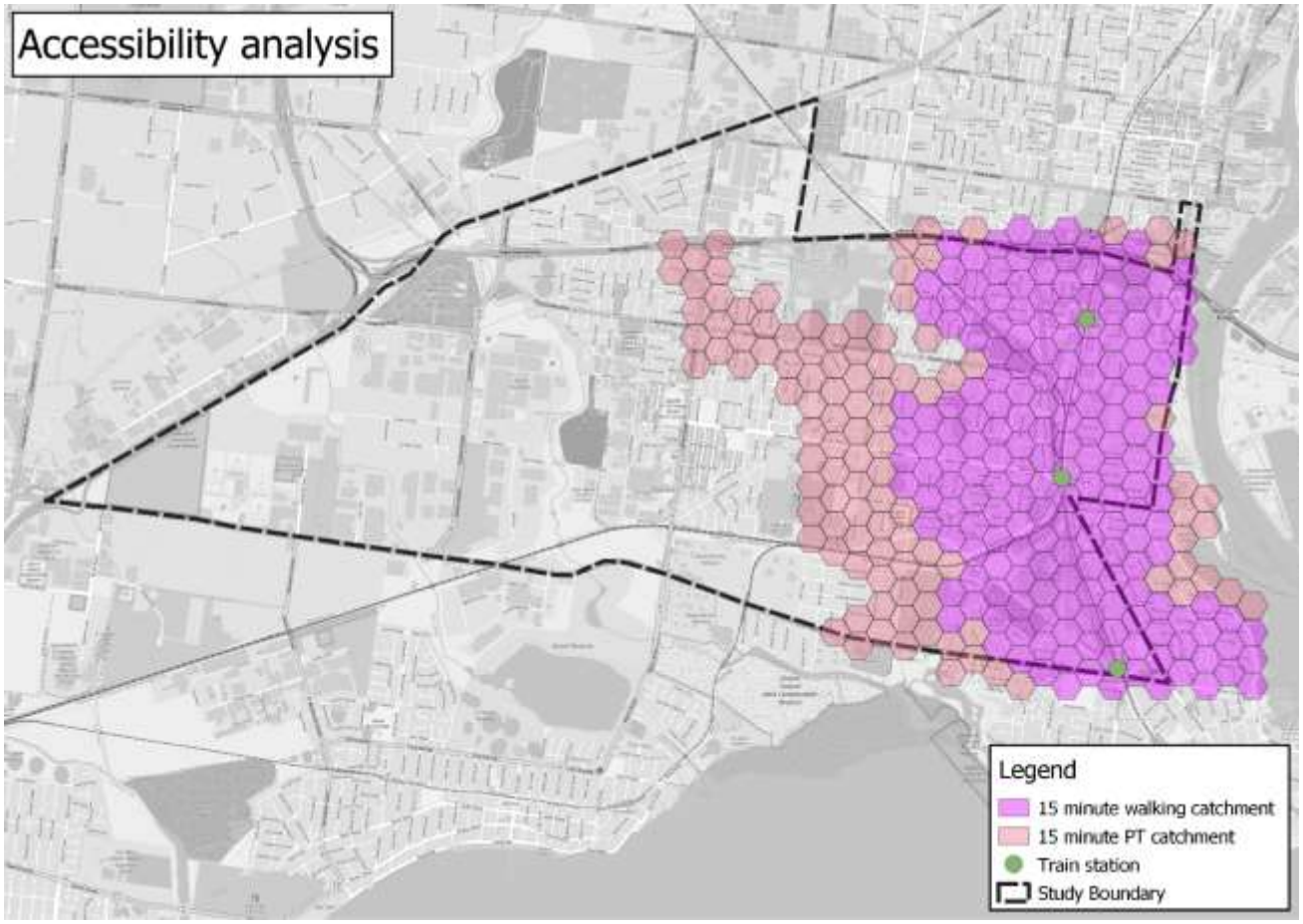


Figure 6-14 Accessibility analysis

[5] Conveyal Analysis allows for an understanding of accessibility by generating a catchment grid of common trip times. For this study a regional analysis was undertaken using the three train stations within the study area as target destinations, with the DoT published GTFS from 27 April 2019 used to provide information around bus movements.

Land uses were mapped alongside the catchments to understand the user groups serviced by the catchment as shown in Figure 6-15. The vast majority of train station walking catchments are zoned 'General Residential', with some 'Mix Used' zoning surrounding Newport station in the current activity centre.

Land uses are from the current planning scheme, and it is noted that Hobsons Bay City Council adopted new zoning in August 2019 but that this would not be formally gazetted into the planning scheme for at least 12 months. The changes to zoning are not substantially different from the existing scheme in terms of the location and density of residential development within the study area. However, it is noted that there is a policy shift to higher density residential development within the vicinity of train stations. Land uses within the Newport Activity Centre were not included as part of this process, and are instead being outlined as part of the separate development of the Newport Precinct Structure Plan.

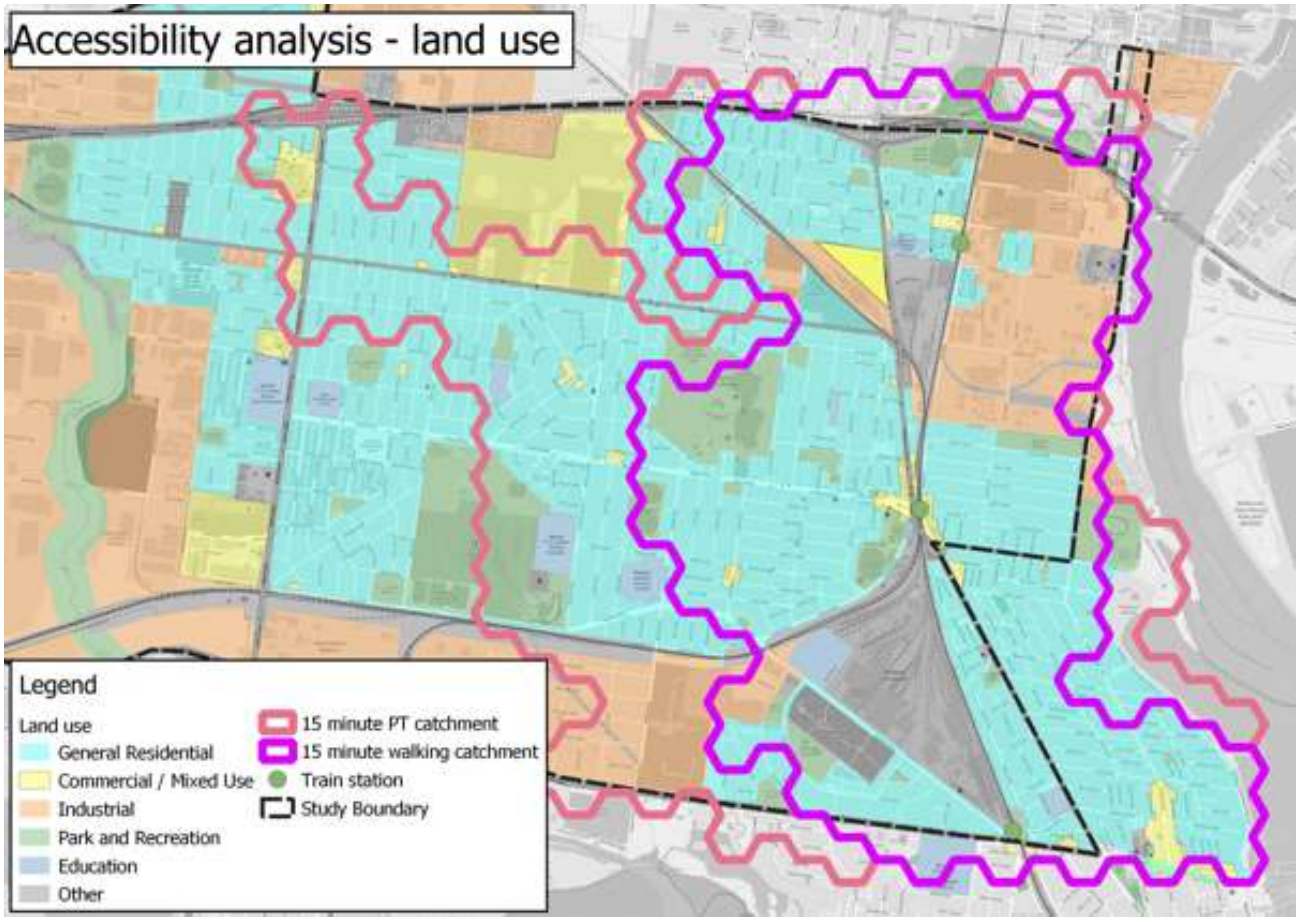


Figure 6-15 Land uses inside train station access catchments

6.1.2.6 KEY ACCESSIBILITY FINDINGS

- A high proportion of the population growth, existing employment and employment growth is occurring within the Altona North area - which also experiences some of the highest car mode share for journey to work and lowest public transport mode share within Hobsons Bay.
- Despite having rail access, Altona as a destination for journey to work, experiences a higher car mode share, compared to other areas of Hobsons Bay that have rail access. It is recognised that service frequency at rail stations within Hobsons Bay vary significantly, with Newport and Spotswood offering a better frequency when compared with stations in Williamstown and along the Altona loop.
- The mode share for cycling is low within Hobsons Bay, however it is comparable to the western metropolitan Melbourne average. The walking mode share in Hobsons Bay is almost half that of Stonnington's walk mode share (a comparable metropolitan area).

- There is a high percentage of private vehicle use for journey to work relative to other LGAs in Greater Melbourne. High private vehicle use for journeys to work in Melbourne, where trips via private vehicle are relatively unattractive, could indicate a high level of car dependence within the study area.
- Accessibility to key employment locations by public transport varies markedly within the study area.
- Walking to the train station was found to result in the shortest journey time into the Melbourne CBD
- Walking to the train station is the fastest way to access public transport to Footscray. Similar trip times within the 45-minute band can be achieved by either catching direct bus services to Footscray (Route 411,412, 414) or catching a bus to a station to then train to Footscray.
- The fastest PT access to Sunshine is provided by the Route 903 bus along Millers Road (within 30 minutes). Trips within 45 minutes can be made via bus connection to Sunshine, or via walking to the station and changing at Footscray.
- The current bus network provides a theoretical 15-minute journey to train stations in the AM peak for a substantial proportion of the study area's residential land use. However, the residential catchment bordered by Millers Road, Mills Street and Marion Street east of Millers Road and residential catchment west of Millers Road are not covered.
- The vast majority of train station walking catchments are zoned 'General Residential', with some 'Mixed Use' zoning surrounding Newport station in the current activity centre. Zoning is currently in the process of being reviewed and updated by Hobsons Bay City Council.
- The majority (63%) of the 15-minute PT catchment for train station access is also within a 15-minute walking catchment.
- Newport station is the primary focus for interchange by car, bus and bicycle. Car and bicycle parking at Newport station is at capacity.
- Coordination with rail: the benefits of timetable coordination will not be realised if bus services are unable to run to schedule.

6.1.3 BUS PERFORMANCE ANALYSIS

A high-level analysis of the bus network within the study area as shown in Figure 6-16 was undertaken to understand the following:

- Gaps in public transport provision, accessibility and connectivity within the study area
- Inconsistent/infrequent bus services with poor punctuality.

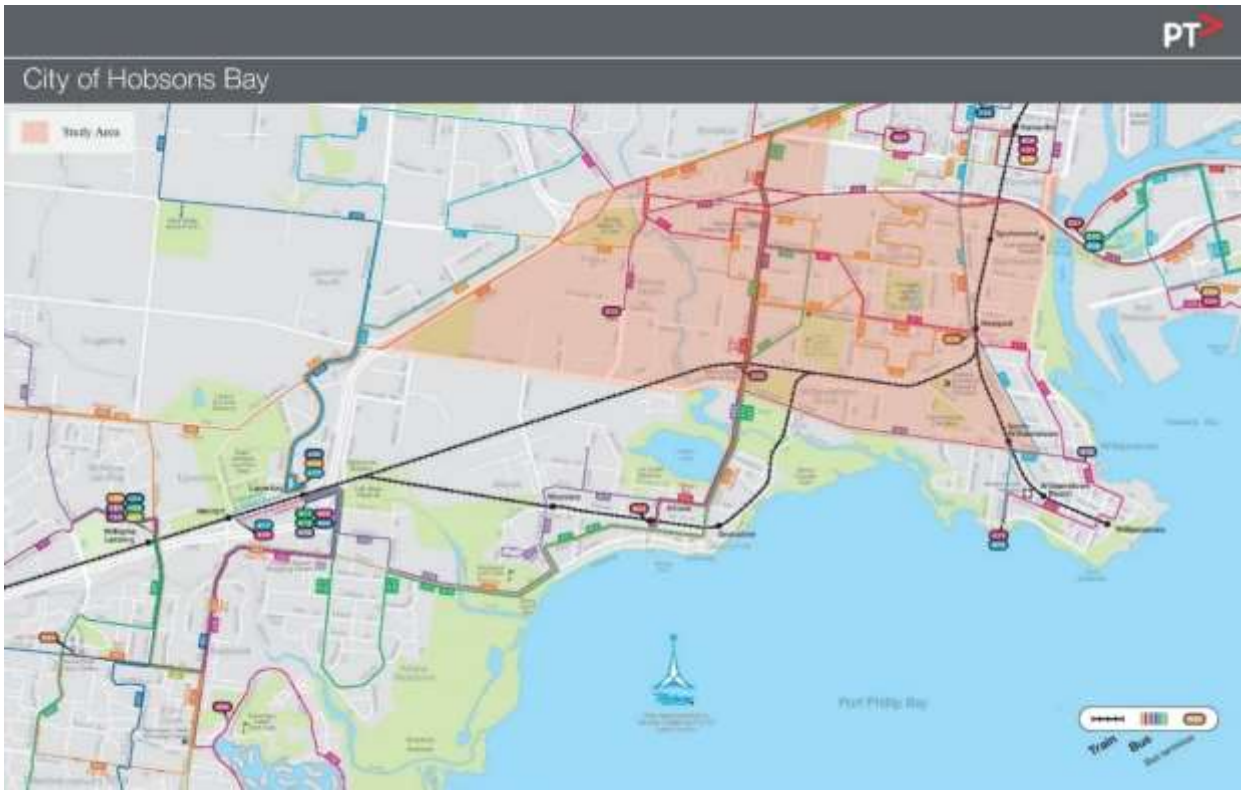


Figure 6-16 City of Hobsons Bay public transport local area map

Source: PTV website

Ultimately, these challenges relate to the useability and attractiveness of the bus network. At a minimum, the bus service offering should align with the needs of existing bus users. To grow patronage within the study area, the service offering must meet the needs of, and be attractive to, people not currently using the bus network. This analysis has considered:

- Route frequency and catchment
- Directness of routes within the network
- The productivity of routes
- Service punctuality.

Routes within the network have been considered with reference to four different bus purposes:

- **High frequency services (< 10 mins) –** provide connection between two destinations, with no other stops, e.g. 601 that connects Huntingdale station with Monash University. Highest hourly boarding rates are expected.
- **Fast and frequent services (5-15 mins) –** provide direct car-competitive services for cross town and radial travel, e.g. 472 connecting Williamstown to Moonee Ponds. High hourly boarding rates are expected.
- **Frequent services (15-20 mins) –** provide direct routes for commuters and local travel. High hourly boarding rates are expected.
- **Low frequency services (30-60 mins)** – provide access where other coverage is not provided. Low hourly boarding rates are expected.

Where a bus service does not fit into one of these categories, there is a risk that it is trying to perform multiple functions which may conflict – e.g. a frequent service that aims to maximise access is a mixture of the low frequency service and frequent service buses and may not achieve either purpose effectively.

6.1.3.1 ROUTE FREQUENCY AND CATCHMENT

For the purposes of route and network planning, DoT has identified residential areas within Melbourne that have walking access to public transport stops that support more than six stops per hour. An extract of this map for the study area is shown in Figure 6-17. This analysis does not differentiate by route or destination and the definition of frequent must be considered with reference to the fact a 10-minute frequency is only achieved by a limited number of bus routes across Melbourne.

Figure 6-17 demonstrates that most of the study area has limited access to high frequency bus services. The immediate surroundings of Millers Road are the only the part of the study area where residents have walkable access frequent bus service in the AM peak, provided by the Route 232, 411, 412 and 903 bus services.

The frequent public transport catchment on the west of the study area is provided by the bus services running north-south on Millers Road, which provide access to the Melbourne CBD, Sunshine and Footscray. The frequent service catchment in the east of the study area is driven by North Williamstown, Newport and Spotswood train stations.

Figure 6-17 Walking access to frequent public transport (07:00-09:00)

Source: Analysis of public transport timetable and land use data

To understand bus service levels with reference to the four service types (High frequency, fast and frequent, frequent, and low frequency), service frequencies across different time periods were mapped.

For weekdays, bus service frequencies are at 20 minutes or less within the study area, for both AM and PM peaks (except for the Route 412) as shown in Figure 6-18. These frequencies are typical of 'frequent' buses, which provide fast and direct routes. As might be expected, these frequencies reduce in the interpeak and off-peak periods as shown in Figure 6-19 and Figure 6-20. These reduced frequencies are most noticeable between Millers Road and Melbourne Road, this area is serviced by the Route 412 and 432 bus routes.

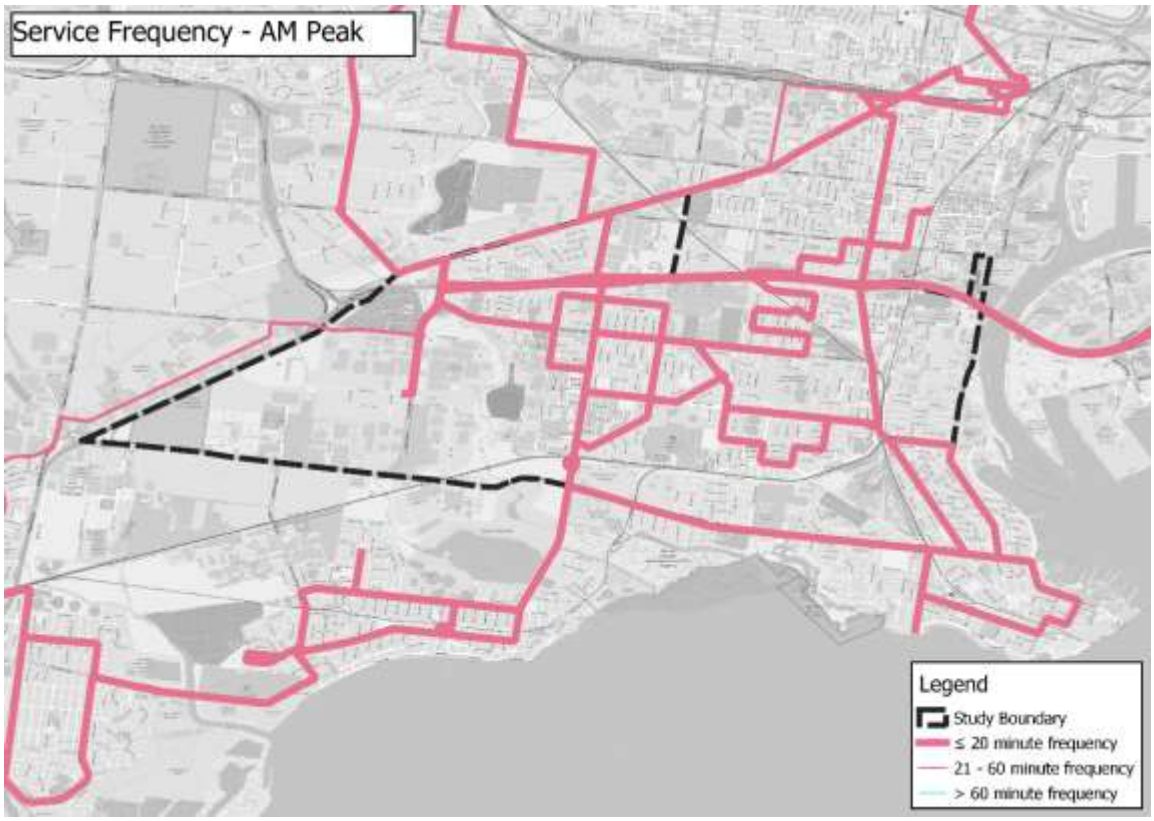


Figure 6-18 Bus service frequency in the AM Peak (weekday)

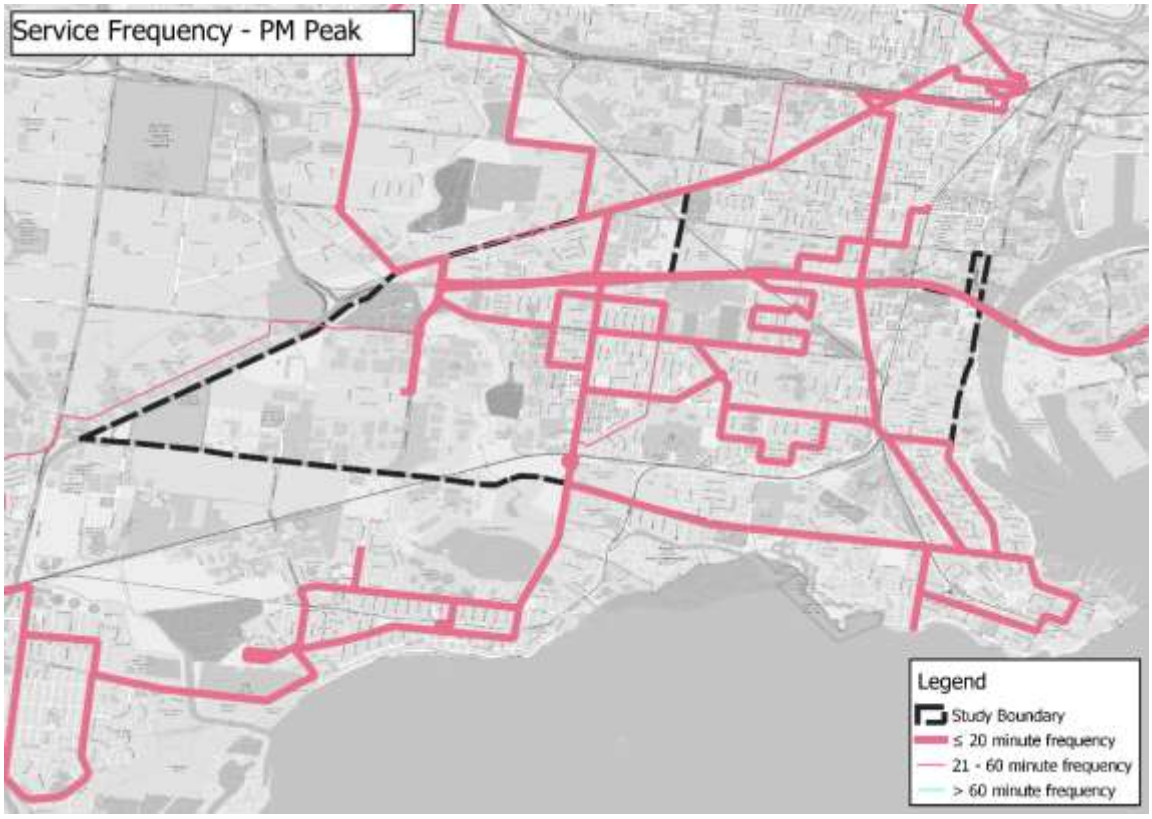


Figure 6-18 Bus service frequency in the PM Peak (weekday)

Figure 6-19 Bus service frequency in the Interpeak (weekday)

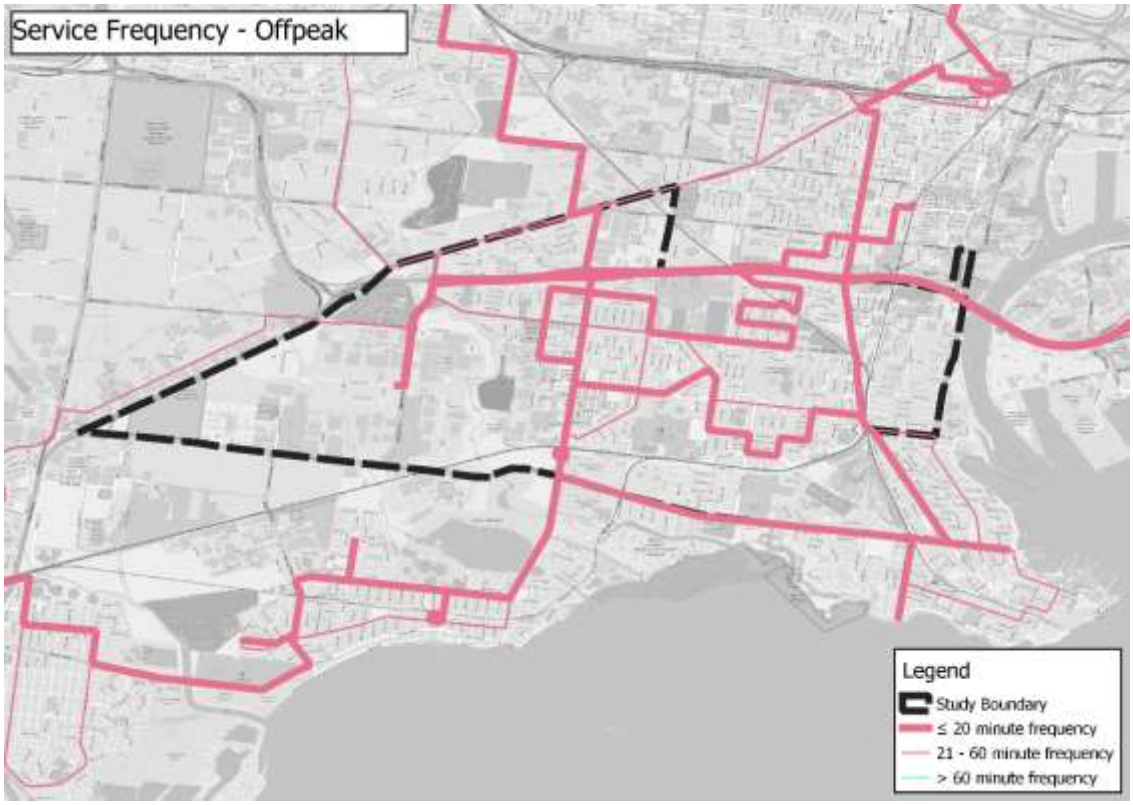


Figure 6-20 Bus service frequency in the off-peak (weekday)

On Saturdays and Sundays, service frequencies reduce across Melbourne, including within the study area.

The reduced service frequency greatly effects the size of the bus catchment in the study area. This has been illustrated by comparing the 30-minute frequency catchment on Saturday and Sunday to the interpeak on a weekday. This is shown in Figure 6-21 and Figure 6-22 respectively. The figures indicate that there is a reduced ability to move east-west within the study area on weekends as there are no east-west services on weekends with a frequency of 30 minutes or less.

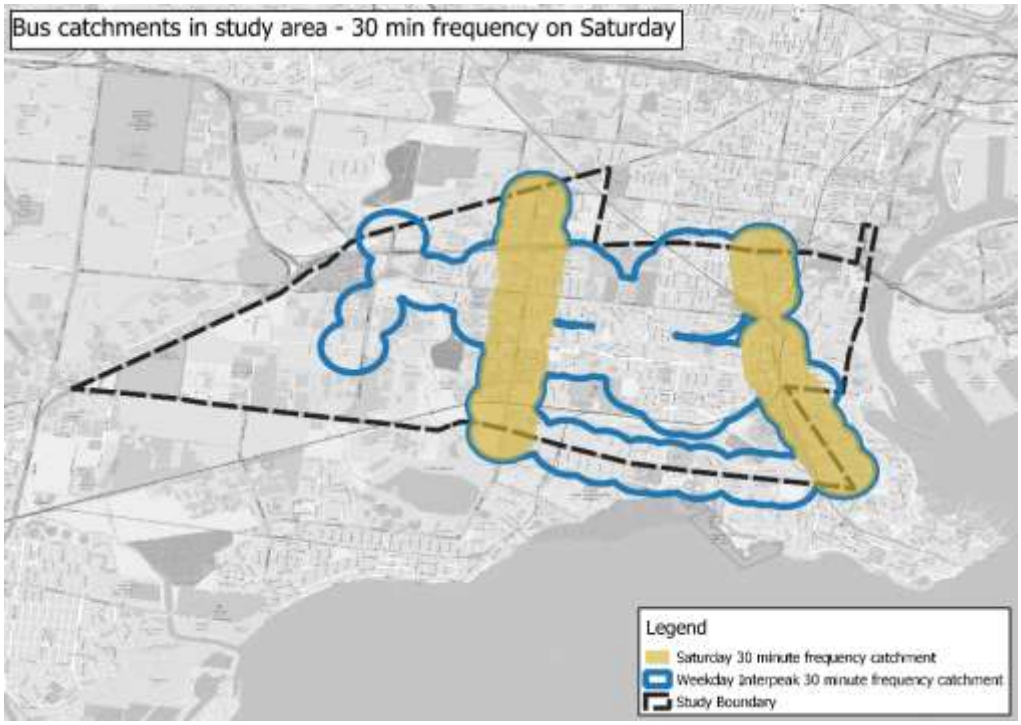


Figure 6-21 30-minute bus frequency catchment for Saturday

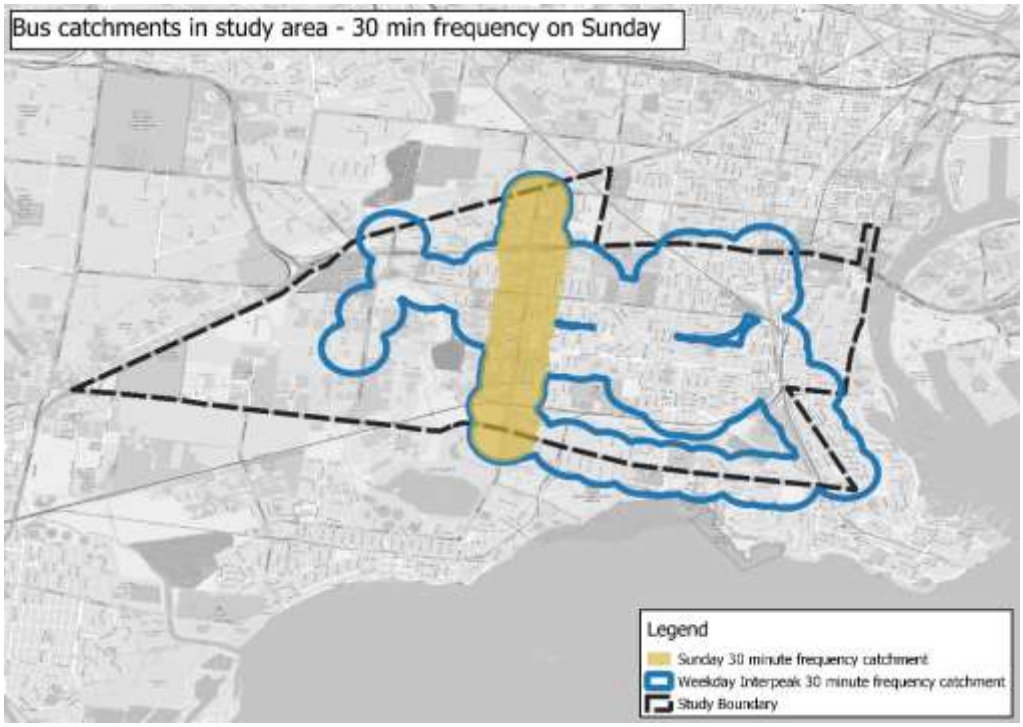


Figure 6-22 30-minute frequency catchment for Sunday

6.1.3.2 BUS DIRECTNESS

Direct bus routes increase the attractiveness of a service by reducing trip times.

There is a trade-off between directness and the catchment that can be served by the route. Premium routes for example, are expected to be more direct than neighbourhood routes. Typically, directness ratios between 1.1 to 1.3 are considered desirable (Victorian Auditor General's Office, 2014).

Directness ratios were calculated for bus routes within the study area, using entire route length, as shown in Table 6-1. The table indicates that most of the bus routes in the study area have directness ratios that are higher than desirable. They tend to operate with 'frequent' levels, but appear to be performing the access function seen on 'low frequency' services.

Table 6-1 Directness ratios for buses within study area

BUS ROUTE	ROUTE LENGTH (KM)*	DIRECT ROUTE LENGTH (KM)**	DIRECTNESS RATIO	WITHIN DESIREABLE RANGE
232	15.5	15.2	1.0	Yes
414	16.8	15.0	1.1	Yes
472	16.5	14.4	1.1	Yes
415	19.5	14.0	1.4	No
471	19.7	13.4	1.5	No
411	22.9	15.0	1.5	No
412	24.1	15.0	1.6	No
432***	15.9	4.3	3.7	No
432 – AG to Yarraville	8.8	5.2	1.7	No
432 – AG to Newport	7.1	4.5	1.6	No

** As per PTV GTFS shapefile*

*** Shortest route for a trip by car taken at midnight*

**** It is recognised that the 432 bus is not designed to be taken from end to end as the trip between Yarraville and Newport stations could be taken far more quickly by train. To inform this assessment the 432 has also been split into two routes which terminate at Altona Gate.*

6.1.3.3 BUS PRODUCTIVITY

The overall productivity of a bus route is measured by passenger boardings per hour. DoT has analysed Myki data to understand passenger boardings per hour across the Melbourne bus network. The process by which this data has been prepared is experimental and is not an endorsed or official metric, but can provide an indication of both the demand and attractiveness of a service:

- a low rate of boardings may indicate:
  - that the bus route serves a small catchment
  - that the bus route does not provide users access to the destinations they wish to go to
  - that the bus route does not provide users access to destinations at the times they wish to travel
- a high rate of boarding may indicate that there is demand for additional services, as this metric does not take into account service frequency.

Infrastructure Victoria (2018) benchmarks the boardings of bus services against a minimum 20 boardings per service per hour as the measurement of economic viability and productivity. The rate of bus boardings across Melbourne were analysed and found a median rate of 23 boardings per hour, and an interquartile range (25th-75th percentile) of 15-32 boardings per hour.

The Hobsons Bay bus productivity is shown against Melbourne buses in Figure 6-23 and Table 6-2

This illustrates which services that underperform against the 20 boardings per service per hour benchmark as well as how they perform relative to other Melbourne bus services.

Despite its high frequency, the Route 232 is a highly unproductive bus service, with productivity lower than the 25th percentile of all buses in Melbourne. The Route 415 and 432 bus routes have productivity below the benchmark and lower than the Melbourne median.

Figure 6-23 Bus boardings per hour across Melbourne, indicating Hobsons Bay bus route boardings

Source: DoT

Table 6-2 Hobsons Bay route productivity comparison

BUS ROUTE	SCHOOL WEEKDAY BOARDINGS / HOUR	WITHIN DOT RANGE	RELATIVE TO MELBOURNE BUSES
232	13	No	Lower than the 25th percentile
411	28	Yes	Higher than the median
412	29	Yes	Higher than the median
415	16	No	Lower than the median
432	15	No	Lower than the median
471	28	Yes	Higher than the median
472	20	Yes	Lower than the median
903	32	Yes	Higher than the median

6.1.3.4 BUS PATRONAGE

Bus patronage was also examined by looking at the number of bus Myki touch on and touch offs in the study area.

As there are known issues with the quality of data at a stop level, patronage findings have been reported as a percentage of total touch on/touch offs within the study area, and are assigned to a general area, rather than a specific stop.

There is a broad similarity in the locations where most touch ons and touch offs occur within the study area as shown in Figure 6-24 and Figure 6-25 respectively.

The north-south movement along Millers Road attracts relatively high levels of patronage compared to the rest of the study area, with 26 per cent of touch ons and touch offs within the study area on Millers Road. This movement serves the 411, 412, and 903 routes, with the likely destination being Footscray (411,412) and Sunshine (903). The 232 also uses this section of Millers Road, but makes a modest contribution to overall patronage.

Newport station has the highest number of touch ons and touch offs in the study area. A significant proportion of the trips are likely to originate from the Route 432 and 471 bus stops east of Millers Road, which are shown to attract a relatively high patronage.

The Altona North Park and Ride is underutilised, this may be a function of its location or the route (Route 232) which it serves.

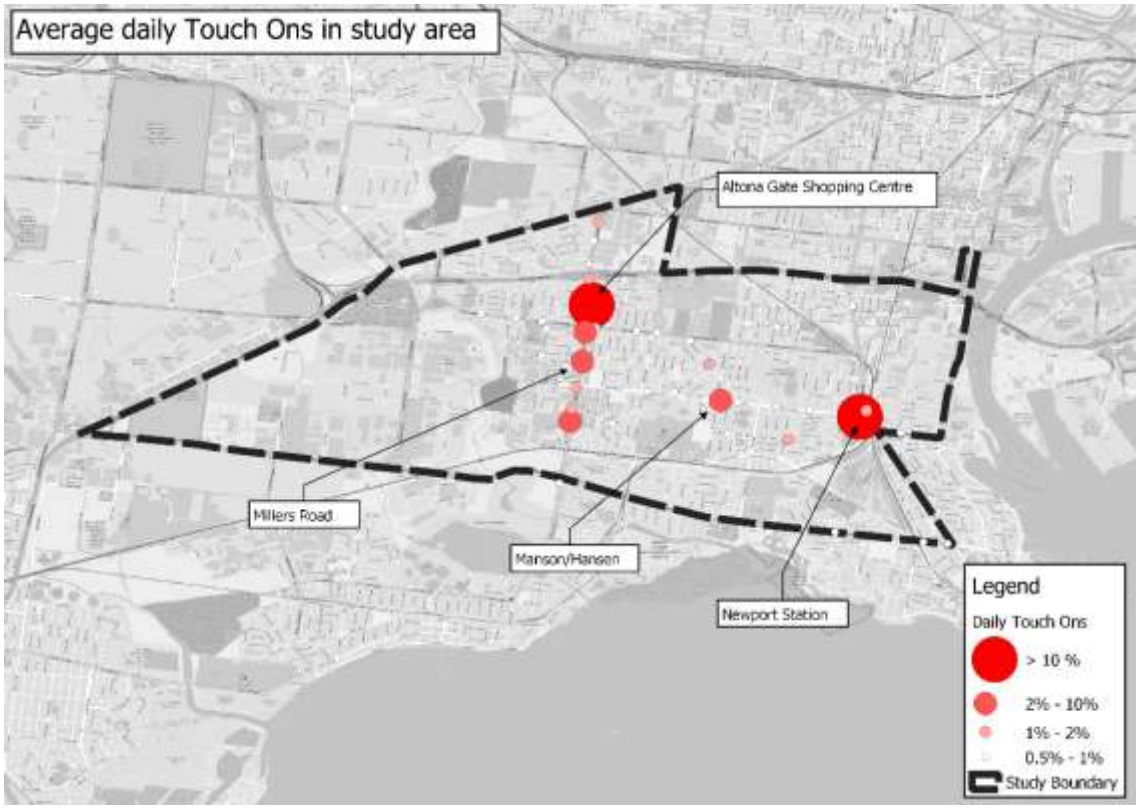


Figure 6-24 Average daily Touch Ons in study area (bus)

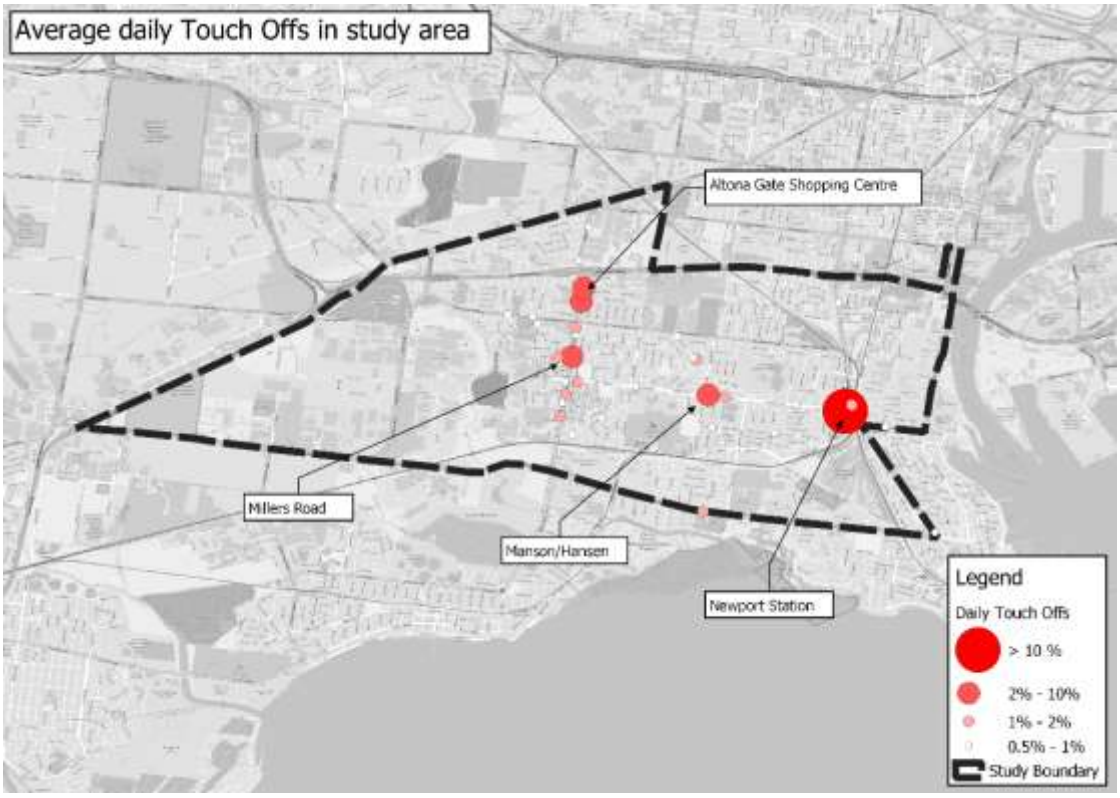


Figure 6-25 Average daily Touch Offs in study area (bus)

ALTONA NORTH PARK AND RIDE

The Altona North Park and Ride, located north of Kororoit Creek Road is served by the Route 232 service. Myki data provided by DoT indicated at the Park and Ride there is an average touch on rate of six per day and an average touch off rate of seven per day. These rates are much lower than would be expected for dedicated park and ride infrastructure.

This low rate of use was confirmed through a review of satellite imagery taken midweek in the middle of the day, where it is expected that the maximum number of car parks would be in use. The images show that there is a minimal number of cars parked at the Park and Ride (Figure 6-26).

Wednesday 4 April 2018 – 11:51 am

Thursday 23 November 2017 – 10:52 am

Tuesday 10 October 2017 – 2:42 pm

Wednesday 9 August 2017 – 11:22 am

Figure 6-26 Carpark use at Altona North Park and Ride (Route 232)

Source: Nearmap

6.1.3.5 BUS SERVICE PUNCTUALITY

Bus performance data has been analysed for existing bus routes travelling through the HBTPS study area for peak direction movements, to provide an indication as to the peak period bus travel times and punctuality. This data is intended to inform the challenges and opportunities discussion for bus travel within the study area and accessing key destinations outside of HBCC. The analysis considers data across a one month period in March 2019 and compares the scheduled/timetabled travel time against the actual travel time for individual bus routes along key segments of the routes. Services on Tuesday, Wednesday and Thursday are analysed as this is considered to best represent typical conditions. The bus routes included in this analysis are Routes 232, 903, 472, with total sample sizes ranging from 90-180 services depending on peak period, direction, and segment. The analysis compares the 'scheduled travel time' (i.e. timetabled bus times) and 'actual travel time' between bus stops to assess punctuality and variability of travel times. The data measures

the punctuality of services, which is based on the PTV network performance monitoring standards, with services being deemed punctual if they arrive within five minutes of the scheduled travel times. Peak times are defined as:

- AM Peak: 07:00 – 09:00
- PM Peak: 15:00 – 18:00

Figure 6-27 details the segments, routes, and directions analysed to understand the current levels of bus travel time and punctuality of services.

Figure 6-27 Bus punctuality analysis segments and directions

Route 232 provides public transport coverage to the Altona North area of Hobsons Bay, which is not served by rail and is shown to have a high dependence on private vehicle mode share for journeys to work. The Route 232 was analysed across two key segments in the AM and PM peak periods:

- Millers Road (between the Altona North Park and Ride and the WGF)
- WGF (between Millers Road and Southern Cross station).

As shown in Figure 6-28:

- the Millers Road and WGF segments both record poor levels (less than 90 per cent[6] of services along the bus route of punctuality in the AM peak period, which could be attributed to the presence of traffic congestion.
- there was a wide spread of travel times on the WGF, ranging from 14 to 44 minutes in the AM peak period and 14 to 55 minutes in the PM peak.
- The WGF segment recorded the worst level of punctuality in the PM peak period, due to traffic congestion
- the Millers Road segment has 98.8 per cent of services within the five minutes of scheduled travel time, and does not appear to have a punctuality issue in the PM peak[7].

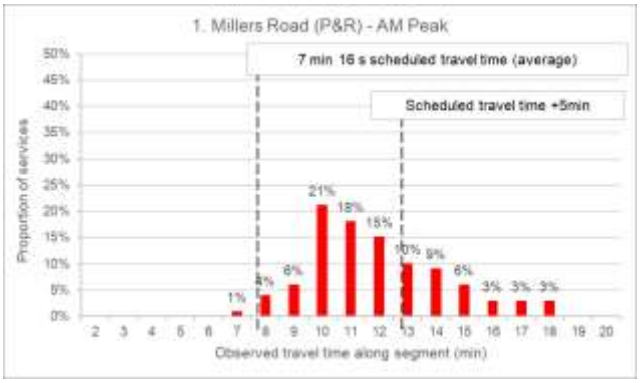
This data indicates that Route 232 is impacted by traffic congestion on Millers Road and the West Gate Freeway, so it does not offer a suitable alternative to private vehicle travel, particularly for trips from Hobsons Bay to the central city.

6 Refer to performance standards at https://www.ptv.vic.gov.au/footer/data-and-reporting/network-performance/

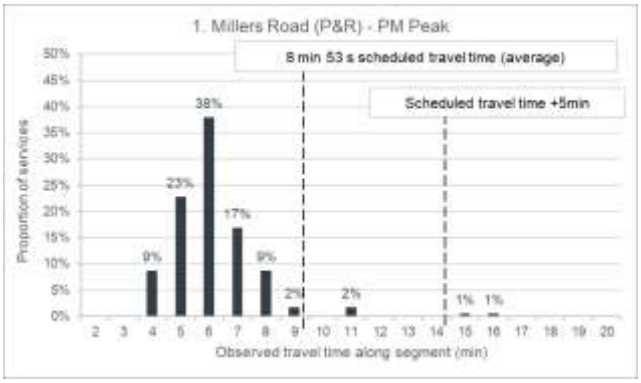
7 However, the scheduled travel times for this segment may need to be reviewed as the average travel time of services analysed along this corridor were on average, more than three minutes faster than scheduled

The punctuality issue for Route 232 reduces the opportunity for growing the bus mode share (attracting passengers to the bus service).

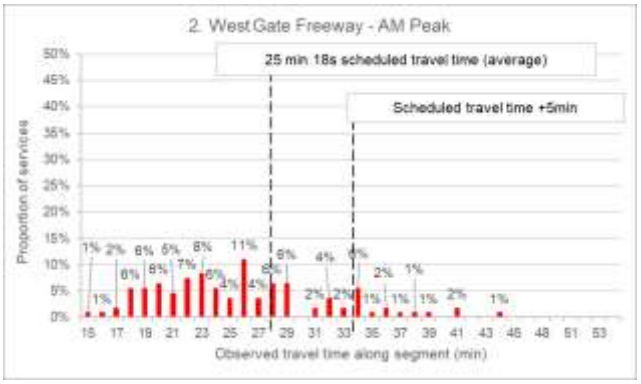
Route 232 - Millers Road (AM Peak): 66.7% punctuality



Route 232 - Millers Road (PM Peak): 98.8% punctuality



Route 232 - WGF (AM Peak): 78.7% punctuality



Route 232 - WGF (PM Peak): 49.4% punctuality

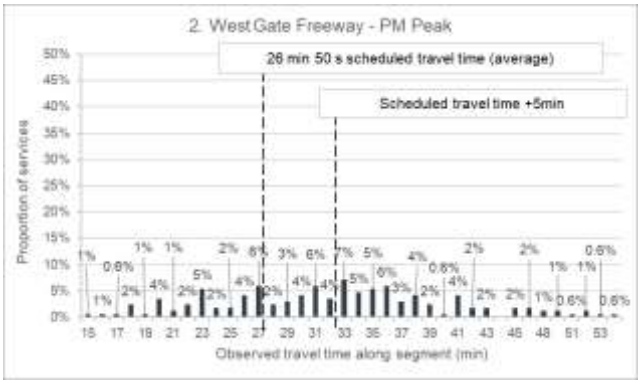


Figure 6-28 Route 232 bus punctuality analysis

The bus performance data for Route 903 has been analysed across two separate segments of Millers Road within Hobsons Bay (north and south of WGF). The data indicates punctuality problems in the AM peak on the south section of Millers Road and the north section in the PM peak. This is consistent with the findings for Route 232 data for the southern section of Millers Road in the AM peak, which highlights the bus performance being impacted by congestion.

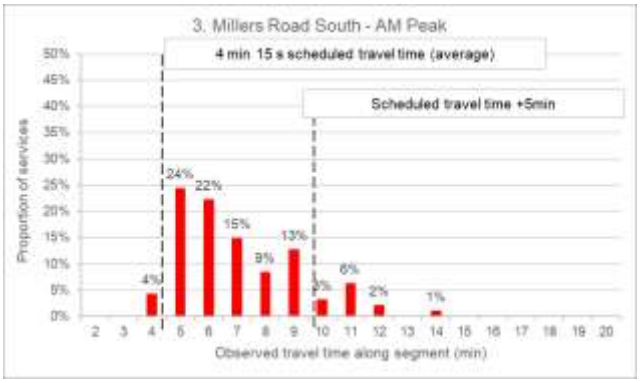
Route 903 - Millers Road South of WGF (AM Peak): 88.3% punctuality	Route 903 - Millers Road North of WGF (PM Peak): 81.9% punctuality
	

Figure 6-29 Route 903 Bus punctuality analysis

To provide an understanding of east-west punctuality of existing bus routes, the Route 471 service was assessed between Altona Gate Shopping Centre and Newport station Interchange. Sections of Blackshaws Road and Mason Street are covered by this bus route. This analysis found that 98.5 per cent of services were within the five-minute scheduled travel time in the AM peak, while 92.5 per cent were punctual in the PM peak. This indicates that traffic congestion does not have a significant impact on these bus services, when compared to the north-south Route 232 and Route 903.

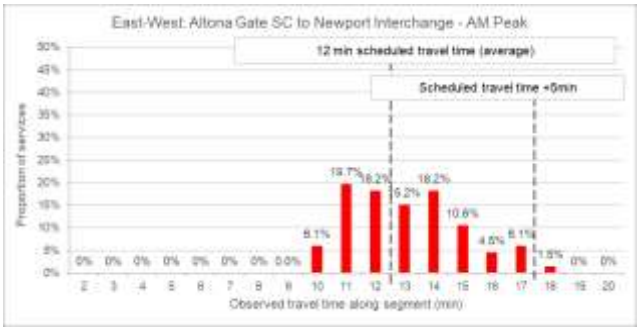
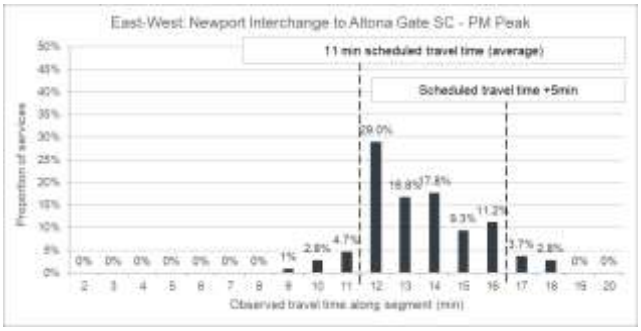
Route 471 East-West to Newport Interchange (AM Peak): 98.5% punctuality	Route 471 East-West to Altona Gate SC (PM Peak): 92.5% punctuality
	

Figure 6-30 Route 471 Bus punctuality analysis

Bus Route 472 was also assessed to provide an understanding of existing bus performance on Melbourne Road, between Kororoit Creek Road and WGF. This data showed that 95.8 per cent of services were within the five-minute scheduled travel time in the AM peak and 100 per cent in the PM peak, indicating that traffic congestion was not impacting these bus services to the same extent as shown for Route 232 and Route 903.

6.1.3.6 BUS PERFORMANCE ANALYSIS FINDINGS

Frequency and Catchment

- The immediate surroundings of Millers Road are the only the part of the study area where residents have walkable access to frequent bus services in the AM peak, provided by Route 232, 411, 412 and 903 bus services.
- All services in the AM peak, and all except the Route 414 in the PM peak, operate at a frequency of 20 minutes or less. These frequencies are typical of 'frequent' services, which provide fast and direct routes.
- There is no frequent (≤ 10 minutes) service running east-west through the study area.
- There is a reduced ability to move east-west within the study area on weekends as there are no east-west services on weekends with a frequency of 30 minutes or less.

Directness

- The majority of bus services operating within the study area have a directness ratio greater than what is typically desirable. They tend to operate at 'frequent' levels, but appear to be performing the access function seen on 'low frequency' services.

Productivity

- Despite its high frequency, the Route 232 is a highly unproductive bus service, with productivity lower than the 25th percentile of all buses in Melbourne. Anecdotal evidence suggested this was due to poor performance on the West Gate Freeway.
- The 415 and 432 bus routes have productivity outside the DoT range and lower than the Melbourne median. Unless their purpose is to provide neighbourhood access to a small catchment, the reasons behind their low productivity should be explored.
- Bus routes 411, 412 and 471 have high levels of productivity, indicating that buses within the study area can be attractive if they provide connectivity that is in demand.

Patronage

- The north-south services along Millers Road attract relatively high levels of patronage compared to the rest of the study area, with 26 per cent of touch ons and touch offs within the study area on Millers Road. This movement serves the Route 411,412, and 903 routes, with the likely destination being Footscray (411,412) and Sunshine (903). This finding aligns with the high productivity levels reported for these routes. The Route 232 also uses this section of Millers Road, but makes a modest contribution to overall patronage.
- Newport station has the highest number of touch ons and touch offs in the study area. A significant proportion of the trips are likely to originate from the Route 432 and 471 bus stops east of Millers Road, which are shown to attract a relatively high patronage.
- The Altona North Park and Ride is underutilised, this may be a function of its location or the route (232) which it serves.

Punctuality

- The Route 232 service frequency and its directness indicate that the intent of the Route 232 is to provide a direct and car competitive service to access the Melbourne CBD. However, the route on the West Gate Freeway results in a service that provides poor punctuality and a wide spread of travel times – as such, Route 232 is unlikely to be an attractive service offering. The bus service punctuality is impacted by a congested arterial route particularly in the AM peak.

– There appears to be capacity on the existing road network for east-west travel as buses are relatively punctual when travelling east-west as opposed to those travelling north-south.

6.1.4 RAIL NETWORK AND PERFORMANCE ANALYSIS

A high-level analysis of the rail network within the study area as shown in Figure 6-31 was undertaken to respond to the following challenges:

– Capacity and crowding of trains travelling through the study area

– Trains bypassing the Altona loop and running direct to Laverton station.

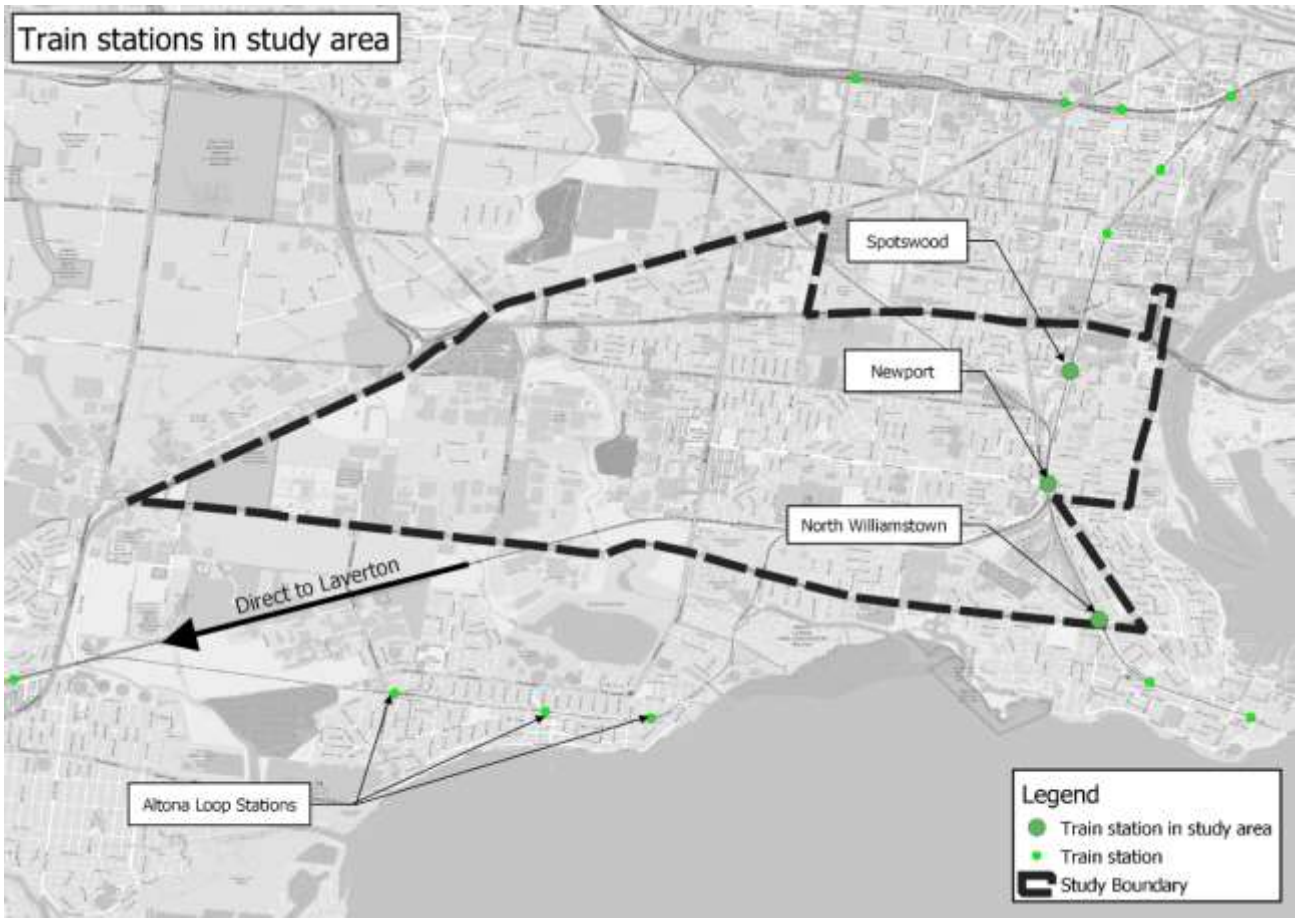


Figure 6-31 Train stations in study area

6.1.4.1 RAIL PATRONAGE DATA

STATION PATRONAGE

Weekday patronage at the three train stations within the study area was measured using number of entries and exits into each station, as shown in Table 6-3. Newport station attracts approximately four times as many entries and exits in the AM and PM peaks compared to North Williamstown and Spotswood.

Table 6-3 Weekday patronage data from stations within study area

TRAIN STATION	TRAIN LINES	AM ENTRIES	AM EXITS	PM ENTRIES	PM EXITS
Spotswood	Williamstown	499	93	193	485
Newport	Werribee, Williamstown	2,273	233	514	2,130
North Williamstown	Werribee, Williamstown	614	136	217	536

TRAIN SERVICE CAPACITY

Through annual surveys, DoT monitors the average number of passengers on train services against benchmark standards. Where services are above benchmark levels, extra capacity may be required. The May 2019 survey was conducted from 6 to 23 May 2018, with benchmark capacity of 900 passengers. Prior to 2017, the benchmark capacity was 798 and was increased to reflect the reconfiguration of rolling stock to increase their standing room capacity (Department of Transport, 2019).

Results for the Werribee Line in the AM and PM peaks are shown in Figure 6-32 and Figure 6-33 respectively, and results for the Williamstown Line in the AM and PM peaks are shown in Figure 6-34 and Figure 6-35 respectively. The figures show that benchmarks for loading are being exceeded on the Werribee Line, despite increases in the number of services in the AM and PM peaks.

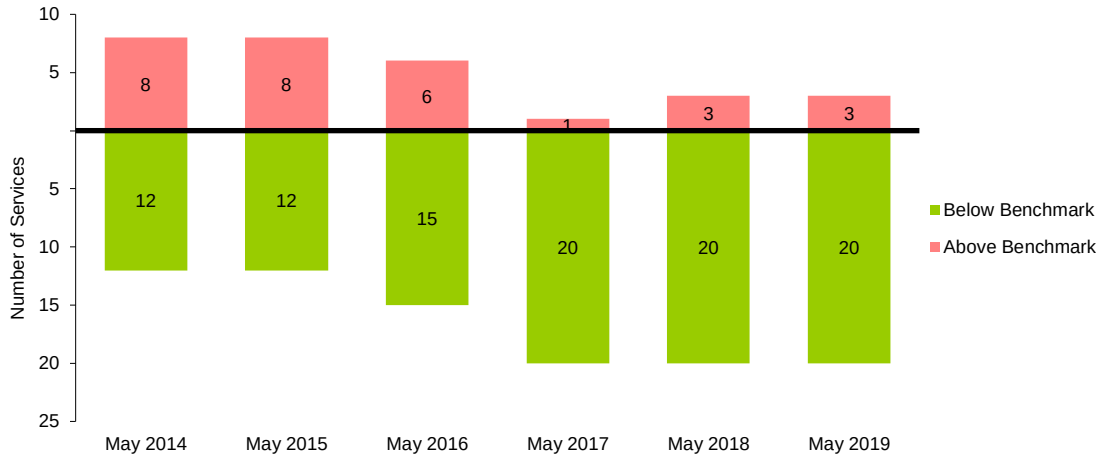


Figure 6-32 Number of AM peak services below and above benchmark levels (May 2012 to May 2019) for Werribee Line

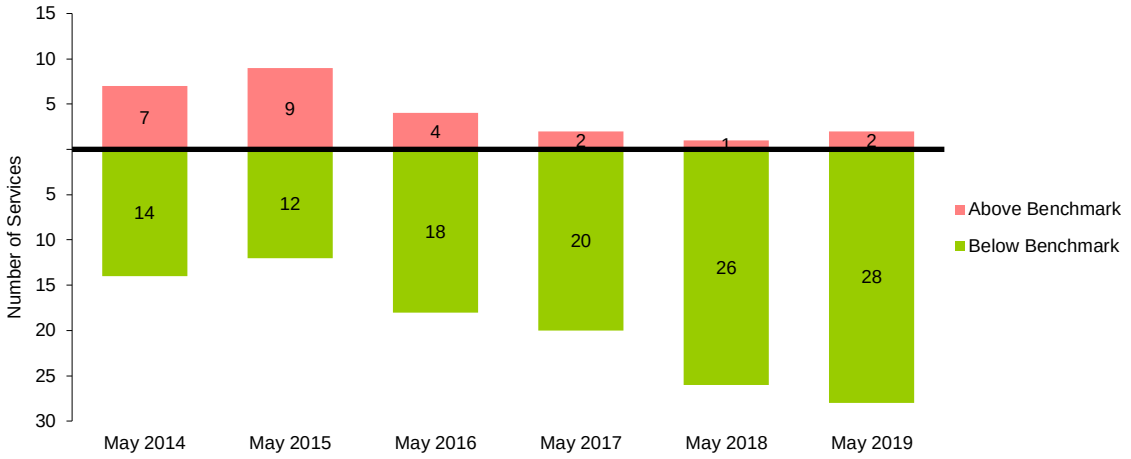


Figure 6-33 Number of PM Peak services below and above benchmark levels (May 2012 to May 2019) for Werribee Line

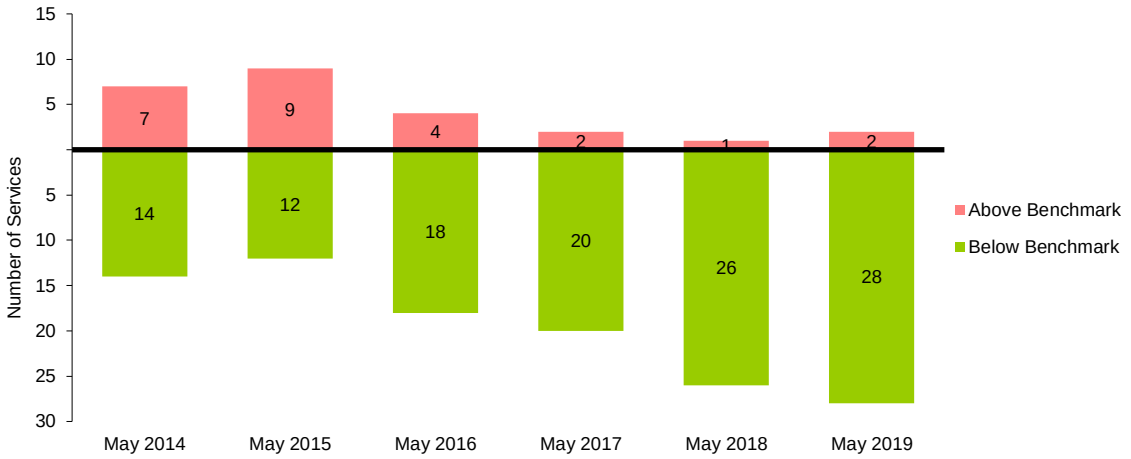


Figure 6-34 Number of AM peak services below and above benchmark levels (May 2012 to May 2019) for Williamstown Line

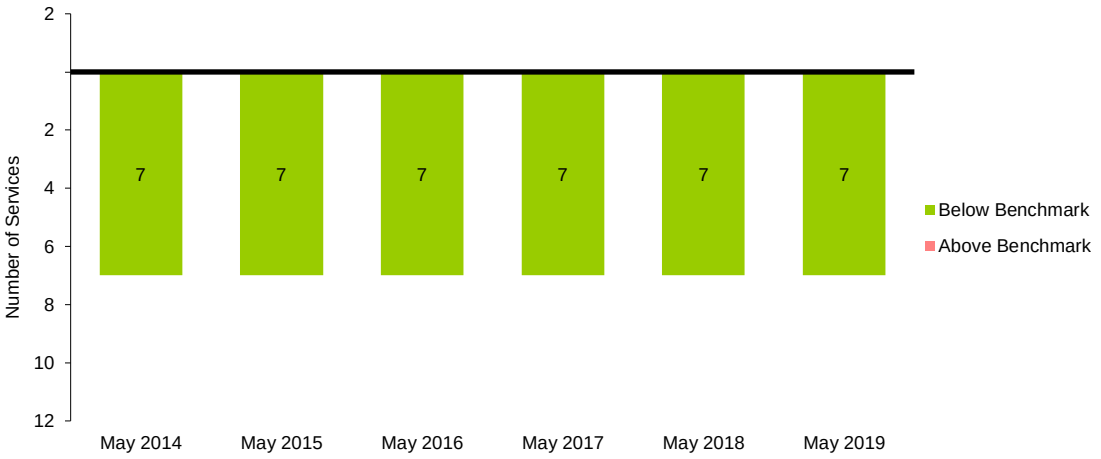


Figure 6-35 Number of PM peak services below and above benchmark levels (May 2012 to May 2019) for Williamstown Line

Source above figures: Department of Transport, 2018

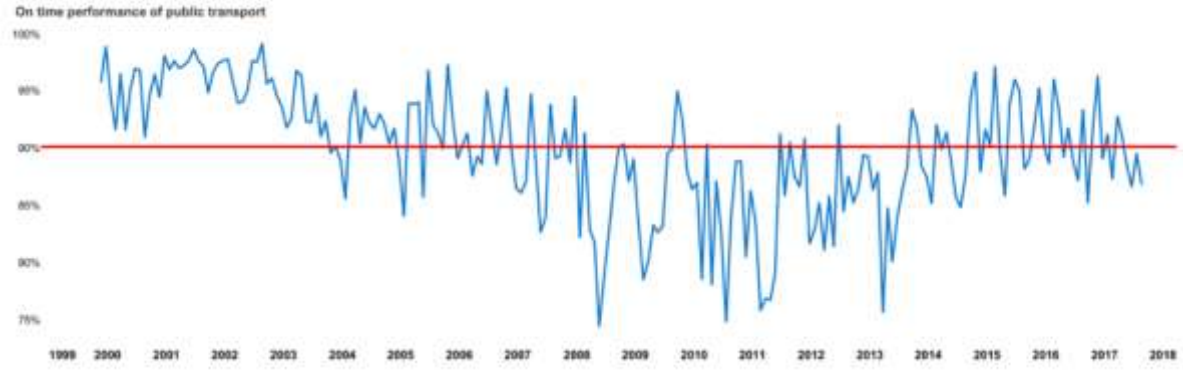
6.1.4.2 TRAIN PUNCTUALITY

Metro Trains capture the arrival times of all of its train services, with on time performance defined as a train arriving no later than four minutes and 59 seconds after the scheduled time. Performance is reported in aggregate, as such only general findings can be made for each train line.

On time performance for the Williamstown and Werribee lines in the AM and PM peaks is shown in Figure 6-36 and Figure 6-37 respectively. Under its current franchise agreement, Metro Trains must ensure that 90 per cent of its services are on time.

While this is a network wide, rather than line specific performance measure, for this study it has been taken to be indicative of the level of acceptable performance for a given line. On this basis, there are on time running issues for both lines in the PM peaks. Generally, except for the Werribee line in the PM peak, there is trend towards improved on time running over the past five years.

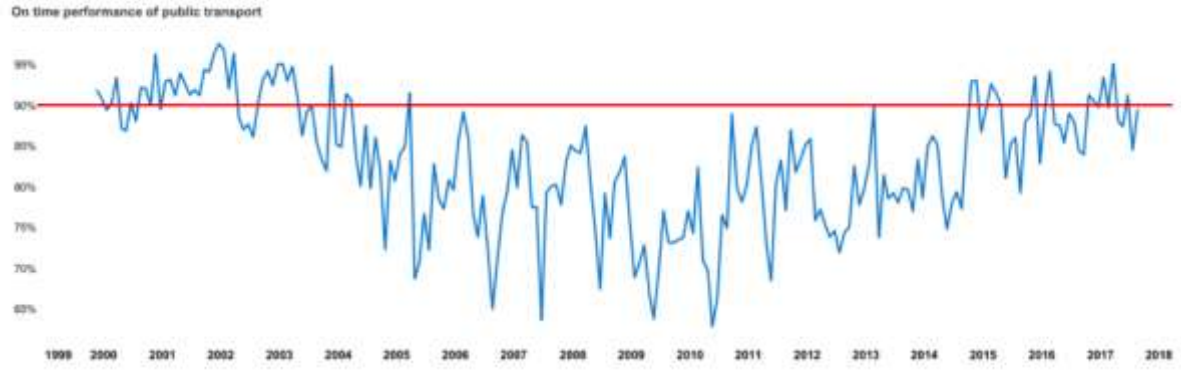
Williamstown line – AM Up (towards City)



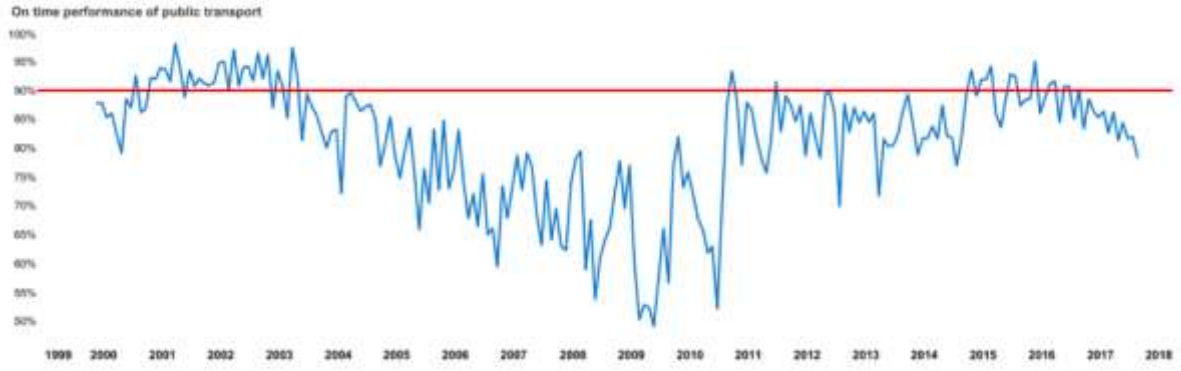
Williamstown line – PM Down (out of City)

Figure 6-36 On time performance of trains on Williamstown line

Source: DoT Transport Data Portal



Werribee Line – AM Up (towards City)



Werribee line – PM Down (out of City)

Figure 6-37 On time performance of trains on Werribee line

Source: DoT Transport Data Portal

6.1.4.3 RAIL CANCELLATIONS

PTV's July 2019 performance results were reviewed to understand the number of cancelled services on the Werribee and Williamstown lines. These results consider a full year of services from July 2018 to July 2019. Cancellation of services reduces the viability and attractiveness of public transport due to perceptions of poor reliability.

Furthermore, while not inside the study area, trains not running through the Altona loop (Seaholme, Altona and Westona stations) has been reported as an issue by the community within Hobsons Bay. This can occur in two forms:

- Cancellation of a service that would normally run through the loop – reported as a cancelled service, or unplanned cancellation.
- Trains running directly from Newport to Laverton and skipping the stations in the Altona loop – reported as a skip stop or unplanned skip stop event.

As shown in Figure 6-38, 1.6 per cent of services on the Werribee line were cancelled, broadly in line with the percentage of cancelled services on the Frankston (1.8%), Pakenham (1.7%), Cranbourne (1.6%) and Craigieburn (1.5%) lines. Cancellations on the Williamstown line were relatively lower at 0.9 per cent of all services. The number of services that would have run through the loop cannot be disaggregated from this dataset.

A total of 33 skip stops were reported on the Werribee line over the full year of services. Assuming that each one of these events impacted the Altona loop, and that all events occurred on a weekday, on average there is one skipping event every eight days.

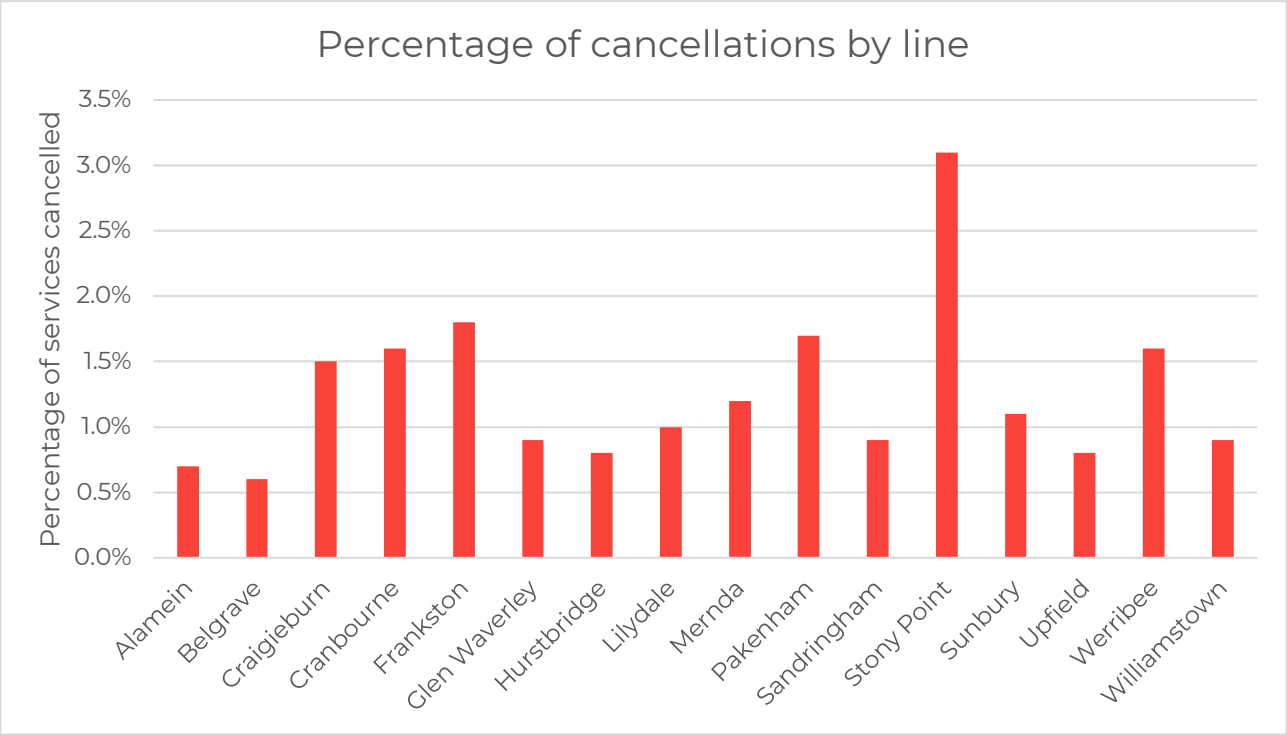


Figure 6-38 Percentage of services cancelled by line (July 2018 to July 2019)

Source: PTV, 2019

6.1.4.4 RAIL ANALYSIS FINDINGS

- Newport station attracts approximately four times as many entries and exits in the AM and PM peaks compared to North Williamstown and Spotswood.
- Benchmarks for loading are being exceeded on the Werribee Line despite increases in the number of services in the AM and PM peaks.
- All Williamstown Line services in the AM and PM peaks are below loading benchmark.
- Cancellations on the Werribee line as a percentage of services are similar to other lines, with the number of services skipping the Altona loop relatively low (one service every eight working days in the worst case). However, the level to which services within the Altona loop are cancelled cannot be determined from available data.

The following opportunities were identified:

- Where improved access to the train network is required, there is an opportunity to spread increased patronage to North Williamstown and Spotswood to balance out the patronage.
- Investigate timed bus connections with Williamstown Line services to spread patronage to Williamstown Line.

6.1.5 ACTIVE TRANSPORT

A high-level analysis of active transport within the study area was undertaken to respond to the following challenges:

- Lack of safe and connected pedestrian infrastructure across Hobsons Bay
- Lack of quality pedestrian facilities and infrastructure to encourage and support safe walking
- Gaps in the provision of a safe, connected, convenient cycling network for Hobsons Bay
- Lack of quality cycling facilities and infrastructure.

Trips to work from residences in Hobsons Bay via public and active transport (3.3%) are lower than the comparison LGA of Stonnington (5.8%) (Figure 4-8)

In the study area, Williamstown has the highest percentage of commuters using active modes (walking and/or cycling) to access employment in the area (5.9%), whilst Newport has the highest public transport mode share within Hobsons Bay. Altona North has notably lower public transport and active transport use (1.1%) than both Newport and Williamstown.

The comparatively low mode split for active transport within the Hobsons Bay and the study area has arisen from a number of factors including perceptions of unsafe cycling routes, gaps in cycling infrastructure and physical barriers to the pedestrian network.

Hobsons Bay, with its generally flat topography, and proximity to Central Melbourne, is well positioned to take advantage of increasing community awareness of the benefits of active transport. The West Gate Tunnel Project will deliver a 2.5 km long veloway from Footscray to Docklands, which will provide a safer route to the city for cyclists (see Figure 5-6 in Future Vision). In addition to this initiative, other upgrades are planned to enhance the active transport network within the area to encourage walking and cycling, including:

- A new north-south link connecting the Kororoit Creek and Federation trails
- Wider, well-lit paths under the West Gate Freeway at Millers Road
- Completing the missing link in the Federation Trail with a new off-road path between Fogarty Avenue and Hyde Street and upgrades to the trail from Kororoit Creek to Fogarty Avenue
- A cycling and pedestrian path near the Newport freight rail line at New Street, South Kingsville that will connect to the Federation Trail, the Bradmill site and Precinct 15 sites
- A new connection from the Federation Trail to Hyde Street Reserve and Spotswood station that will improve access and connect the neighbourhoods of Spotswood and Yarraville.

Approximately nine per cent[8] of car trips within Hobsons Bay are less than one kilometre. In comparison, only seven per cent[9] of car trips within Stonnington LGA are less than one kilometre. Many of these car trips are for purposes that have the potential to be converted to walking or cycling trips (such as accessing a rail station, school commutes, short shopping trips and social).

Gaps in the walking/cycling infrastructure can create a public perception that it is not safe to use active transport modes. Publicity around fatal crashes involving pedestrians and cyclists may also reduce public confidence in the safety of walking or cycling. Cycle crashes have been reported at a high frequency on routes with on-road cycle paths, and roundabouts, highlighting the benefits of separated cycle facilities and further investigation into innovative treatments at roundabouts to enhance cyclist safety.

Hobsons Bay City Council is proactively improving footpaths across the city (*Hobsons Bay City Council Footpath Upgrade Program* in Section 5.4.2), and has initiated a wayfinding project in Williamstown, Altona and Laverton (with

[8] VISTA 2012-16 available from https://transport.vic.gov.au/about/data-and-research/vista/vista-data-and-publications

[9] VISTA 2012-16 available from https://transport.vic.gov.au/about/data-and-research/vista/vista-data-and-publications

potential to expand to Newport). HBCC is working with SSRIP to run a safety improvement programme in Williamstown. HBCC has also submitted a request for funds from the TAC for localised improvements between Blackshaws Road and the West Gate Freeway. HBCC is working to encourage community engagement in active modes and is running a series of LAMPs in collaboration with community groups, and the local BUGs (Hobsons Bay BUG, and Bay West BUG).

6.1.5.1 WALKING

The Department of Transport has defined the strategic walking classifications within the study area. The classifications are derived from the level of connectivity each link provides to significant places. There are no Walking W1 classifications located within the study area, however there are Walking W2 classifications as shown in Figure 6-39. These classifications define the important walking routes within the study area and service key activity centres and transport interchanges (train stations and Altona Gate Shopping Centre). It should be noted that these walking classifications are currently under development within the Department of Transport and will reflect the aims of the Principal Pedestrian Network.

This section discusses some of the challenges and opportunities identified for the walking network around the study area. Walking accessibility catchments to train stations were discussed previously in Section 6.1.2.

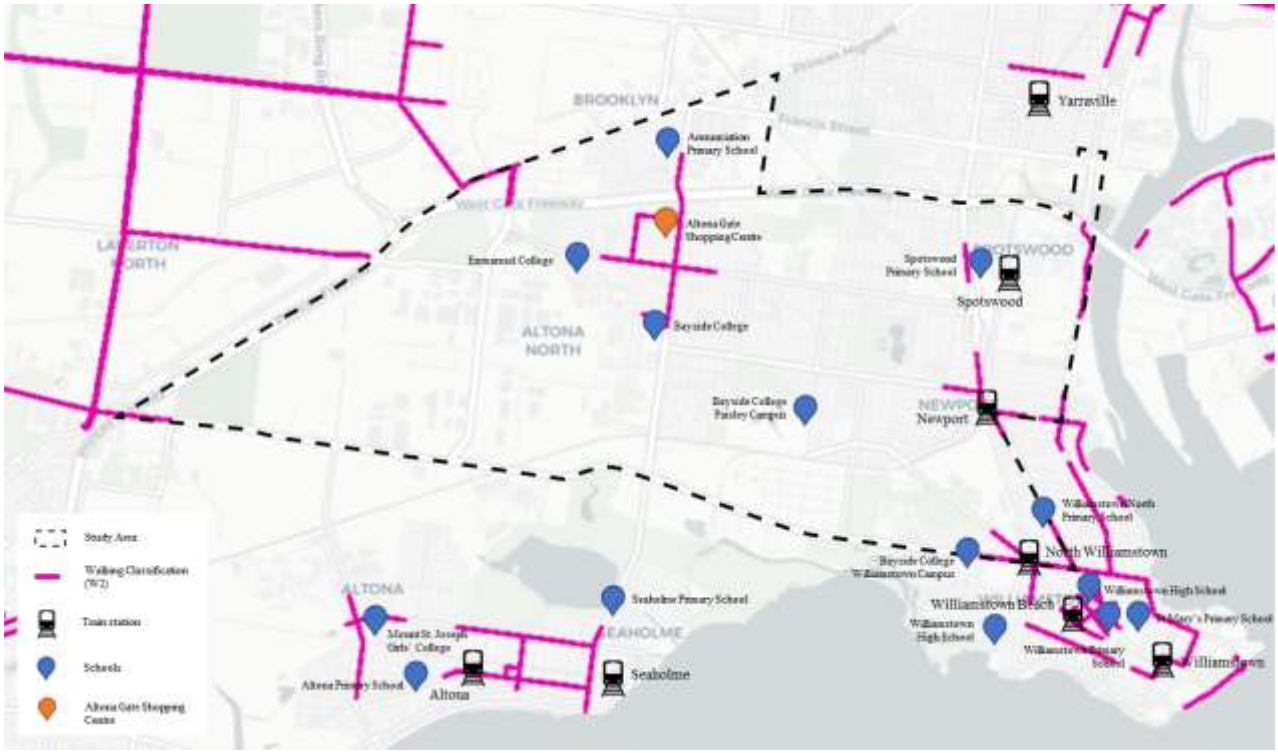


Figure 6-39 Walking links (DoT classifications)

HIGH LEVEL SAFETY HOTSPOTS

A key concern highlighted by residents in Hobsons Bay (see Appendix C for a summary of the complaints and requests logged by the community) is the need for a safe and connected pedestrian network that encourages safe walking. To understand these challenges, it is important to understand the recent history of pedestrian safety in the study area. Figure 6-40 highlights the pedestrian crashes recorded in the study area between 2013-2018. Crash data was previously discussed in Section 4.2.

Reviewing the pedestrian crash history shows that:

- There is a high concentration of crashes involving pedestrians along the Millers Road corridor. In particular, Millers Road at Altona Gate Shopping Centre appears to be a safety hotspot for pedestrians.
- Crashes involving pedestrians are also concentrated around Spotswood and Newport station. Improving safety and accessibility outcomes for pedestrians at these station precincts presents an opportunity to further improve the utilisation of train travel in Hobsons Bay.

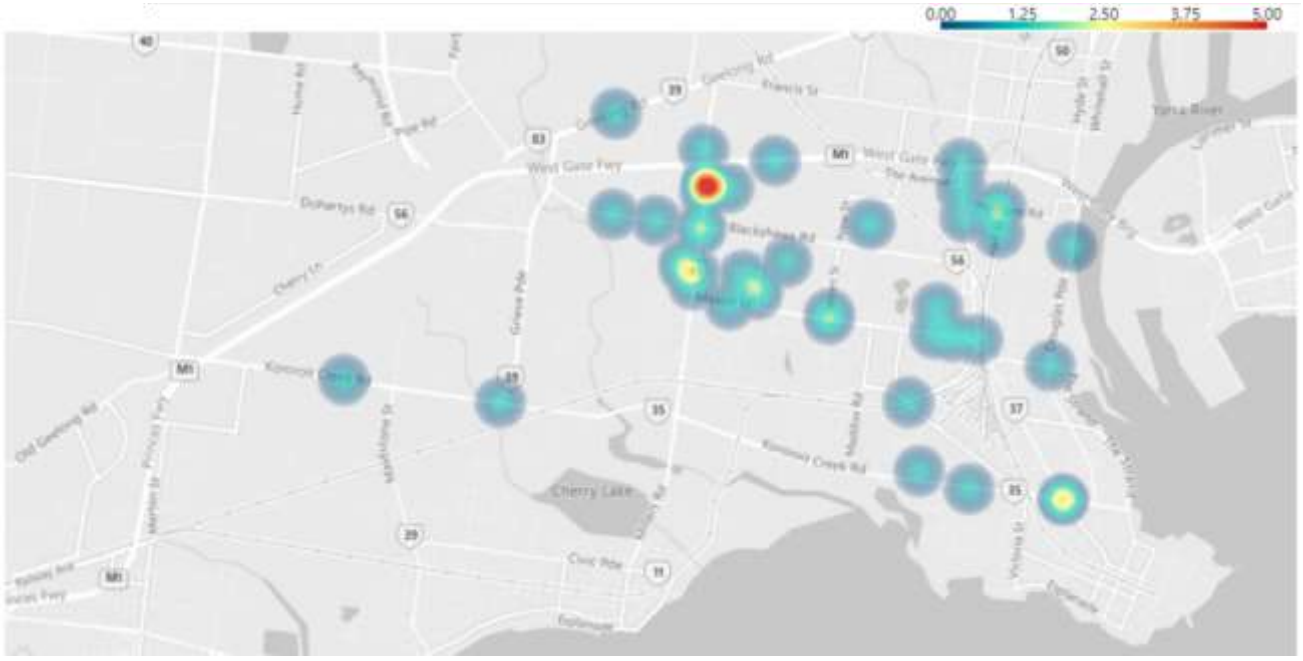


Figure 6-40 Heatmap of pedestrian crashes in study area (2013-2018)

Source: Department of Transport Open data

NEWPORT STATION

A summary of the key walking access routes, crossings and barriers to walking accessibility for Newport station are shown in Figure 6-41 and Figure 6-42.

Key findings:

- Melbourne Road south of North Road is classified as a walking W2 route, however it does not provide direct connectivity to Newport station. Walking access from the south is poor due to the overpass on Melbourne Road and lack of crossing points. In particular, there is no direct access from the residential pocket between Melbourne Road and the rail line, south of Newport station.
- Access from the west is facilitated primarily through Mason Street and Market Street.

A signalised crossing provides direct access to the station from Mason Street. However, the large roundabout at Mason Street / Walker Street potentially presents safety conflicts between active transport and vehicles. As shown in

Figure 6-40, Mason Street in the vicinity of Newport station has historically been a hotspot for crashes involving pedestrians.

- Market Street facilitates active transport linkages between residential areas in the southwest and also from the adjacent station parking. Market Street is afforded zebra crossings and a pedestrian underpass which provide direct connectivity with Newport station. Bus to train interchange movements are also facilitated through this pedestrian underpass.

The main walking access to Newport station:

- **From the west** – Mason Street
- **From the south** – Melbourne Road and Market Street
- **From the north** – Hall Street and Melbourne Road
- **From the east** – North Road

Figure 6-41 Walking access to Newport station

Source: Strava

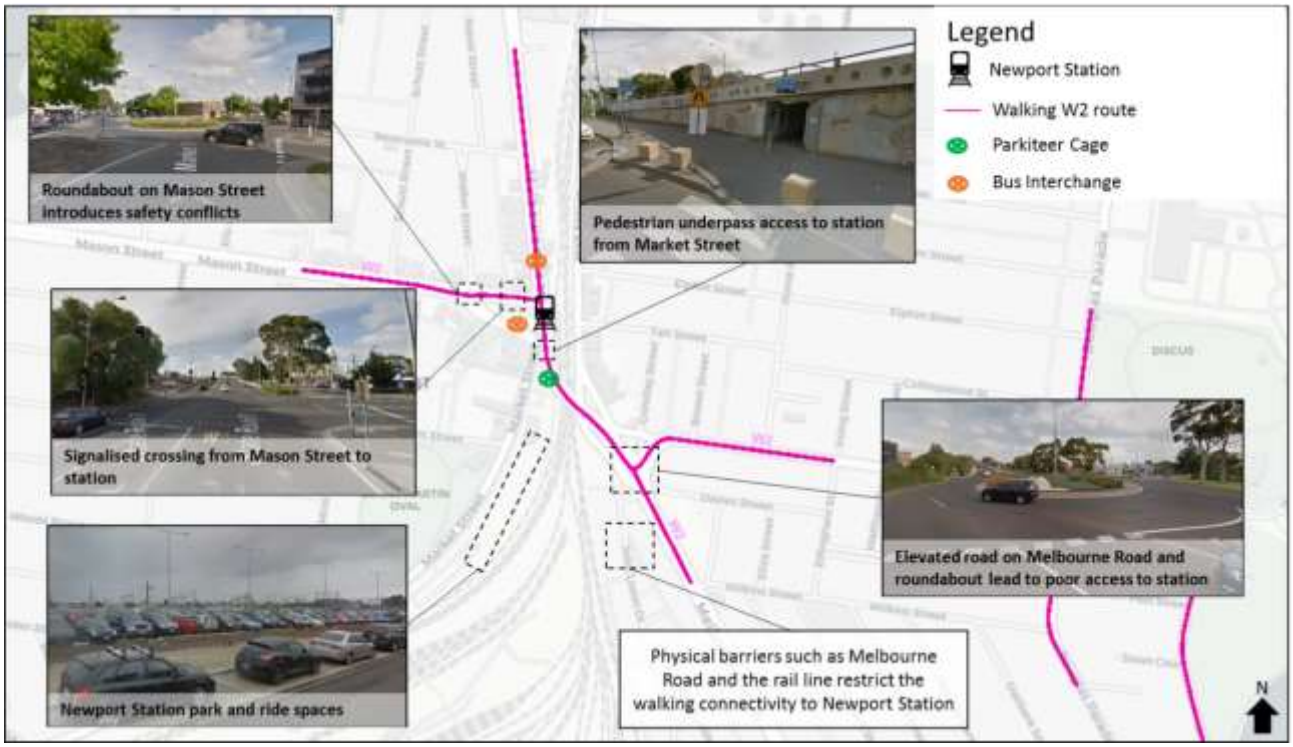


Figure 6-42 Walking access to Newport station – challenges and opportunities

Market Street is not currently classified as a W2 walking route, however this could be reconsidered as part of station accessing planning. Walking access to Newport station through the Market Street corridor includes an existing shared path on the southern side of the rail line along Market Street to Champion Road. This walking route is a popular but unpleasant route from a safety and amenity perspective, in particular where it extends under the Melbourne road overpass from the Parkiteer cage and Newport substation.

SPOTSWOOD STATION

A summary of the key walking access routes, characteristics, challenges and opportunities surrounding Spotswood station are shown in Figure 6-43 and Figure 6-44.

Key findings:

- The key walking routes as defined by the W2 classifications in the vicinity of Spotswood station are Melbourne Road and Douglas Parade (Coastal Trail).
  - While Melbourne Road is identified as a key walking route, it is also classified as an arterial route which provides access to the West Gate Freeway. This route does not provide connectivity to Spotswood station and the high number of vehicles travelling along Melbourne Road may result in unpleasant walking and crossing conditions.
  - Douglas Parade and the Coastal Trail are also identified as key walking routes, however pedestrian crossing facilities along Douglas Parade are limited, with no direct linkages between Spotswood station and the Coastal Trail.
- Access to the station is predominantly through low speed local roads (Hudsons Road, Hall Street, Craig Street etc.) which is preferable for pedestrian walking conditions. There are two zebra crossings (along Hudsons Road and Hall Street) which provide some connectivity to the train station.
- The WGTP includes the provision of a new connection from the Federation Trail to Hyde Street Reserve and Spotswood station along Hall Street that will improve access and connect the neighbourhoods of Spotswood and

Yarraville. This will help improve both walking and cycling connectivity to Spotswood station from the north and presents an opportunity to consolidate the walking infrastructure within the area.

- Some of the key challenges associated with walking around Spotswood station include:
  - Lack of key walking routes providing access to Spotswood station and connections to surrounding land use
  - Pedestrians wishing to cross Hall Street must cross at the railway level crossing (safety conflicts). This presents a key barrier to pedestrian links between the two halves of the Spotswood commercial precinct
  - The rail line is a barrier to walking accessibility, with only one crossing available at Hudsons Road.

The main walking access to Spotswood station is:

- **From the west** – Hudson Road and Hope Street
- **From the south** – Hall Street
- **From the north** – Hall Street
- **From the east** – Hudsons Road and Craig Street

Figure 6-43 Walking access to Spotswood station

Source: Strava

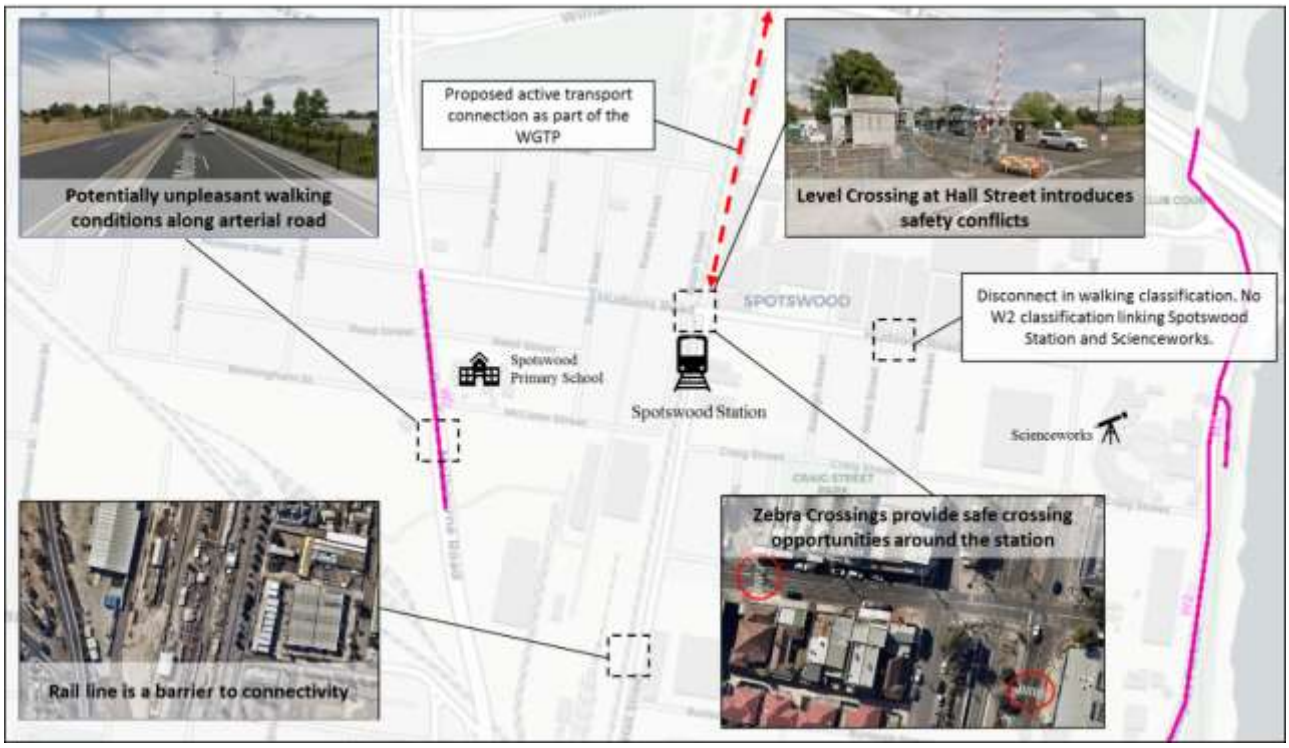


Figure 6-44 Walking access to Spotswood station – challenges and opportunities

NORTH WILLIAMSTOWN STATION

A summary of the key walking access routes, characteristics, challenges and opportunities surrounding North Williamstown station are shown in Figure 6-45 and Figure 6-46.

Key findings:

- There are three schools located near North Williamstown station. As a result, there are high pedestrian numbers passing through this location accessing the schools and the Ferguson Street Activity Centre. Pedestrians accessing the station and the schools must negotiate major arterial roads and therefore the provision of safe pedestrian crossings is key. Currently, there are a combination of signalised and unsignalised pedestrian crossings around North Williamstown station.
- Currently there is a level crossing at Ferguson Street, which in combination with the two roundabouts at Champion Road and Railway Road, which creates a constrained pedestrian environment with several conflict points. The Fergusons Street level crossing will be removed by LXRP, with works currently in the early planning stage. As part of this project there is the opportunity to consolidate access/desire lines in and around the train station.

The main walking access to North Williamstown station:

- **From the west** – Kororoit Creek Road and Champion Road
- **From the south** – Victoria Street
- **From the north** – Melbourne Road and Power Street
- **From the east** – Ferguson Street

Figure 6-45 Walking access to North Williamstown station

Source: Strava

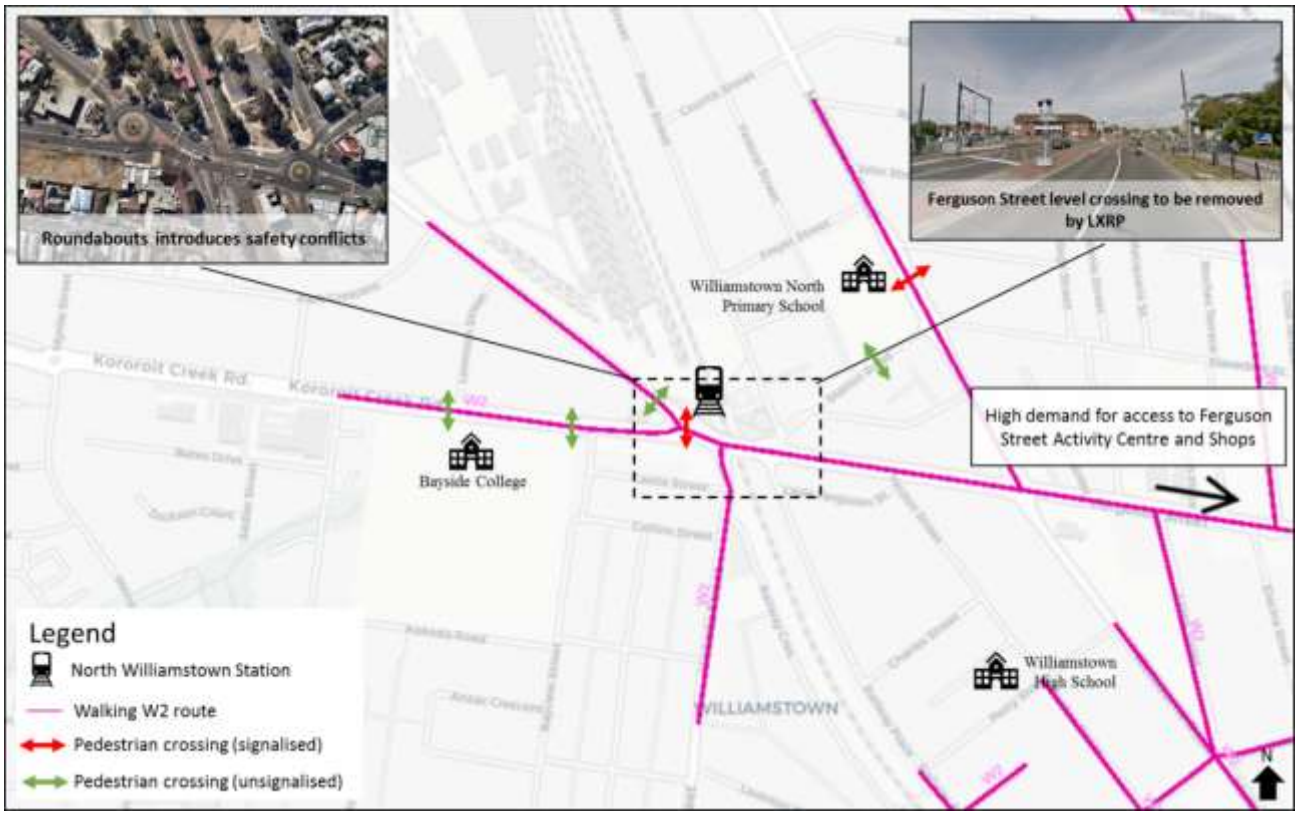


Figure 6-46 Walking access to North Williamstown station – challenges and opportunities

ALTONA GATE SHOPPING CENTRE

Altona Gate Shopping Centre is a local activity centre located on Millers Road, south of the West Gate Freeway. Figure 6-47 shows the key walking routes and pedestrian crossing points to and from the Altona Gate Shopping Centre.

Key findings:

- The main entrance to Altona Gate Shopping Centre is via Millers Road. Most pedestrians are expected to access the shopping precinct via the main entrance and associated crossings at Millers Road / Cyclamen Avenue. It is noted that Millers Road is a major north-south arterial, facilitating large freight movements. As such, this potentially introduces safety implications for pedestrians accessing Altona Gate. This location has been identified as a safety hotspot (Figure 6-40).
- Altona Gate appears to be designed primarily for vehicle access, with little consideration for pedestrian connectivity. Pedestrian access to the precinct is via one entrance (off Millers Road) and is characterised by heavy interference with vehicles accessing the car parks.
- Duosa Road is classified as a walking W2 route and provides access to the Altona Gate multi-level carpark and indirect pedestrian access to Altona Gate.

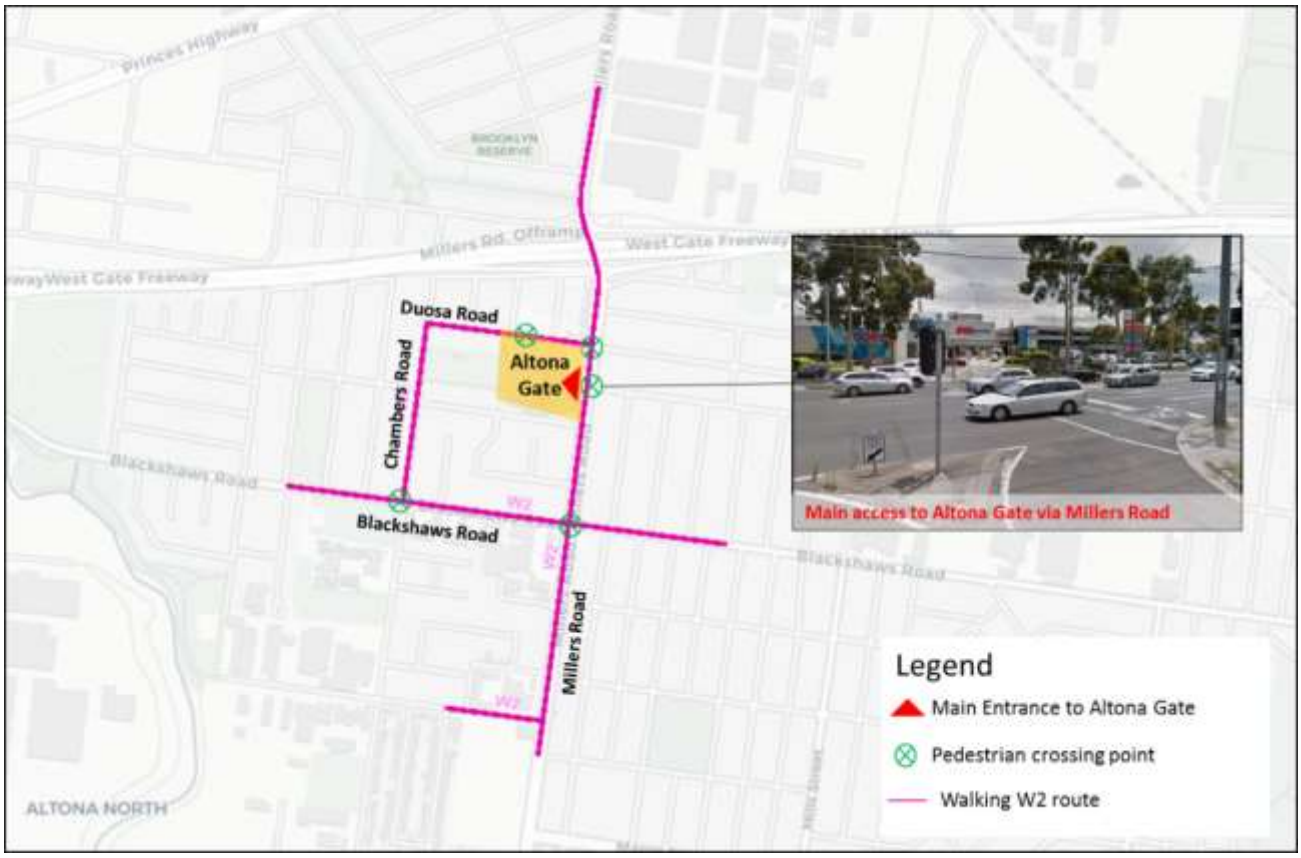


Figure 6-47 Altona Gate Shopping Centre walking access

6.1.5.2 CYCLING

HIGH LEVEL SAFETY HOTSPOTS

The increase in uptake of cycling in Hobsons Bay is highly dependent on perceptions of safety and levels of traffic stress experienced by cyclists. Figure 6-48 highlights the cycling crashes recorded in the study area between 2013-2018. Crash data was previously discussed in Section 4.2.

Key findings:

- There is a concentration of crashes along Mason Street, which is on the proposed SCC and provides direct access to Newport station
- There is a concentration of crashes along Kororoit Creek Road, particularly at the intersection of Kororoit Creek Road and Millers Road.

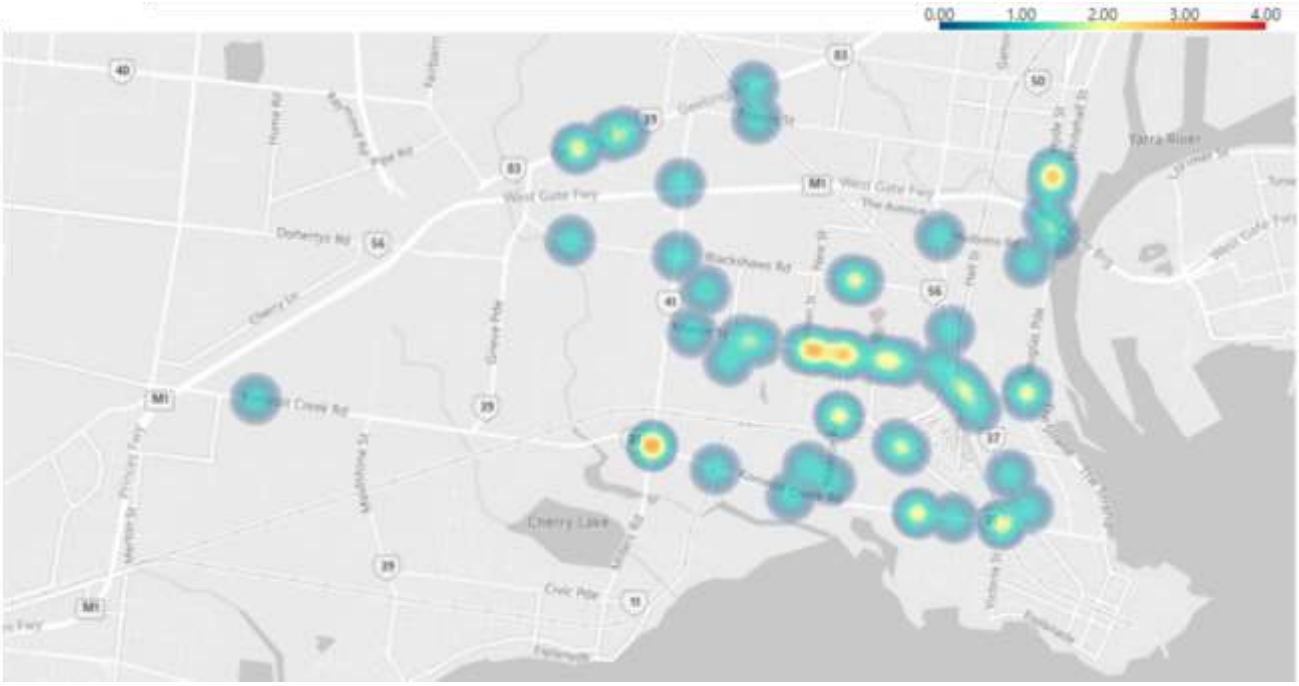


Figure 6-48 Heatmap of cyclist crashes in study area (2013-2018)

Source: data.vic.gov.au

STRATEGIC CYCLING CORRIDORS

To capture the broader cycling network challenges and opportunities within Hobsons Bay, it is necessary to understand the Strategic Cycling Corridors (SCC) defined in the area and the corresponding cycling infrastructure provided on these routes.

SCCs are key arterials of the bicycle network which connect major destinations and are a subset of the Principal Bicycle Network (PBN). SCCs aim to provide safe and connected continuous routes to key destinations and low stress cycling experience and should be supported by dedicated and effective bicycle infrastructure. The effectiveness of cycling routes can be assessed by the level of traffic stress experienced by the cyclist.". Low traffic stress environments (such as cycle paths and cycleways Figure 6-49) are preferred for SCCs.

There is a known gender bias in cycling participation within Hobsons Bay, with 4.6 male cyclists for every female, as compared to 1.6 to 1 in the City of Darebin (Hobsons Bay City Council, 2017a). Providing safer and lower stress cycling networks has been identified as a key action for increasing cycling participation beyond the current typical cyclist who is male and under 45 (Transport for Victoria, 2018).

Many of the cycling routes on the proposed SCC in Hobsons Bay provide only on-road bicycle lanes with non-physical separation with general traffic and freight. This leads to a perception that cycling on these routes in unsafe. From a commuter cyclist perspective, once more direct cycling routes are perceived as less safe, commuters either can opt for safer but less direct routes on cycling trails, or change modes.

Figure 6-49 Level of traffic stress scale for cyclists

Source: Transport for Victoria, 2018

Figure 6-50 shows the SCC in the Hobsons Bay study area. The SCCs identified below represent the latest revision of the SCCs developed in collaboration with DoT and HBCC. The key SCCs through the study area include:

- **Grieve Parade:** north-south
- **Millers Road and Chambers Road:** north-south
- **Hall Street and Melbourne Road:** north-south
- **Kororoit Creek Trail, north of Federation Trail:** north-south (outside of study area)
- **Federation Trail:** east-west
- **Craig Street, McLister Street and Birmingham Street:** east-west
- **Mason Street:** east-west
- **Kororoit Creek Road:** east-west.

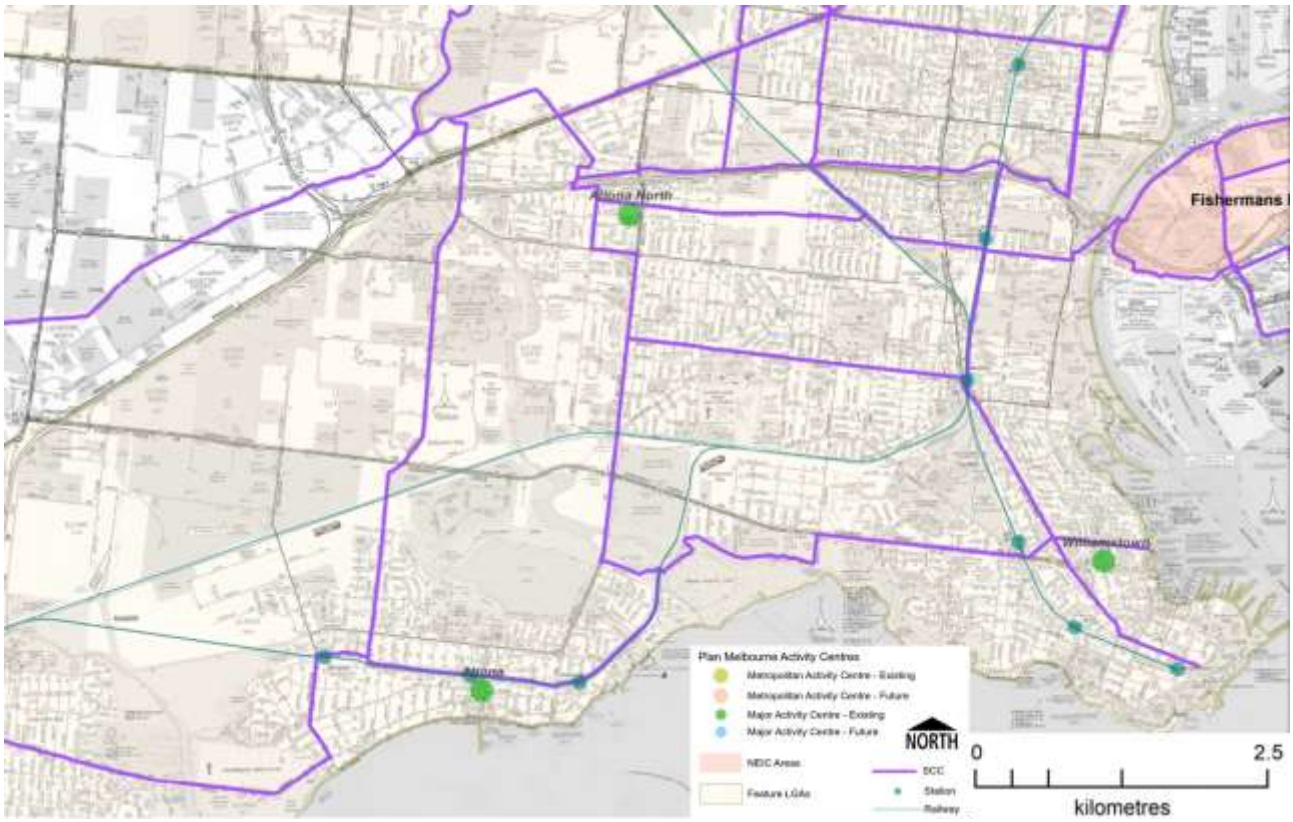


Figure 6-50 Strategic Cycling Corridors in study area

Source: DoT

EXISTING AND COMMITTED INFRASTRUCTURE

To capture the broader cycling network challenges and opportunities within Hobsons Bay, it is necessary to understand the SCCs defined in the area and the corresponding cycling infrastructure already provided on these routes. Figure 6-51 presents a visual summary of the existing and committed (as part of the WGTP) bicycle infrastructure on the SCCs within the study area, whilst

Table 6-4 provides further details of the bicycle facilities on the key sections of the SCC.

Within the study area, the following routes on the SCC have existing bicycle infrastructure (either off-road paths or on-road):

- Grieve Parade – off road
- Millers Road – on road
- Mason Street – on road
- Melbourne Road – on road
- Kororoit Creek Road – on road.

Other routes on the SCC (such as Hall Street) currently do not have dedicated bicycle infrastructure.

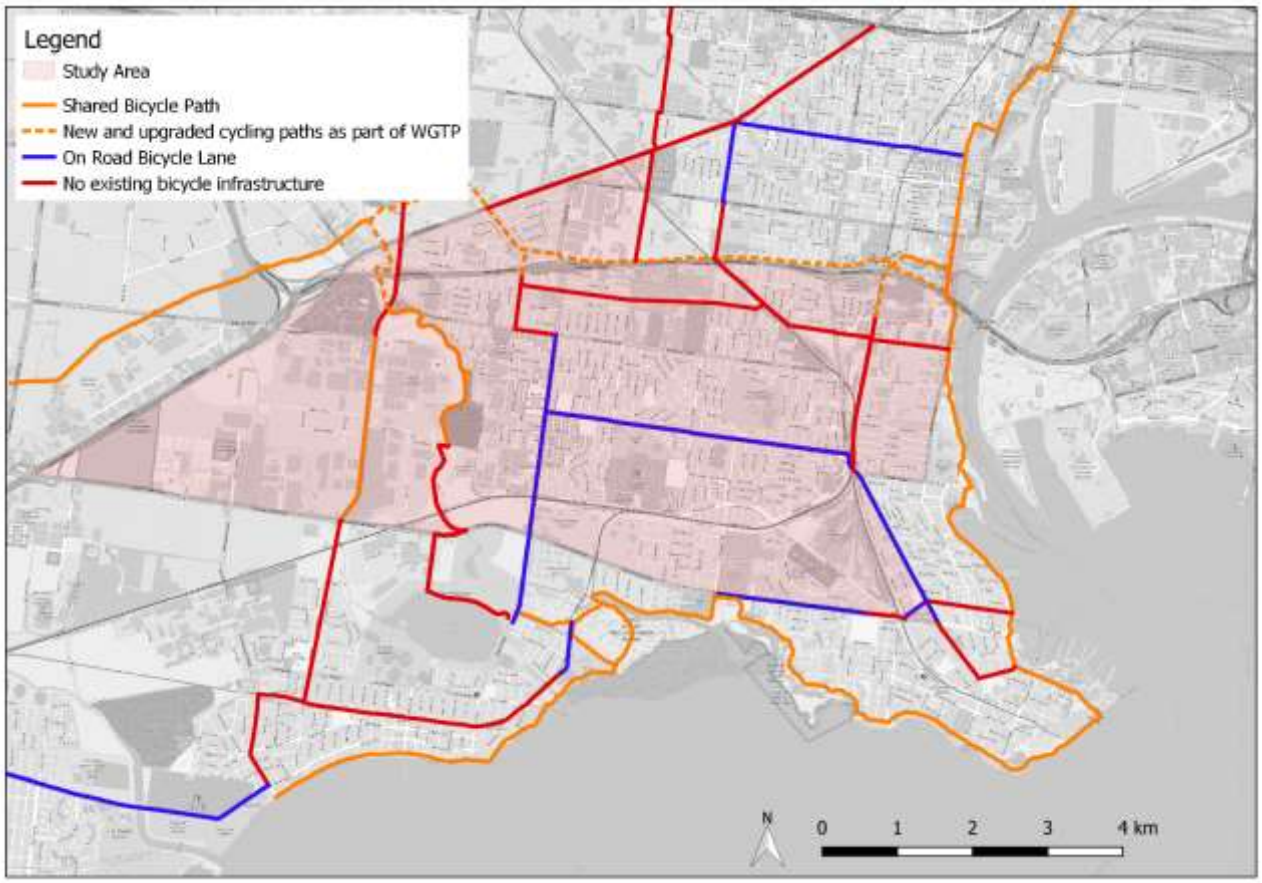


Figure 6-51 Bicycle infrastructure in study area

Table 6-4 Existing bicycle infrastructure

LOCATION	EXISTING BICYCLE INFRASTRUCTURE	PHOTO
Grieve Parade	**Between Kororoit Creek Road and Dohertys Road** — Off-road shared bicycle path **North of Dohertys Road** — No bicycle infrastructure — Posted speed: 70 km/h	
Millers Road	— On-road bicycle lane (kerbside bicycle lane) — Posted speed: 60 km/h — Sections of shared bus and bicycle lane — Lack of continuity in bicycle lanes at intersections	
Mason Street	— On-road bicycle lane (exclusive bicycle lane) — Some sections of shared parking and bicycle lanes — Posted speed: 60 km/h	
Hall Street	**At Newport station** — No dedicated bicycle infrastructure — Posted speed: 50 km/h **North of Newport station** — Lack of clear dedicated bicycle infrastructure — Posted speed: 60 km/h **North of Burleigh Street** — No dedicated bicycle infrastructure — Posted speed: 60 km/h	
Melbourne Road	— On-road bicycle lane (combination of exclusive bicycle lanes and shared bicycle and parking lanes) — Posted speed: 60 km/h	

LOCATION	EXISTING BICYCLE INFRASTRUCTURE	PHOTO
Craig Street	— No dedicated bicycle lanes — Traffic calming and carpark access for Scienceworks	
Kororoit Creek Road	— On-road bicycle lane (kerbside bicycle lanes and shared bicycle/parking lanes) — Posted speed: 60-70 km/h	
McLister Street	— No dedicated bicycle lanes — Posted speed:40 km/h	
Birmingham Street	— No dedicated bicycle lanes — Posted speed:50 km/h	

FEDERATION TRAIL AT MILLERS ROAD

The Federation Trail crosses Millers Road to the north of the Westgate Freeway. There is pedestrian and cyclist signalised crossing at this location. However, this location has been noted as a potential conflict point, as Millers Road north of the West Gate Freeway is a congested link and carries a high proportion of heavy vehicles. This location is a potentially high stress point on the bicycle network.

GAPS IN CYCLING NETWORK

The SCC is the long-term vision for the network underpinned by five principles – destination based, safe, direct, integrated and connected (i.e. to support the 20 minute neighbourhoods). These will be supported by a set of guidelines to minimise level of stress for cycling infrastructure along the SCC. Low traffic stress environments are preferred for SCCs and would typically be recommended to be either:

- Off-road bicycle paths
- Protected bicycle lanes separated from traffic
- Painted bicycle lanes in low speed environments (<= 40 km/h).

On-road bicycle lanes (non-separated) on roads with posted speeds above 40 km/h lead to moderate to high traffic stress and are not suitable for routes on the SCC, however this does depend on the traffic volume and traffic/bicycle lane width.

Based on the above guidance and an assessment of the bicycle infrastructure discussed above, Table 6-5 presents a summary of the current traffic stress environment for the SCCs in the study area. It should also be noted that the primary function of the SCC is for a high-level transport route, and will be supported by municipal cycling links as part of the PBN. The SCC and municipal links have been classified based on its purpose and function. SCCs are classified as either C1 and C2 whilst municipal links are classified C3 to C5. This will affect the desired level of stress.

Table 6-5 Traffic stress on proposed SCC

SCC ROUTE	ROAD SEGMENT	POSTED SPEED (KM/H)	BICYCLE INFRASTRUCTURE	TRAFFIC STRESS	DESIRABLE LEVEL OF TRAFFIC STRESS?
Grieve Parade	**Grieve Parade** (between Kororoit Creek Road and Dohertys Road)	N/A (Off-road path)	Off-road shared bicycle path	Low	Yes
	Grieve Parade (north of Dohertys Road)	70	No dedicated bicycle infrastructure	Moderate to high	No
Millers Road	**Millers Road** (south of Blackshaws Road)	60	On-road bicycle lane	Moderate to high	No
	Blackshaws Road (between Chambers Road and Millers Road)	60	No dedicated bicycle infrastructure	Moderate to high	No
	Chambers Road (north of Blackshaws Road)	50	No dedicated bicycle infrastructure	Low to Moderate	No
Hall Street and Melbourne Road	**Hall Street** (between West Gate Freeway and Melbourne Road)	50-60	No dedicated bicycle infrastructure	Moderate	No
	Melbourne Road (south of Mason Street)	60	On-road bicycle lane	Moderate to high	No

SCC ROUTE	ROAD SEGMENT	POSTED SPEED (KM/H)	BICYCLE INFRASTRUCTURE	TRAFFIC STRESS	DESIRABLE LEVEL OF TRAFFIC STRESS?
Federation Trail	**Federation Trail**	N/A (Off-road path)	Off-road shared bicycle path	Low	Yes
Craig Street, McLister Street and Birmingham Street	**Craig Street**	40-50	No dedicated bicycle infrastructure	Low	Neutral[1]
	McLister Street and Birmingham Street	40-50	No dedicated bicycle infrastructure	Low	Neutral[1]
Mason Street	**Mason Street** (between Millers Road and Melbourne Road)	60	On-road bicycle lane	Moderate to high	No
Kororoit Creek Road	**Kororoit Creek Road** (east of Maddox Road)	60	On-road bicycle lane	Moderate to high	No

[1] Craig and McLister Streets are low-speed local roads, which reduces the traffic stress for cyclists. However, formalised bicycle infrastructure on these routes would assist in supporting these sections as suitable for the SCC.

In addition to the findings presented for the SCC in Table 6-5, there is also a gap in cycling infrastructure identified on Maddox Road, near the level crossing with the Werribee line. There is an existing shared use path located on the eastern side of Maddox Road that extends from the southern side of the level crossing and joins into the Bay Trail south of Kororoit Creek Road. The off-road shared path ends on the southern side of the level crossing and pedestrians/cyclists are then directed to cross the rail line in the eastern most lane of Maddox Road for travel in both directions. This lane is used for parking on both sides of the rail line.

The key findings of this cycling network gap assessment are:

- Most of the cycling network designated under the SCC within the study area is not in line with the recommended cycling infrastructure, with the exception of Grieve Parade (south of Dohertys Road) and the Federation Trail (new and upgraded as part of the WGTP).
- Although Melbourne Road, Millers Road, Mason Street and Kororoit Creek Road currently have on-road bicycle lanes, the bicycle lanes are still impacted by frequent interference with parking and bus lanes/stops (refer to Table 6-4) and still present a high traffic stress environment for cyclists. These roads also have high posted speeds of 60 km/h.
- Within the study area, the following road segments on the SCC require dedicated cycling infrastructure:
  - Grieve Parade, north of Dohertys Road
  - Blackshaws Road (west of Millers Road) and Chambers Road
  - Hall Street
  - Craig Street, McLister Street and Birmingham Street – although these roads present lower speed environments, providing dedicated cycling infrastructure presents an opportunity to formalise the SCC route.
- The following road segments on the SCC require upgraded cycling infrastructure:
  - Melbourne Road
  - Millers Road

- Mason Street
- Kororoit Creek Road.

- It is understood that cycling infrastructure around Kororoit Creek Road is being upgraded as part of the Ferguson Level Crossing removal, planned for removal between 2019 and 2022. Improvements to the cycling infrastructure on Kororoit Creek Road in the vicinity of the level crossing presents an opportunity to align Kororoit Creek Road with the cycling infrastructure recommended for a SCC.
- It is understood that the proposed developments for Precinct 15 will include the provision of a dedicated east-west cycling route, linking Chambers Road on the west and to Craig Street on the east.
- The Kororoit Creek Trail is incomplete south of Barnes Road. The extension of the Kororoit Creek Trail south to the Coastal Trail has been proposed and considered in strategic plans such as the West Trails Strategic Plan, July 2017.

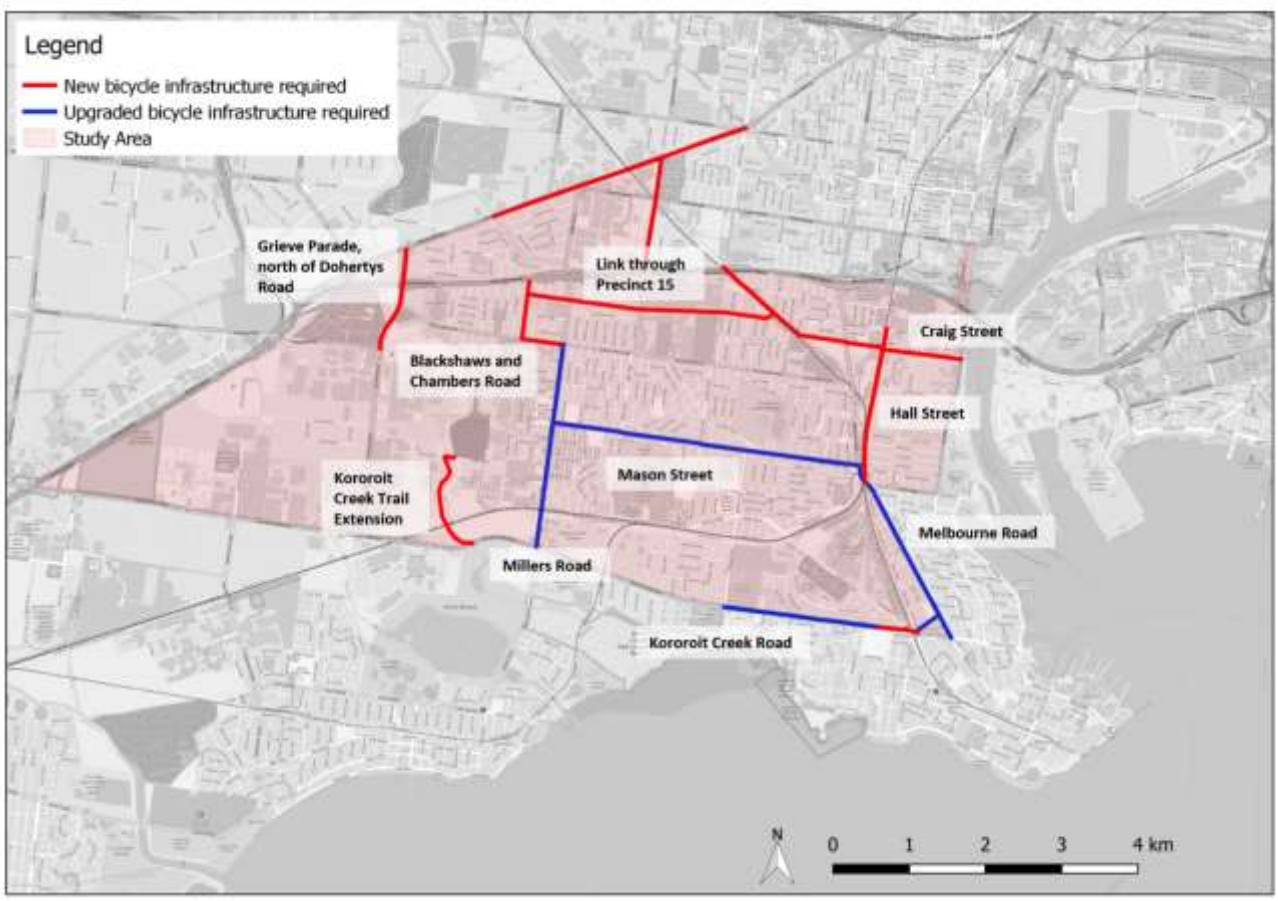


Figure 6-52 SCC cycling gaps identified

CRAIG STREET CONTINUITY

Under the most recent revision of the SCCs within Hobsons Bay, Craig Street and McLister Street in Spotswood are designated SCCs. However, it is noted that currently there is no direct link between Craig Street and McLister Street due to the rail line (see Figure 6-53). This presents a challenge to the functionality of this SCC, as a lack of direct connectivity reduces the effectiveness and attractiveness of cycling for commuters.

Figure 6-53 Craig Street and McLister Street

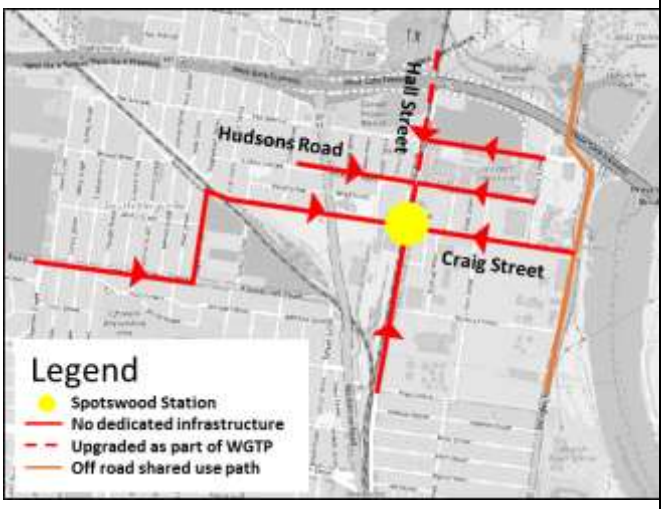
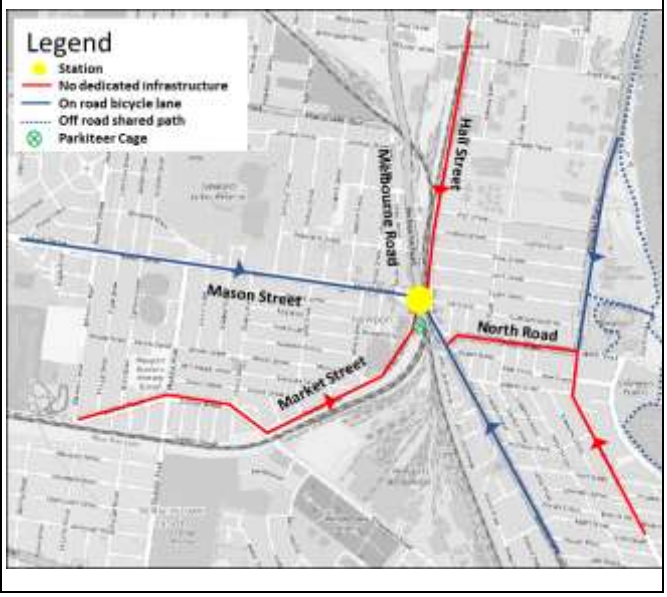
CYCLING ACCESSIBILITY TO STATIONS

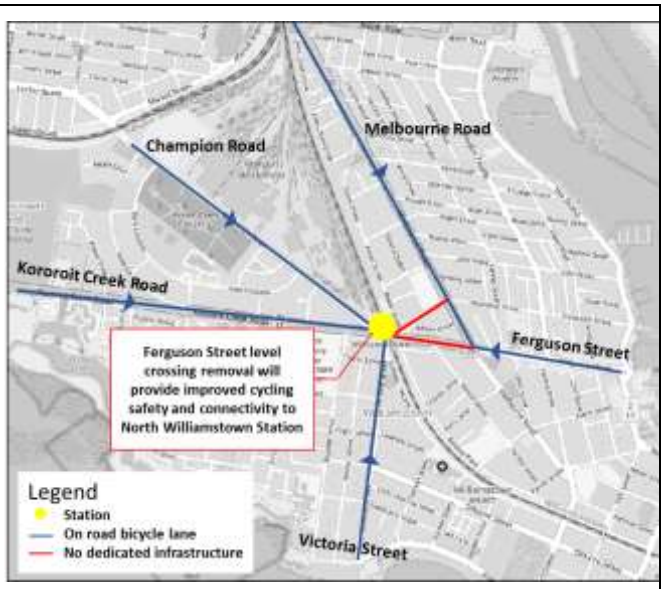
This section discusses the ability to access train stations within the study area (Spotswood, Newport and North Williamstown stations) via cycling. Table 6-6 provides a summary of the main identified access routes to the stations.

The key findings are:

- Hall Street provides direct access to both Newport station and Spotswood station and is on the proposed SCC. Currently, there are no dedicated bicycle lanes/paths on Hall Street. This can create the perception of an unsafe cycling route and limit potential for mode shift from private vehicle to bicycle.
- Spotswood station is serviced by proposed SCCs along Hall Street (north-south) and Craig Street / McLister Street (east-west). Currently, there are is no dedicated cycling lanes/infrastructure on these routes. However, Hall Street north of Spotswood station will be upgraded as part of the WGTP.
- Newport station is serviced by the proposed SCCs along Hall Street (north), Melbourne Road (south) and Mason Street (west). The major cycling catchment for bicycle-train interchange movements at Newport station predominantly exist in the residential pockets to the east and west of the station.
- North Williamstown station appears to have adequate cycling accessibility in terms of dedicated infrastructure. However, the on-road (non-separated) bicycle lanes are still below what would normally be recommended for a SCC. Active transport upgrades as part of the Ferguson Street Level Crossing removal presents an opportunity to further improve the active transport linkages to the station.
- Newport station has a Parkiteer cage, however demand regularly exceeds supply (refer to Section 6.1.2). There are no Parkiteer cages located at Spotswood station and North Williamstown station. Informal bicycle parking (i.e. fences, poles etc.) are currently being used by cyclists in the absence of formalised bicycle facilities. This suggests that even with upgraded cycling links to the stations, the lack of end-of-trip cycling facilities presents a key challenge in promoting the shift towards active transport to stations.

Table 6-6 Cycling links to train stations

Station	Access Routes	Diagram
Spotswood station	Spotswood station is serviced by the proposed SCCs along Hall Street and Craig Street / McLister Street. Direct north-south access to Spotswood station is via Hall Street and Hope Street, whilst the main east-west cycling access is from the local roads of Craig Street, McLister Street and Birmingham Street. Currently, there are no dedicated cycling lanes/infrastructure on these routes. However, Hall Street north of Spotswood station will be upgraded as part of the WGTP. Hudsons Road also provides east-west local access to Spotswood station, however is not on the proposed SCC. There is a lack of formalised bicycle end-of-trip facilities at Spotswood station.	
Newport station	Newport station is serviced by the proposed SCCs along Hall Street (north), Melbourne Road (south) and Mason Street (west). Other key cycling access points include North Road (east) and Market Street (southwest). Although Mason Street and Melbourne Road are afforded on-street cycling lanes, there is no dedicated cycling infrastructure currently provided on the other routes. In particular, there is a notable gap along Hall Street which provides north-south connectivity and is designated as a SCC. End-of-trip locker and Parkiteer facilities are provided on Market Street.	

North Williamstown station	North Williamstown station is serviced by the proposed SCCs along Kororoit Creek Road (west) and Melbourne Road (north). Other key access points include Victoria Street (south), Ferguson Street (east) and Champion Road (northwest). Cyclists accessing the station from Melbourne Road (north) and Ferguson Street (east) run into interference from local traffic approximately 200 m from the station, where there is no dedicated cycling infrastructure. All other routes have on-road bicycle lanes, however, there is currently a lack of adequate end-of-trip cycling facilities provide at the station.	

6.1.5.3 ACTIVE TRANSPORT ANALYSIS FINDINGS

A summary of the key opportunities and challenges for active transport is shown in Figure 6-54. The key findings of the above assessment are:

- The key pedestrian walking areas are the three train stations in the study area (Spotswood station, Newport station and North Williamstown station), Ferguson Street Activity Centre and Shops, and Altona Gate Shopping Centre.
- Currently, the proposed SCC within the study is not supported by adequate cycling infrastructure to the standard recommended for a SCC.
  - Although Melbourne Road, Millers Road, Mason Street and Kororoit Creek Road currently have on-road bicycle lanes, these bicycle lanes are affected by frequent interference with parking and bus lanes/stops and present a high traffic stress environment for cyclists. These roads also have high posted speeds of 60km/h and, in the case of Millers Road, facilitate large freight movements in the area.
  - Grieve Parade (north of Dohertys Road), Blackshaws Road, Hall Street and Craig Street are designated SCCs, however currently lack dedicated cycling infrastructure. Opportunities exist to formalise these routes on the SCC by providing improved cycling infrastructure. In particular, Hall Street could provide linkages between Newport station and Spotswood station/activity centre (as well as towards Williamstown), whilst also providing connectivity with the Federation Trail as part of the upgrades with the WGTP.
- The Federation Trail crosses Millers Road at a signalised crossing, however, it is a potential conflict and high stress point for cyclists, as Millers Road is a congested link and carries a high proportion of heavy vehicles.
- It is understood that cycling infrastructure around Kororoit Creek Road is being upgraded as part of the Ferguson Level Crossing removal, planned for removal between 2019 and 2022. Improvements to the cycling infrastructure on Kororoit Creek Road in the vicinity of the level crossing presents an opportunity to align Kororoit Creek Road with the cycling infrastructure recommended for a SCC, as well as to improve walking linkages between North Williamstown station and the schools within the area.
- It is understood that the proposed developments for Precinct 15 will include the provision of a dedicated east-west cycling route, linking Chambers Road on the west and to Craig Street on the east.
- The Kororoit Creek Trail is incomplete south of Barnes Road. The extension of the Kororoit Creek Trail south to the Coastal Trail has been proposed in strategic plans such as the *West Trails Strategic Plan, July 2017*.

- High-level safety hotspots have been identified along Mason Street for cyclists and around Altona Gate Shopping Centre for pedestrians. Mason Street is on the proposed SCC and provides direct connectivity to Newport station.
- End-of-trip bicycle facilities are limited at the train stations in the study area. Bicycle demand outstrips supply at Newport station, whilst parkiteer cages are not provided at North Williamstown and Spotswood station. The benefits of any improvements to the cycling infrastructure to and from the station precincts will be limited unless end-of-trip facilities are upgraded.
- Walking accessibility is poor in parts of the study area due to physical barriers such as the rail line and arterial roads such as Millers Road and Melbourne Road. In particular, walking access to Newport station from the south is poor due to the elevated road on Melbourne Road and lack of crossing points.

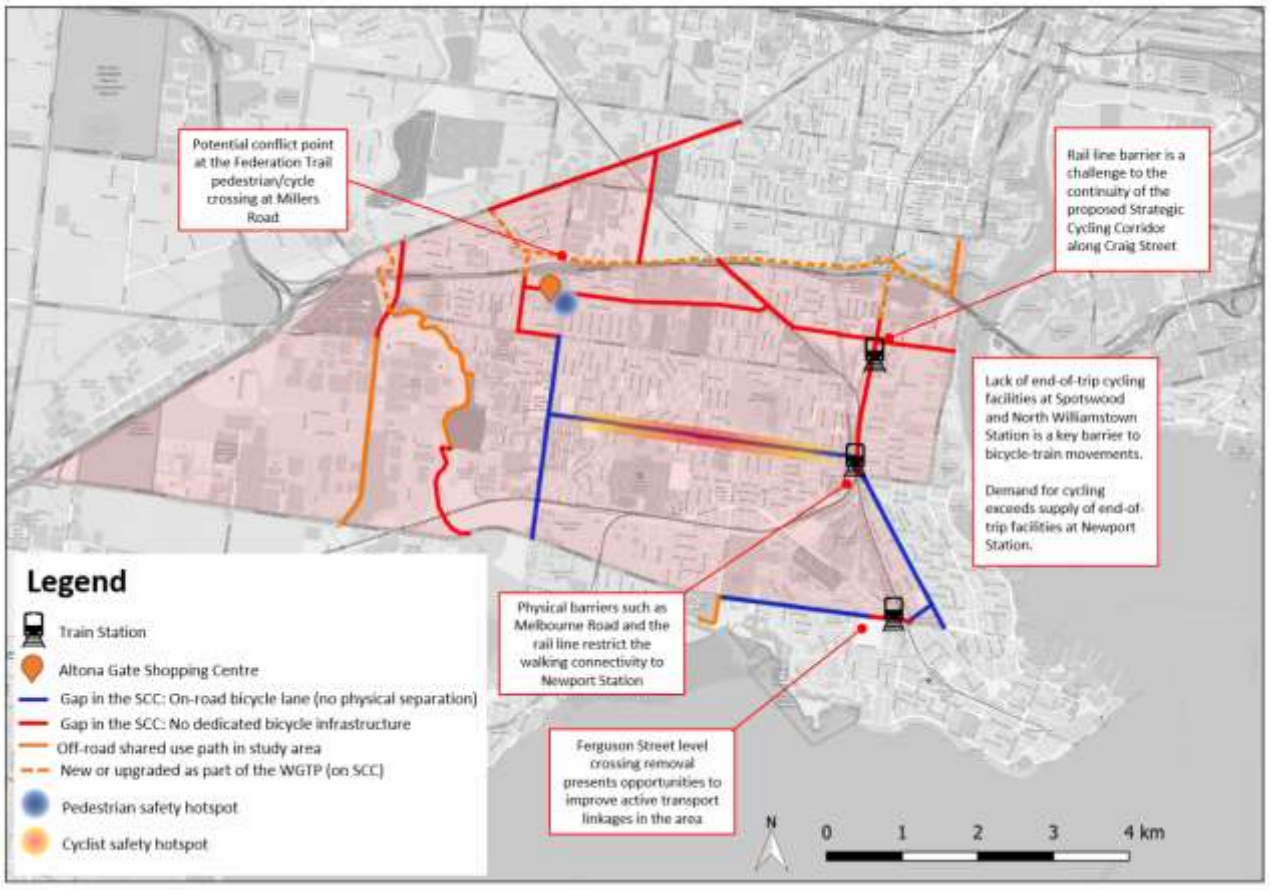


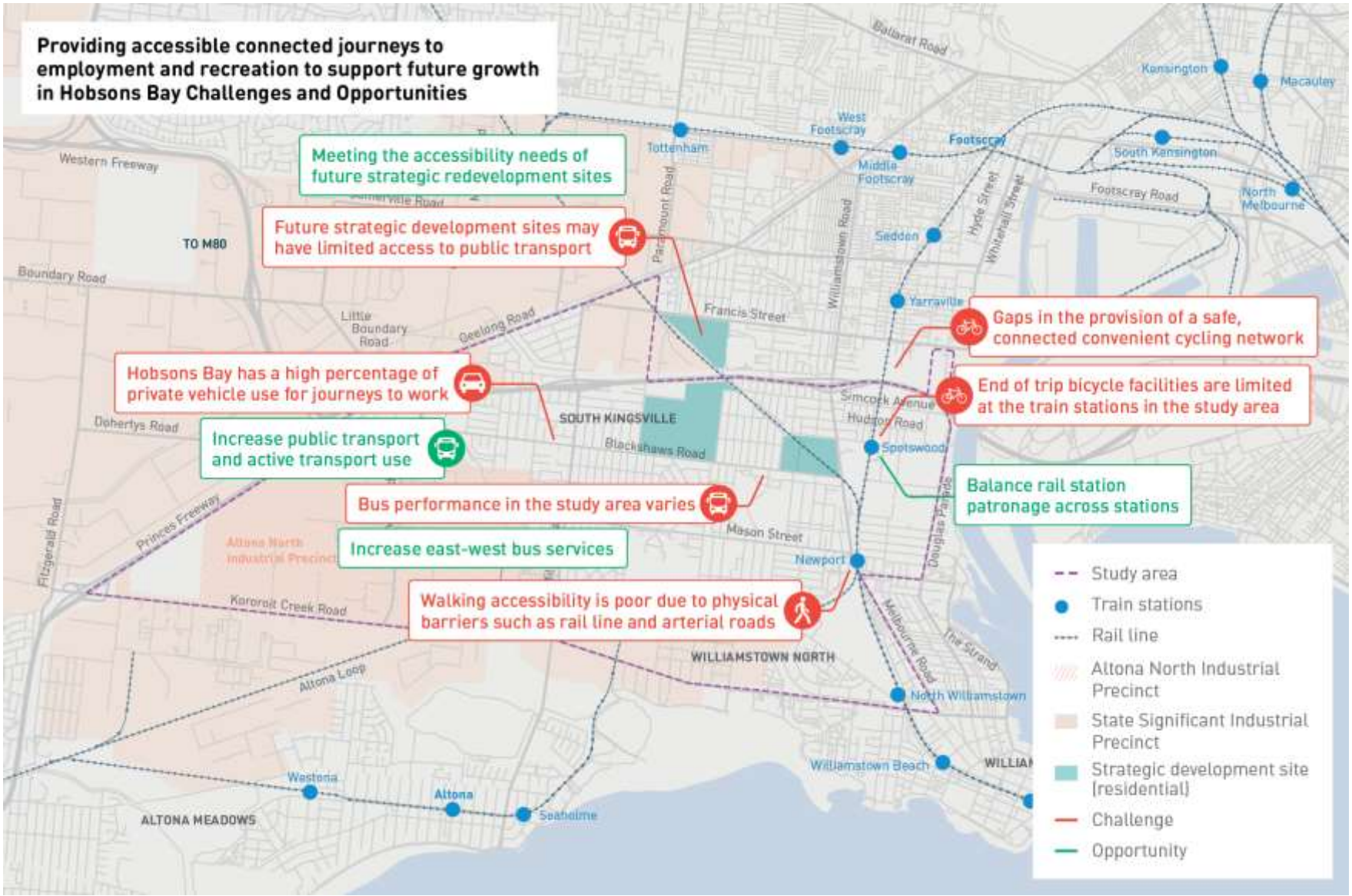
Figure 6-54 Active transport opportunities and challenges

6.1.6 THEME 1 CHALLENGES AND OPPPORTUNITIES

Based on the analysis and investigation undertaken, the challenges and opportunities for providing accessible connected journeys to employment and recreation to support future growth in Hobsons Bay are:

	**Challenge** **Hobsons Bay has a high percentage of private vehicle use for journey to work.** Public transport trips appear to be an unattractive alternative to private vehicles, apart from catchments within walking distance to a rail station. Connectivity and coordination to rail services limits transport options for journeys to work, particularly for areas such as Brooklyn and Altona North. Public transport mode share increases for catchments within walking distance to a rail station.
	**Challenge** **Future strategic development sites may have limited access to public transport.** Altona North contributes to a high proportion of the population and employment growth in Hobsons Bay, experiencing the highest car mode share for journey to work and low public transport mode share compared to other suburbs within Hobsons Bay.
	**Challenge** **Bus performance in the study area varies.** Whilst some bus services in the study area provide a level of performance comparable to Metropolitan Melbourne**,** many services in the Altona North and Brooklyn area are infrequent, unreliable, indirect, cover a limited catchment, have poor punctuality or have low productivity compared to other bus services within Metropolitan Melbourne.
	**Challenge** **Gaps in the provision of a safe, connected, convenient cycling network for Hobsons Bay.** There are gaps in the Strategic Cycling network that limits the attractiveness of cycling as a transport mode. The provision of dedicated cycling infrastructure on key commuter routes would assist cycling as an alternative mode choice.
	**Challenge** **End-of-trip bicycle facilities are limited at the train stations in the study area.** The benefits of any improvements to the cycling infrastructure to and from the station precincts could be further improved with upgrades to end of trip facilities at stations.
	**Challenge** **Walking accessibility is poor in parts of the study area due to physical barriers such as the rail line and arterial roads.** Walking access to key destinations such as Newport Station and Altona Gate Shopping Centre is hindered by major arterial roads such as Millers Road and Melbourne Road.
	**Opportunity** **Meeting the accessibility needs of future strategic redevelopment sites.** Strategic redevelopment sites, such as Precinct 15 are slated to support significant residential growth. There is an opportunity to connect these redevelopment sites to Spotswood station, which would require improvements to east-west public transport connectivity and east-west active transport upgrades in the area.
	**Opportunity** **Increase public transport and active transport use.** Improve bus services and active transport connectivity, supporting public transport and active transport options as alternatives to cars.

	**Opportunity** **Improve east-west bus services.** There appears to be capacity on the existing road network for east-west travel, as east-west buses are relatively punctual, compared to north-south.
	**Opportunity** **Balance rail station patronage across stations.** Newport station attracts four times as many patrons as North Williamstown and Spotswood. Where improved access to the train network is required, encourage patronage uplift at North Williamstown and Spotswood.



6-55 Theme 1 Summary Map Challenges and Opportunities

6.2 THEME 2: A BALANCED NETWORK THAT SUPPORTS ACCESS INTO AND OUT OF HOBSONS BAY

Theme 2 considers facilitating key freight movements into and out of Hobsons Bay while understanding the need to maintain the balance between key freight movements and local land uses. Challenges that were explored under this theme are as follows:

Key freight movements into and out of Hobsons Bay

- Freight connectivity between Altona North, Tottenham/Brooklyn, M80, the Port of Melbourne and Geelong.
- East-west freight connectivity between Spotswood and the Port/ Melbourne's east: limited connectivity due to the truck bans along Francis Street and Somerville Road when the WGTP opens.
- Impact of new ramps (Hyde Street) and truck bans that will change truck routes after the WGTP opens.

Localised congestion at key intersections

- Millers Road Interchange: The WGTP and associated truck bans are expected to exacerbate the congestion along Millers Road.
- Williamstown Road Interchange: Currently, the Williamstown Road Interchange experiences high levels of congestion and delays (particularly in the AM peak).
- Francis Street / Hyde Street Intersection: Francis Street / Hyde Street is expected to continue to be a congested hotspot, even with the opening of the WGTP.

This section examined data on:

- Freight precincts and their potential to increase freight movements in the study area
- Freight network including details of existing freight movements and freight movements once WGTP opens, including a review of truck origins/destinations, truck curfews, daily truck volumes before and after WGTP.
- Road network and delays on key road links and intersections.

6.2.1 FREIGHT PRECINCTS

There are a number of key origins and destinations of Port traffic. Understanding where Port cargo is transported to and from is a key part of ensuring Port development is well-integrated with road and rail networks and feeds into broader, state-wide transport planning and freight precinct development.

Overall, the outer west of metropolitan Melbourne is a key node for Port-related activity. The majority of imported containers are delivered to Melbourne's outer suburbs, 26% to outer western suburbs (including Laverton North and Altona). Melbourne's west also accounts for the largest concentration of export container origins, with 25% of the containers originating from the outer west, and 14% from Inner Melbourne predominantly from freight precincts in West Melbourne and West Footscray.

The West State Significant Industrial Precincts (WSSIP), shown in Figure 6-56, is the largest industrial area in Victoria, comprised of approximately 10.4 million square metres. Container yards and high freight generators are shown in Figure 6-57. Altona North Industrial Precinct (which encompasses the area south of Dohertys Road, between the Princes Freeway, Kororoit Creek Road, and Millers Road) is part of the WSSIP and falls within the study area of the HBTPS.

The HBTPS will focus on freight related challenges/opportunities in relation to the Altona North Industrial Precinct and the Brooklyn/Tottenham area, as these areas already generate truck traffic within study area, with truck volumes forecast to increase significantly on Millers Road (north of the WGF), once WGTP opens and new truck curfews are introduced.

Another notable freight precinct in the study area is the Spotswood Industrial Precinct. This precinct is largely characterised by the fuel terminals along Douglas Parade (Caltex and Newport Terminals) and Hyde Street (Mobil Terminal) and the predominant truck type within the area, particularly along Hyde Street, are fuel tanker trucks.

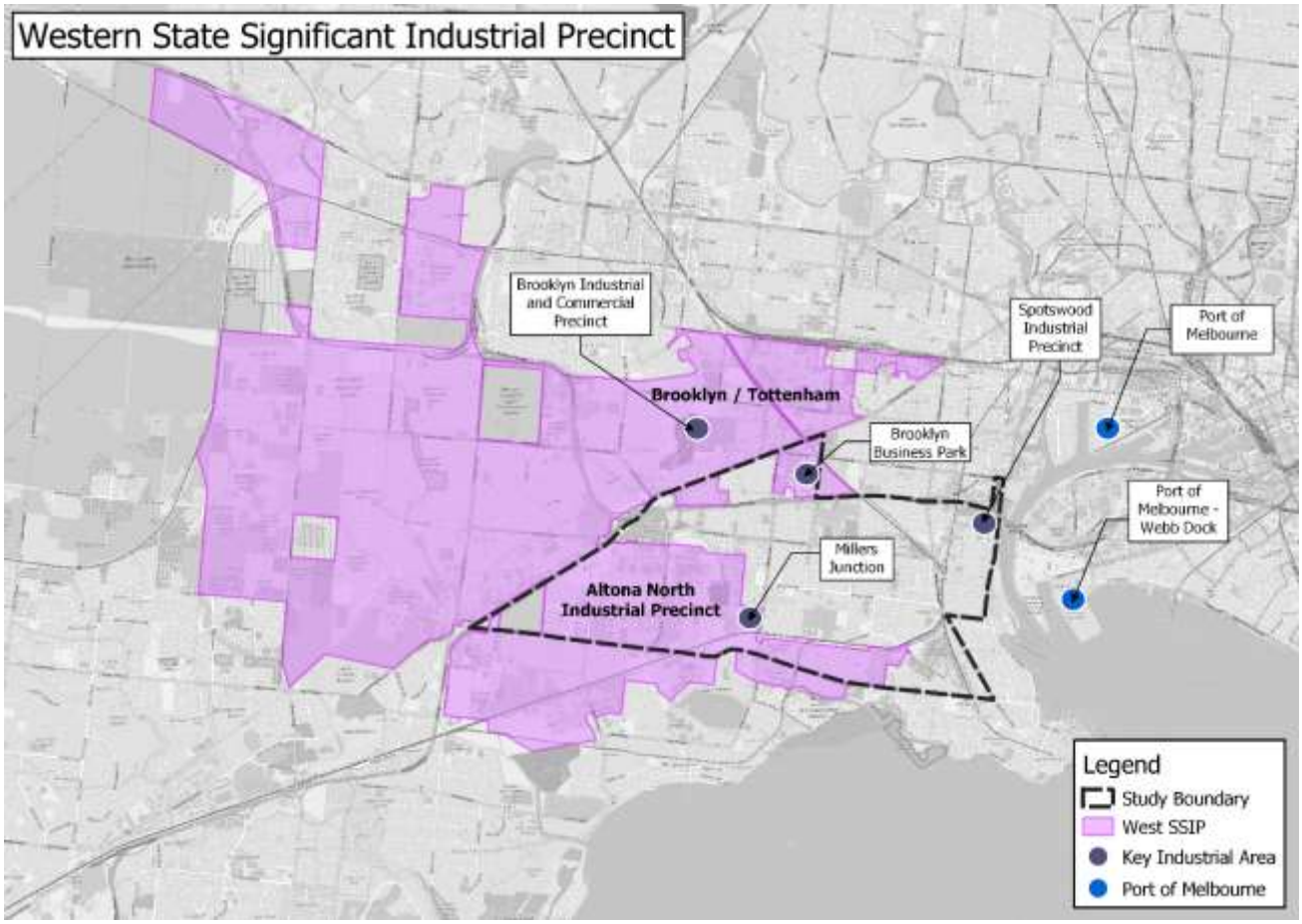


Figure 6-56 Western State Significant Industrial Precinct, indicating precincts local to the study area

Figure 6-57 Container yards and high freight generators in Hobsons Bay and surrounding areas

There are plans to develop strategic industrial and commercial precincts within and surrounding the HBTPS study area, which have the potential to generate truck traffic within Hobsons Bay. These precincts are:

- Brooklyn Business Park
- Brooklyn Industrial and Commercial Precinct
- Millers Junction Enterprise Area.

Further discussion is provided below in relation to the network challenges and opportunities that these developments may have on the transport network.

BROOKLYN BUSINESS PARK

The BBP (shown in Figure 6-58) is a parcel of industrial land bound by Millers Road to the west, Geelong Road, Cemetery Road and Francis Street to the north and the goods rail line to the east, and West Gate Freeway to the south. The site will benefit from the future access to the West Gate Tunnel.

Planning for this site is in its pre-planning and scoping phase, so the traffic and freight movements are not yet known. The redevelopment of this site may generate additional freight movements within the area, particularly along Millers Road north of the West Gate Freeway. According to the WGTP EES, this section of road is forecast to experience an additional 4,000 trucks daily in 2031 for the WGTP scenario compared to the no project scenario.

The redevelopment of Brooklyn Business Park presents an opportunity to reassess the form and function of Millers Road north of the West Gate Freeway.

Figure 6-58 Brooklyn Business Park

BROOKLYN INDUSTRIAL AND COMMERCIAL PRECINCT (BICP)

The BICP is located within an industrial area covering 262 hectares of industrially zoned land across the municipalities of Brimbank, Maribyrnong, Wyndham and Hobsons Bay known as the Western Industrial Precinct. It is a triangular area bordered by Kororoit Creek to the west and Geelong Road to the south, freight rail boundary to the east (including a rail spur) and the northern boundary follows the Brooklyn suburb boundary (see Figure 6-59).

The City of Brimbank prepared a Precinct Structure Plan and Urban Design Framework including an implementation plan for Brooklyn Industrial and Commercial Precinct (BICP), titled *Brooklyn Evolution February 2016*. Amendment C177 to the Brimbank Planning Scheme, which was gazetted on 25 August 2016, implemented the statutory recommendations of *The Brooklyn Evolution, February 2016*, by introducing policy direction for the BICP into the Municipal Strategic Statement, rezoned part of the Geelong Road frontage to Commercial 1 Zone to stimulate growth and introduced development design guidelines that will guide future development within the Precinct.

The site has been identified as suitable for transport, logistics and distribution; general manufacturing; light industry and mixed-use factory estates.

The redevelopment of BICP may generate additional freight movements onto arterial roads in the surrounding area, including Millers Road north of the West Gate Freeway, however given the uncertainty surrounding the type and density of land use in this area, it is difficult to quantify the scale of this increase.

The principles for future development documented in *The Brooklyn Evolution* includes the improvement of north-south linkages to maintain connectivity and accessibility between BICP and the broader network. The extension of Grieve Parade through BICP via Jones Road to Market Road to improve access and connection within the precinct is a long-term strategy detailed by Brimbank City Council as part of the structure plan for the precinct.

The potential extension of Grieve Parade through BICP via Jones Road to Market Road creates an opportunity to divert freight movements from other arterial roads origins/ destinations in areas such as Altona North Industrial Precinct and Tottenham Industrial Precinct.

Figure 6-59 Brooklyn Industrial and Commercial Precinct

MILLERS JUNCTION, ALTONA NORTH

Millers Junction Enterprise area (shown in Figure 6-60) is a 15-hectare area of land identified by the International Land Measurement Standards (ILMS) to have redevelopment potential, following the closure of Cabots. The site is bound by Millers Road and the Werribee railway line and is a mixed business precinct that includes a range of retail and commercial businesses.

The redevelopment of this site may generate additional freight movements within the area, particularly along Millers Road south of the West Gate Freeway.

Figure 6-60 Millers Junction Enterprise Area, Altona North

6.2.1.1 FREIGHT PRECINCT FINDINGS

- The redevelopment of precincts in Altona North and Brooklyn may generate additional freight movements along arterial roads such as Millers Road north of the West Gate Freeway.
- The *Brooklyn Evolution Plan* notes there is the potential to create a new and direct north-south connection between Altona North industrial precinct and the Tottenham Industrial Precinct via Brooklyn Industrial and Commercial Precinct. This would involve the extension of Grieve Parade to Market Street via Jones Road, potentially diverting freight traffic away from Millers Road and Geelong Road.

6.2.2 FREIGHT NETWORK

An analysis of the study area freight network was undertaken to provide information on:

- Freight origins and destination findings from previous surveys
- Truck curfews
- Truck volumes and types of trucks.

The major freight routes based on the Movement and Place classifications (F1 and F2) within and surrounding the HBTPS study area are detailed in Figure 6-61 with the following definitions:

- F1 routes, freight is priority movement and facilitates the mass movement of goods at high speeds. The F1 routes are predominately freeways or major highways and not connecting freight routes.
- F2 classifications are given to routes that facilitate a significant movement of goods and support region-wide movement by connecting F1 routes with key destinations (Department of Transport, 2019). Dohertys Road, Grieve Parade, and Millers Road north of the West Gate Freeway are classified as F2. These corridors connect freight movements in Altona North to the F1 routes of West Gate Freeway, Princes Freeway and the M80.
- F3 routes are defined as freight access routes where there is no priority for freight over other movements (Department of Transport, 2019). The F3 routes include Hume Road, McDonald Road, Paramount Road, and Tottenham Parade. The F3 routes provide connections to Altona North industrial precinct and Brooklyn/Tottenham industrial precinct.

Proposed changes to the Movement and Place classifications were developed through Movement and Place Workshops attended by DoT and HBCC stakeholders. These proposed changes were circulated to all workshop participants following the workshops for further comment and updated as required. The proposed changes and their rationale will need to be documented and presented to DoT TNIG for endorsement and inclusion in DoT mapping.

Figure 6-61 Freight routes and classifications

6.2.2.1 ORIGIN DESTINATION SURVEY DATA

The following two origin-destination surveys have been undertaken within and surrounding the HBTPS study area:

- VicRoads and Maribyrnong City Council Inner West Truck Surveys, GHD (December 2013)
- West Gate Tunnel Project Origin Destination Survey Results, Western Distributor Authority, GHD (August – September 2016).

The scope of these surveys is shown in Figure 6-62 and Figure 6-63. The 2016 survey included an extended cordon to the west (including Millers Road north, Grieve Parade north, Market Road and McDonald Road) and captures freight origin-destination movements in the Brooklyn / Tottenham industrial area. It is noted that the OD survey study areas do not cover a large portion of the HBTPS study area and therefore do not provide an understanding of the freight ODs for the key truck generating precincts located within Hobsons Bay, including the Altona North Industrial Precinct and the Spotswood fuel terminals.

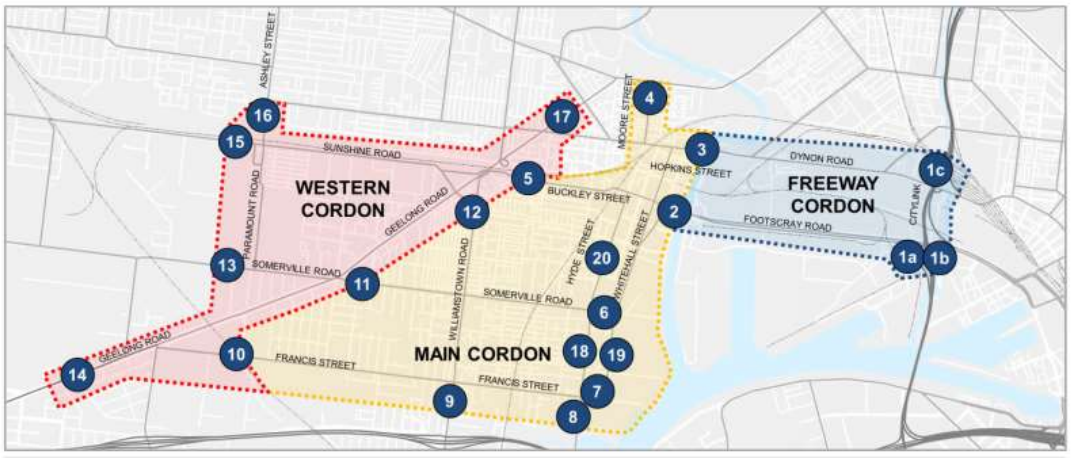


Figure 6-62 OD survey scope – December 2013

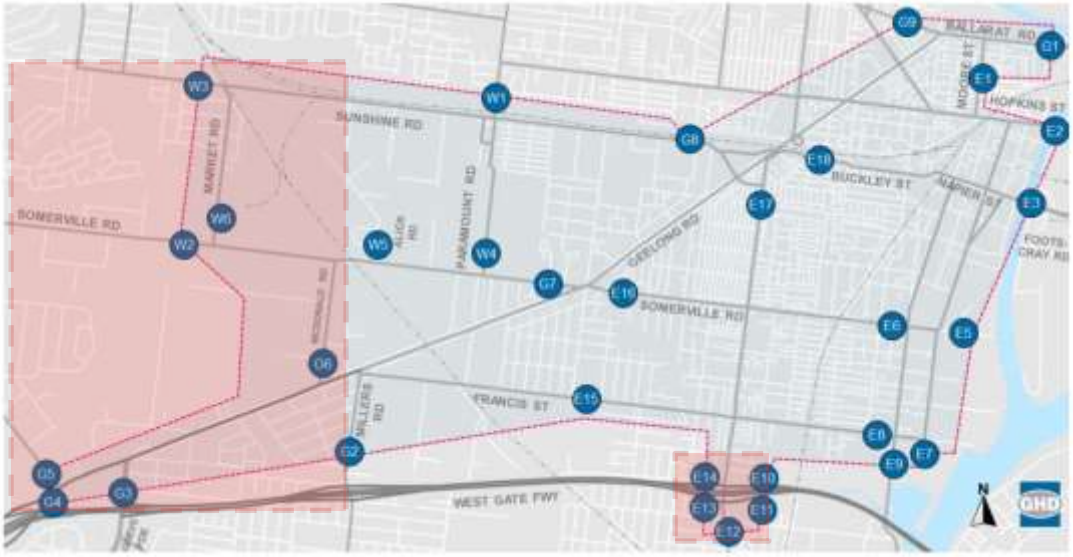


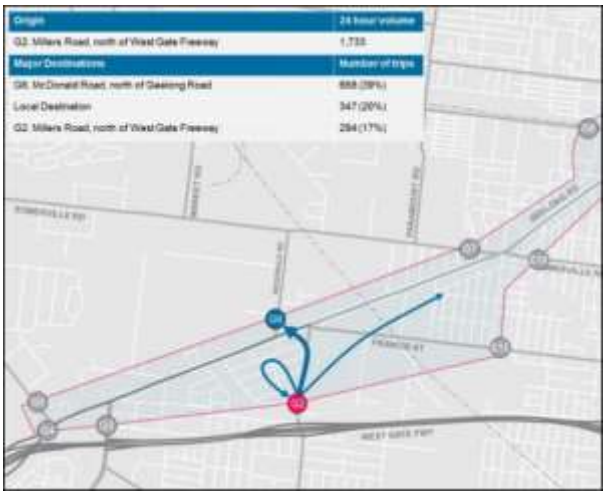
Figure 6-63 OD survey scope – August/September 2016

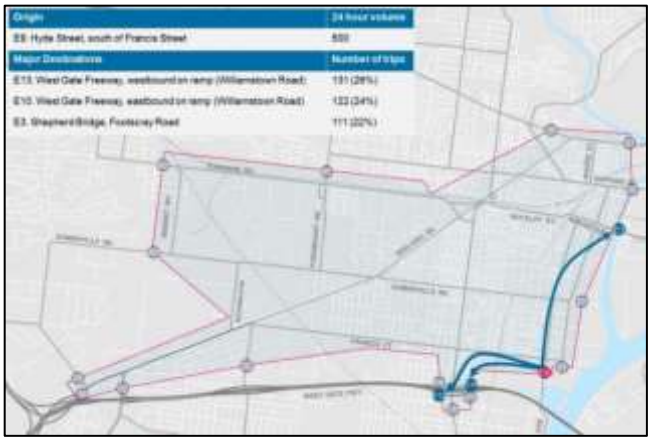
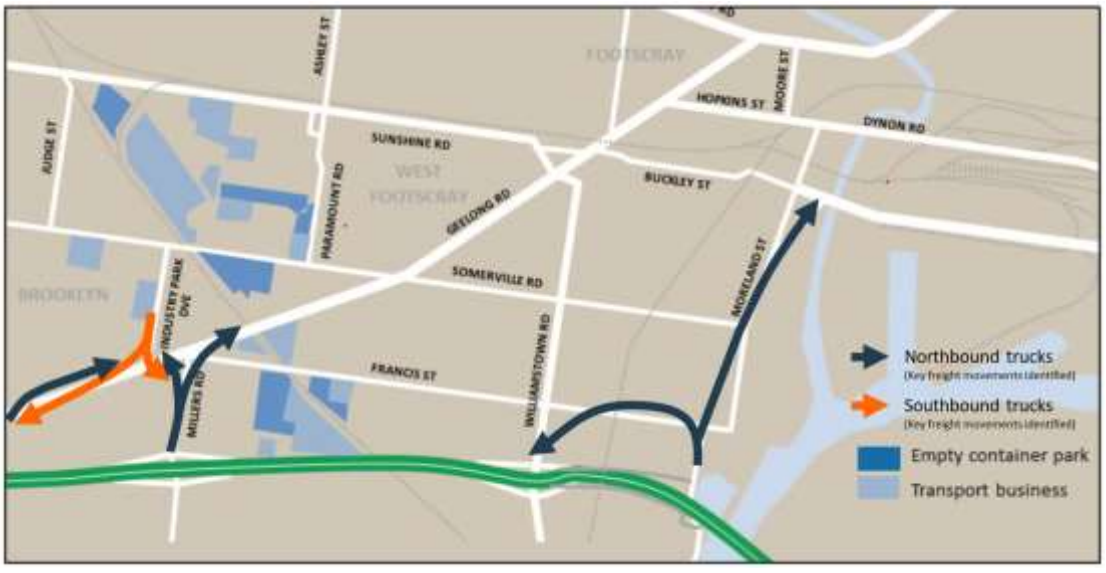
The absence of OD survey data for freight movements within Hobsons Bay (especially south of the West Gate Freeway), means there is uncertainty around where trucks are travelling to and from. This makes it difficult to understand which freight routes have the highest demand. Nonetheless, the following findings were drawn from a review and comparison of the two previous OD surveys:

- Truck volumes appear lower in the 2016 survey (likely due to a combination of additional AM and school peak curfews and Shepherd Bridge early works for West Gate Tunnel Project)
- Truck composition proportions are largely the same across both surveys – container trucks are the predominant truck type on most roads except along Hyde Street (where tankers are most common)
- OD movements appear to be similar across both survey periods. The key movements are:
  - Northbound trucks on Millers Road predominantly have destinations through McDonald Road (39%), which is a key access point to the Brooklyn / Tottenham Industrial Precinct. 17 per cent have destinations around the vicinity of the Brooklyn Business Park adjacent to Millers Road. There are no alternative routes for these trucks.

- A large proportion (42%) of northbound trucks on Grieve Parade have a destination through Little Boundary Road, which provides direct access to the industrial precinct around Laverton North and also the M80 Freeway.
- Trucks travelling southbound at McDonald Road (from the Brooklyn / Tottenham Industrial Precinct) predominantly travel via Millers Road (40%) or Grieve Parade (17%). In this, Millers Road acts as a key conduit between the Brooklyn / Industrial Precinct and the south/freeway network.
- Currently, the key destinations for northbound trucks along Hyde Street are towards Shepherd Bridge (22%) and the West Gate Freeway (26% westbound and 24% eastbound) via Francis Street and Williamstown Road. Once the WGTP opens, westbound trucks are provided with a quicker alternative route via the Hyde Street ramps.

Table 6-7 Summary of key origin-destination movements

	KEY MOVEMENTS	DIAGRAM
From Millers Road (northbound)	**Top 3 destinations for northbound trucks are:** – Tottenham / Brooklyn Industrial Precinct – approx. 39% have a destination in the Tottenham / Brooklyn Industrial Precinct via McDonald Road (and north to Somerville Road, Market Road and Paramount Road) – Brooklyn Business Park – approx. 17% have a destination in the industrial area bounded by Francis Street and Millers Road (i.e. TFM Logistics) and, as such, are required to use Millers Road. – 'Local' destinations – approx. 20% have local destinations	
From Grieve Parade (northbound)	**Top 3 destinations for northbound trucks are:** – Laverton North Industrial Precinct and M80 Access – approximately 42% of trucks have a destination via Little Boundary Road (access to M80 and Laverton North Industrial Precinct). – Tottenham / Brooklyn Industrial Precinct – approx. 11% of trucks from Grieve Parade have a destination via McDonald Road (entry point for the Brooklyn / Tottenham Industrial Precinct). – Local destinations – approx. 14% of trucks have local destinations.	

From McDonald Road (Brooklyn / Tottenham Industrial Precinct) (southbound)	**Top 3 destinations for southbound trucks are:** – Millers Road – 40% travel via Millers Road, with the majority presumably travelling eastbound on WGF, however no data to confirm) – Grieve Parade – 17% of trucks from McDonald Road travel via Grieve Parade (access to the Altona North Industrial Precinct) – Princes Freeway westbound – approx. 11% of trucks have a destination via Princes Freeway travelling west	
From Hyde Street, south of Francis Street (northbound)	**Top 3 destinations for southbound trucks are:** – Shepherd Bridge – approx. 22% of northbound trucks travel northeast via Shepherd Bridge, which provides access to the Port and the CBD. – West Gate Freeway westbound (Williamstown Road) – approx. 26% of trucks travel westbound on the West Gate Freeway from via Francis Street and Williamstown Road. – West Gate Freeway eastbound (Williamstown Road) – approx. 24% of trucks travel eastbound on the West Gate Freeway from via Francis Street and Williamstown Road.	
Key origin-destination movements		

Source: West Gate Tunnel Project Origin Destination Survey Results, Western Distributor Authority

6.2.2.2 TRUCK BANS

Figure 6-64 summarises the proposed truck curfew arrangement which will be in effect when the WGTP opens. These proposed truck bans will alter the freight classifications within the local area[10], most notably Blackshaws Road (between Melbourne Road to Grieve Parade), which will no longer be classified as an F3 freight route.

The truck bans will significantly change the routes that trucks travel within and surrounding the HBTPS study area. With the introduction of the truck bans and the opening of the WGTP, east-west truck movements between the Brooklyn/Tottenham industrial precinct and the Port of Melbourne will be concentrated towards the WGTP, accessing at either Grieve Parade or Millers Road. Increasing truck volumes on these routes, in particular on Millers Road (north of the WGF), which is expected to impact on residential amenity, increase congestion, limiting accessibility to adjacent neighbourhoods and potentially increasing conflict, particularly for pedestrian movements.

The WGT EES assumed the current curfews would be removed as part of the project:

- on Whitehall Street between Somerville Road and Francis Street
- Hyde Street between Francis Street and Simcock Avenue.

Figure 6-64 WGTP proposed truck curfews

Source: Westgate Tunnel Project, 2019

6.2.2.3 TRUCKS IN THE STUDY AREA

DAILY TRUCK VOLUMES

Figure 6-65 and Figure 6-66 illustrate the existing truck volumes (2016) and future truck volumes (2031 with WGTP) as outlined in the WGTP EES. The key differences across the two scenarios are:

- Significantly greater volumes on Millers Road (range increasing from 3,600-4,500 to 9,500-11,800 trucks per day), north of West Gate Freeway once the WGTP opens. This is due to east-west truck bans along Francis Street and Somerville Road.

[10] These classification changes were proposed in the Movement and Place workshop held by WSP on 7 August, 2019

- Reduction in truck volumes along Francis Street and Somerville Road due to the introduction of full time truck bans once the WGTP opens.
- Increase in truck volumes along Hyde Street and Douglas Parade once the WGTP opens, due in part to the Hyde Street ramps.
- Truck volumes along Blackshaws Road once the WGTP opens are expected to be similar to existing conditions (approximately 1,000 trucks a day).

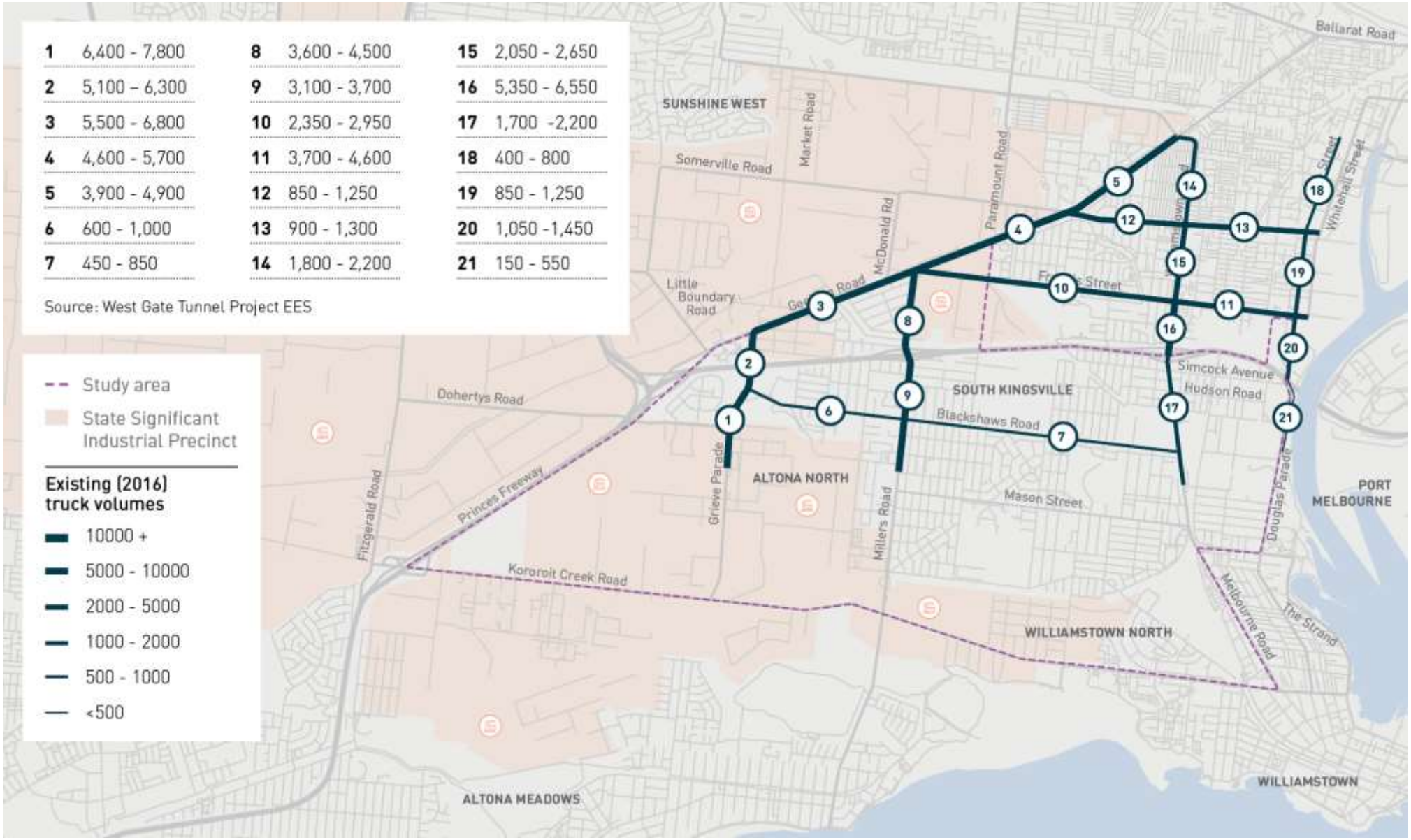


Figure 6-65 2016 Existing truck volumes

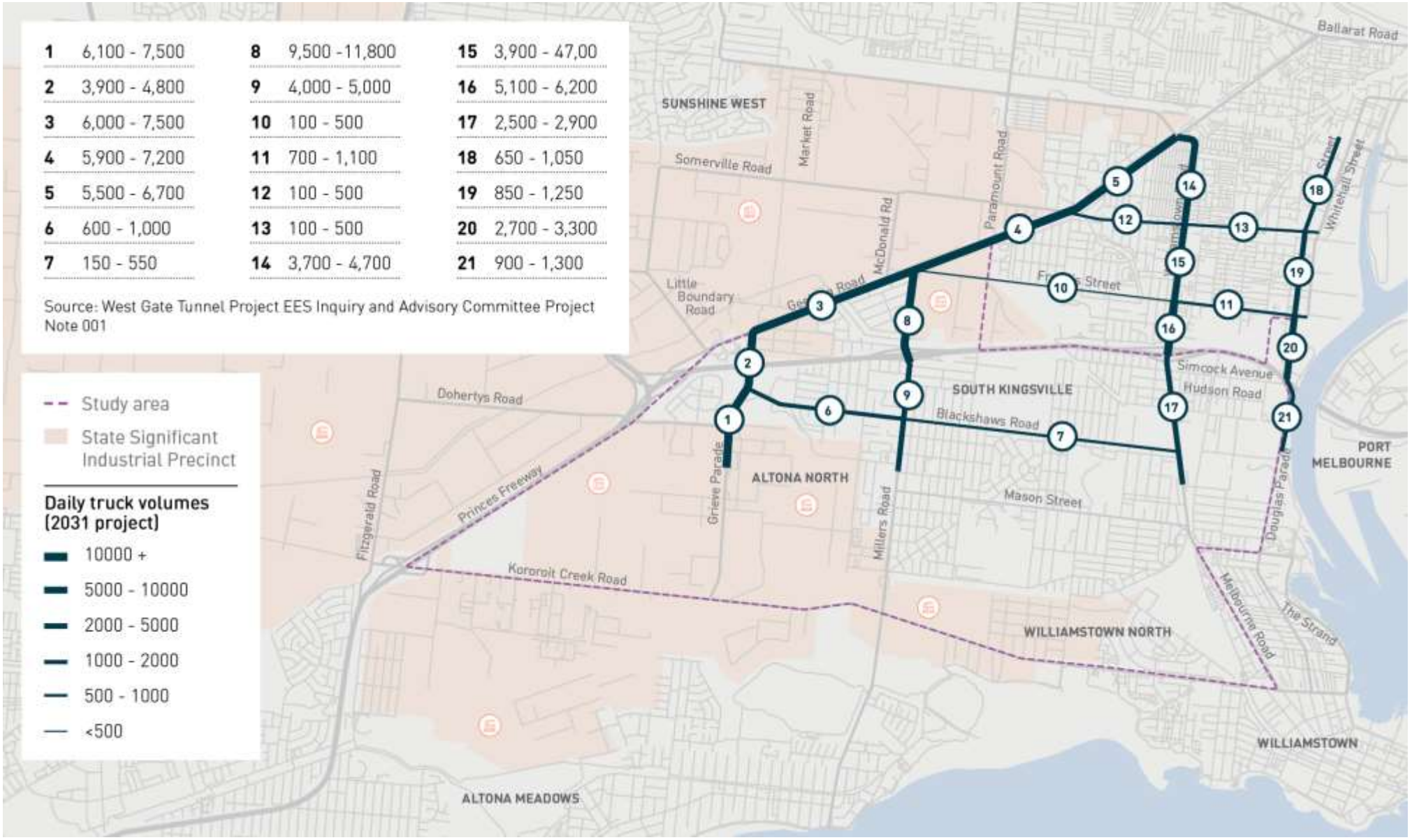


Figure 6-66 2031 Truck volumes (with WGTP)

DAILY TRUCK PROFILES (2013)

Figure 6-67 illustrates the daily truck profiles at selected roads from December 2013, within and surrounding the HBTPS study area and provides a summary of when trucks are moving throughout the day. The data shows that truck volumes are generally concentrated in the non-curfew times (between 06:00-08:00) and greatest around midday. The truck profile is relatively flat across the curfew period, with low volumes being recorded. Trucks with a local origin/destination in this local area would be permitted to travel during curfew time. Note, these profiles are from December 2013, which is prior to the AM peak and school-peak curfews coming into effect (at Francis Street and Somerville Road). Equivalent data from the August-September 2016 OD survey is not available.

Key findings:

- There appears to be an adequate level of adherence to truck curfews. Trucks with a local origin/destination in this local area would be permitted to travel during curfew time.
- The majority of trucks in the surveyed area travel in the interpeak period (09:00-15:00). However, a significant proportion also travel during the AM and PM peak hours, mixing with commuter private vehicle travel.
- The truck profile along Hyde Street is currently relatively flat over the day.

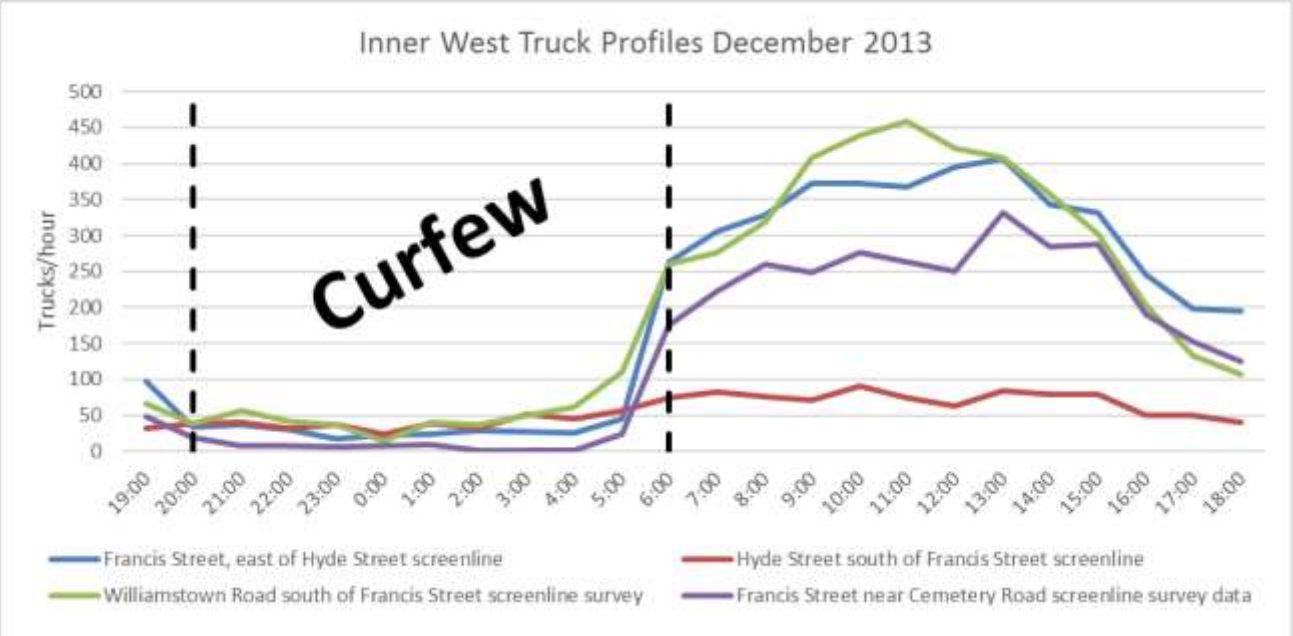


Figure 6-67 Daily truck profiles

Source: Inner west Truck Surveys, April 2015

*Note: Linear plot of truck volumes shows an upwards trend between 5:00 am and 6:00 am. This is expected as the curfew is lifted from 6:00 am.

TRUCK TYPES

Figure 6-68 illustrates 2016 surveyed daily truck volumes and compositions on Geelong Road, Grieve Parade, Millers Road and Little Boundary Road. The data shows that Grieve Parade is currently carrying a higher volume of trucks than Millers Road. The types of trucks travelling along are predominantly container trucks, tautliners and pantech trucks.

The 2016 surveyed daily truck volumes and compositions on Francis Street and Hyde Street are notably different to those on Grieve Parade, particularly along Hyde Street, where the majority (66%) of truck movements are fuel tankers due to the local fuel terminals along Hyde Street and Douglas Parade.

Container trucks account for a larger proportion of the truck movements along Francis Street (approximately 50%), than Geelong Road, Grieve Parade, Millers Road and Little Boundary Road (20-30%), although the volume of trucks observed along these roads is similar.

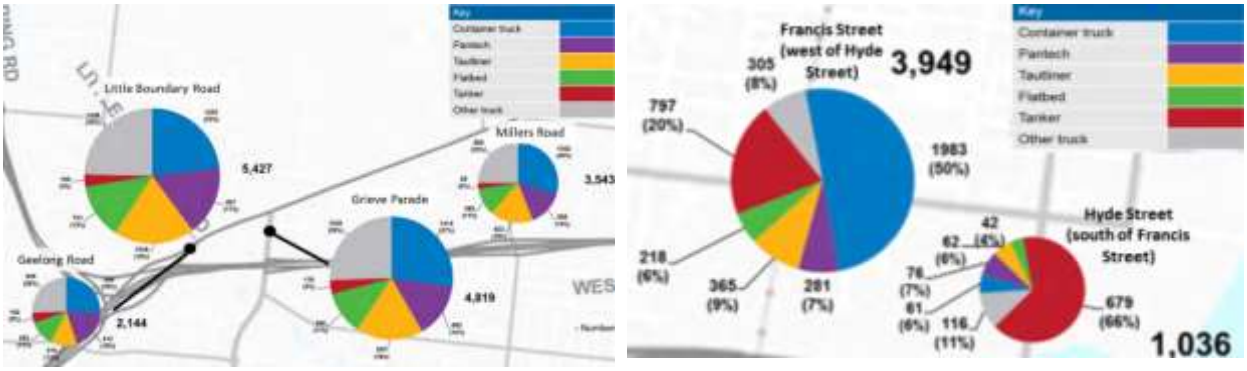


Figure 6-68 2016 daily truck volumes and composition

Source: West Gate Tunnel Project, EES, Technical Report A - Transport

Figure 6-69 shows the daily profile of trucks by type (rigid, semi-trailer, and B-double) at several locations. It is noted that trucks classified as semi-trailers are the dominant truck type in locations around the northern boundary of Hobsons Bay.

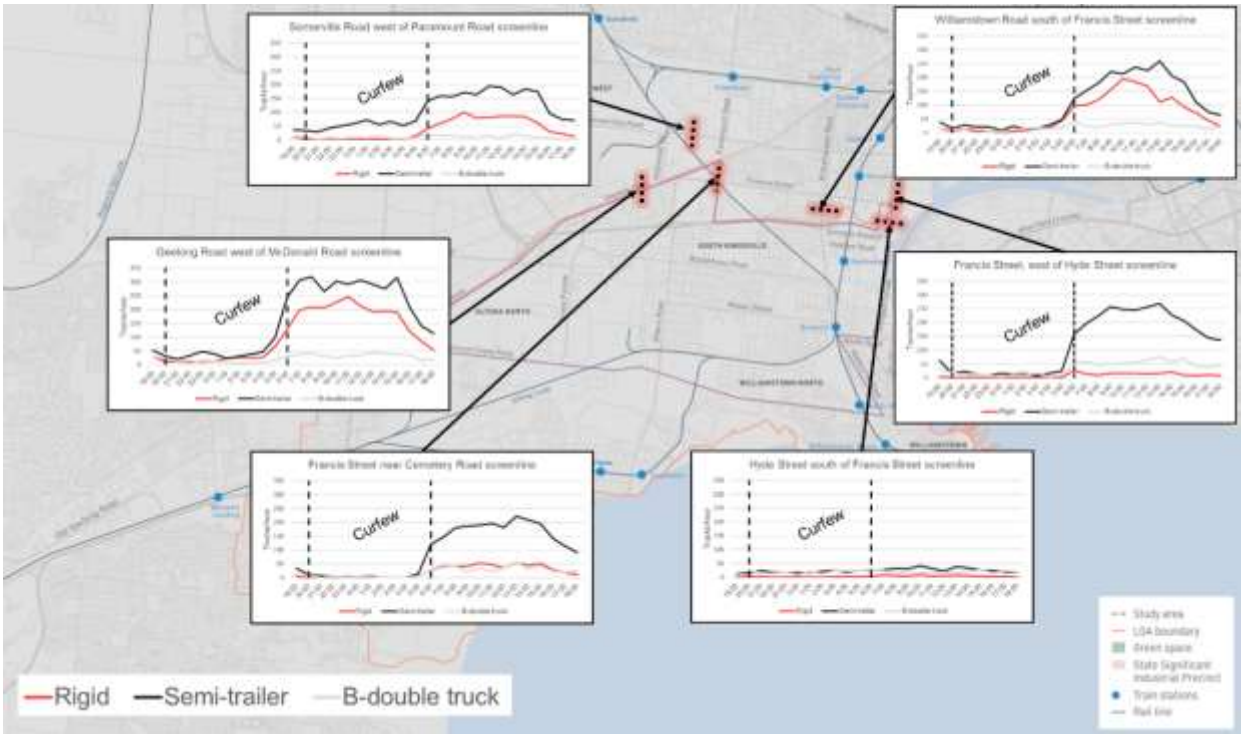


Figure 6-69 Daily truck profiles

Source: Inner west Truck Surveys, April 2015

6.2.2.4 FREIGHT MOVEMENTS ON THE NETWORK

The WGTP will impact freight movements from particular precincts. Analysis of movements to and from the following precincts has been undertaken:

- Altona North Industrial Precinct: connectivity to/from the freeway network via existing arterial routes
- Spotswood Industrial Precinct: impact of truck curfews on routes and travel times to/from the east
- Brooklyn / Tottenham Industrial Precinct: impact of truck curfews on routes that increase truck volumes on Millers Road.

This analysis involves investigation of travel times between a chosen point within the precincts identified above to the freeway network via existing routes. Travel times are observed over a typical weekday with the reported travel times reflecting the existing AM peak, PM peak, and off-peak (free flow) conditions. This analysis is used to inform the impact of the WGTP on travel time and route directness along key freight movements.

ALTONA NORTH INDUSTRIAL PRECINCT

To assess the existing connectivity of the Altona North industrial precinct to/from the freeway network, approximate route distances and free-flow travel times have been determined for key movements, as shown in Table 6-8. The key movements identified for Altona North industrial precinct freight include:

- To and from the M80 interchange
- To and from Brooklyn / Tottenham industrial precinct
- To and from Geelong.

Table 6-8 Route distance and travel time of key movements to / from Altona North Industrial Precinct

KEY MOVEMENT	ROUTE DISTANCE	TRAVEL TIME
To / from the M80 interchange* (route via Grieve Parade – Dohertys Road – Hume Road – Boundary Road)	6.1 km	Free flow travel time: 8 min AM Peak: 7-9 am: 8-15 min PM Peak: 4-6 pm: 8-16 min
To / from the M80 interchange* (route via Grieve Parade – Geelong Road – Little Boundary Road)	4.6 km	Free flow travel time: 6-9 min AM Peak: 7-9 am: 8-18 min PM Peak: 4-6 pm: 8-18 min
To / from Brooklyn** (route via Grieve Parade – Geelong Road – McDonald Road – Somerville Road)	5.5 km	Free flow travel time: 7-9 min AM Peak: 7-9 am: 7-19 min PM Peak: 4-6 pm: 7-15 min
To / from Geelong*** (route via Grieve Parade – Kororoit Creek Road)	4.1 km	Free flow travel time: 5 min AM Peak: 7-9 am: 5-10 min PM Peak: 4-6 pm: 7-17 min

* Distances in Table 6-8 have been measured from the intersection of Grieve Parade / The Gateway to the Boundary Road / M80 Interchange.

** Distances in Table 6-8 have been measured from the intersection of Grieve Parade / The Gateway to the intersection of McDonald Road / Somerville Road

*** Distances in Table 6-8 have been measured from the intersection of Grieve Parade / The Gateway to the Kororoit Creek Road / Princes Freeway interchange

SPOTSWOOD INDUSTRIAL PRECINCT

The Spotswood Industrial Precinct is largely characterised by the fuel terminals along Douglas Parade (Caltex and Newport Terminals) and Hyde Street (Mobil Terminal). As such, the main truck type within the area (particularly along Hyde Street) are fuel tanker trucks (refer to Section 6.2.2 Truck Types).

As part of the WGTP, Hyde Street Ramps will connect Hyde Street and the West Gate Freeway to and from the west. However, access to/from the east is not provided via the proposed ramps. As such, the ramps do not directly benefit trucks with an origin or destination in the east.

Currently, eastbound trucks travel along Francis Street and the West Gate Freeway via the Williamstown Road Interchange. However, the proposed truck bans along Francis Street (as well as Somerville Road and Hudsons Road) would ban this route for trucks when the WGTP opens (refer to Section 6.2.2 Truck Curfews). As a result, Spotswood precinct trucks, including Caltex Melbourne Fuel Terminal, Yarraville Fuel Terminal, and Newport Fuel Terminal, are required to find alternative routes to access the freeway network to travel to/from the east, once WGTP opens. The most likely alternative proposed route would funnel trucks north along Whitehall Street, Footscray Road and CityLink. The WGT EES assumed the current curfew on Whitehall Street would be removed.

The approximate free-flow travel time and distance of the existing and expected routes originating from Caltex Melbourne Fuel Terminal, Yarraville Fuel Terminal, and Newport Fuel Terminal once the WGTP truck bans are in operation are shown in Table 6-9. The total route distance of the existing and potential routes is similar, however the potential route along Whitehall Street and Footscray Road is impacted by more signals and operates at lower speeds, leading to greater travel times.

Table 6-9 Route distance and travel time of key movements to / from Spotswood Industrial Precinct

KEY MOVEMENT	ROUTE DISTANCE	TRAVEL TIME
Caltex Melbourne and Newport Terminals to West Gate Freeway / Wurundjeri Way Interchange (existing route via Douglas Parade – Hyde Street – Francis Street – Williamstown Road – West Gate Freeway)	9.6 km	Free flow travel time: 12 min AM Peak: 7-9am: 15-30 min PM Peak: 4-6pm: 12-18 min
Caltex Melbourne and Newport Terminals to West Gate Freeway / Wurundjeri Way Interchange (potential route via Douglas Parade – Hyde Street – Francis Street – Whitehall Street – Footscray Road – CityLink – West Gate Freeway)	9.7 km	Free flow travel time: 14-16 min* AM Peak: 7-9am: 17-39 min* PM Peak: 4-6pm: 14-31 min*
Mobil Yarraville Oil Terminal to West Gate Freeway / Wurundjeri Way Interchange (existing route via Francis Street – Williamstown Road – West Gate Freeway)	8.3 km	Free flow travel time: 9 min AM Peak: 7-9am: 13-26 min PM Peak: 4-6pm: 9-16 min
Mobil Yarraville Oil Terminal to West Gate Freeway / Wurundjeri Way Interchange (potential route via Whitehall Street – Footscray Road – CityLink – West Gate Freeway)	7.9 km	Free flow travel time: 10-14 min AM Peak: 7-9am: 15-32 min PM Peak: 4-6pm: 12-24 min

* There may be minor additional delay / travel time once the WGTP opens due to two new signalised intersections from the Hyde Street ramps

BROOKLYN / TOTTENHAM INDUSTRIAL PRECINCT

The HBCC submission to the WGT EES notes "the introduction of truck bans in Footscray and Yarraville will likely divert thousands of trucks onto Millers Road" (between Geelong Road and the West Gate Freeway) via two key north-south routes:

- Paramount Road/Tottenham Parade[11]/Geelong Road
- Market Road/McDonald Road/Geelong Road
- Little Boundary Road/Geelong Road.

A suggested alternative in the HBCC submission to reduce the number of trucks on Millers Road was to divert trucks south along Geelong Road to Grieve Parade, noting that this requires trucks to double back approximately two kilometres.

Table 6-10 shows indicative travel times from the Brooklyn/Tottenham Industrial Precinct towards the WGF or the Port of Melbourne. The table shows the travel times and distances via:

- the McDonald Road/Millers Road route
- the McDonald Road /Geelong Road /Grieve Parade route.

Table 6-10 Route distance and travel time of key movements to / from Brooklyn / Tottenham Industrial Precinct

KEY MOVEMENT	ROUTE DISTANCE*	TRAVEL TIME
To West Gate Freeway / Port of Melbourne (existing route via Somerville Road – McDonald Road – Geelong Road – Millers Road)	3.6 km	Free flow travel time: 5-6 min AM Peak: 7-9am: 6-17 min PM Peak: 4-6pm: 5-12 min
To West Gate Freeway / Port of Melbourne (existing route via Somerville Road – McDonald Road – Geelong Road – Grieve Parade)	6.0 km	Free flow travel time: 6-8 min AM Peak: 7-9am: 8-20 min PM Peak: 4-6pm: 7-15 min

*Distances in Table 6-10 have been measured from the intersection of McDonald Road / Geelong Road to the Millers Road / West Gate Freeway Interchange.

This analysis shows the Grieve Parade route is longer than the Millers Road route by 2.4 km, and one to two minutes longer as a free-flow travel time.

The distance and travel time analysis presented above for the three different industrial precincts does not take into account potential alternative routes to / from these areas, that may be the result of new infrastructure upgrades, including projects that have been advocated for by Hobsons Bay City Council.

[11] The VLC model does not identify Tottenham Parade as a corridor utilised by freight for movements between Paramount Road and Geelong Road

FREIGHT ORIGINS AND DESTINATIONS

The origins and destinations of trucks travelling through Millers Road (between Geelong Road and WGF) has been investigated using the 2031 VLC strategic modelling outputs to provide a summary of the distribution of freight movements across the inner west area.

Figure 6-70 shows the origins of trucks passing through Millers Road (two-way movement) between Geelong Road and WGF, which demonstrates the following two key origins for truck movements:

- Port of Melbourne via Footscray Road (24% of trucks)
- Brooklyn/Tottenham industrial precinct via Market Road (18% of trucks).

The remaining origins represent much smaller percentages of truck movements, as such, the total 100% of origins is not shown. The next highest truck origin is the WGF from the east, representing 8 per cent of the daily truck movements.

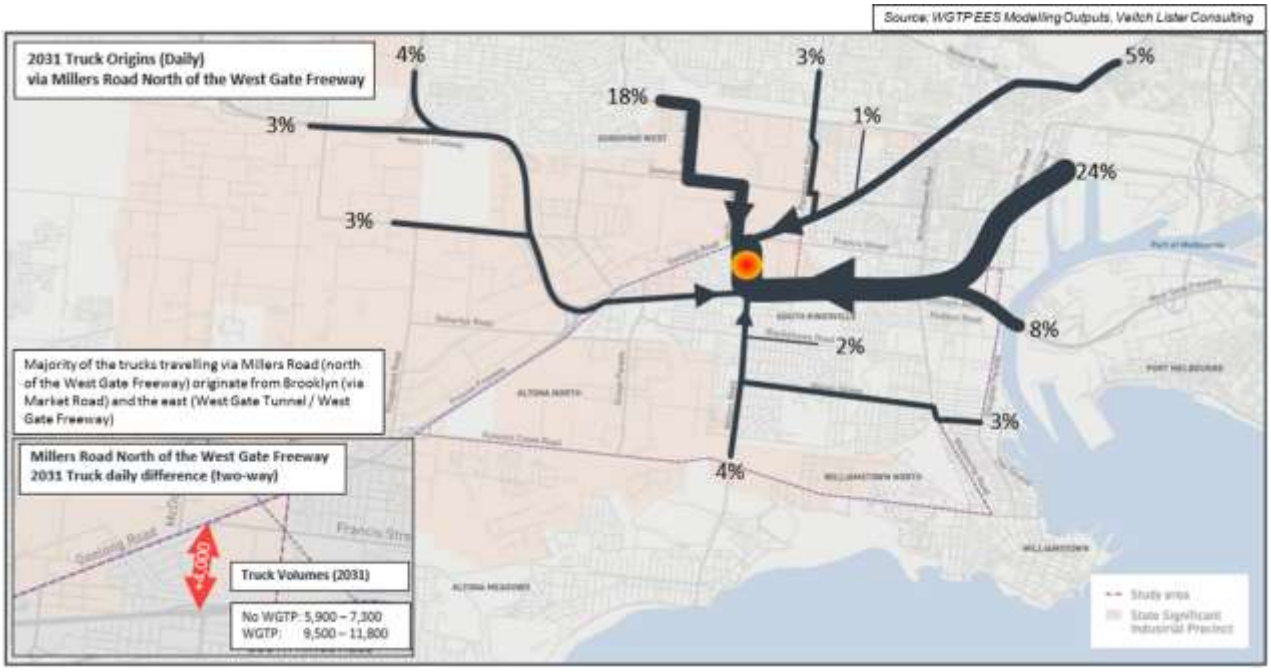


Figure 6-70 Origins of trucks travelling via Millers Road, north of the West Gate Freeway (daily)

Figure 6-71 shows the destinations of trucks passing through Millers road (two-way) between Geelong Road and WGF, which indicates a similar pattern to that shown in the origins map in Figure 6-70. The Port of Melbourne and Brooklyn/Tottenham industrial precinct destinations make up almost 50 per cent of the daily truck destinations for the trucks passing through Millers Road.

The origin/destination maps shown in Figure 6-70 and Figure 6-71 demonstrate the importance of the links between the Port of Melbourne and the Brooklyn/Tottenham industrial precinct via Millers Road and WGF/WGTP. Once the WGTP is operational and the east-west truck bans are in place in the inner west, the route via Millers Road and WGF/WGTP becomes the most direct connection for trucks travelling between Port of Melbourne and the Brooklyn/Tottenham industrial precinct.

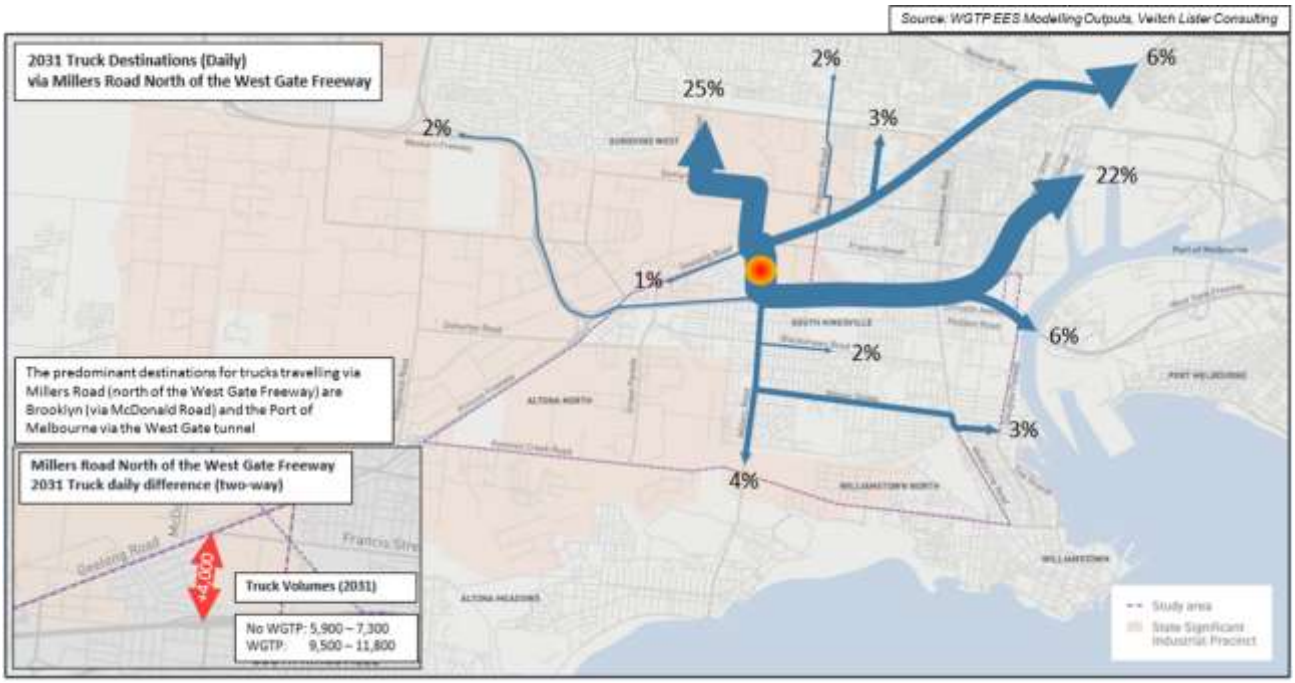


Figure 6-71 Destinations of trucks travelling via Millers Road, north of the West Gate Freeway (daily)

6.2.3 ROAD NETWORK

An analysis of the road network was undertaken to examine the challenges of:

- existing capacity and queuing on the road network
- delays at intersections on the road network.

6.2.3.1 EXISTING CAPACITY AND QUEUING

The HBTPS study area includes four north-south arterial routes (Grieve Parade, Millers Road, Melbourne Road and Douglas Parade), providing access to/from WGF and City of Maribyrnong and Brimbank City Council. East-west arterial roads within the study are limited to Blackshaws Road and Kororoit Creek Road, however east-west travel through the study area is constrained by the geographic constraint of the Yarra River.

From an overall network perspective, road congestion is a key challenge facing access to/from Hobsons Bay. Other localised issues, which may be caused or exacerbated by the primary congestion challenge include 'rat running' on local roads, conflict between different transport modes, lack of available queue storage for vehicles and lack of capacity or alternative connections within the study area, particularly north-south.

Travel time information from VicRoads' Corporate Traffic Data System was analysed to understand delays on sections of road within the study area. This data is captured by Bluetooth sensors placed at key locations on the arterial road network.

For each link, VicRoads calculates an average travel delay, which compares the observed travel speed for a 15-minute period against observed free flow speeds on the link. To allow for comparison between different links, average delay has then been calculated relative to the length of each link (relative average delay). The data provided by VicRoads were the average travel speeds and delays of all school day Wednesdays between 1 July 2018 and 1 July 2019.

The links with the largest relative average delays for AM and PM peaks are illustrated in Figure 6-72 and include:

- Millers Road
- Melbourne Road
- West Gate Freeway

- Geelong Road
- Grieve Parade
- Hyde Street / Douglas Parade
- Kororoit Creek Road at Princes Freeway.

The underlying data for delays within the study area is included in Appendix B.

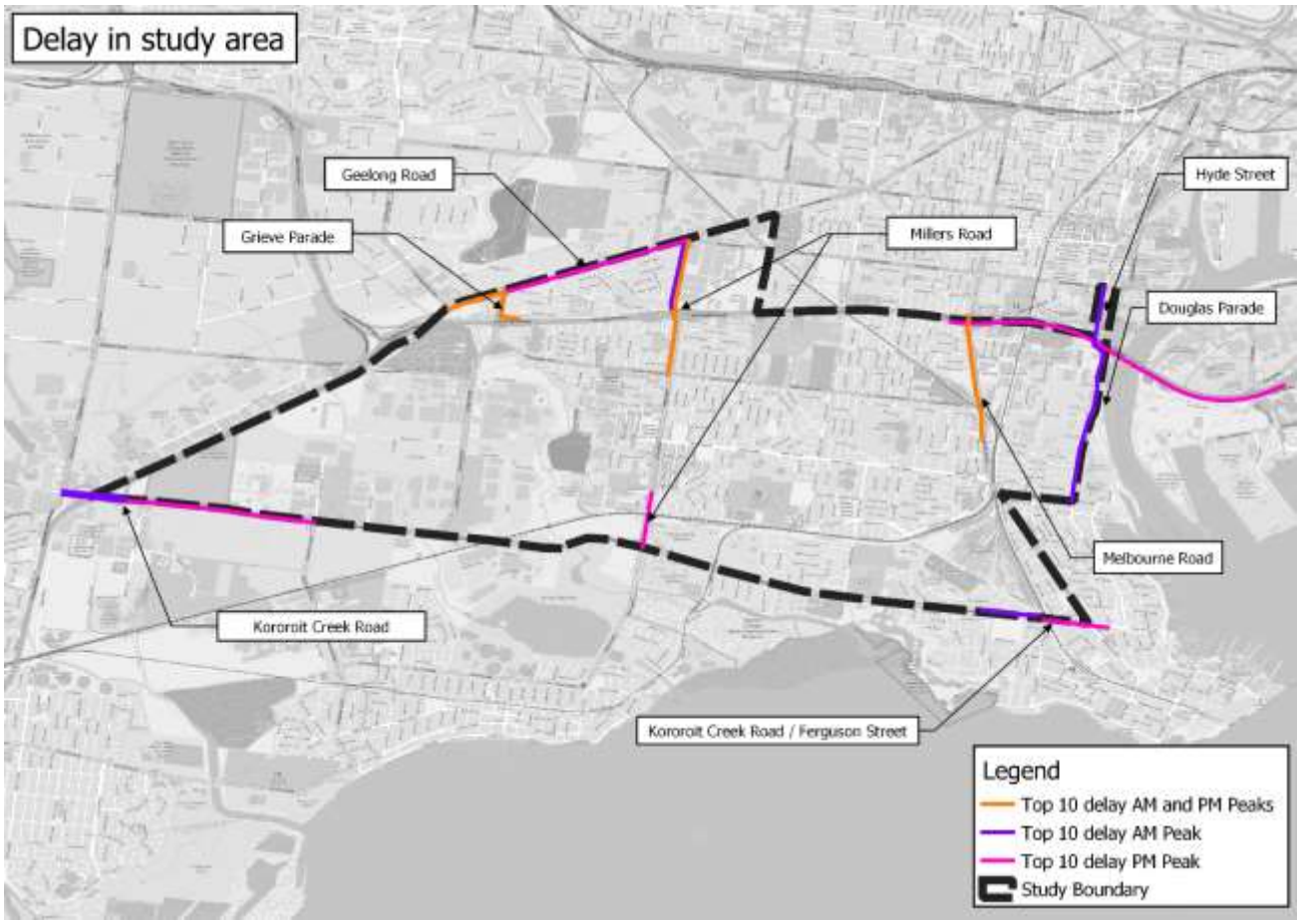


Figure 6-72 Links with greatest delays in study area

Noting the concentration of delays along Millers Road, and the anecdotal evidence that the Millers Road interchange with the West Gate Freeway was responsible for significant congestion along Millers Road, the links of Millers Road either side of the West Gate Freeway were benchmarked against other Melbourne intersections / interchanges performing a similar function - arterial roads that support both a key through movement and have direct connectivity onto a highway / freeway with significant traffic volumes:

- South Road at Nepean Highway
- Middleborough Road at Eastern Freeway
- Palmers Road at Princes Freeway West.

For completeness, Grieve Parade and Williamstown Road interchanges onto the West Gate Freeway were also considered. A plot of the relative average delay for the links making up these intersections / interchanges is shown in Figure 6-73. More detailed plots of the AM peak, Interpeak and PM peak are shown in Appendix C.

Increased delays during the AM and PM peaks is a typical feature of the Melbourne network, however, as shown in Figure 6-73, the delays on Millers Road southbound in PM are substantially higher than those experienced by any of the other benchmarked links, including Millers Road southbound in the AM peak.

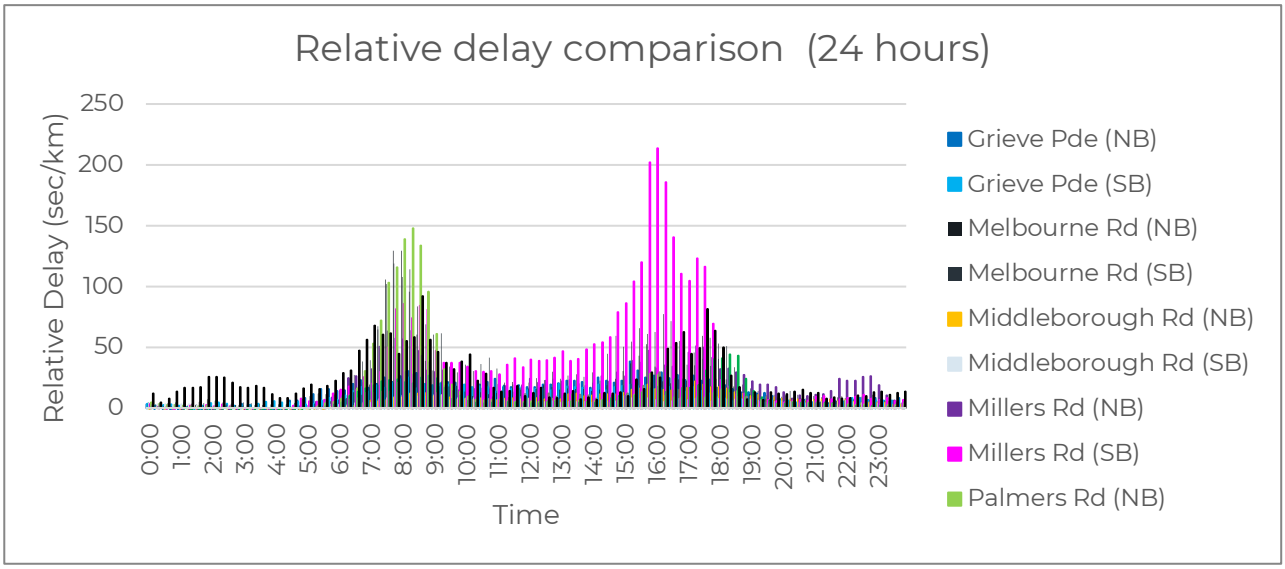


Figure 6-73 Relative delay comparison between links at intersections and interchanges

Key findings:

- While delay is highest on Palmers Road in the AM peak, it is relatively similar to that seen on Millers Road and Williamstown Road.
- While levels of delay drop off for all links in the interpeak, it remains high, and consistently so for Millers Road southbound.
- Levels of delay are substantially higher on Millers Road southbound in the PM peak than for any other link at any other time of day:
  - 148 sec/km reported for Palmers Road in the AM peak between 08:15 and 08:30, compared to an average relative delay of 149 sec/km between 15:30 and 17:30 on Millers Road southbound
  - Maximum relative delay of 214 sec/km was on Millers Road southbound between 16:00 and 16:15.
- The relative delay experienced on Millers Road southbound and northbound are similar in the AM peak, but then vary substantially:
  - AM peak northbound: 40.5 sec/km, southbound: 48.1 sec/km
  - Interpeak northbound: 20.8 sec/km, southbound: 41.6 sec/km
  - PM peak northbound: 37.9 sec/km, southbound: 102.4 sec/km
  - Off-peak northbound: 18.1 sec/km, southbound: 8.7 sec/km.

DELAYS AT INTERSECTIONS

Congestion has been reported at specific intersections, which may be related to additional challenges such as storage capacity/queueing, access/efficiency and safety. Until site specific evidence is gathered, challenges at the intersections are considered to be anecdotal.

Intersections where congestion has been reported and supporting evidence is outlined in Table 6-11, along with areas where further investigation is required.

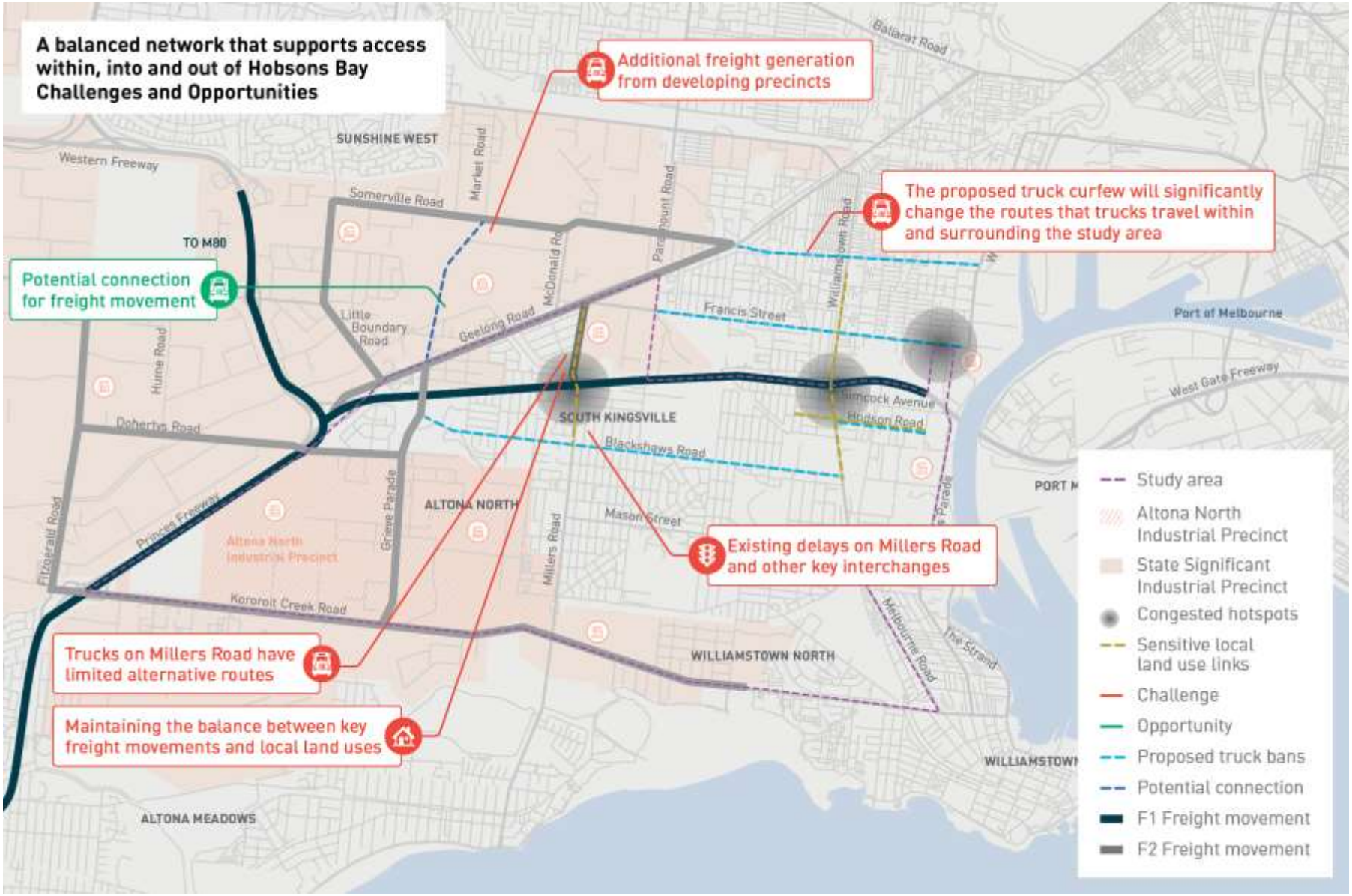
Table 6-11 Intersections where congestion has been reported

INTERSECTION	EVIDENCE
West Gate Freeway/Millers Road interchange	Substantial delays on links north and south of the interchange identified in the AM and PM peaks. See Section 6.2.3.1. Access to freeway is via metered ramps, which have been reported to queue back into the intersection.
West Gate Freeway/Williamstown Road interchange	Substantial delays on the southern approach to the interchange identified in the AM and PM peaks. See Section 6.2.3.1.
Millers Road near Altona Gate (Cyclamen Avenue, Marigold Avenue/Duosa Road)	Substantial delays on road link which contains these intersections. See Section 6.2.3.1. These delays can't be attributed to a specific intersection or cause; further investigation is required to evidence specific challenges.
Melbourne Road/The Avenue	Intersection sits within a link that has substantial delays in the AM and PM peaks. See Section 6.2.3.1. Based on the intersection's proximity to the West Gate Freeway/Williamstown Road interchange, it could be presumed that the challenges reported at the interchange impact the ability of vehicles to turn onto Melbourne Road from The Avenue.
Hudsons Road/Melbourne Road	Substantial delays on road link which contains this intersection. See Section 6.2.3.1. Further investigation is required to evidence specific issues.
Mason Street/Melbourne Road	Further investigation is required to evidence specific issues.
Blackshaws Road/Ross Street/Melbourne Road	Further investigation is required to evidence specific issues.

6.2.4 THEME 2 CHALLENGES AND OPPORTUNITIES

Based on the analysis and investigation presented above, the challenges and opportunities for a balanced network that supports access into and out of Hobsons Bay are:

	**Challenge** **Additional freight generation from developing precincts.** The redevelopment of precincts in Altona North and Brooklyn may generate additional freight movements along arterial roads such as Millers Road north of the West Gate Freeway.
	**Challenge** **Trucks on Millers Road have limited alternative arterial routes to the West Gate Freeway.** Millers Road north of the West Gate Freeway is a key conduit to the Brooklyn / Tottenham Industrial Precinct and the Brooklyn Business Park.
	**Challenge** **Existing delays on Millers Road and other key interchanges.** Millers Road southbound (particularly in the PM peak) experiences comparatively high levels of delay compared with similar arterial roads in Melbourne. Melbourne Road and Francis Street/Hyde Street also experience high levels of congestion and delay during peak periods.
	Challenge The implementation of the 24 hour inner west truck bans will significantly change the routes that trucks travel within and surrounding the study area. Increasing truck volumes, in particular on Millers Road (north of the West Gate Freeway) is expected to impact on residential amenity, increase congestion, limiting accessibility to adjacent neighbourhoods and establishing an unsafe environment, particularly for pedestrian and cycling movements.
	**Challenge** **Maintaining the balance between key freight movements and local land uses.** Balancing the movement needs of the key freight links with the local land use needs is integral to the development, liveability and growth of Hobsons Bay.
	**Opportunity** **A potential connection by extending Grieve Parade.** There is the potential to create a new and direct connection between Altona North industrial precinct and the Tottenham Industrial Precinct. This would potentially divert freight traffic away from Millers Road and Geelong Road.



6-74 Theme 2 Summary Map challenges and opportunities

6.3 THEME 3: SUPPORTING THE SUSTAINABLE INTEGRATION OF FUTURE INFRASTRUCTURE

Theme 3 considers mitigating the impact of future infrastructure on the study area, in particular the impact of the WGTP. The challenges that were explored under this theme are as follows:

The impacts of additional trucks on Millers Road once the WGTP opens

- The WGTP is expected to lead to an increase of 4,000 trucks a day on Millers Road, north of the West Gate Freeway once it opens. An increase in truck volumes lead to increase in noise pollution and reduction in the local amenity of the residents along Millers Road. In addition, the Millers Road Interchange is expected to operate close to its capacity once the WGTP opens and will be a key barrier to efficient north-south movement within the area.

Impact of Hyde Street Ramps

- How the Hyde Street ramps could affect the bicycle network, and the extension of the Federation Trail
- Potential for rat running in local streets to access the Hyde Street ramps.

Active transport upgrades as part of the WGTP

- The WGTP introduces new shared-use and active transport path upgrades along the Federation Trail. Opportunities exist to consolidate and maximise the benefits of these links to the residents of Hobsons Bay.

Ferguson Street level crossing

- Level crossing removal provides an opportunity to consolidate Kororoit Creek Road's designation on the Strategic Cycling Corridor and to consolidate active transport and safety benefits in the area.

This section examines:

- Key traffic connections to the West Gate Freeway (with and without WGTP)
- Active transport interfaces with the West Gate Tunnel project
- Ferguson Street level crossing removal.

6.3.1 KEY TRAFFIC CONNECTIONS TO WEST GATE TUNNEL PROJECT

The completion of any major piece of road infrastructure will result in changes in travel patterns across the road network – this is no different for the West Gate Tunnel Project. Impacts on the following roads have been investigated:

- Millers Road
- Hyde Street
- Grieve Parade.

6.3.1.1 MILLERS ROAD

Millers Road plays a crucial role in providing north-south connectivity to and through the study area. As identified in Section 6.2.3, there are currently large delays on Millers Road in the AM and PM peaks.

As shown in Table 6-12, vehicle volumes will continue to grow over time. Following the completion of the West Gate Tunnel Project, it is anticipated that there will be an additional 4,000 trucks on Millers Road north of the West Gate Freeway, largely due to truck bans to be implemented in Footscray and Yarraville that result in more trucks travelling via Millers Road to access the West Gate Freeway.

Growth is also anticipated to the south on Millers Road south of the West Gate Freeway, although to a much lesser extent.

Table 6-12 Vehicle volumes on Millers Road (two-way, 24 hours)

ROAD	2016	2031 NO PROJECT	2031 PROJECT	2031 CHANGE IN DAILY TRAFFIC DUE TO PROJECT[12]
Millers Road (North of West Gate Freeway to Geelong Road)	24,000 - 29,000	30,000 – 37,000	34,000 – 42,000	+4,500
Millers Road (South of West Gate Freeway to Blackshaws Road)	35,000 - 41,000	43,000 – 52,000	43,000 – 52,000	+600

Source: GHD, 2017

As part of the WGT EES, an interchange assessment was conducted along the West Gate Freeway Corridor, including the Millers Road interchange. Figure 6-75 and Figure 6-76 show the operation for the 2031 no project case. The results show that with no project, the interchange operates at LoS D generally, but LoS E in the 08:00-09:00 period.

In the AM peak, there are delays on the eastbound off-ramp, which is noted to have a relatively short green time as the north-south movements are critical. There is a LoS F for Millers Road north (deteriorating from LoS D in the 7:00-08:00 period).

In the PM peak the interchange operates at LoS D, with the eastbound off-ramp the worst performing approach (LoS F).

	7 am to 8 am			8 am to 9 am		
	Average Delay (secs)	Level of Service	Arrived Volume	Average Delay (secs)	Level of Service	Arrived Volume
Millers Road North	45	D	970	137	F	980
Westbound off-ramp	28	C	700	30	C	710
Millers Road South	26	C	2,000	26	C	2,040
Eastbound off-ramp	118	F	690	129	F	700
All Movements	**45**	**D**	**4,360**	**67**	**E**	**4,430**

Figure 6-75 Millers Road interchange 2031 no project case - AM peak

Source: GHD, 2017

[12] 2031 no project to 2031 project case: Change in daily traffic volumes sourced from GHD 2017, Figure 158.

	4 pm to 5 pm			5 pm to 6 pm		
	Average Delay (secs)	Level of Service	Arrived Volume	Average Delay (secs)	Level of Service	Arrived Volume
Millers Road North	51	D	1,540	49	D	1,520
Westbound off-ramp	32	C	710	29	C	680
Millers Road South	24	C	1,910	24	C	1,940
Eastbound off-ramp	65	E	560	63	E	540
All Movements	**39**	**D**	**4,720**	**37**	**D**	**4,680**

Figure 6-76 Millers Road interchange 2031 no project case - PM peak

Source: GHD, 2017

The results for Millers Road interchange 2031 project case are presented in Figure 6-77 and Figure 6-78. The traffic volumes through the intersection are greater in the 2031 project case.

For the Millers Road interchange 2031 with project case, the interchange operates overall at LoS D during both AM and PM peak periods, indicating that the "interchange works satisfactorily" in the 2031 with project case. The model indicates that the interchange performs better in the AM peak in the 2031 project case, compared to the 2031 no project case. The eastbound off-ramp and Millers Road north are both reported to operate at LoS D in the 2031 project case.

In the PM peak, the eastbound off-ramp operates at LoS F (worse than the 2031 no project case), due to the 'significant amount of signal green time needed for other movements'.

While there are current performance challenges at the Millers Road / West Gate Freeway interchange, the interchange is modelled to operate satisfactorily overall after the opening of the West Gate Tunnel project. This is due to the largely reduced delays for entering the freeway due to improvement in its traffic flow. However, it is noted that the westbound off-ramps operate at a LoS E in the AM peak from 8 am to 9 am, and the eastbound off-ramp operates at a LoS F across the two-hour PM peak. This LoS is not desirable, especially as a future (2031) case model and traffic congestion at this interchange is considered to be a challenge in the future.

	7 am to 8 am			8 am to 9 am		
	Average Delay (secs)	Level of Service	Arrived Volume	Average Delay (secs)	Level of Service	Arrived Volume
Millers Road North	41	D	1,160	39	D	1,190
Westbound off-ramp	45	D	1,130	68	E	1,180
Millers Road South	28	C	2,380	31	C	2,410
Eastbound off-ramp	52	D	730	53	D	750
All Movements	**37**	**D**	**5,390**	**44**	**D**	**5,520**

Figure 6-77 Millers Road interchange 2031 project case - AM peak

Source: GHD, 2017

	4 pm to 5 pm			5 pm to 6 pm		
	Average Delay (secs)	Level of Service	Arrived Volume	Average Delay (secs)	Level of Service	Arrived Volume
Millers Road North	43	D	1,550	41	D	1,480
Westbound off-ramp	31	C	1,170	27	C	1,060
Millers Road South	40	D	2,180	35	C	2,200
Eastbound off-ramp	105	F	720	95	F	750
All Movements	**47**	**D**	**5,620**	**43**	**D**	**5,500**

Figure 6-78 Millers Road interchange 2031 project case - PM peak

Source: GHD, 2017

6.3.1.2 HYDE STREET RAMPS AND HYDE STREET/FRANCIS STREET INTERSECTION

The Hyde Street ramps are part of the WGTP, and are a westbound entry ramp from Simcock Avenue and an eastbound exit ramp onto Hyde Street. Both ramps will include new signalised intersections with Hyde Street and Douglas Parade.

The wider study area of the HBTPS is provided in Figure 6-79, and the Hyde Street ramps are provided inset.

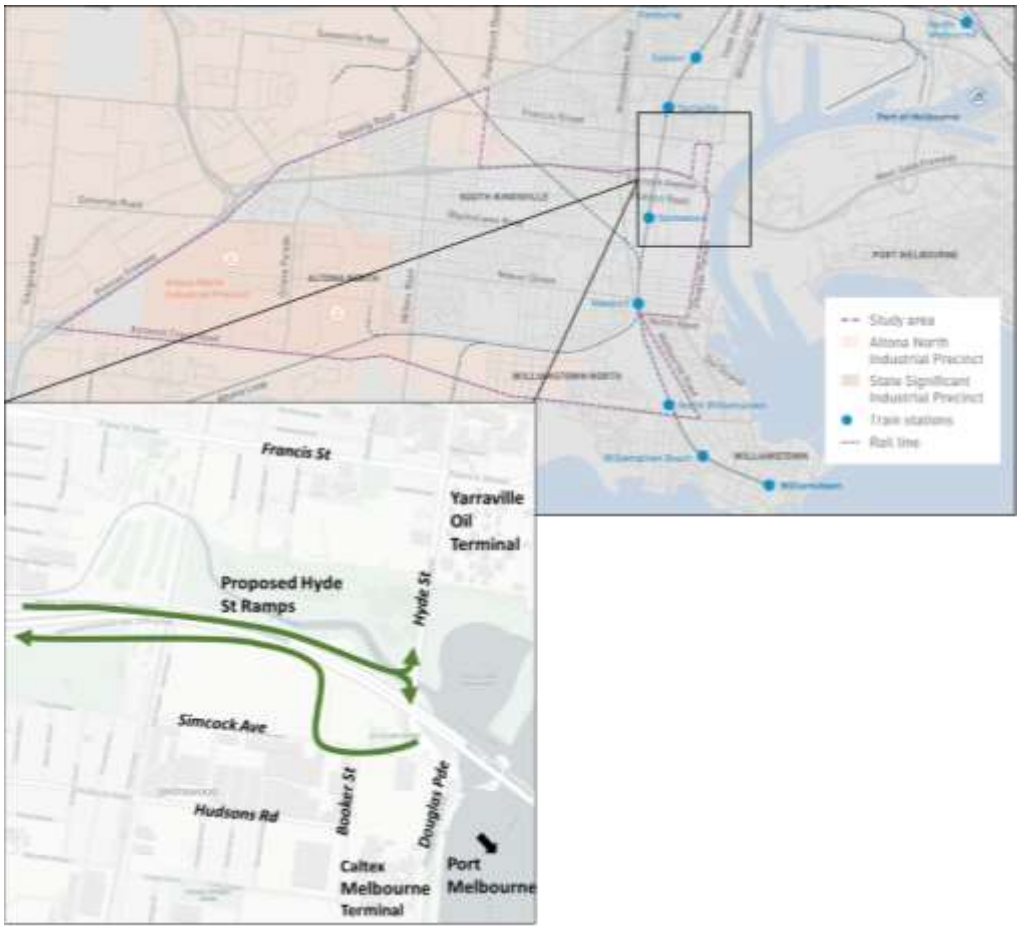


Figure 6-79 HBTPS study area and investigation study area

The following traffic related observations were made in relation to the construction of the Hyde Street ramps:

- Increased traffic along Hyde Street (additional 1,500 vehicles a day due to WGTP) and Simcock Avenue (additional 1,500 vehicles a day) due to provision of ramps.
- Modelling results outlined in the EES do not indicate capacity issues at the intersections where the ramps connect at Hyde Street and provide access to Douglas Parade – LoS B across both peak hours.

- However, according to the EES the intersection of Hyde Street / Francis Street is expected to operate at LoS F in PM peak for 2031 project case. This is reportedly due to a heavy turning movement, turning left from the east approach of Francis Street onto Hyde Street, requiring a large amount of green time.
- Majority of trucks using the ramps are destined for local fuel terminals and would travel in the local area regardless of the ramps.

As identified in Section 6.2.3 there are already substantial delays on Hyde Street and Douglas Parade in the AM peak. The exact location of delay cannot be identified from the data available.

It is noted that the HBCC submission to the EES raised the potential for increased trucks and vehicle rat-running across local roads to access the Hyde Street ramps, impacting on the adjacent residential and commercial zones. Following a review of the EES supporting documents, there is currently no evidence to confirm that this rat-running would occur. This could be further investigated as part of the development of HBCC Local Area Movement Plans.

Modelling of the intersections where the ramps connect at Hyde Street and provide access to Douglas Parade indicates that these intersections will perform at acceptable levels of service. However, the continued growth in vehicle volumes, particularly by heavy vehicles with their increased size and low acceleration profiles may exacerbate existing delays along the length of Hyde Street and Douglas Parade. The source of existing delays should be investigated further to understand the relationship between them and the Hyde Street ramps.

6.3.1.3 GRIEVE PARADE

Grieve Parade provides north-south connectivity to and through the study area. Land use along its length is industrial and as an F2 classified road, it facilitates the significant movement of freight.

As identified in Section 6.2.3, there are substantial delays on the Grieve Parade / West Gate Freeway on-ramp. However, delays for the through movements north and south along Grieve Parade are not large relative to those reported at Millers Road or Melbourne Road. Delays on the on-ramp are a function of the ramp metering which restricts access to the freeway from Grieve Parade to maintain a stable flow on the freeway. The widening of the West Gate Freeway and completion of the Freeway Management System as part of the West Gate Tunnel Project will alleviate the challenges currently reported on the Grieve Parade / West Gate Freeway on-ramp.

As shown in Table 6-13,Grieve Parade north of the West Gate Freeway is forecast to experience a significant decrease in traffic volumes (-4,000 daily) in the 2031 WGTP scenario compared with the 2031 no WGTP scenario. It is noted that the WGTP scenario has lower volumes for 2031 than were recorded in 2016.

Grieve Parade south of the West Gate Freeway is expected to experience an increase of 600 vehicles per day.

Table 6-13 Vehicle volumes on Grieve Parade (two-way, 24 hours)

ROAD	2016	2031 NO PROJECT	2031 PROJECT	2031 CHANGE IN DAILY TRAFFIC DUE TO PROJECT[13]
Grieve Parade (North of Freeway)	23,000 - 29,000	25,000 – 31,000	22,000 – 27,000	-4,000
Grieve Parade (South of Freeway)	26,000 - 32,000	33,000 – 41,000	34,000 – 41,000	+600

[13] Change in daily traffic volumes sourced from GHD 2017, Figure 158. These numbers may not accurately reflect the change in project case to a single toll point between Millers Road and Williamstown Road rather than two toll points, with the additional toll point between Grieve Parade and Millers Road being removed in the most recent modelling.

Source: GHD, 2017

As part of the WGT EES, an interchange assessment was conducted along the West Gate Freeway Corridor, including the Grieve Parade interchange. Figure 6-80 and Figure 6-82 summarise the modelled capacity of the Grieve Parade interchange for the AM and PM peaks across both the 2031 WGTP scenario and no WGTP scenario, as provided in the WGT EES. The interchange is identified as providing a level of service (LoS) C during both AM and PM peak periods, indicating that the "interchange works satisfactorily" in the 2031 WGTP scenario. The model indicates that the interchange performs slightly better in the AM peak in the 2031 no project case compared to the 2031 project case.

In the 2031 project case (with two toll points), the WGT EES notes that the Grieve Parade to Millers Road freeway segment is "busy but stable" operating at a LoS D in the AM peak, and "stable and uncongested" in the PM peak for traffic movements from Millers Road to Grieve Parade. This is shown in Figure 6-81 and Figure 6-83.

Grieve Parade north of the West Gate Freeway is forecast to experience a significant decrease in traffic volumes (-4,000 daily) in the 2031 WGTP scenario compared with the 2031 no WGTP scenario. It is noted that the WGTP scenario has lower volumes for 2031 than were recorded in 2016.

Modelling undertaken for the West Gate Tunnel Project EES indicates that the interchange performance at Grieve Parade will be acceptable post the opening of the project.

The currently reported congestion challenges at the Grieve Parade / West Gate Freeway on-ramp will be mitigated through the widening of the West Gate Freeway, and the introduction of a Freeway Management System as part of the West Gate Tunnel Project. As volumes will remain similar to those recorded currently, traffic congestion at this interchange is not considered to be a significant issue in the future.

	2031 project case		2031 no project case	
	Level of Service		Level of Service	
	7 am to 8 am	8 am to 9 am	7 am to 8 am	8 am to 9 am
Grieve Parade Interchange	C	C	B	C

Figure 6-80 Grieve Parade interchange summary - AM peak

Source: GHD, 2017

	7 am to 8 am		8 am to 9 am	
	Density pcu/lane/km	Level of Service	Density pcu/lane/km	Level of Service
Grieve Parade merge	17.9	D	17.9	D
Millers Road diverge	19.6	D	19.9	D

Figure 6-81 Grieve Parade to Millers Road freeway segment LoS - AM peak (2031 project case with two toll points)

Source: GHD, 2017

	2031 project case		2031 no project case	
	Level of Service		Level of Service	
	4 pm to 5 pm	5 pm to 6 pm	4 pm to 5 pm	5 pm to 6 pm
Grieve Parade Interchange	C	C	C	C

Figure 6-82 Grieve Parade interchange summary - PM peak

Source: GHD, 2017

	7 am to 8 am		8 am to 9 am	
	Density pcu/lane/km	Level of Service	Density pcu/lane/km	Level of Service
Millers Road merge	14.7	C	14.3	C
Grieve Parade diverge	15.0	C	15.0	C

Figure 6-83 Grieve Parade to Millers Road freeway segment LoS - PM peak (2031 project case with two toll points)

Source: GHD, 2017

6.3.1.4 TRAFFIC CONNECTIONS KEY FINDINGS

- Millers Road
  - While there are current performance challenges at the Millers Road / West Gate Freeway interchange, the interchange is modelled to operate satisfactorily after the opening of the West Gate Tunnel project, even with larger traffic volumes. This is largely due to reduced delays for entering the freeway due to improvement in its traffic flow.
- Hyde Street
  - Modelling of the intersections where the ramps connect at Hyde Street and provide access to Douglas Parade indicates these will perform acceptably. However, the continued growth in vehicle volumes, particularly by heavy vehicles with their increased size and low acceleration profiles may exacerbate existing delays along the length of Hyde Street and Douglas Parade. The source of existing delays should be investigated further to understand the relationship between them and the Hyde Street ramps.
- Hyde/Francis Street
  - According to the EES, the intersection of Hyde Street / Francis Street is expected to operate at LoS F in PM peak for 2031 project case. This is reportedly due to a heavy turning movement turning left from the east approach of Francis Street onto Hyde Street, requiring a large amount of green time.
- Grieve Parade
  - Grieve Parade north of the West Gate Freeway is forecast to experience a significant decrease in traffic volumes (-4,000 daily) in the 2031 WGTP scenario compared with the 2031 no WGTP scenario. It is noted that the WGTP scenario has lower volumes for 2031 than were recorded in 2016.

- Modelling undertaken for the West Gate Tunnel Project EES indicates that the interchange performance at Grieve Parade will be acceptable after the opening of the project.
- The currently reported congestion challenges at the Grieve Parade / West Gate Freeway on-ramp will be mitigated through the widening of the West Gate Freeway, and the introduction of a Freeway Management System as part of the West Gate Tunnel Project. As volumes will remain similar to those recorded currently, traffic congestion at this interchange is not considered to be a significant issue in the future.

6.3.2 ACTIVE TRANSPORT INTERFACES WITH WEST GATE TUNNEL PROJECT

HYDE STREET RAMPS

To facilitate the ramps at Hyde Street delivered as part of the WGTP, new signalised intersections with Hyde Street and Douglas Parade at the intersections of Douglas Parade / Simcock Avenue and Hyde Street / Hyde Street eastbound exit-ramp will be constructed. A high-level schematic is shown in Figure 6-84.

It is understood that both signalised intersections will include at-grade pedestrian crossings and facilitate active transport movements between the Federation Trail and the Hobsons Bay Coastal Bay Trail.

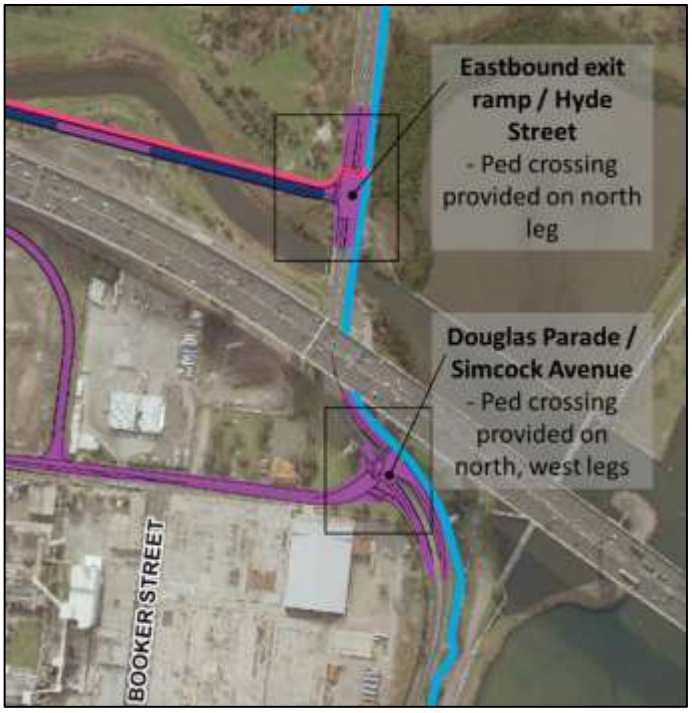


Figure 6-84 New signalised intersections at Hyde Street and Douglas Parade

As part of the WGTP, the extension of the Federation Trail with a new off-road shared-use path is proposed between Fogarty Avenue and Hyde Street, as shown in Figure 6-86. It is understood that this connection will be an off-road connection running parallel to the eastbound Hyde Street exit ramp. This connection will tie into the existing Maribyrnong River Trail/Hobsons Bay Coastal Bay Trail (refer to Figure 6-85) via pedestrian signals and provide access to the West Gate Punt Ferry terminal.

In addition to the extension of the Federation Trail, the WGTP will also include a new walking and cycling connection which connects the Federation Trail to the Hyde Street Reserve and Spotswood station along Hall Street.

Figure 6-85 Active transport connections around Hyde Street

Source: West Gate Tunnel Project, 2019

Figure 6-86 Concept image of Federation Trail extension to Hyde Street

Source: West Gate Tunnel Project, Walking and cycling, January 2018, www.westgatetunnelproject.vic.gov.au

Although this provides active transport benefits and ties the Federation Trail with the Hobsons Bay Coastal Bay Trail, it also raises the potential for safety implications as pedestrians and cyclists are required to navigate across pedestrian signals at Hyde Street, introducing potential for additional conflicts with trucks. In particular, there is a potential conflict between left-turning trucks exiting from the Hyde Street exit ramp and pedestrians/cyclists crossing between the Federation Trail and Coastal Bay Trail (see Figure 6-87). Anecdotally, it is understood that the Coastal Bay Trail is a popular scenic and cultural trail for families, which potentially introduces more at-risk and vulnerable riders into the conflict area. In HBCC's Submission to the EES, Council advocated for the grade separation of the shared-use path at Hyde Street to provide a "seamless connection to the Coastal Bay Trail". (Hobsons Bay City Council, 2017e)

Similarly, the proposed pedestrian crossings at the intersection of Douglas Parade / Simcock Avenue also raise similar safety implications. HBCC have previously expressed concerns regarding "safety issues at the Douglas Parade intersection due to poor sight lines" (Hobsons Bay City Council, 2017e, p19). The upgrade of this intersection will need to adhere to applicable design standards in order to satisfy sight distance requirements.

Figure 6-87 Potential safety implications at Hyde Street exit ramp intersection

MILLERS ROAD INTERFACE WITH FEDERATION TRAIL

As discussed in 6.1.5.2, the Federation Trail crosses Millers Road to the north of the Westgate Freeway. There are new or modified shared use paths around the Millers Road/WGF interchange.

This location has been noted as an existing potential conflict point. With the expected increases in freight traffic on Millers Road after the opening of the WGTP, this crossing point has potential for safety implications for pedestrians and cyclists.

6.3.3 FERGUSON STREET LEVEL CROSSING

The level crossing at Ferguson Street in Williamstown is planned for removal between 2019 and 2022. A geographic summary of the Ferguson Street level crossing to be removed, along with other level crossing removals within the vicinity of the study area, is presented in Figure 6-88.

The Ferguson Street level crossing is adjacent to North Williamstown station and is currently used by approximately 22,000 vehicles a day (LXRP, 2019b). Anecdotally, the Ferguson Street level crossing is a major safety hazard for pedestrians, cyclists and vehicles in the area. The planned removal of the level crossing introduces various opportunities and challenges to be considered as part of the HBTPS.

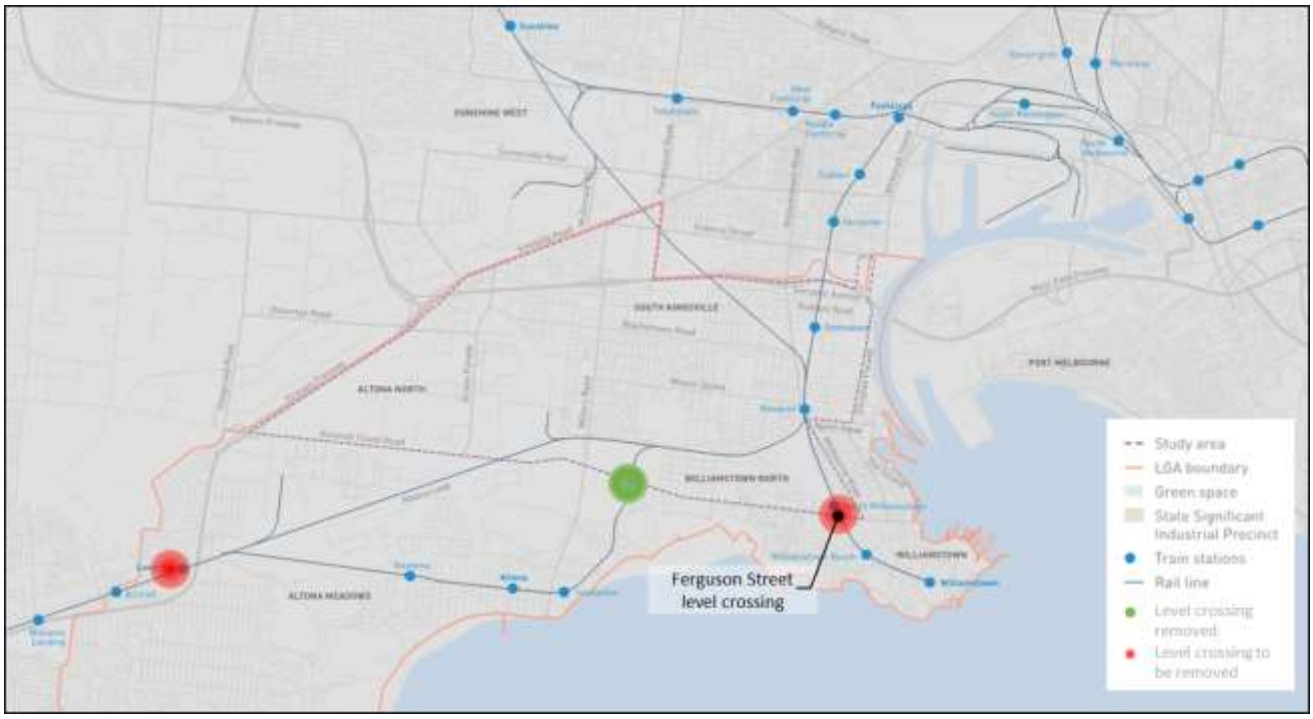


Figure 6-88 Level crossing removals in Hobsons Bay

The following presents some of the opportunities, challenges and considerations of the Ferguson Street Level Crossing:

- **Opportunity to consolidate the bicycle network and the SCC**

Kororoit Creek Road/Ferguson Street is along the proposed SCC. This designation means that the route should be supported by dedicated safe, connected and continuous bicycle infrastructure for the purposes of linking key activity centres and destinations. In this instance, Kororoit Creek Road/Ferguson Street provides east-west cycling connectivity towards Williamstown activity centre, North Williamstown station and the Coastal Bay Trail.

- **Opportunity to consolidate walking paths, access points and desire lines**

Various pedestrian generators and attractors in the vicinity of the Ferguson Street level crossing, such as North Williamstown station, schools (Bayside College and Williamstown North Primary School) and Williamstown activity centre, lead to greater pedestrian foot traffic in the area. Walking access to North Williamstown station is the predominant access mode and represents over 75 per cent of the mode split access to the station. The importance of the area to walking is evidenced by its classification as a W2 walking route (Kororoit Creek Road, Ferguson Street, Victoria Street, Champion Road).

Accordingly, the removal of the Ferguson Street level crossing presents an opportunity to ensure walking desire lines and walking access is improved (i.e. adequate footpaths, clear wayfinding, safe crossings etc.).

Further information regarding the active transport challenges associated with the Ferguson Street level crossing was discussed in Section 6.1.5.1.

- **Consideration of potential rat-running along Kororoit Creek Road, Douglas Parade and Melbourne Road**

The removal of the level crossing at Ferguson Street is expected to improve the traffic flow along the Kororoit Creek Road / Ferguson Street corridor. This potentially increases the likelihood of undesired toll-avoidance behaviour of trucks originating from the Altona North industrial precinct travelling eastbound (either to the Port of Melbourne, Webb Dock or east of the CBD). That is, trucks from Altona North who currently access the West Gate Freeway via the interchanges at Kororoit Creek Road or Grieve Parade (or Millers Road) may find it more attractive to access through Melbourne Road (or potentially Douglas Parade), as this allows trucks to avoid the West Gate Freeway tolls – refer to Figure 6-89. Freight access through the Kororoit Creek Road and Grieve Parade interchanges is preferred from a local amenity

perspective as the surrounding land use is predominantly industrial (Grieve Parade is a F2 freight route). In contrast, the land use around Melbourne Road and Douglas Parade is predominantly residential.

A visual assessment of the land use (which shows a significant amount of vehicle storage in satellite aerials) indicates that there is a high proportion of truck movements between the Altona North precinct and Webb Dock (the largest automotive terminal in Australia).

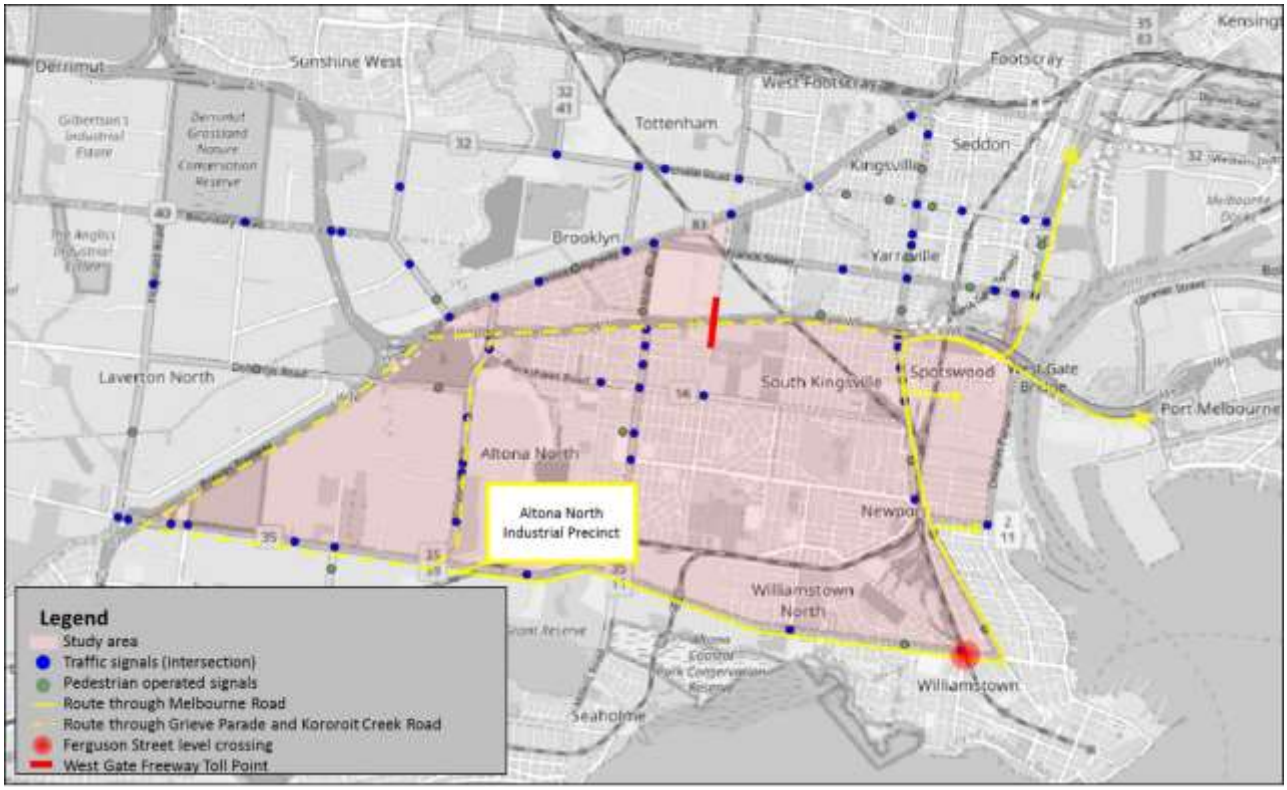


Figure 6-89 Ferguson Street level crossing removal potential impact on freight movements

The likelihood and magnitude of toll-avoidance behaviour would be dependent on the current duration that the boom gates are down. The frequency of trains at North Williamstown station is currently relatively low (approximately four trains per hour per direction). A study of the delays at level crossings by VicRoads in 2015 indicated that the boom gate down time at the Ferguson Street level crossing is approximately 23 per cent (approximately 12 minutes down time per hour) in the AM and PM peak hour (VicRoads, 2015).

,As discussed in Section 6.2.3.1, Melbourne Road currently experiences high levels of delays, particularly in the AM peak and has a high number of traffic signals (Figure 6-89). Even with the removal of the Ferguson Street level crossing, the congestion along Melbourne Road would reduce its attractiveness to freight movements.

While this route does not appear to be an attractive alternative, there is an opportunity to plan and direct general and freight traffic movements away from this area, supporting its function as a place and for active transport movements.

6.3.4 THEME 3 CHALLENGES AND OPPORTUNITIES

Based on the analysis and investigation presented above, the challenges and opportunities for supporting the sustainable integration of future infrastructure are:

	Challenge **Mitigating the impacts of additional trucks on Millers Road once the West Gate Tunnel opens.** The West Gate Tunnel is expected to lead to an increase of 4,000 trucks a day on Millers Road, north of the West Gate Freeway. As discussed in the IAC report for the WGTP EES

	and the Planning Ministers assessment, an increase in truck volumes may lead to increases in noise and air pollution and reduction in the local amenity of the residents living along Millers Road.
	**Challenge** **Interchanges with the West Gate Tunnel have existing delays that impact the network.** West Gate Tunnel EES Modelling indicates satisfactory operation of the Millers Road, Grieve Parade and Hyde Street interchanges after the West Gate Tunnel opens. However, the source of existing delays may require further investigation to understand these potential congestion hotspots and key barriers to efficient north-south movement within the area.
	**Challenge** **The Hyde Street/Francis Street intersection is expected to be congested.** Modelling indicates unsatisfactory operation of this intersection in the PM peak period after the opening of West Gate Tunnel, which has potential to cause wider issues to the network.
	**Challenge** **Better understanding of the impact of Hyde Street Ramps on local streets.** There is expected to be increased traffic along Hyde Street (additional 1,500 vehicles a day due to the West Gate Tunnel Project) and Simcock Avenue (additional 1,500 vehicles a day) due to provision of ramps. It is unclear how this may impact local movements through the adjacent residential and commercial zones of Spotswood and Yarraville.
	**Challenge** **Safe integration of Hyde Street Ramps with the active transport network is needed to protect vulnerable road users.** The new ramps and the extension of the Federation Trail raises the potential for safety implications as pedestrians and cyclists use pedestrian signals at Hyde Street.
	**Challenge** **Ferguson Street level crossing removal.** Controlling movements for general traffic and freight through this area will be important, to support the vision for place and active transport.
	**Opportunity** **Maximise the benefits of active transport upgrades as part of the West Gate Tunnel Project.** The West Gate Tunnel introduces new shared-use and active transport paths along the Federation Trail. Consolidating the active transport network will bring benefits for the residents of Hobsons Bay.
	**Opportunity** **Consolidate and formalise the cycling infrastructure along Kororoit Creek Road.** Ferguson Street level crossing removal will allow for changes for safer and better connected active transport in the area.

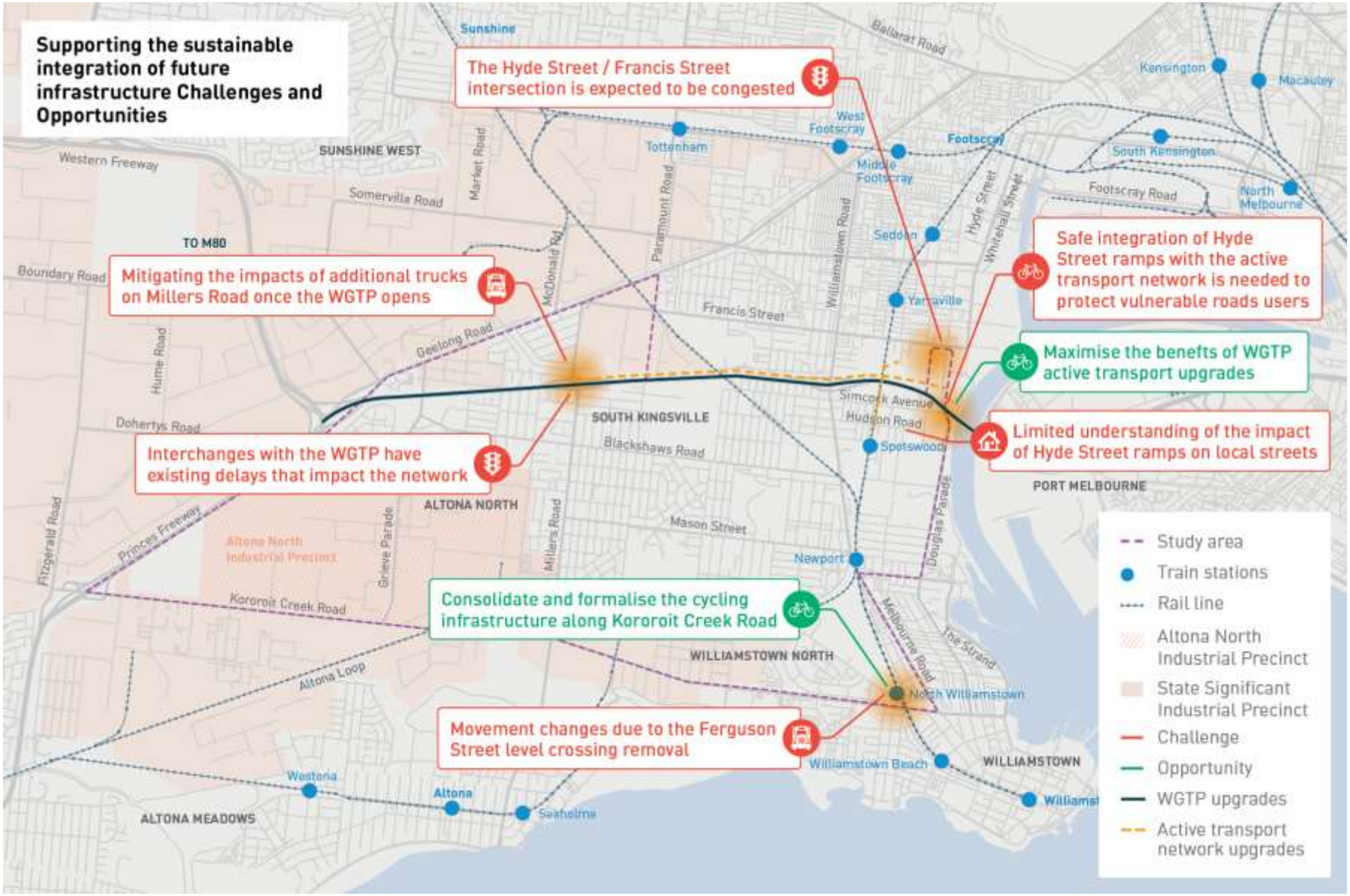


Figure 6-90 Theme 3 Summary Map: challenges and opportunities

7 CONCLUSIONS AND NEXT STEPS

Through a comprehensive review of the current and future transport network, and the places influencing movement patterns within Hobsons Bay, challenges and opportunities in the Hobsons Bay transport network were identified and grouped into three themes:

- **Theme 1:** Providing accessible connected journeys to employment and recreation to support future growth in Hobsons Bay
- **Theme 2:** Achieving a balanced network that supports access within, into and out of Hobsons Bay
- **Theme 3**: Supporting the sustainable integration of future infrastructure.

This report's findings provide an evidence base that can be drawn on by both DoT and HBCC in the following way:

- DoT will respond to the main themes identified through this investigation, and look for future funding opportunities of a strategic nature.
- HBCC will respond to localised challenges and opportunities identified through this investigation, these can be transferred to the relevant Local Area Management Plan (LAMP) or developed into other initiatives for delivery by Council.

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APPENDIX A

STUDY PRINCIPLES

A1 PRINCIPLES, OBJECTIVES AND PERFORMANCE MEASURES

PRINCIPLES		OBJECTIVE (O) AND PERFORMANCE MEASURES (PM)
Principle 1: An efficient, integrated and sustainable transport network outcome 	Improving Overall Transport Network	— Maintain and improve access and connectivity throughout Hobsons Bay and surrounding areas(O). — Maintain or improve efficiency of travel for all modes of transport (pedestrian, cycling, public transport in alignment with the Movement and Place objectives for the network (O). — Maintain and improve existing pedestrian, cycling and vehicle access and connections, as well as seeking opportunities to develop new strategic connections (O)
	Improving Linkages	— Improve Hobsons Bay access to the CBD (O). — Improve Hobsons Bay access to the Port (O). — Seek opportunities to develop efficient north south connections within Hobsons Bay, in particular between Grieve Parade and Williamstown Road (O)
	Improving Balance of Modal Choices	— Promote and increase non-general traffic mode share (public transport, cycling and walking) (O). — Ensure public transport reliability is improved, including on road public transport (O). — Implement travel demand management and improved on road public transport priority measures (O).
	Developing the Active Transport Network	— Create direct, accessible, safe and user-friendly pedestrian and cycling connections that are well integrated with surrounding destinations and connections and built to relevant international best practice (O).

PRINCIPLES		OBJECTIVE (O) AND PERFORMANCE MEASURES (PM)
	Facilitating Efficient Freight Movements	— Facilitate efficient movement for truck traffic from industrial areas, particularly Spotswood and the Altona North Industrial precinct (O).
	Mitigating Adverse Transport Movements for Local Communities	— Reduce truck traffic in residential areas (O). — Create measures to prevent rat-running through local streets(O). — Develop strategies to mitigate potential adverse traffic impacts on Hobsons Bay from WGTP.
Principle 2: Positive liveability, amenity and community wellbeing 	Achieving Outcomes for Transport	— Stimulate economic growth and tourism (O). — Improve access to recreation and community services and facilities (O). — Improve access to employment for Hobsons Bay residents (O). — Improve access to and awareness of tourist destinations within Hobsons Bay (O)
	Managing Noise and Air Quality	— Reduce noise and air quality impacts (O). — Identify air quality impacts and mitigate to EPA standards (PM). — Mitigate noise impacts to standards that are to international best practice (PM)
	Supporting Local Liveability	— Achieve high quality design outcomes (O). — Protect and improve the amenity of the Hobsons Bay community (O). — Protect amenity and avoid impacts to adjacent properties and public space(O). — Avoid or mitigate risks to public health and safety (O). — Demonstrate that all potential public health and safety risks have been identified — and put agreed mitigation and protection measures in place(O). — Conserve heritage values and be sympathetic to the character of the local area (O).

PRINCIPLES		OBJECTIVE (O) AND PERFORMANCE MEASURES (PM)
Principle 3: Planning for future growth 	Integrating Land Use and Transport	— Ensure future land use development aligns with the existing and future transport network (O) — Provide sufficient capacity/ traffic management to ensure traffic from new developments is not adversely impacted (PM).
	Planning/ Allowing for Future Network Improvements	— Identify and allow sufficient space for construction of future transport connections (O). — Improve accessibility to broader arterial network, particularly at the freeway interchanges at Melbourne Road and Millers Road and Hyde Street ramps (O)). — Support cycling for commuting through alignment with the agreed Strategic Cycling Corridors. — Improve local transport choices to support 20 minute neighbourhoods — Create pedestrian friendly neighbourhoods — Improve freight efficiency while protecting urban amenity — Ensure all planning and network improvements align with the principles and objectives of the *Transport Integration Act*.

APPENDIX B

TRAVEL TIME DELAYS

B1 TRAVEL TIME DELAYS IN STUDY AREA

The delays for the AM and PM peaks are shown in Table C-1 and C-2, and compared in Figure C-1, C-2 and C-3.

Table C.1 Top 10 delays in study area for AM Peak (07:00 – 09:00)

LINK NAME	RELATIVE AVERAGE DELAY (SEC/KM) – AM PEAK	AVERAGE DELAY (SEC) – AM PEAK
1309 - Melbourne Rd/Williamstown Rd, McRobert St to Westgate Fwy	80.4	120.5
3636 - Grieve Pde, Princes Hwy to Westgate Fwy On Ramp	72.3	44.4
1291 - Millers Rd, PHW/Francis St to Westgate Fwy	63.1	54.5
1290 - Millers Rd, Blackshaws Rd to Westgate Fwy	50.1	38.6
3168 - Ferguson St, Lyon St to Victoria St	46.5	25.6
4253 - Douglas Pde, North Rd to Francis St	44.3	118.0
1292 - Millers Rd, Westgate Fwy to PHW/Francis St	40.3	34.7
2276 - Geelong Rd, Grieve Rd to Little Boundary Rd	34.3	18.3
1296 - Kororoit Creek Rd, PFW SB Ramps to Fitzgerald Rd	30.8	18.4
1295 - Kororoit Creek Rd, Fitzgerald Rd to PFW SB Ramps	28.1	16.8

Table C.2 Top 10 delays in study area for PM Peak (15:00 – 18:00)

LINK NAME	RELATIVE AVERAGE DELAY (SEC/KM) – PM PEAK	AVERAGE DELAY (SEC) – PM PEAK
1291 - Millers Rd, PHW/Francis St to Westgate Fwy	131.2	113.3
2276 - Geelong Rd, Grieve Rd to Little Boundary Rd	69.7	37.1
3636 - Grieve Pde, Princes Hwy to Westgate Fwy On Ramp	69.1	42.5
1285 - Kororoit Creek Rd, Maidstone St to PFW SB Ramps	65.4	120.3
2278 - Geelong Rd, Millers Rd to Grieve Rd	56.3	107.9
2325 - Millers Rd, Cabot Dr to Kororoit Creek Rd	51.9	34.2
1290 - Millers Rd, Blackshaws Rd to Westgate Fwy	40.5	31.2
1309 - Melbourne Rd/Williamstown Rd, McRobert St to Westgate Fwy	37.3	55.9
3171 - Ferguson St, Adeline St to Victoria St	35.8	21.9
3556 - West Gate Bridge OB, Todd Rd to Williamstown Rd	34.1	118.7

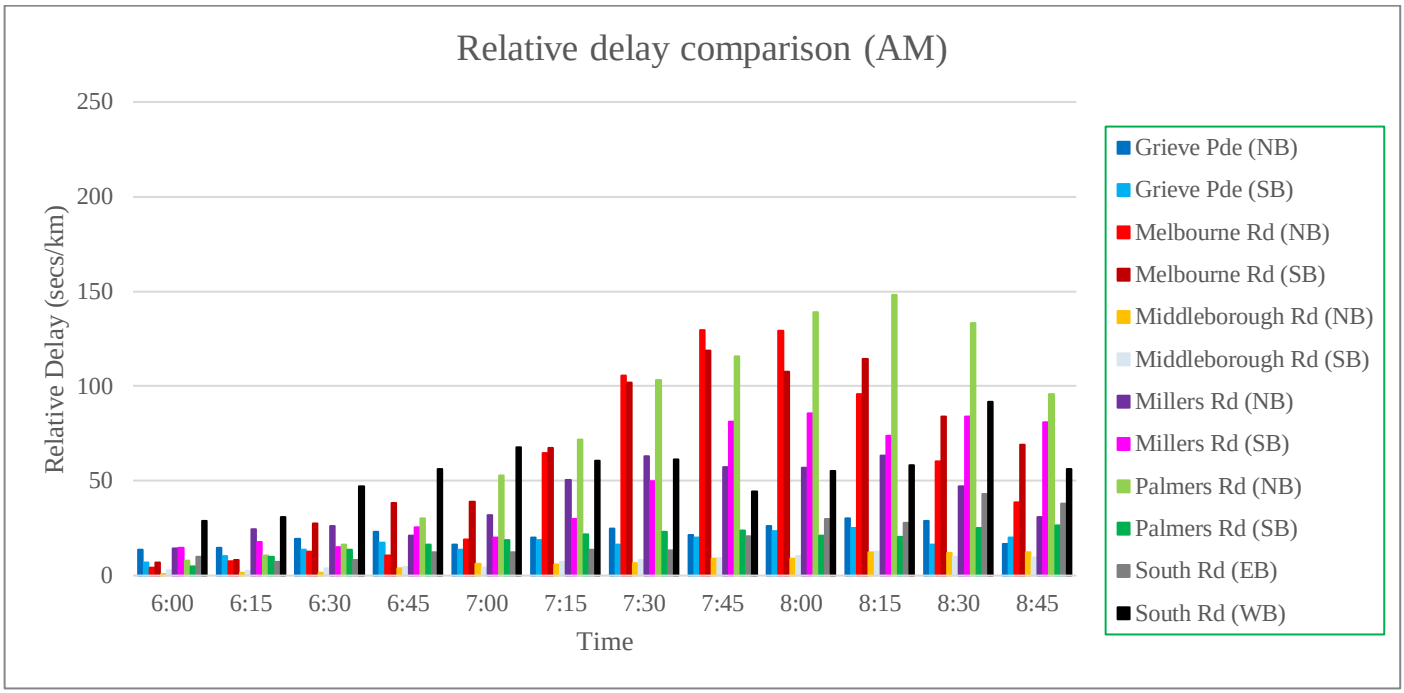

Figure C.1 Relative delay comparison between links at intersections (AM)

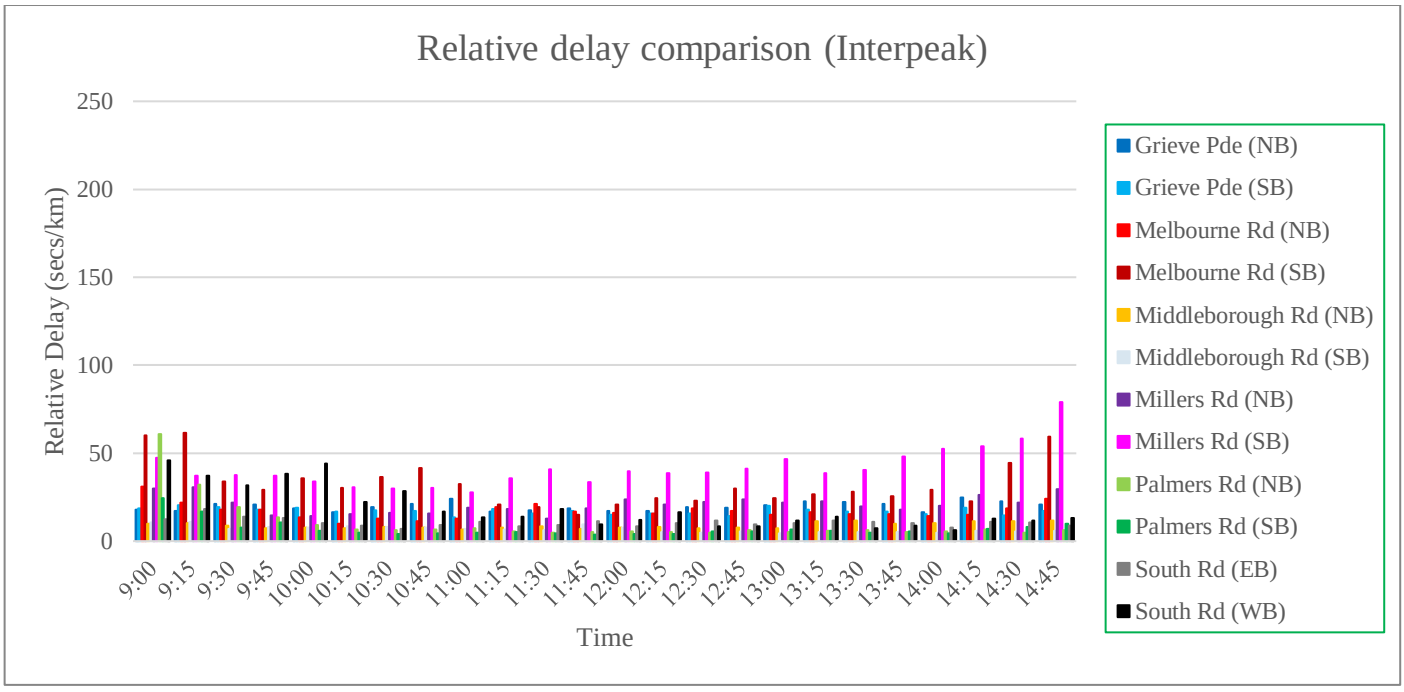

Figure C.2 Relative delay comparison between links at intersections (Interpeak)

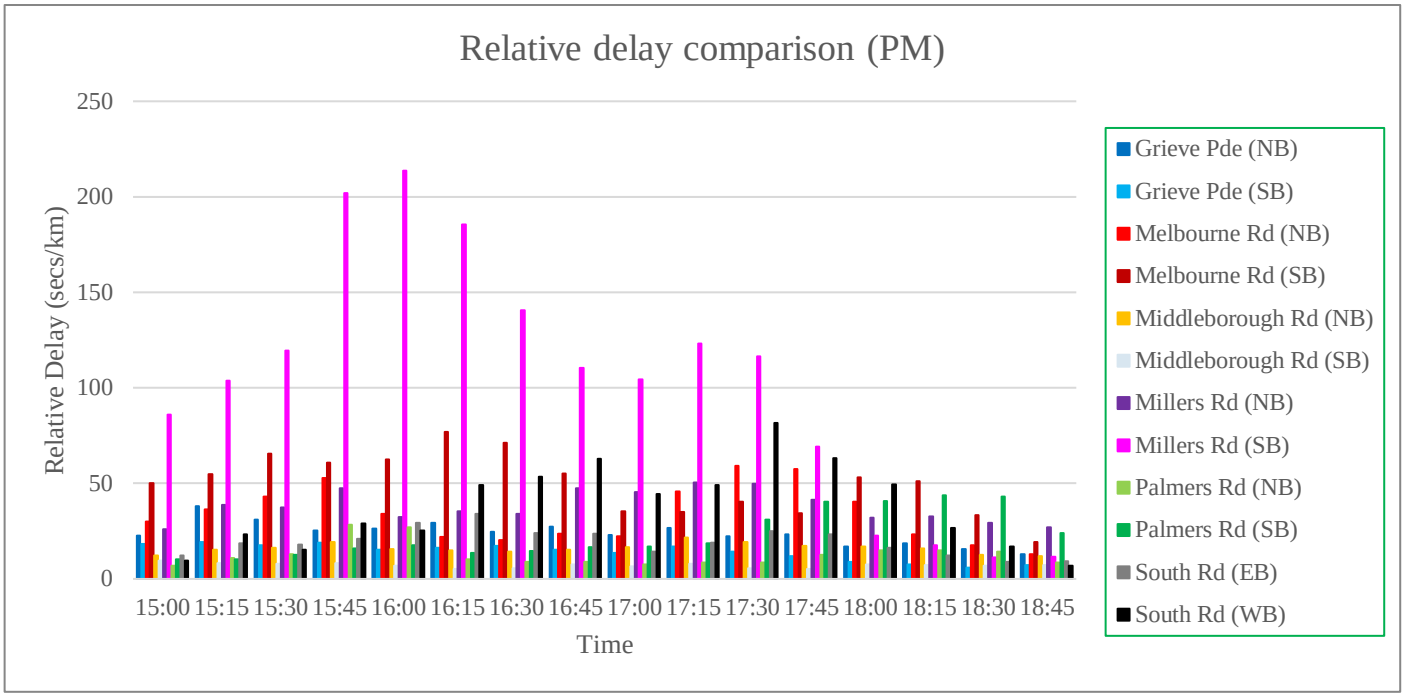

Figure C.3 Relative delay comparison between links at intersections (PM)

APPENDIX C

REVIEW OF ISSUES REPORTED TO HBCC AND DOT (ETS)

C1 CHARM DATA SUMMARY

A total of 1888 complaints and requests were logged with council between late October 2009 and mid-June 2019 and provided to WSP in the spreadsheet titled *Charm data – northern suburbs*. 20 complaints/requests have been flagged as outstanding, with the remaining being flagged as closed, resolved or work completed.

This document summarises these complaints and requests, noting that the majority of these requests/complaints are not relevant or outside the scope of the HBTPS.

Table D.1 Charm data – summary

ENQUIRY/ COMMENT/ COMPLAINT CATEGORY	NO. (%)	COMMENTS
ROAD		
Roads (line marking)	436 (23%)	— A large number of enquiries relate to line marking which is outside the scope of HBTPS
Roundabouts	31 (2%)	— Most requests relate to damaged roundabouts or requests for new roundabouts as traffic calming devices
Speed Problems	46 (2%)	— All enquiries closed by council — Enquiries potentially relating to HBTPS: — *There are roads works going on between Douglas Parade and Hyde Street under the West Gate Fwy. She says the trucks are coming from Douglas Parade onto Hyde St and are heavily speeding and making it very dangerous. (September 2018)* — A few complaints relating to speeding and trucks on Hudsons Road
Speed Humps	216 (11%)	— 4 enquiries flagged as outstanding — All open complaints relate to requests for speed humps as traffic calming devices to reduce speeds on residential areas: — Edina Street – Williamstown North — Fifth Avenue – Altona North — Ginifer Avenue – Altona North — Heather Ave – Brooklyn (outside of study area)
Traffic Lights	15 (1%)	— Main concerns relating to phasing/signal configuration, new traffic signals or safety issues — Very few enquiries/complaints - only one complaint from 2019 and two from 2018.
Traffic Island	32 (2%)	— All enquiries closed — Most concerns relating to damaged traffic islands (outside of scope of HBTPS) — Truck Curfew, Signage, Road Condition, Vehicle Speed & Pedestrian Crossing concerns. (on Hudsons Road)
PARKING		
Parking	365 (19%)	— Lots of complaints surrounding residential parking permits, or parking restrictions to non-residents — Recent complaints surrounding trades people, workers at the yard taking up parking.

ENQUIRY/ COMMENT/ COMPLAINT CATEGORY	NO. (%)	COMMENTS
BUS		
Bus Shelters	16 (1%)	— All enquiries/complaints have been closed. No new complaints since Feb 2019. — Most complaints relate to request for more bus shelters.
Bus Stops	14 (1%)	— All enquiries/complaints have been closed. No new complaints since March 2017. — Most complaints relate to bus stop condition, damage, vandalism etc.
PEDESTRIANS		

Pedestrian Crossing	100 (5%)	— All complaints/enquiries closed.
		— Most complaints relate to the need for additional pedestrian crossings or safety concerns at existing crossings
		— 12 complaints/enquiries since 2019
		— Enquiries potentially relating to HBTPS:
		  — The need for pedestrian crossings and road safety along Hudsons Road and Booker Street should be investigated as this is the predominant route used by school children when travelling between Spotswood train station and Scienceworks. (August 2018)
		  — Crossing requested at corner of Hall St / Hudsons Rd (February 2019)

School Crossings	51 (3%)	— All complaints/enquiries closed — Most complaints regarding to safety concerns with existing school crossings (faded line markings, damaged posts etc.)
OTHER		
Bollards	49 (3%)	— Most comments relate to request for bollards to restrict parking, speeding, trucks etc. — All complaints have been closed. No new complaints since May 2018
Guard rail	4 (0%)	— All complaints closed — Not applicable to HBTPS
Town Planning	3 (0%)	— All enquiries closed — Last comment from 2018 May
Sign	510 (27%)	— All complaints closed — No complaints since June 2018
Total	**1,888 (100%)**	

C2 HBET ISSUES

This chapter summarises the complaints from the spreadsheet titled *HBETISSUES.*

A total of 123 complaints and requests were logged between December 2015 to Mid 2019. A summary of the issues, disaggregated by transport mode is provided in the table below. The majority of the complaints appear to be outside of the scope of works of the HBTPS.

Table D.2 HBET Issues summary

MODE	NO. (%)	COMMENTS
All	5 (4%)	Many safety concerns, for instance: — Safety concerns at intersection of Hall Street / Hudsons Road — Safety concerns at intersection of Douglas Parade / Ferguson Street — Safety concerns at intersection of The Avenue and Melbourne Road — Pedestrian safety concerns at Douglas Parade due to high level tanker truck movements and inadequate pedestrian refuges/facilities
Car	66 (54%)	— Various concerns relating to congestion, safety, intersection/phasing operations etc.
Cycling	9 (7%)	— Safety concerns for cyclists at Millers Rd / Kororoit Creek Road roundabout — Request for bicycle lanes on Melbourne Road — The Federation Trail crossing point at Millers Rd, Brooklyn is a safety issue due to motorists missing the lights. (This issue is raised numerous times)
Freight	7 (6%)	— Congestion for trucks at Grieve Parade / Pinnacle Road
Public Transport	2 (2%)	— Main concerns around pedestrian safety at bus stops.
Walking	34 (28%)	Many requests for new pedestrian crossings (especially at Blackshaws Road which anecdotally has a lot of children crossing), for instance: — Blackshaws Road between Millers Road and Melbourne Road — Blackshaws Road in the vicinity of Johnston Street — Blackshaws Road between Stephenson Street and Elizabeth Street — Williamstown Road between Wilkins Street and Stevedore Street
TOTAL	**123 (100%)**	