8 Traffic and transport

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8.1 OVERVIEW

This chapter provides an assessment of the project-related traffic and transport impacts. It is based on the transport impact assessment presented in Appendix A: *Transport impact assessment.* The assessment considered the construction and operation impacts of the project on:

- access as a result of induced demand by the project compared to existing conditions
- the road network, considering forecast traffic demand, performance and safety
- the ability of the project to support the intended network road use classifications
- the effectiveness of transport network integration with public transport and shared use paths
- potential construction impacts on safety and network operations.

The impact assessment identified the key constraints of the current network and the key benefits of the project (discussed in Chapter 2: *Project rationale and benefits*). It also identified the key risks and impacts for the construction and operation phases of the project on the road network and road safety (discussed in this chapter).

The project provides several key transport benefits including:

- improvement to east–west and north–south connectivity and capacity reducing delays at existing intersections and providing a high level of service for all vehicles using the road network
- a reduction in travel time variability and time lost through delays for both commuters and the freight and logistics sectors, improving productivity by reducing vehicle operating costs and unexpected delays resulting in lost efficiency
- travel times on key origin/destination routes are expected to be cut by up to 7.7 minutes in the morning peak and 10.6 minutes in the evening peak
- reduced traffic and congestion on existing arterial roads would improve connectivity and provide better times for local vehicle and public transport users
- a significant reduction in daily traffic volume on surrounding roads, including a 70–75% reduction along Wells Road (west of Springvale Road) and approximately 60% reduction along Boundary Road (south of Governor Road)
- the project is expected to attract more than 75,000 total vehicles a day which includes 13,000 heavy vehicle trips relieving the pressure from key parallel routes, reducing the volume of heavy vehicles on local roads and improving the local environment for the community
- significantly improving safety by reducing the risk of collisions through the reduction of traffic volumes and by providing a higher standard of road design, with a road safety barrier and a continuous median separation which reduces the likelihood of run-off road and head on crashes.

Typical traffic impacts attributed to construction activities include:

- construction vehicles using the existing road network to access constructions sites
- temporary construction traffic management measures associated with road works during construction e.g. temporary road closures.

The assessment of construction traffic movements assumed a two-year construction period with truck movements over 12 hours (7am to 7pm) with a six-day working week (as a worst-case scenario).

The project will mostly result in positive outcomes for transport, including faster travel times and improved safety outcomes. There will also be localised impacts, including higher traffic volumes on some surrounding roads such as Centre Dandenong Road. This is largely due to the project providing an opportunity for access to the proposed precinct development associated with the 2015 Moorabbin Airport Master Plan. To manage potential impacts associated with the increased traffic volumes, the project has included the duplication of Centre Dandenong Road between the Mordialloc Bypass (Freeway) and Boundary Road. In addition, intersection re-alignment works will be undertaken at the intersection of Boundary Road and Centre Dandenong Road to ensure the new lanes align with the existing roadway and traffic flow is not disrupted.

Environmental Performance Requirements (EPRs) have been proposed to ensure the risk of adverse traffic and transport impacts during construction and operation is managed to an acceptable level. EPRs include design standards to implement for adherence with VicRoads operation requirements and application of appropriate safety standards. Construction transport impacts will be subject to a Transport Management Plan to provide measures to manage construction traffic, road alterations, impacts on local road users and the community and maintenance of access and connectivity for both road users, pedestrians and cyclists.

8.2 EES OBJECTIVES AND REQUIREMENTS

The draft evaluation objective for transport efficiency, capacity and safety is defined in the *Scoping Requirements for Mordialloc Bypass Environment Effects Statement* (scoping requirements) (DELWP 2018).

DRAFT EVALUATION OBJECTIVE

To provide for an effective connection between the Mornington Peninsula Freeway and the Dingley Bypass; to improve travel efficiency, road safety, and network capacity; as well as improve amenity and local transport networks in the Aspendale/Dingley area.

Table 8.1 summarises key issues for transport efficiency, capacity, and safety as identified in the EES scoping requirements. Cumulative transport and traffic impacts related to the nearby projects, including the Level Crossing Removal Authority (LXRA) projects, are addressed in Chapter 21: *Cumulative impacts*.

Amenity impacts are covered elsewhere in the EES, including Chapter 9: *Land use and planning*, Chapter 11: *Landscape and visual effects*, Chapter 12: *Noise and vibration effects* and Chapter 13: *Air quality and greenhouse gas*. The assessments covered within those chapters have used information from the *Transport impact assessment* report (Appendix A) and other relevant impact assessment reports.

Table 8.1 EES key issues – transport efficiency, capacity and safety

Key issues
Changes to distribution and volumes of traffic (including heavy vehicles) on roads that might be affected by the project.
Effective integration of the proposed project with local transport networks including public transport and shared bicycle pathways.
Identify and compare modelled transport performance of the preferred project relative to identified alternatives (including the arterial road option and the “no project” option), in terms of travel times, capacity, traffic volumes, road safety and accessibility.

8.3 LEGISLATION AND POLICY

Project development needs to consider the legislative, policy and strategic context within which the Department of Economic Development, Jobs, Transport and Resources (DEDJTR), Roads Corporation (VicRoads), Major Road Projects Authority (MRPA) and Public Transport Victoria operate. The legislation, policy documents and strategic context relevant to transport planning are summarised in Table 8.2 and Chapter 2: *Project rationale and benefits*. Further detail is provided in Appendix A: *Transport impact assessment*.

Table 8.2 Legislation and policy – traffic and transport

Legislation/policy	Description
State	
Transport Integration Act 2010 (Vic)	The *Transport Integration Act 2010* is the guiding legislative framework for Victoria's transport agencies, including VicRoads, to provide an integrated and sustainable transport system in Victoria. The Act establishes six transport system objectives to help meet these aspirations: • social and economic inclusion • economic prosperity • environmental sustainability • integration of transport and land use • efficiency, coordination and reliability • safety, health and wellbeing. The Act outlines vision, key objectives, decision making principles for transport planning and requires agencies to consider the potential impact of land use planning proposals on transport.
Road Management Act 2004 (Vic)	The *Road Management Act 2004* aims to establish a coordinated management system for public roads that promotes safe and efficient road networks. The Act provides the statutory framework for VicRoads and local councils to manage the Mordialloc Bypass (Freeway) and is applicable throughout the project's whole-of-life cycle including planning and development, construction, operations and asset management. The Act (Schedule 2) requires the project to obtain approval from VicRoads to connect to the Mornington Peninsula Freeway and requires VicRoads to consult with municipal councils.
Planning and Environment Act 1987 (Vic)	The Planning and Environment Act establishes land-use planning objectives and, in subordinate instruments, requirements to be considered when making decisions on transport planning. It sets out a framework of land-use planning requirements to be adopted for project planning.
Victoria the Freight State – the Victorian Freight and Logistics Plan	Document which provides a vision and plan for ensuring that Victoria retains its status as Australia's freight and logistics capital, and for the freight and logistics sector to support other areas of the Victorian economy. A new freight strategy is to be developed. However, in the meantime, this document provides guidance on future directions.
Towards zero – Victoria's Road Safety Strategy and Plan	*Towards Zero – Victoria's Road Safety Strategy and Plan* 2016–2020 is a plan to lower the number of lives lost on Victoria's roads to 200 or less by 2020, and reduce serious injuries by at least 15%. Key directions in Towards Zero that are relevant to Mordialloc Bypass (Freeway) are: • safe system approach • making local and busy places safer • using our roads more safely.

Legislation/policy	Description
Cycling into the Future 2013/23	Strategy to position Victoria as Australia's most bicycle friendly State. A new cycling strategy is under development. *Cycling into the Future 2013–23* identifies six directions that will build our understanding of cycling and the types of trips Victorians make by bike, help us to increase these trips in the future and encourage more people to consider cycling: 1. Build evidence 2. Enhance governance and streamline processes 3. Reduce safety risks 4. Encourage cycling 5. Grow the cycling economy 6. Plan networks and prioritise investment.
Plan Melbourne	Plan Melbourne is a plan to manage the growth in the city and suburbs to the year 2050. It seeks to integrate long-term land use, infrastructure and transport planning, and, in doing so, meet the city's future environmental, population, housing and employment needs.
Planning for the Monash Employment and Innovation Cluster (NEIC)	The proposed Monash Cluster draft framework plan provides a strategic vision to improve, promote and enhance: • the profile of the cluster • public transport services and connections • public realm and amenity • commercial developments to support key employment areas.
Victoria's 30-year infrastructure strategy (Infrastructure Victoria, 2016)	Strategy prepared by Victoria's independent infrastructure advisory agency. Contains recommendations to Parliament and Government.

8.4 METHODOLOGY

The objective of the traffic and transport assessment was to understand existing conditions in the study area, and to identify the potential local and network impacts the project will have upon traffic and transport movements, accessibility and safety. The assessment methodology included:

- identifying initial traffic and transport related environmental risks, including the risk of cumulative impacts, that may result from the development of the project
- conducting traffic surveys and reviewing baseline existing conditions within the study area
- reviewing relevant legislation and policy
- strategic transport modelling (using the Victorian Integrated Transport Model (VITM)) of the project's potential to change travel-demand statistics, traffic volumes and travel times
- undertaking validation checks including comparing original model data
- assessing the impacts of the project on:
  - existing local road users
  - the local pedestrian and cycling network
  - the local public transport network, specifically bus services on adjacent routes

WHAT IS THE VICTORIAN INTEGRATED TRANSPORT MODEL (VITM)?

VITM is the in-house strategic transport demand model owned by the Victorian Department of Economic Development, Jobs, Transport, and Resources (DEDJTR).

VITM is a comprehensive database and model of freight and transport movements, which acts as an analytical tool to forecast travel and understand alternate travel in response to various transport infrastructure and land use planning scenarios.

VITM provides a platform to assess impacts of key transport projects on the wider network. It takes into consideration population growth and allows the assessment of travel patterns and induced demand for projects.

Induced demand occurs when additional vehicle trips are generated. This occurs when people choose to travel by car instead of public transport, or decide to travel on the new road because its more attractive than the alternatives, usually due to improved driving conditions or travel efficiency. These behaviours are accounted in VITM.

- assessing design, key adjacent intersection, and mitigation measure performance based on traffic forecasts for the year 2031 with and without the project
- assessing the traffic impacts of construction
- undertaking a risk assessment process as described in detail in Chapter 4: *EES assessment framework and approach*
- recommending mitigation measures to minimise or avoid impacts on the traffic and transport network, where required.

8.5 STUDY AREA

The study area for the transport impact assessment is based on arterial roads surrounding the project area. The Mordialloc Bypass (Freeway) spans approximately 9km between the Dingley Bypass and Dingley Village in the north, to Springvale Road/Mornington Peninsula Freeway and Aspendale Gardens in the south. The study area is bounded by Dingley Bypass, Springvale Road and Wells/Boundary Road as shown in Figure 8.1.

The study area extent was also informed by the following key areas identified in Plan Melbourne which are located near the project:

- Mornington Peninsula Freeway and EastLink are both identified as State Significant road corridors.
- Moorabbin Airport is identified as a transport gateway (major airport).
- Both Frankston and Dandenong are identified as Metropolitan Activity Centres.
- Dandenong and Monash are identified as National Employment and Innovation Clusters (NEIC).

Wider network impacts have also been considered as part of this EES and associated Appendix A: *Transport impact assessment.*

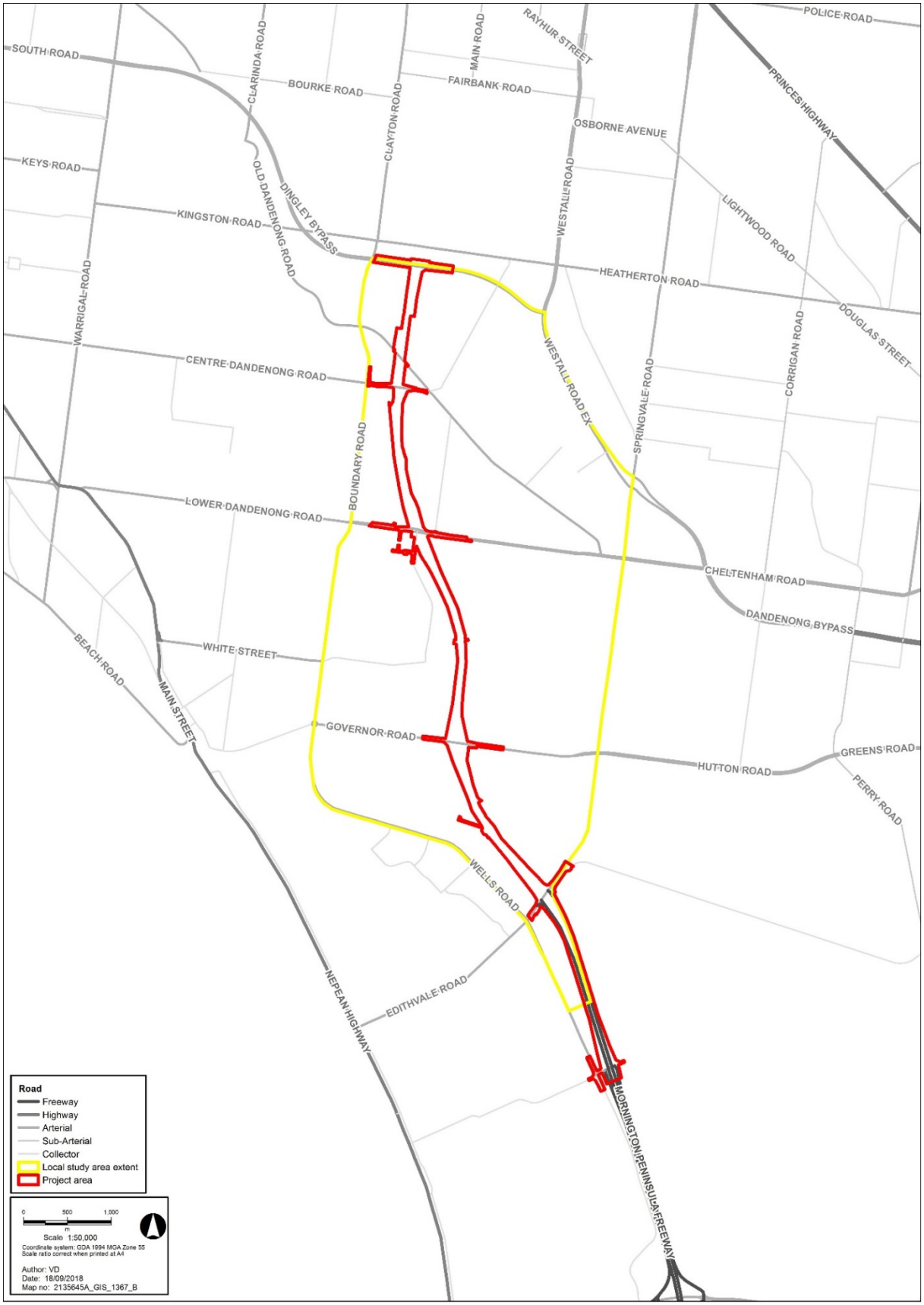


Figure 8.1 Locality of study area with project area shown

8.6 EXISTING CONDITIONS

8.6.1 Land use

The bypass route traverses the suburbs of Aspendale Gardens, Waterways, Braeside and Dingley Village and is characterised by predominantly residential areas at its southern end, public open space in Braeside Park to the east, and industrial estates in Mordialloc and Braeside on its western side.

Several schools and educational facilities sit in close proximity to the project. Of note, Aspendale Gardens Primary School is located to the west of Wells Road; Haileybury College (Keysborough Campus) is located along Springvale Road; Kingswood Primary School, St Marks Primary Catholic School and Dingley Primary School are all located in Dingley Village.

There are a number of open space areas within the local vicinity of the project. The bypass will pass over the Mordialloc Creek and waterways, and pass alongside Braeside Park. The Edithvale-Seaford Wetlands Environmental Area is also located east of the southern end of proposed bypass, along Edithvale Road.

The Woodlands Industrial Estate is located west of the proposed route, generally bounded by Governor Road and Lower Dandenong Road. The Redwood Gardens Industrial Estate is also located west of the bypass route, bounded by Lower Dandenong Road, Centre Dandenong Road and Boundary Road.

Moorabbin Airport is located west of the proposed bypass between Centre Dandenong Road and Lower Dandenong Road. DFO Moorabbin and Kingston Centre Plaza are immediately west of the airport, accessed from Centre Dandenong Road.

8.6.2 Road network

The road network within the local study area and further afield is a mixture of declared roads, local roads and private roads. Declared roads within the project area which are under the responsibility of VicRoads include Dingley Bypass, Boundary Road, Wells Road, Old Dandenong Road, Governor Road, Centre Dandenong Road, Lower Dandenong Road, Westall Road, Springvale Road and Mornington Peninsula Freeway. The local roads are under the control of the City of Kingston.

The project alignment runs generally north-south from Dingley Bypass to Springvale Road and crosses several major east-west roads, as summarised in Table 8.3.

Table 8.3 Existing cross-section configurations along Mordialloc Bypass (Freeway) alignment

Road	Speed limit	Traffic cross-section	Bicycle provision	Pedestrian provision	Public transport provision
Dingley Bypass	80km/h	3-lanes each direction	Shared off-road path on northern side		None
Old Dandenong Road	70km/h	Single-lane each direction	None	None	None
Centre Dandenong Road	70km/h	Single lane each direction	Off-road shared path on southern side		Bus Route 828
Lower Dandenong Road	80km/h	3-lanes each direction and auxiliary turning lanes at Woodlands Drive	Off-road shared path on northern side		Bus Routes 811, 812
Governor Road	80km/h	Single lane each direction	None	None	Bus Route 709
Bowen Parkway	50km/h (default)	Single lane each direction	Off-road shared path on southern side		None
Springvale Road	80km/h	3-lanes northbound, 2-lanes southbound and auxiliary turning lanes	On-road bike lane on northern side	None	Bus Route 902

Intersection controls

In the project's immediate vicinity, intersection controls are a mixture of interchanges with traffic signals, roundabouts and un-signalised intersections, as shown in Figure 8.2.

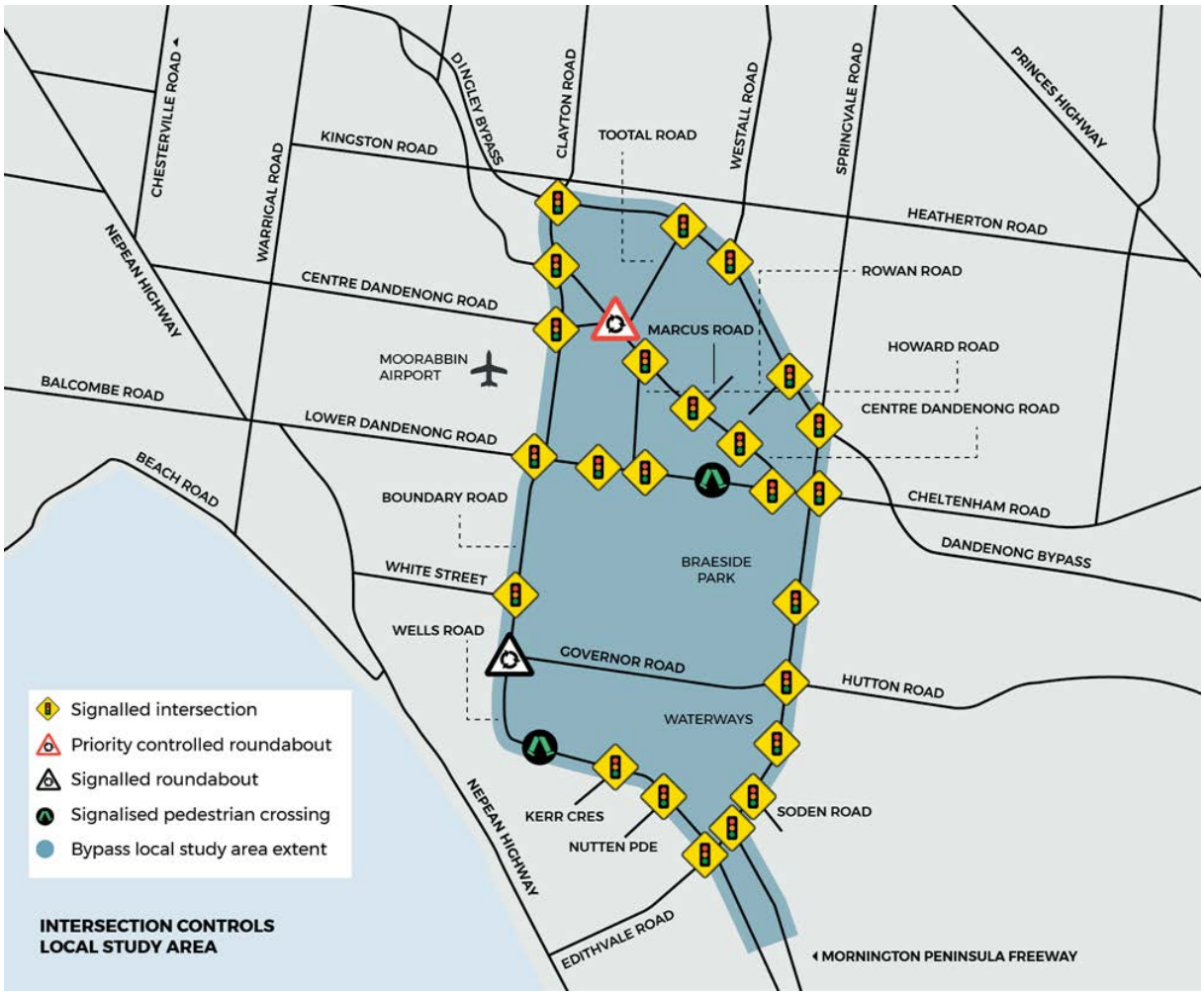


Figure 8.2 Intersection controls in the study area

Freight

Mornington Peninsula Freeway and the study area arterial roads are part of the principal road freight network, distributing freight to and from local and inter-regional destinations. Mornington Peninsula Freeway is predicted to become the southern freight corridor for the State's freight demand over the next 30 years. Demand is anticipated to grow at an average rate of 2.6 percent each year for Metropolitan Melbourne and 1.5 percent each year for regional Victoria. The Woodlands, Redwood Gardens Estates and Kingston Industrial Precinct are key local industrial areas for freight.

The VicRoads B-Double Network (heavy vehicles) identifies that all arterial and local roads in the Woodlands and Redwood Gardens industrial estates are approved for B-double vehicles.

B-DOUBLES

B-Doubles are trucks with two semitrailers; the first trailer (or carriage) is attached to the prime mover, and the second is attached to the first, not the prime mover.

As B-doubles are tall, and longer than 19m (usually 23–25m); suitable approved freight networks are mapped and displayed in *Victoria's gazetted roads for B-Doubles.*

The freight network (shown in Chapter 2: *Project rational and benefits*, Figure 2.3) highlights the importance of freight connection in the study area, in particular to the Redwood Gardens and Woodlands industrial estates. Traffic surveys in the study area showed higher proportions of heavy vehicles on the road network in the morning peak compared to evening peak.

8.6.3 Road network performance

Table 8.4 presents 2016–17 study area traffic counts. The survey data showed high peak hour demand on the Mornington Peninsula Freeway, south of Springvale Road. Westall Road also accommodates a high component of traffic flows east of Springvale Road, which reduces along the Dingley Bypass toward the city. White Street is a single traffic lane in each direction which also forms a notable contribution to the local network traffic flows.

The daily traffic profiles show typical suburban characteristics with a pronounced AM peak period between 7–9am and a PM peak between 4–6pm. North and westbound movements are the dominant traffic movements during the AM peak period, with the south and eastbound movements dominating in PM peak period. The peak hour varies slightly across the road network, however, the peak hour is generally between 8–9am and 5–6pm.

Table 8.4 Traffic volume and classification (2016–17 traffic counts)

Road	Segment	Two-way traffic information		
		Daily proportion of heavy vehicles	Morning peak hour (8am–9am)	Evening peak hour (5pm–6pm)
Dingley Bypass	South of Heatherton Road	8.6%	4,000	3,800
	Boundary Rd and Tootal Road	9.1%	3,200	3,100
Springvale Road	South of Heatherton Road	3.1%	2,900	2,800
Centre Dandenong Road	Boundary Rd and Federation Way	5.8%	2,400	2,400
	Boundary Rd and Tootal Road	7.4%	1,200	1,400
Old Dandenong Road	South of Kingston Road	12.5%	700	600
	Boundary Rd and Tootal Road	6.7%	600	500
Lower Dandenong Road	West of Centre Dandenong Road	9.8%	3,600	3,400
Boundary Road	North of White Street	6.5%	3,100	3,100
White Street	East of Chute Street	7.3%	2,200	1,900
Tarnard Drive	East of Downward Street	16.5%	100	100
Garden Boulevard	North of Redwood Drive	11.1%	200	100
Redwood Drive	East of Boundary Road	18.5%	100	100
Bell Grove	South of Lower Dandenong Road	11.1%	120	130
Westall Road	Spring Road and Springvale Road	11.1%	5,000	5,200
Mornington Peninsula Freeway(1)	Springvale Road and Thames Promenade	5.0%	4,600	4,700
Wells Road(1)	North of Sanctuary Place	11.8%	3,500	3,200
Governor Road(1)	Boundary Road to Bate Drive	11.6%	2,100	1,900
Thames Promenade	East of Mornington Peninsula Freeway	6.2%	533	371

Note: (1) March 2016 counts

Vehicle composition

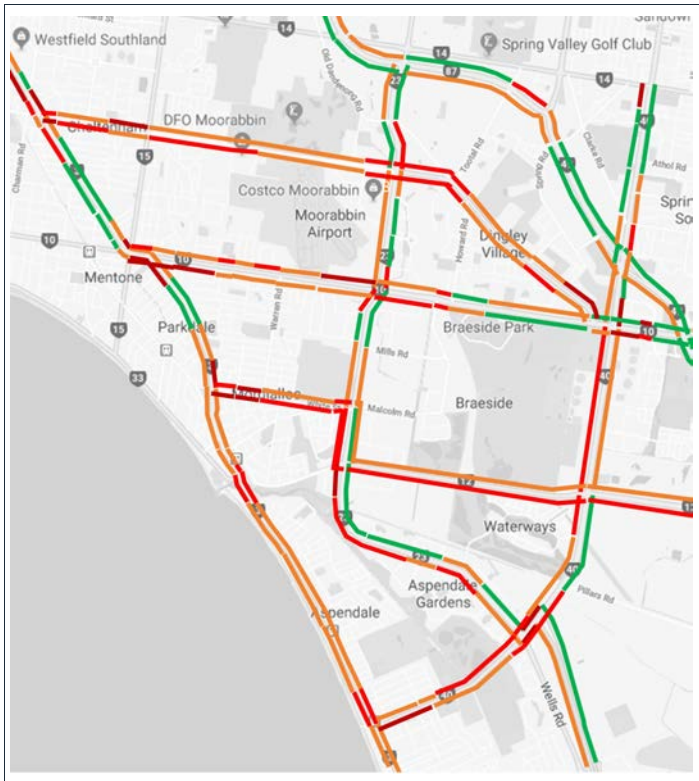
Traffic surveys demonstrated that local roads such as Tarnard Drive and Redwood Drive (located in the Woodlands and Redwood Gardens industrial estates) have a relatively higher proportion (approximately 15 percent) of heavy vehicles compared to the surrounding arterial roads (Table 8.4). Typically, heavy vehicle composition on the arterial roads around the project is between 2.5 and 12.1 percent.

Travel time

Travel time surveys were conducted during 2016 and 2017 to help understand the key areas of congestion and travel-time variability during peak travel periods (Figure 8.3 and Figure 8.4). The results show high variability between typical conditions and congested conditions through the area. The percentage difference between the fastest and slowest travel time across all routes averaged 83 percent, indicating peak period road congestion.

The White Street–Governor Road–Greens Road corridor had notable congestion impacts with up to 20 minute observed delays. The Springvale Road northbound route revealed the highest degree of variability (172 percent); the slowest trip took 31 minutes, which was nearly three times longer than the fastest trip of 11 minutes.

Operating speeds were also reduced during peak commuter periods particularly on approach to several key intersections. Slower speeds are typically found in the most congested areas of the study area. Figure 8.3 and Figure 8.4 shows traffic speeds, based on travel time surveys) during the morning and evening peak hours respectively. The figures also include brief discussions on the results.



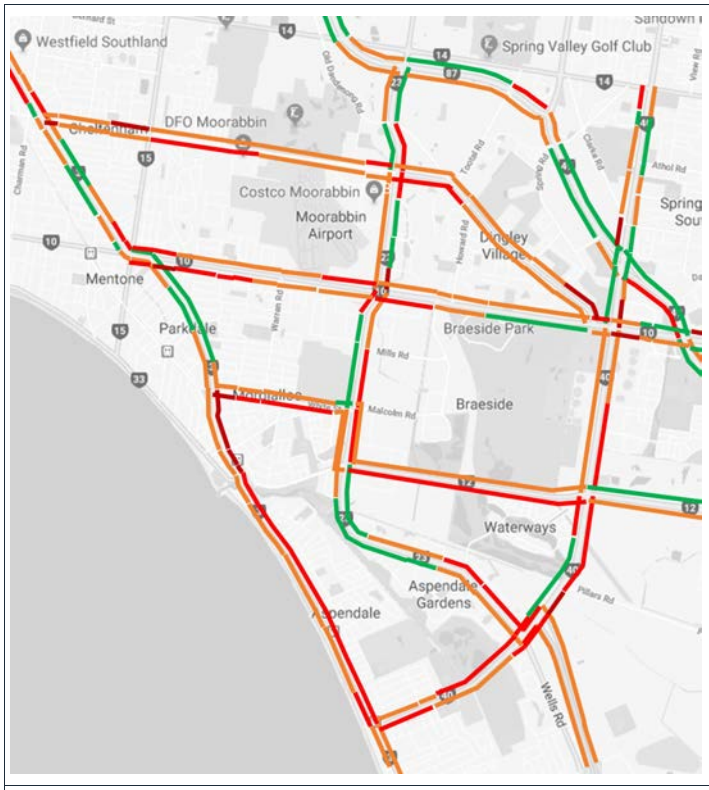
Low AM peak hour operating speeds common across the network.

Slow operating speeds on Wells Road northbound from the Wells Road and Governor Road intersection, extending back to Springvale Road. This extends further south, from Mornington Peninsula Freeway northbound to Wells Road northbound.

Congestion typical for northbound traffic on both Wells Road/Boundary Road and Springvale Road. This worsens on approach to intersections.

Eastbound routes across the study area commonly operate at 0–19km/hr.

Figure 8.3 **Morning commuter peak (8am–9am) link speed plots (floating car surveys 2016, 2017)**



Low PM peak hour operating speeds across the network.

Slow operating speeds were recorded around the Wells Road and Governor Road intersection, extending north and east from the intersection.

Heavy congestion southbound around the 'dog leg' movement from Wells Road southbound to Mornington Peninsula Freeway southbound.

Congestion typical for southbound traffic on both Wells Road/Boundary Road and Springvale Road, worsening on approach to intersections.

East-west routes slow in both directions across the study area.

Figure 8.4 **Evening commuter peak (5pm–6pm) link speed plots (floating car surveys 2016, 2017)**

Key movement constraints

The key movement constraints, or areas that slow, block or reduce efficiency within the study area road network are noted in Table 8.5 and shown in Figure 8.7.

Table 8.5 Key movement constraints at locations within the study area

Location	Movement constraint
Westall Road/Dingley Arterial/Springvale Road intersection	• Competing cross regional movements along Westall Road and Dingley Arterial. • Right turn bans recently implemented at Springvale Road approaches during peak periods to accommodate key vehicle movements.
Lower Dandenong Road/Springvale Road intersection	• Competing east-west movements along Lower Dandenong Road. • Northbound traffic queue extends beyond The Waterways Boulevard in the morning peak.
Boundary Road/Governor Road Roundabout	• Traffic on the eastern approach along Governor Road is metered in the morning peak to minimise impedance on the dominant northbound traffic movement. • Despite metering, northbound traffic queue can extend further than 1km.
Wells Road/Edithvale Road/Springvale Road	• Inadequate right-turn lane storage capacity at Edithvale Road and Wells Road approaches, impacts morning peak. • Insufficient lane capacity to facilitate afternoon peak movements from Wells Road to Mornington Peninsula Freeway. • Outbound traffic further impacted by downstream queueing conditions at Mornington Peninsula Freeway/Springvale Road. • In evening peak, excessive outbound traffic queues for about 1.5km along Wells Road from Springvale Road to and beyond Palm Grove Boulevard.
Mornington Peninsula Freeway/Springvale Road Freeway interchange/terminal	• In the morning peak, citybound traffic queues about 1km from Springvale Road due to inadequate left turn lane capacity and geometric delay caused by the terminal arrangement. • Outbound congestion along Mornington Peninsula Freeway impacts on Springvale Road and causes traffic to queue back beyond Governor Road.

Figure 8.5 Wells Road/Edithvale Road/ Springvale Road

Figure 8.6 Mornington Peninsula Freeway/ Springvale Road Freeway interchange/terminal

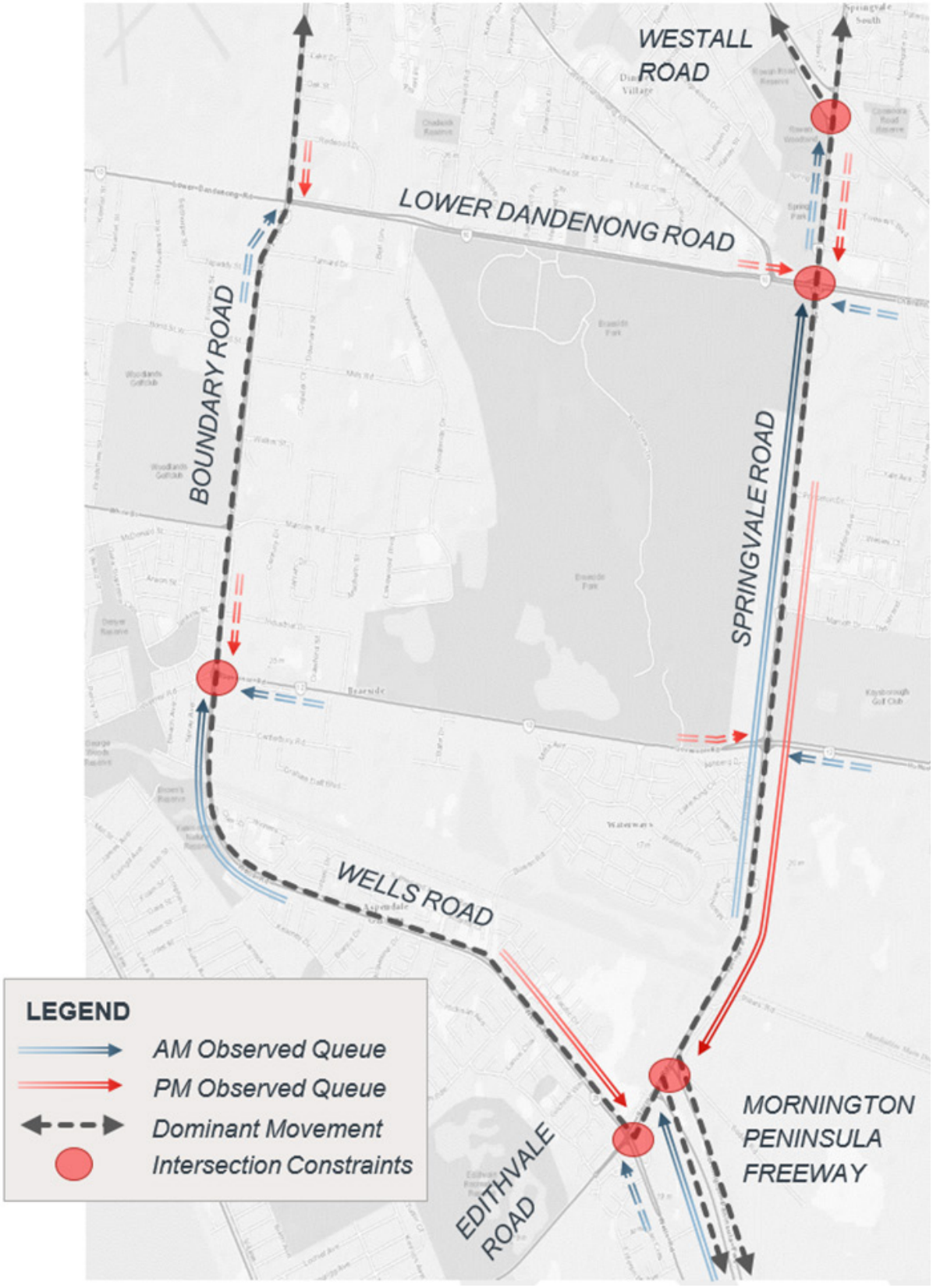


Figure 8.7 **Intersection constraints and morning/afternoon queues**

Disconnected and inefficient local network arrangement

Currently, a significant proportion of vehicles travel between Mornington Peninsula Freeway and Wells Road throughout the AM and PM peaks. Under current AM peak conditions, the high volume of traffic heading northbound from the Mornington Peninsula Freeway travel onto Springvale Road and on to Wells Road, which has insufficient capacity to channel the movements resulting in long queues and greater travel time delays.

In the PM peak conditions, the opposing southbound flow at the Wells Road and Springvale Road intersection have a limited left turn capacity which causes excessive traffic queues on Wells Road. This is followed by an unconventional right turn onto Mornington Peninsula Freeway and Springvale Road intersection which leads to driver confusion and an increased safety risk.

Road safety

Crash statistics for the last five years (June 2012 to May 2017) from the VicRoads Crashstats database showed that, of the 339 crashes recorded in the study area:

- 1 percent were fatal.
- 32 percent resulted in serious injury.
- 67 percent were recorded as 'other injury'.
- Most (77 percent) incidents involved collision with a vehicle (21 percent were pedestrians struck by a vehicle).
- 59 percent were recorded at intersections (41 percent at a location other than an intersection).
- Most (54 percent) accidents happened in an 80km/hr speed zone (183) and 22 percent within a 60km/hr speed zone.
- A significant number of crashes were recorded on Springvale Road and Wells Road/Boundary Road with a total of 70 serious injuries and one fatality over the past five years.

8.6.4 Public transport

Rail network

Both Frankston and Cranbourne/Pakenham rail lines operate near the project alignment. The nearest railway station (Edithvale Station, Frankston line) is about 2.5km from the project's southern end. Springvale Station (Cranbourne and Pakenham Lines) is about 3km from the project's northern end.

Bus network

The surrounding area is serviced by a bus network that traverses the study area, providing local access to destinations including Mordialloc railway station (route 705, 708) and Springvale railway station (route 811). Buses are heavily used throughout the study area providing commuters with important connections to railway stations and destinations for recreation, retail, education and employment. Bus priority facilities exist and include queue jump lane treatments at intersections and dedicated bus lanes along Springvale Road and sections of Lower Dandenong Road.

Future public transport

Growth in south-eastern Melbourne has increased the demand on existing public transport networks. Plans are in place to enhance the capacity of bus and train networks.

Public Transport Victoria's 2012 Network Development Plan – Metropolitan Rail is a demand-led strategic plan for developing the rail network over the next 40 years and notes that the Cranbourne-Pakenham rail corridor will become the busiest rail corridor on the network by 2020.

Transport for Victoria is currently reviewing bus routes in Mordialloc and surrounding areas and is considering changes to the network that improve the quality of bus services in the area. Changes to bus routes in Mordialloc and surrounding areas being considered by Transport for Victoria include:

- rerouting bus Routes 705 (between Centre Dandenong and Mordialloc Station), Route 857 (along Scotch Parade instead of Fowler Street) and Route 858 in Edithvale and Chelsea Heights
- removal of Route 706 due to overlap with the Frankston train line between Mordialloc and Chelsea
- dividing Route 708 into two shorter routes. Route 708 will no longer cover sections of Chelsea Heights, instead it will be covered by Route 858, and
- adding new Route 707 between Hampton and Mordialloc Station, replacing Route 708.

8.6.5 Active transport

Pedestrian environment

Pedestrian connectivity throughout the local study area is typically catered for by footpaths on one or both sides of roads adjacent to residential, industrial and built-up areas.

Lower Dandenong Road, Governor Road and Old Dandenong Road do not have pedestrian paths, and offer limited connectivity for east-west pedestrian movements across the project corridor. Pedestrian connectivity in the north-south direction is also typically limited to Springvale Road (pedestrian path on one side), and Boundary Road (no path, or path on one side only).

Pedestrian crossings are typically at signalised intersections, but exceptions exist at certain roundabout intersections which lack pedestrian crossing facilities.

WHAT IS ACTIVE TRANSPORT?

Active transport involves human-powered people movements, most commonly walking or cycling. A range of policies and infrastructure encourage active transport.

Transport for Victoria's Active Transport Victoria unit works with local governments and communities to coordinate and plan infrastructure and ensure projects across the state are built to encourage safe, connected and inclusive walking and cycling routes.

The benefits of more commuters using active transport include healthier, more environmentally sustainable, better-connected and safer communities and local environments.

Bicycle environment

The VicRoads Principal Bicycle Network of proposed and existing bicycle routes has extensive coverage through the local study area, including all arterial roads except Old Dandenong Road. Of note, the Mordialloc Bypass (Freeway) corridor is nominated as part of the Principal Bicycle Network, with connections further north to Heatherton Road.

8.6.6 Surrounding transport projects

As part of the ongoing development of the south-east, several transport network projects and improvements works have funding committed and are being undertaken surrounding the study area. This includes the following:

- Level crossing removals – Edithvale Road
- Monash Freeway Upgrade Stage 1 and 2
- Suburban Roads Upgrade Program – South Eastern Roads package
- Moorabbin Airport 2015 Master Plan – major transport gateway.

8.7 RISK ASSESSMENT

An environmental risk assessment (ERA) was undertaken to identify environmental risks associated with the construction and operation of the project. Where initial risks were rated as 'medium' or higher (with standard controls in place) these issues were further assessed and investigated in the *Transport Impact Assessment* report. Where necessary, additional controls were identified as part of the impact assessment to reduce the identified risks to acceptable levels. These controls have been incorporated into the environmental performance requirements (EPRs) for the project. The initial risks were then re-assessed following application of the environmental performance requirements to derive the residual risk ratings. The methodology for the risk assessment has been described in Chapter 4: *EES assessment framework and approach*.

Table 8.6 provides a summary of the key transport related risks identified. Four risks were determined to have an initial risk rating of medium. With additional mitigation in place the residual risk rating of R-T1, R-T2 and R-T7 remains at medium and risk R-T6 is reduced to low. For a full list of all traffic and transport related primary risks, refer to Appendix A: *Transport impact assessment.*

Table 8.6 Transport risks

Risk	Impact pathway	Primary impact	Project phase	Initial risk rating	EPR ref.	Residual risk rating
R-T1	Construction stage impacts on road users	Construction works reduce capacity of the network and impacts travel time for general traffic, freight and public transport vehicles.	C	Medium	T2 S1	Medium
R-T2	Construction stage impacts on road users	Construction works impact on the safety and operation of pedestrian and cycling movements.	C	Medium	T1 T2 S1	Medium
R-T6	Operation stage impacts on road users	Project increases the likelihood of crashes at shared use path crossing locations.	O	Medium	T1 T3	Low
R-T7	Operation stage impacts on road users	Project increases the likelihood of crashes within the network with the introduction of new intersections.	O	Medium	T1 T3 S1	Medium

8.8 IMPACT ASSESSMENT AND MITIGATION

8.8.1 Construction

Construction works impacts on road users and active transport (Risks R-T1 and R-T2)

Typical traffic impacts attributed to construction activities include:

- construction vehicles using the existing road network to access constructions sites
- temporary construction traffic management measures associated with road works during project construction e.g. temporary road closures.

The assessment of construction traffic impacts includes consideration of:

- construction worker movements to and from site (light vehicles)
- construction material delivery to and removal from site (heavy and, occasionally, oversized vehicles).

The assessment of construction haulage was based on assumptions of three axle rigid-trucks with 3–4 axle dog trailer (mass capacity limit 42.5 tonnes), a six-day working week, a two-year construction period and truck movements over 12 hours (7am to 7pm). The construction material fill quantities have been estimated to inform the construction traffic assessment and determine the potential haulage volumes on surrounding roads. Results indicate a higher quantity of heavy vehicles will use Governor Road during earthworks.

As the project area is mostly within an existing road reserve that is currently undeveloped, meaning construction works will largely remain outside existing roads, minimal construction impacts are expected to most existing traffic movements. The transport impact assessment identified only minor disruption to the existing local network from construction traffic including impacts on the following arterial roads:

- Springvale Road between Edithvale Road and Westall Road
- Dingley Bypass between Boundary Road and Westall Road
- Boundary Road between Springvale Road and Dingley Bypass.

Traffic management controls, including temporary partial or full road closures, will be required at certain routes within the project area during structural works including at interchange and overpass/bridge locations.

Acceptable traffic and transport impacts can be achieved by preparing and implementing a Transport Management Plan (TMP) to satisfy the performance requirements specified in EPR T2. The TMP will include provisions for minimising impacts on existing connectivity for pedestrian, cyclists, public transport and road vehicles during construction. The TMP would consider specific measures for discrete components or stages of the works having the potential for impact on roads, shared use paths, bicycle paths, footpaths or public transport infrastructure. The TMP will assist in managing construction-related traffic movements, routes and delivery timing, and will detail management measures for temporary road or lane closures and shared path closures.

EPR T2 also requires that the TMP includes a communications strategy to advise affected users, potentially affected users, relevant stakeholders and the relevant road authorities of any changes to transport conditions in accordance with the Community and Stakeholder Engagement Management Plan (EPR reference S1).

Construction staging

The scope of the construction area associated with Mordialloc Bypass (Freeway) is predominantly within the road reservation which is currently an undeveloped area where construction impact on traffic movements would be minimal. A higher level of impact is expected at the proposed interchange and overpass locations as structural construction works takes place which may require partial or full road closure during the construction period. Road closures are expected to take place during non-peak periods to minimise potential disruption. Possible construction staging of the proposed grade separated infrastructure should be considered to avoid full road closures.

The interface with the Southern Programme Level Crossing Removal Project and in particular the Edithvale Road Level Crossing Removal will be essential to minimising the impacts of construction traffic and traffic management measures on the local road network. This is discussed further in Chapter 21: *Cumulative impacts*.

8.8.2 Operation

The assessment considered the impacts of the project on network performance, access and road safety during operation.

When operational, the project would provide improvement in network performance in the form of relieving pressure on the existing parallel roads (i.e. congestion relief) and providing travel time savings.

Network performance improvement – congestion relief

The project alignment is located between Dingley Bypass and Springvale Road and is expected to relieve congestion on these parallel routes. It is predicted to attract traffic from adjoining road links and networks creating a shift in traffic pattern and demand, leading to a more streamlined connection for the southern movement corridor.

Modelling outputs have been extracted from VITM and processed to appreciate traffic demand changes throughout the network, route travel time and link capacity performance. Full results can be found in Appendix A: *Transport impact assessment*.

The modelling showed that the project will relieve congestion on the surrounding road network by enhancing traffic capacity in the north-south direction. The project provides an uninterrupted connection between the Mornington Peninsula Freeway and Dingley Bypass, and will reduce a large portion of the current ‘dog-leg’ traffic movement between Boundary Road, Springvale Road and Mornington Peninsula Freeway.

Figure 8.8 and Figure 8.9 plot the predicted changes in daily two-way traffic volumes for 2031 with the project compared with the 2031 base case (without project scenario) for all traffic and heavy vehicles, respectively. The road links highlighted in green show the anticipated road links with volume reduction in 2031 with the project; those highlighted in red reflect an anticipated volume increase with the project.

The project would significantly reduce heavy vehicles on residential streets such as White Street, see Appendix A: *Transport impact assessment* for full details of future road traffic flows.

To service the nearby industrial, residential and commercial precincts, the project would increase road usage along Dingley Bypass, Centre Dandenong Road, Lower Dandenong Road and Governor Road.

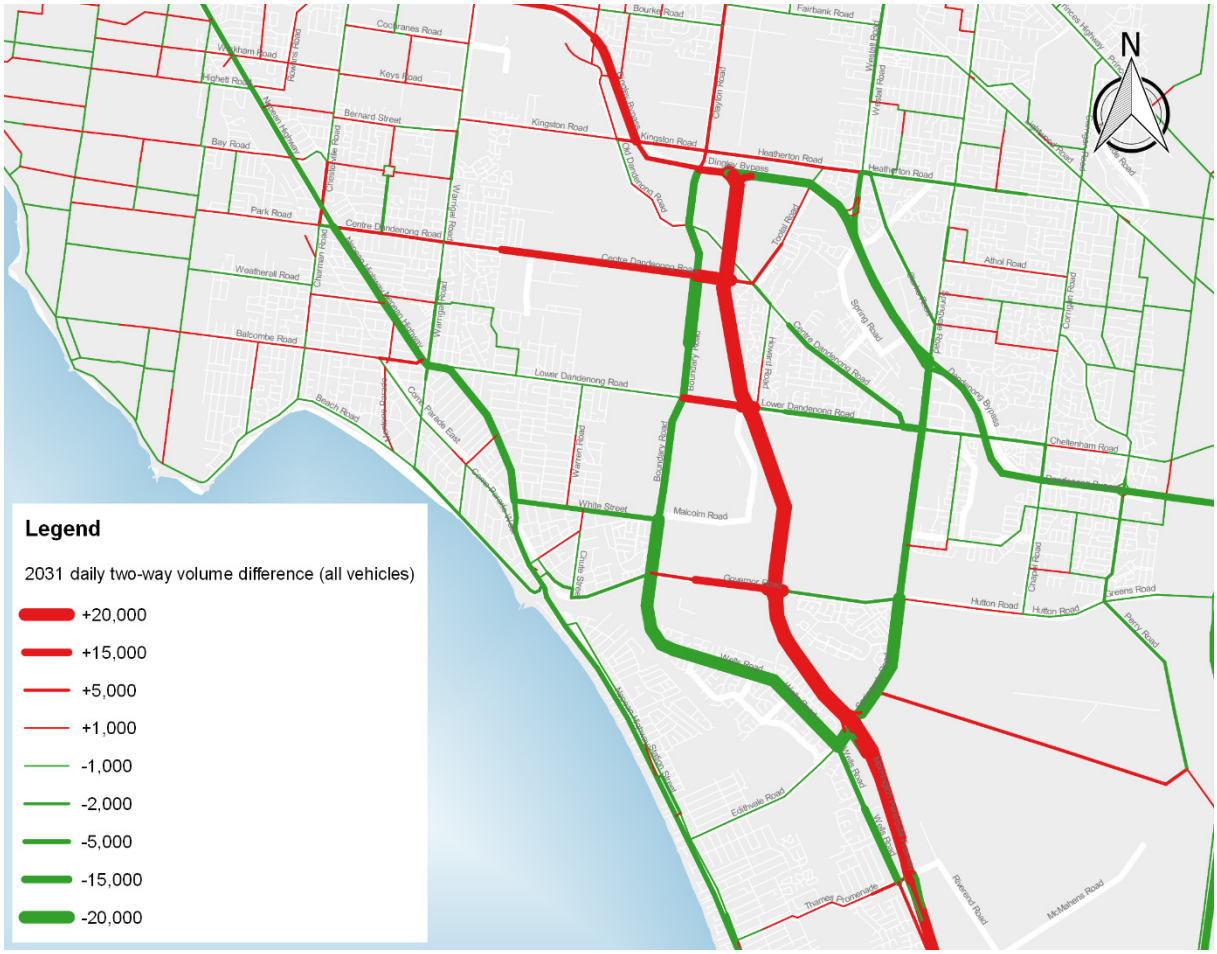


Figure 8.8 **2031 two-way daily volume difference plot (all vehicles – with project versus without project)**

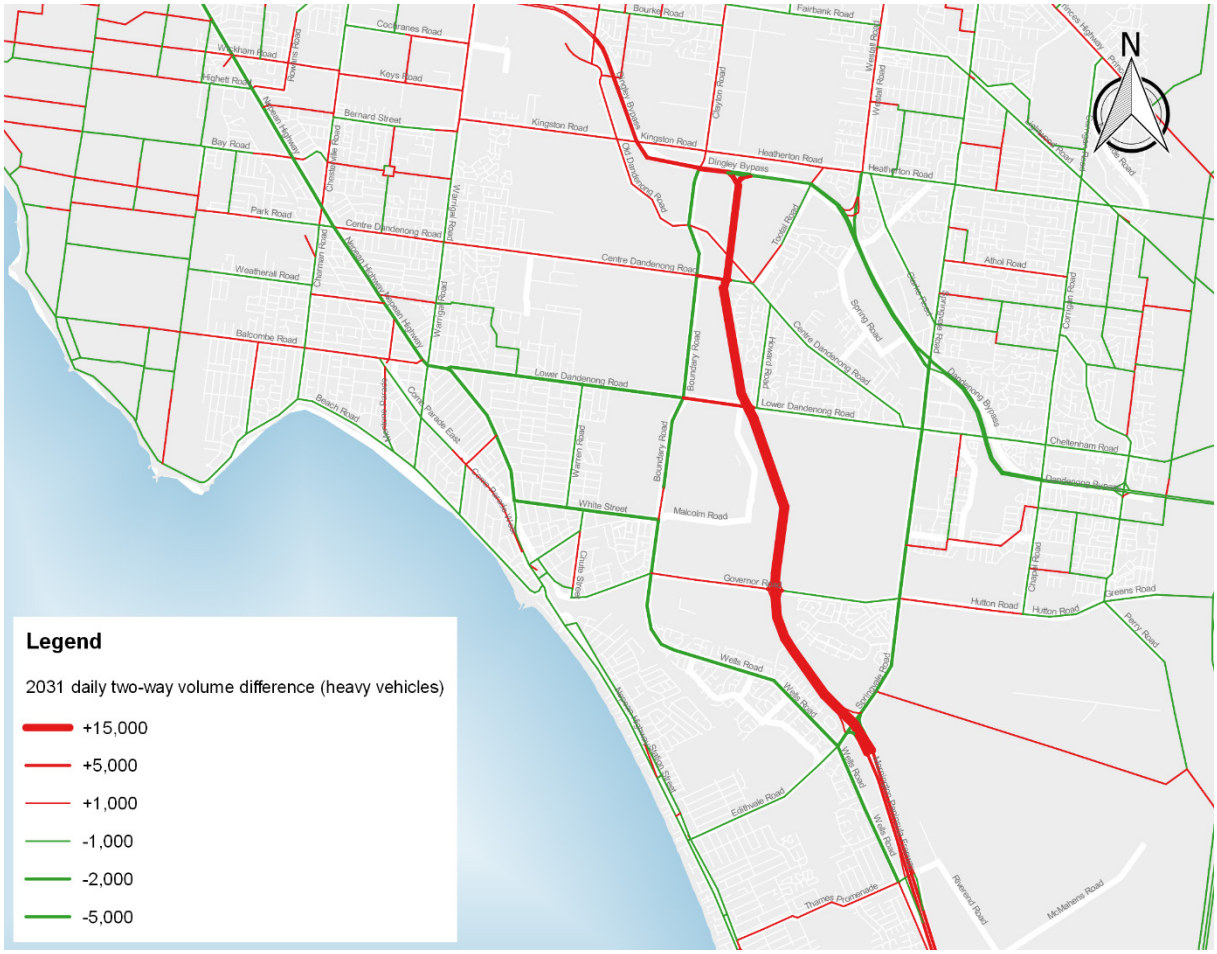


Figure 8.9 **2031 two-way daily volume difference plot (heavy vehicles – with project versus without project)**

Table 8.7 highlights the scale of volume changes on key roads within the study area between scenarios for 2031 with the project and without. The results indicate a significant reduction in forecast demand along Westall Road, Boundary Road, and Springvale Road.

The project will be a higher road standard with enhanced mobility compared with adjacent routes currently servicing trips between Mornington Peninsula Freeway and key activity areas. Key project-driven volume changes are:

- a significant decrease in daily traffic volume along Wells Road, west of Springvale Road
- a significant decrease in daily traffic volume of around 60 percent along Boundary Road, south of Governor Road
- a decrease in daily traffic volume along Springvale Road, north of Mornington Peninsula Freeway
- daily traffic volume is estimated to increase along Mornington Peninsula Freeway, east of Springvale Road by more than 60 percent
- daily traffic volume is estimated to double along Centre Dandenong Road, west of the Mordialloc Bypass (Freeway)
- daily traffic volume is estimated to increase along Governor Road, west of the Mordialloc Bypass (Freeway), by more than 50 percent.

The anticipated growth in traffic volume along Centre Dandenong Road is considered to be the most significant, largely due to the serviceability of the project that unlocks the full potential of the 2015 Moorabbin Airport Master Plan. The project would enhance the equity of access by creating a higher quality network connection to Moorabbin Airport, while reducing pressure along Boundary Road. To manage potential impacts associated with the increased traffic volumes, the project includes the duplication of Centre Dandenong Road between the Mordialloc Bypass (Freeway) and Boundary Road. In addition, intersection improvement works will take place at the Boundary Road and Centre Dandenong Road intersection to enhance mobility for traffic in all directions.

Table 8.7 2031 forecast demand (daily two-way volume) – 2031 with project versus 2031 without project

Road	Location	Traffic volumes (number of vehicles)		
		Without project	With project	+/-
Mornington Peninsula Freeway	East of Springvale Road	50,700	82,800	32,100
Springvale Road	North of Mornington Peninsula Freeway	44,100	28,500	-15,600
Springvale Road	South of Mornington Peninsula Freeway	40,100	22,500	-17,600
Springvale Road	North of Westall Road	28,400	26,400	-2,000
Wells Road	West of Springvale Road	34,900	8,200	-26,700
Wells Road	East of Springvale Road	20,300	15,500	-4,800
Governor Road	West of Mordialloc Bypass (Freeway)	17,900	27,600	9,700
Governor Road	East of Mordialloc Bypass (Freeway)	17,900	16,200	-1,700
Lower Dandenong Road	West of Mordialloc Bypass (Freeway)	41,100	47,300	6,200
Lower Dandenong Road	East of Mordialloc Bypass (Freeway)	41,100	39,800	-1,300
Boundary Road	South of Lower Dandenong Road	47,900	34,800	-13,100
Boundary Road	South of Governor Road	44,700	17,100	-27,600
Centre Dandenong Road	West of Mordialloc Bypass (Freeway)	17,300	34,700	17,400
Centre Dandenong Road	East of Mordialloc Bypass (Freeway)	17,300	19,100	1,800
Old Dandenong Road	East of Boundary Road	4,500	4,100	-400
Kingston Road	West of Dingley Bypass	22,700	23,700	1,000
Warrigal Road	North of Dingley Bypass	34,000	35,200	1,200
South Road	West of Warrigal Road	51,900	57,000	5,100
South Road	West of East Boundary Road	36,600	41,400	4,800
Westall Road	West of Springvale Road	58,000	39,700	-18,300
Westall Road	North of Heatherton Road	56,400	55,500	-900
Mordialloc Bypass (Freeway)	Springvale Road and Governor Road	–	76,700	–
Mordialloc Bypass (Freeway)	North of Governor Road	–	65,300	–
Mordialloc Bypass (Freeway)	North of Lower Dandenong Road	–	63,500	–
Dingley Bypass	East of Boundary Road	52,800	60,700	7,900
Thames Promenade	West of Wells Road	14,800	15,900	1,100
Thompson Road	East of Mornington Peninsula Freeway	23,100	28,500	5,400
Thompson Road	West of Mornington Peninsula Freeway	19,800	19,900	100
Nepean Highway	North of White Street	43,300	35,200	-8,100

Network performance improvement – Travel time savings

Travel time is one of the key performance metrics used to assess the project's impact. Travel times along existing roads and travel time performance servicing the Monash National Employment Innovative Cluster (NEIC) have been assessed to provide an appreciation of potential route performance and road user experience along the journey to work.

The travel time comparison plot illustrated in Figure 8.10 shows an overall network improvement in mobility and access for motorists wanting to travel to Monash NEIC during the morning peak. The project can achieve more than 5 percent travel time reduction from areas located south-east of Springvale Road, about 10 to 20km away.

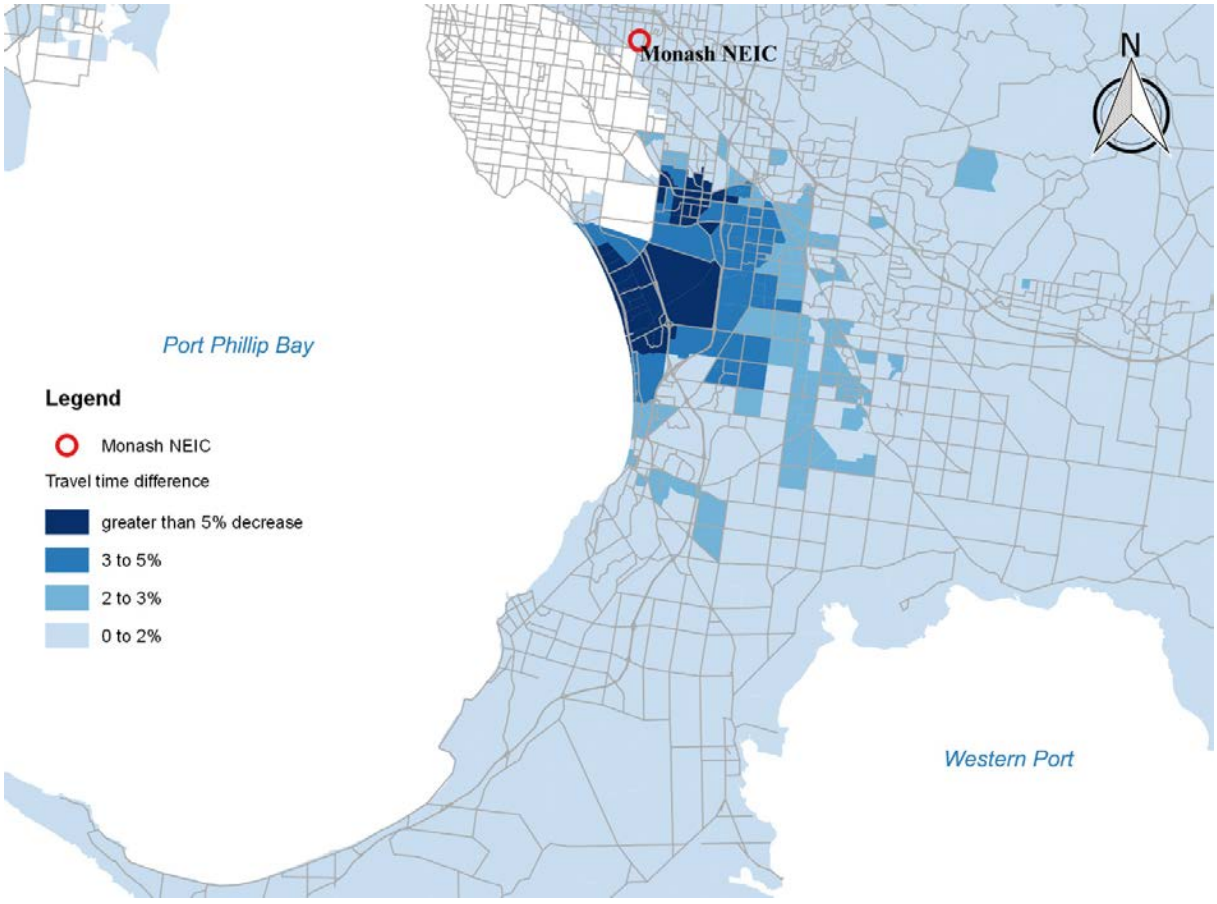


Figure 8.10 2031 morning peak average travel time difference plot (travel to Monash NEIC) – 2031 with project versus 2031 without project

Travel times between the key origin/destination served by the project (i.e. Dingley Bypass/Boundary Road to Mornington Peninsula Freeway/Thames Promenade) will likely be reduced by 7.7 minutes (46 percent) in the AM peak and 10.6 minutes (52 percent) in the PM peak compared to the without project scenario in 2031 in the peak travel directions.

Consistent with the travel time performance results, the level of service is expected to be greatly enhanced along Boundary Road and Springvale Road by 2031 with the implementation of the project. Overall, the results indicate that the project will provide significant improvements to Springvale Road and Wells Road/Boundary Road, the two parallel routes on either side of the project.

It is noted that Centre Dandenong Road may become busier. As part of the project Centre Dandenong Road will be upgraded with an additional lane in each direction increasing capacity. However, it is important to note that despite the increases in traffic volumes and volume-capacity ratio, predicted travel time increases for these links are less than the travel time savings on other links, indicating the overall benefit of the project for the local road network.

Safety impacts on active transport users (Risk R-T6)

The risk assessment found the risk of adverse safety impacts on pedestrians and cyclists at shared use path crossing locations to be a medium risk.

More than eight kilometres of shared use path will be provided by the project to promote active transport travel in the north-south direction along the bypass corridor. In addition, elevated road structures and new crossing facilities are proposed to maintain the permeability across the project and access to existing and future shared use path connections, including Braeside Park and the Mordialloc Creek Corridor.

The proposed shared use path for the project aligns with the SmartRoads system employed by VicRoads to manage the competing interests of road space by nominating the priority of transport modes now and into the future. Mordialloc Bypass (Freeway) is identified on the SmartRoads maps as a future preferred traffic route with a shared path alongside providing priority to cyclists and pedestrians.

Removal of all at–grade intersections reduces the number of high speed crossing points accessible to pedestrians and cyclists, increasing safety for active transport users.

As required by EPR T1, detailed design and construction of intersections and freeway facilities that are affected by the project, and those proposed for the project, will be required to provide safe vehicle movements to the satisfaction of the responsible road management authority. This will require Road Safety Audits and/or Safe System Assessment to be undertaken for the proposed design at shared use path crossing locations.

Additionally, where formal vehicle, bicycle and pedestrian access is altered during construction of the project, such access must be replaced in accordance with relevant road design standards, as soon as practicable (EPR T3).

The residual risk of adverse impacts on active transport user safety associated with shared use path crossing locations are expected to be low.

Road safety impacts on road users (Risk R-T7)

The risk assessment found the risk of adverse safety impacts on road users due to the introduction of new intersections to be a medium risk. While the project is expected to improve road safety for the area to an extent through grade separated interchanges and installation of road safety barrier systems, it will also create new intersections and induce traffic demand. So, there is still a risk in terms of road safety that needs to be managed throughout the detailed design development process. In accordance with EPR T1, the design must provide for safe vehicle movements to the satisfaction of the responsible road authority, where Road Safety Audits and Safe System Assessments are to be undertaken on the design.

Altered access arrangements

The project maintains existing formal vehicle and pedestrian access arrangements along the project length through providing overpasses at each road location. In addition, MRPA has incorporated a pedestrian underpass between Park Way and Braeside Park, formalising what was an informal track.

SAFE SYSTEMS APPROACH

The Victorian Government is dedicated to achieving the strategic goal of no road deaths and serious injuries. The key principals for the safe systems approach are that:

- people make mistakes
- people have a limited tolerance to injuries
- safety is a shared responsibility.

The four components of the safe systems are safer roads, safer speeds, safer vehicles and safer people.

A Safe Systems Assessment assesses a design against a base case to allow to ensure that the design is trending towards a safer alternative. In this case, the base case was an arterial road option, compared to the proposed freeway. The SSA showed a reduction of 35 per cent in the overall risk score when considering all major crash types.

In general, the project will not alter traffic arrangements along the major arterial roads, except for the additional intersections associated with the access ramps for the new freeway. The exception is at Woodlands Drive, where the existing traffic is diverted to Tarnard Drive as described in Section 6.5.3 of Chapter 6: *Project description*. Intersection analysis has shown that this set up will function better than the existing alignment, and is designed to cater for truck movements. Traffic exiting Redwood Drive will also be affected, as this intersection will become a left turn only, with provisions of dedicated U-turn lane at Tarnard Drive.

This diversion will also remove the informal parking along Tarnard Drive, and provide formalised parking at the truncated area of Woodlands Drive.

Meeting the project objectives

The transport impact assessment outcomes provide evidence of how the project objectives will be met. The benefits are discussed in detail in Appendix A: *Transport impact assessment*, included in Chapter 2: *Project rationale and benefits* and are summarised below:

1. The project will offer significant safety improvements through the reduction of traffic volumes and higher standard of road design (including barriers and traffic separation), whilst significant reductions in congestion and time travel delays will improve road users experience and benefit the local community.
2. Improved efficiency in freight transport resulting in cost efficiency for businesses and customers.
3. Improved amenity on local roads and access to local services due to reduced traffic congestion, less freight on local roads and improved safety.
4. Reduced traffic and congestion on arterial roads and intersections will improve public transport efficiency, whilst public transport will be promoted through the project with bus priority measures.
5. Active transport will be promoted through the shared use path alongside the project and better connectivity for pedestrians and cyclists.
6. Travel time improvements.

8.9 ENVIRONMENTAL PERFORMANCE REQUIREMENTS (EPRs)

Table 8.8 outlines the EPRs developed to maintain and enhance transport efficiency, capacity and safety.

Table 8.8 Environmental performance requirements (EPRs)

EPR reference	Environmental performance requirements	Project phase
T1	**Intersection and freeway design and performance** Intersections and freeway facilities that are affected and/or proposed by the project will be designed and constructed to provide safe vehicle movements to the satisfaction of the responsible road management authority. The design of intersections and the freeway must meet VicRoads' design standards with analysis undertaken to ensure the proposed configuration will achieve acceptable operational performance. Road Safety Audits and/or Safe System Assessment in accordance with Austroads guidelines will be undertaken to maximise the safety potential of the project.	All

EPR reference	Environmental performance requirements	Project phase
T2	**Transport Management Plan (TMP)** Prior to the commencement of works, TMP(s) must be developed and implemented to minimise disruption (to the extent practicable) to affected local land uses, traffic, on-road public transport, pedestrian and bicycle movements and existing public facilities during all stages of construction. The plan(s) will comply with relevant standards and must be developed in consultation with Kingston City Council, Greater Dandenong City Council, VicRoads and public transport providers and be informed and supported by an appropriate level of transport analysis. The plan(s) must include: • a program to monitor impacts of construction activities to all modes of active and passive transport. Where monitoring identifies adverse impacts, practicable mitigation measures must be developed and implemented • consideration of cumulative impacts of other major projects operating concurrently in the local area • identify the route options for construction vehicles (including haulage of spoil and other heavy materials to and from the construction site) travelling to and from the project construction site, recognising sensitive receptors, and minimising the use of local streets • development of suitable measures to ensure emergency service access is not inhibited as a result of project construction activities (in consultation with emergency services) • provision for the minimisation of impacts on existing connectivity for pedestrians, cyclists, public transport and road vehicles as a result of construction, including the identification of alternative routes for pedestrians and cyclists and other measures to maintain connectivity and safety for pedestrians and cyclists • management of any temporary or partial closure of roads and traffic lanes, including provision for suitable routes for vehicles, cyclists and pedestrians, to maintain connectivity for road and footpath users • restrictions to the number of local roads to be used for construction-related transportation to minimise impacts on amenity, in consultation with the relevant road authorities, including at Edithvale Road (EPR B4) • reinstatement of access to open space, community facilities, commercial premises and dwellings if disrupted, as soon as practicable, and to an equivalent standard • provision for safe access points to laydown areas and site compounds • a communications strategy to advise affected users, potentially affected users, relevant stakeholders and the relevant road authorities of any changes to transport conditions in accordance with the Community and Stakeholder Engagement Management Plan (EPR S1). The plan must include specific measures for discrete components or stages of the works having the potential to impact on roads, shared use paths, bicycle paths, footpaths or public transport infrastructure.	Construction
T3	**Vehicle and pedestrian access** Where formal vehicle and pedestrian access are altered during construction, such access must be replaced in accordance with relevant road design standards, as soon as practicable.	Operation

8.10 CONCLUSIONS

The project would provide greater network capacity, relieving pressure on parallel routes. This would result in improved travel times on key origin/destination routes of up to 7.7 minutes in the morning peak and 10.6 minutes in the evening peak. This would not only improve user experience but also reflects reduced congestion, improving local amenity in the project area. Increases in traffic volumes would, however, be experienced on arterial roads connecting to the freeway.

The project is expected to improve road safety by reducing crash risk through the reduction of traffic volumes on the local network, including the number of heavy vehicles. Safety would be improved by providing a higher standard of road connection with grade separation of conflicting and opposing traffic, and by improving intersections.

Public transport would be promoted with the project through bus priority measures and active transport would be improved through the provision of a shared use path greater than eight kilometres in length, north to south along the bypass corridor.

Construction is expected to have insignificant effects on the local road network due to the location of the majority of works occurring within an undeveloped area outside the existing road network, minimising disruption. Risks associated with the construction traffic routing to site, road and lane closures and associated issues will be managed through a TMP (EPR T2). The TMP will include a requirement to program works appropriately to minimise disruptions and proposed investigations to consider the need for road safety audits during the construction stages.

For operation, potential accidents at shared use paths crossing locations during operations, however with additional controls through road safety audits and/or safe system assessment this can be reduced. Crash risks at the proposed new intersections will be managed through road safety audits and safe system assessments during detailed design process (EPR T1).

Overall the project will help support the future growth of major land use developments and employment clusters in the project area including Moorabbin Airport and Monash NEIC by enhancing access equity and providing better network connections.